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IMPLEMENTATION COMPLETION AND RESULTS REPORT

TF-017783/TF-017782

ON A

GRANT FROM THE GLOBAL ENVIRONMENT FACILITY TRUST FUND

IN THE AMOUNT OF US$5.49 MILLION

AND A GRANT FROM THE LEAST DEVELOPED COUNTRIES FUND

IN THE AMOUNT OF US$4.05 MILLION

TO THE

REPUBLIC OF RWANDA

FOR THE

LANDSCAPE APPROACH TO FOREST RESTORATION AND CONSERVATION (LAFREC) PROJECT
May 30, 2022

Environment, Natural Resources, and the Blue Economy Global Practice
Africa East Region

ABBREVIATIONS AND ACRONYMS

CPF	Country Partnership Framework
CPS	Country Partnership Strategy
ESMF	Environmental and Social Management Framework
EWS	Early Warning System
FEWS	Flood Early Warning System
FM	Financial Management
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GEO	Global Environmental Objective
GIS	Geographical Information System
GoR	Government of Rwanda
IRR	Internal Rate of Return
LAFREC	Landscape Approach to Forest Restoration and Conservation
LDCF	Least Developed Countries Fund
LULC	Land Use Land Cover
LVEMP II	Lake Victoria Environmental Management Project Phase 2
LWH	Land Husbandry, Water Harvesting and Hillside Irrigation Project
M&E	Monitoring and Evaluation
METT	Management Effectiveness Tracking Tool
MTR	Midterm Review
NDF	Nordic Development Fund
NEWP	National Early Warning Platform
NPV	Net Present Value
NST1	National Strategy for Transformation (2017–2024)
NTAC	National Technical Advisory Committee
PAD	Project Appraisal Document
PDO	Project Development Objective
PSC	Project Steering Committee
RDB	Rwanda Development Board
REMA	Rwanda Environment Management Authority
RMA	Rwanda Meteorological Agency
RPF	Resettlement Policy Framework
RSSP	Rural Sector Support Project
SCD	Systematic Country Diagnostic
SPIU	Single Project Implementation Unit
TTL	Task Team Leader
UNESCO	United Nations Educational, Scientific and Cultural Organization
WBGCCAP	World Bank Group Climate Change Action Plan (2021–2025)

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DATA SHEET

BASIC INFORMATION

Product Information

Project ID	Project Name
P131464	Landscape Approach to Forest Restoration and Conservation (LAFREC)
Country	Financing Instrument
Rwanda	Investment Project Financing
Original EA Category	Revised EA Category
Partial Assessment (B)	Partial Assessment (B)

Organizations

Borrower	Implementing Agency
Republic of Rwanda	REMA, Ministry of Environment

Project Development Objective (PDO)

Original PDO

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

FINANCING

	Original Amount (US$)	Revised Amount (US$)	Actual Disbursed (US$)
World Bank Financing			
TF-17783	5,487,000	5,487,000	5,487,000
TF-17782	4,045,000	4,045,000	4,045,000
Total	**9,532,000**	**9,532,000**	**9,532,000**
Non-World Bank Financing			
Borrower/Recipient	0	0	0
Total	**0**	**0**	**0**
Total Project Cost	**9,532,000**	**9,532,000**	**9,532,000**

KEY DATES

Approval	Effectiveness	MTR Review	Original Closing	Actual Closing
27-Aug-2014	12-Dec-2014	05-Feb-2018	31-Dec-2019	30-Sep-2021

RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Amount Disbursed (US$M)	Key Revisions
21-Aug-2019	6.37	Change in Loan Closing Date(s)
13-Nov-2020	8.19	Change in Loan Closing Date(s)

KEY RATINGS

Outcome	Bank Performance	M&E Quality
Satisfactory	Satisfactory	High

RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US$M)
01	17-Dec-2014	Moderately Satisfactory	Moderately Satisfactory	.10
02	23-Apr-2015	Moderately Satisfactory	Moderately Satisfactory	.80
03	03-Nov-2015	Moderately Satisfactory	Moderately Satisfactory	.87
04	22-May-2016	Moderately Satisfactory	Moderately Satisfactory	1.49
05	14-Dec-2016	Moderately Satisfactory	Moderately Satisfactory	2.06
06	29-Jun-2017	Satisfactory	Moderately Satisfactory	2.57
07	19-Dec-2017	Satisfactory	Moderately Satisfactory	3.10
08	01-May-2018	Satisfactory	Moderately Satisfactory	3.60
09	01-Nov-2018	Satisfactory	Satisfactory	5.02
10	11-May-2019	Satisfactory	Moderately Satisfactory	5.71
11	03-Dec-2019	Satisfactory	Moderately Satisfactory	7.10
12	29-May-2020	Satisfactory	Moderately Satisfactory	7.83
13	16-Dec-2020	Satisfactory	Satisfactory	8.31
14	25-Jun-2021	Satisfactory	Satisfactory	9.25

SECTORS AND THEMES

Sectors

Major Sector/Sector	(%)
Agriculture, Fishing and Forestry	**80**
Forestry	60
Other Agriculture, Fishing and Forestry	20
Public Administration	**3**
Other Public Administration	3

Transportation	**3**
Other Transportation	3
Water, Sanitation and Waste Management	**14**
Other Water Supply, Sanitation and Waste Management	14

Themes

Major Theme/ Theme (Level 2)/ Theme (Level 3)	(%)
Private Sector Development	**100**
Jobs	100
Finance	**4**
Finance for Development	4
Disaster Risk Finance	4
Urban and Rural Development	**42**
Rural Development	30
Land Administration and Management	30
Disaster Risk Management	12
Disaster Response and Recovery	4
Disaster Risk Reduction	4
Disaster Preparedness	4
Environment and Natural Resource Management	**55**
Renewable Natural Resources Asset Management	25
Biodiversity	25
Water Resource Management	30
Water Institutions, Policies and Reform	30

ADM STAFF

Role	At Approval	At ICR
Vice President:	Makhtar Diop	Hafez M. H. Ghanem
Country Director:	Diarietou Gaye	Keith E. Hansen
Director:	Karin Erika Kemper	Catherine Signe Tovey
Practice Manager/Manager:	Magdolna Lovei	Iain G. Shuker
Project Team Leader:	Stephen Ling	Pablo Cesar Benitez Ponce
ICR Co Author:		Hisham Mohammed Salih Osman Mohammed

I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

A. CONTEXT AT APPRAISAL

Context

1.   At project appraisal (2014), Rwanda was making rapid progress in development. The Government of Rwanda (GoR) was taking a strategic approach to development, and its long-term development vision, articulated in Rwanda Vision 2020 (published in 2000), was to become a lower-middle-income economy operating as a knowledge-based economy. To implement this long-term vision, the first two Economic Development and Poverty Reduction Strategies (EDPRS I and II) were focused on economic transformation, rural development, productivity and youth employment, and accountable governance. This strategic approach had paid dividends. In the 10 years before appraisal, annual gross domestic product (GDP) growth averaged 8.0 percent, and the poverty headcount dropped nationally, from 78 percent in 2000 to 57.9 percent in 2013 (based on the population living on less than US$1.90 per day, using 2011 purchasing power parity). Despite this progress, poverty remained deep and pervasive, particularly in rural areas.

2.   Rwanda's development has been challenged by demographic pressures. It is the most densely populated country in continental Africa, and at appraisal, the population of 11 million was growing annually at 2.6 percent. This placed enormous strain on Rwanda's landscapes, which provided the natural resources upon which its economy is built, in the form of land, water, and biodiversity resources. Around 50 percent of power generation came from (small-scale) hydropower, and 85 percent of the domestic energy supply in the country was from forest resources (wood fuels). Agriculture accounted for 32.7 percent of GDP in 2012 and was the main source of income for 87 percent of Rwandans, who typically farmed very small landholdings. This pressure on land, combined with Rwanda's steep terrain, made sustainable land and landscape management strict necessities.

3.   Moreover, Rwanda is highly vulnerable to seasonal variability and long-term climate change. Heavy rainfall and floods have had significant consequences on the environment, society, food security, and the wider economy. Significant impacts were also expected for the country's water resources, agriculture, and health sectors. Increased temperatures, flooding, droughts, and soil erosion put both urban and rural communities at risk, particularly affecting the livelihoods of the poor and vulnerable groups. Since the early 2000s, the frequency and severity of disasters—particularly of floods, landslides, and droughts—have increased, causing injury and death and economic and environmental losses. The impact of flooding on people had worsened, as a growing population and a limited availability of land have pushed people to settle in flood-prone areas. The combined effects of climate change and environmental degradation (soil erosion, deforestation, and loss of ecosystem services) presented significant obstacles to the country's sustainable economic growth and development. Managing and protecting Rwanda's forest landscapes was and remains central to overcoming these obstacles.

4.   Forest ecosystems in Rwanda are primarily contained within protected areas that included the Gishwati and Mukura Forest Reserves. Protected areas have been encroached and reduced in size through successive re-gazetting, and nationally, almost two-thirds of forests have been lost since independence in 1962. In addition to these protected forest areas, Rwanda also contains remnant terrestrial ecosystems

that have resulted from the fragmentation of larger ecosystems. Through Vision 2020, and to reverse deforestation, the Government embarked on a vigorous afforestation program to achieve 30 percent forest cover by 2020. At appraisal, Rwanda had three national parks: Volcanoes National Park (established in 1929), Akagera National Park (established in 1934), and Nyungwe Forest National Park (established in 1933). The Volcanoes National Park, famous for its population of Mountain Gorillas, was awarded United Nations Educational, Scientific and Cultural Organization (UNESCO) Biosphere Reserve status in 1983.
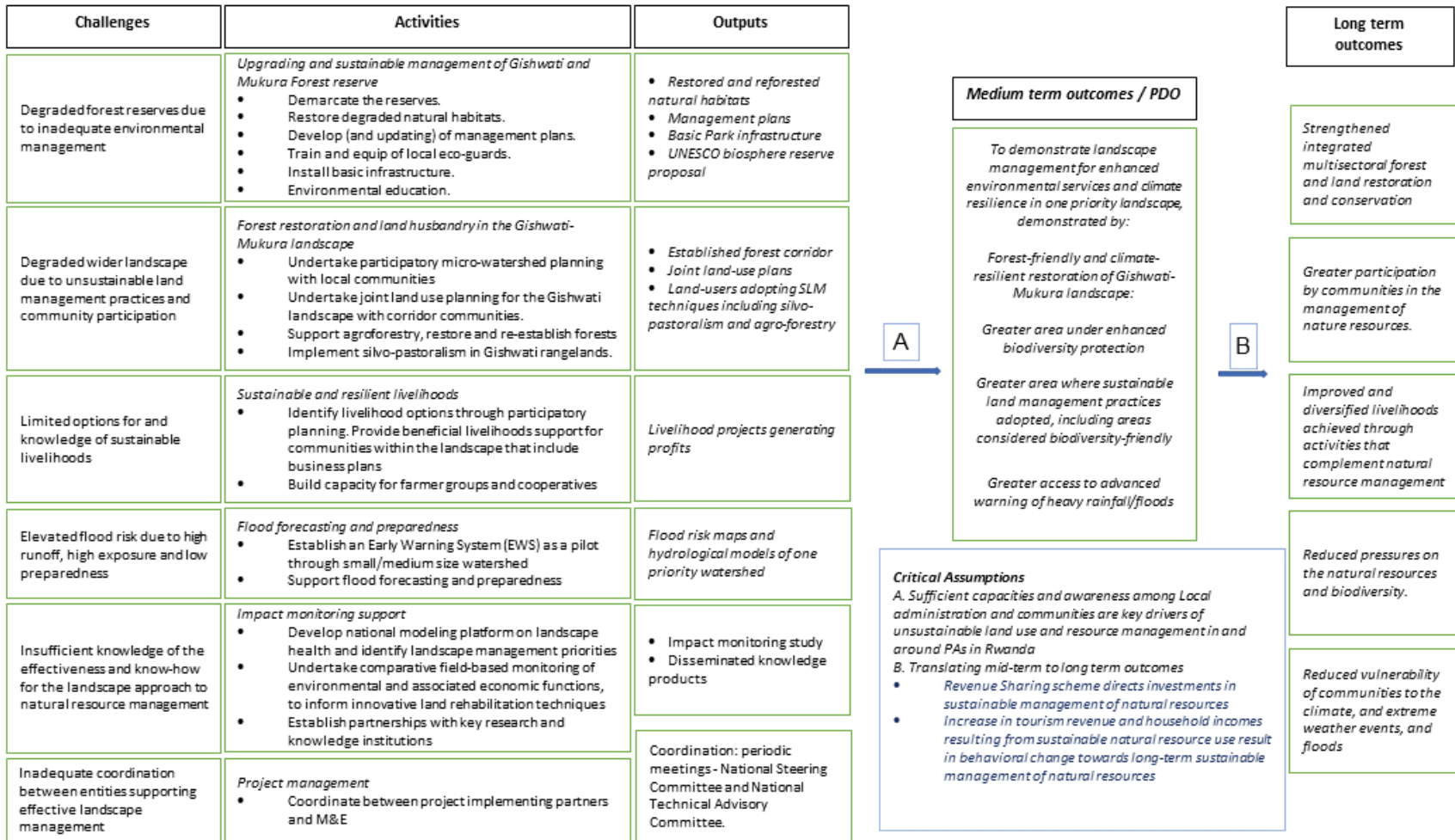
5.   In the FY14–18 Country Partnership Strategy (CPS),[1] the GoR and the World Bank agreed to prioritize cross-sectoral investments in environmental management, including climate change, and committed to integrate environmental sustainability into the key development sectors (energy, agriculture, private sector development, environment and natural resources, urbanization, and transport). The CPS acknowledged that rapid economic growth may present risks for environmental sustainability, because of Rwanda's size, topography, population density, and natural resource base. The CPS explored where resource constraints or negative externalities could potentially hinder growth in key sectors and highlighted how climate resilience and environmental sustainability would be mainstreamed though sector operations. Theme 2 of the CPS focused on "Improving the productivity and incomes of the poor through rural development and social protection". The Landscape Approach to Forest Restoration and Conservation (LAFREC) project was aligned with the thematic areas under specific programs such as intensifying sustainable agriculture systems, rehabilitating ecosystems, enhancing cross-sectoral coordination and implementation through local government, and using local labor.

6.   Drawing on both the CPS and Government commitments, the LAFREC project was designed to primarily contribute to CPS Theme 2, supporting sustainable agricultural production alongside the existing World Bank projects on sustainable agriculture and watershed management—that is, the Rwanda Rural Sector Support Project (RSSP, P064965), Land Husbandry, Water Harvesting and Hillside Irrigation Project (LWH, P114931/P124785), and the Lake Victoria Environmental Management Program Phase II (LVEMP II, P118316). LAFREC sought to broaden these approaches by promoting the direct and indirect economic benefits of landscape management beyond local agricultural output by including tourism and the protection of water resources for energy and water supply. It also aimed to reduce social vulnerability by enhancing climate resilience among highly vulnerable rural communities. Thus, LAFREC included a key component of climate resilience against floods and landslides that would enable and empower local communities to adopt more sustainable practices including early warning for floods that were prevalent in the intervention area. The adoption of the landscape approach was selected because of its focus on multisectoral investments and the importance of participatory planning and implementation. This rationale is further elaborated in the Theory of Change.

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[1] IDA/IFC/MIGA. Country Partnership Strategy for the Republic of Rwanda for the Period FY2014–2018. Report No. 87025-RW.

Theory of Change (Results Chain)

Challenges	Activities	Outputs
Degraded forest reserves due to inadequate environmental management	*Upgrading and sustainable management of Gishwati and Mukura Forest reserve* • Demarcate the reserves. • Restore degraded natural habitats. • Develop (and updating) of management plans. • Train and equip of local eco-guards. • Install basic infrastructure. • Environmental education.	• Restored and reforested natural habitats • Management plans • Basic Park infrastructure • UNESCO biosphere reserve proposal
Degraded wider landscape due to unsustainable land management practices and community participation	*Forest restoration and land husbandry in the Gishwati-Mukura landscape* • Undertake participatory micro-watershed planning with local communities • Undertake joint land use planning for the Gishwati landscape with corridor communities. • Support agroforestry, restore and re-establish forests • Implement silvo-pastoralism in Gishwati rangelands.	• Established forest corridor • Joint land-use plans • Land-users adopting SLM techniques including silvo-pastoralism and agro-forestry
Limited options for and knowledge of sustainable livelihoods	*Sustainable and resilient livelihoods* • Identify livelihood options through participatory planning. Provide beneficial livelihoods support for communities within the landscape that include business plans • Build capacity for farmer groups and cooperatives	*Livelihood projects generating profits*
Elevated flood risk due to high runoff, high exposure and low preparedness	*Flood forecasting and preparedness* • Establish an Early Warning System (EWS) as a pilot through small/medium size watershed • Support flood forecasting and preparedness	*Flood risk maps and hydrological models of one priority watershed*
Insufficient knowledge of the effectiveness and know-how for the landscape approach to natural resource management	*Impact monitoring support* • Develop national modeling platform on landscape health and identify landscape management priorities • Undertake comparative field-based monitoring of environmental and associated economic functions, to inform innovative land rehabilitation techniques • Establish partnerships with key research and knowledge institutions	• Impact monitoring study • Disseminated knowledge products
Inadequate coordination between entities supporting effective landscape management	*Project management* • Coordinate between project implementing partners and M&E	Coordination: periodic meetings - National Steering Committee and National Technical Advisory Committee.

Medium term outcomes / PDO

To demonstrate landscape management for enhanced environmental services and climate resilience in one priority landscape, demonstrated by:

Forest-friendly and climate-resilient restoration of Gishwati-Mukura landscape:

Greater area under enhanced biodiversity protection

Greater area where sustainable land management practices adopted, including areas considered biodiversity-friendly

Greater access to advanced warning of heavy rainfall/floods

A → B →

Long term outcomes

Strengthened integrated multisectoral forest and land restoration and conservation

Greater participation by communities in the management of nature resources.

Improved and diversified livelihoods achieved through activities that complement natural resource management

Reduced pressures on the natural resources and biodiversity.

Reduced vulnerability of communities to the climate, and extreme weather events, and floods

Critical Assumptions
A. Sufficient capacities and awareness among Local administration and communities are key drivers of unsustainable land use and resource management in and around PAs in Rwanda
B. Translating mid-term to long term outcomes
• Revenue Sharing scheme directs investments in sustainable management of natural resources
• Increase in tourism revenue and household incomes resulting from sustainable natural resource use result in behavioral change towards long-term sustainable management of natural resources

Note: EWS = Early Warning System; M&E = Monitoring and Evaluation; PDO = Project Development Objective; SLM = Sustainable Land Management.

Project Development Objectives (PDOs)

7.   The joint PDO/Global Environmental Objective (GEO) was to "demonstrate landscape management for enhanced environmental services and climate resilience in one priority landscape."

Key Expected Outcomes and Outcome Indicators

8.   The project targeted a major improvement in the restoration of the highly degraded Gishwati-Mukura landscape to enhance productivity and provide environmental values, which would serve as a demonstration model that can be scaled up to other regions.[2] Landscape management in the priority Gishwati-Mukura landscape would focus on (a) rehabilitating forests and biodiversity within the Gishwati and Mukura Forest Reserves, (b) enhancing sustainable land management in the agricultural lands between them, and (c) introducing silvo-pastoral approaches in the rangelands of the former central Gishwati Forest Reserve.

9.   Enhanced environmental services would be delivered through (a) improved native biodiversity within a global priority ecoregion; (b) increased carbon sequestration; (c) improved watershed function, reducing sedimentation and related costs to downstream water infrastructure and fisheries; and (d) higher productivity and diversity of natural-resource-based livelihoods.

10.   Climate resilience and climate adaptation are intrinsic to sustainable land management and watershed rehabilitation. Additional climate resilience benefits would come through the diversification of livelihoods, targeting the most vulnerable, and improvement in flood warning and preparatory systems for those faced with the most acute climate threats.

11.   The PDO-level outcome indicators are the following:

1.   Area of protected forests (Gishwati-Mukura National Park) under enhanced biodiversity protection

2a.   Land area where sustainable land management practices have been adopted because of the project

2b.   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

4a.   Project beneficiaries

4b.   Of which female.

12.   In hindsight, the PDO could have been better stated to identify multiple integrated expected outcomes more clearly, as outlined in the Theory of Change. The Project Appraisal Document (PAD) did

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[2] The Gishwati-Mukura landscape refers to the wider area that includes the former Gishwati Forest Reserve and Mukura Forest Reserve, their buffer zones, and the area between which includes pasture lands, agroforestry, and agricultural land. The Gishwati-Mukura National Park refers to the single protected entity to be created by combining parts of the remnant Gishwati Forest and the Mukura Forest Reserve (see the map in annex 5). The selection of the Gishwati-Mukura landscape was due to its degraded nature, the relationship between this degradation and flood risk, and its elevated levels of poverty.

not clearly present a results chain linking activities to outputs and intermediate outcomes. The Theory of Change (above) has been interpreted from the contents of the PAD.

Components

13.   The project had two components.

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

14.   Under this component, the project aimed to apply a landscape approach to forest restoration and conservation to improve ecosystem functions and services in the Gishwati-Mukura landscape and adjacent parts of the Congo-Nile Ridge. The target was to arrest and eventually reverse the ongoing land conversion in the area through forest restoration and agroforestry approaches in a manner that would maximize ecological connectivity and hydrological function in the landscape. A map showing the location of project sites is presented in annex 5.

Subcomponent 1.a.: Upgrading and sustainable management of Gishwati and Mukura Forest Reserves (US$1.408 million)

15.   The project aimed to support the 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 and national park with a higher standard of protection. Activities would be focused in three groups: (a) physical demarcation of the reserves based on boundaries of core forest areas and buffer zones for the national park proposed in a draft law; (b) restoration of degraded natural habitats using assisted regeneration of degraded portions involving planting of native species, removal of exotic species where necessary, and in some limited areas where mining had taken place, small-scale works to fill excavations; and (c) development and updating of management plans, which would include a park management plan and strategy for ecotourism development. The management planning process was expected to result in the preparation of a Biosphere Reserve nomination to UNESCO for the newly established Gishwati-Mukura National Park; training and equipping of local eco-guards; installation of basic infrastructure, including a park headquarters, viewing platforms, and nature trails; and an environmental education program targeting local communities and schools.

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

16.   The project planned to work on the management of the broader Gishwati-Mukura landscape to enhance both production and watershed values while capitalizing on opportunities to increase the representation of native species and therefore biodiversity connectivity in the landscape. The priority investments would focus on

(a)   Sustainable land management with corridor communities. Significant investments in land use intensification would include participatory micro-watershed planning to identify sustainable land management investments, the promotion of agroforestry techniques, and a set of watershed rehabilitation actions;

(b)   Silvo-pastoralism in the Gishwati rangelands;

(c)   Agroforestry and forest restoration support to the Ministry of Agriculture and Animal Resources and the Forests Department; and

(d)   Joint land use planning for the Gishwati-Mukura landscape.

Subcomponent 1.c.: Sustainable and resilient livelihoods (US$2.616 million)

17.   This subcomponent aimed to support demand-driven income-generating activities targeting some of the most vulnerable people. Key project investments would include (a) expanding and increasing the economic options and security of the livelihoods base of the population within the Gishwati-Mukura landscape, as well as strengthening their climate resilience and (b) increasing the sustainability of land and forest management investments with beneficial livelihoods support for communities within the landscape. The design of livelihood activities would be based on community-based participatory planning, and would consider vulnerability indicators such as female-headed and low-income households. It would also include capacity building for farmer groups and cooperatives.

Subcomponent 1.d.: Flood forecasting and preparedness (US$1.184 million)

18.   The subcomponent planned to improve the technical capacity of institutions responsible for flood risk management and complement other flood management initiatives to support a fully integrated EWS. The LAFREC project focused on establishing an EWS as a pilot in a small/medium-size watershed at a high risk of flooding.

Component 2: Research, monitoring and management (US$1.305 million)

Subcomponent 2a: Applied research and impact monitoring (US$0.861 million)

19.   The project aimed to demonstrate the potential for and inform the future implementation of forest-friendly land rehabilitation approaches. Impact monitoring would support (a) a national modeling platform on landscape health and identify landscape management priorities and (b) comparative field-based monitoring of a range of environmental and associated economic functions, to inform innovative land rehabilitation techniques. 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 agroforestry and natural forest interventions. Applied research would support the establishment of partnerships with key research and knowledge institutions to improve knowledge management of the Gishwati-Mukura landscape and improve restoration techniques, with particular focus on enhancing adoption of native species.

Subcomponent 2b.: Project management (US$0.444 million)

20.   Project management resources were planned to cover routine administrative overheads, such as coordination between project implementing partners, procurement and contract management, financial management (FM), M&E system, and reporting. The internal M&E system would incorporate information on project outcomes generated through field-based impact monitoring.

B. SIGNIFICANT CHANGES DURING IMPLEMENTATION

21.   The project was extended twice to facilitate completion of key activities that could not be finalized by the initial project close-out date of December 31, 2019. The first extension ran from December 31, 2019, to December 31, 2020. The second extension ran until September 30, 2021. The extension enabled the completion of key activities which included the gazetting of the national park, completion of park infrastructure, the completion of impact monitoring activities, and the handover of the FEWS.

Revised PDOs and Outcome Targets

22.   There were no changes to the PDO or outcome targets.

Revised PDO Indicators

23.   There were no changes to the indicators.

Revised Components

24.   There were no changes to the components.

Other Changes

25.   There were no additional changes.

Rationale for Changes and Their Implication on the Original Theory of Change

26.   The rationale for extending the project closure date was to enable completion of activities that were considered key to achieving project outcomes. The extension was also justified by the onset of COVID-19 which interrupted the support of field-based activities, and the institutional readiness to support handover activities including the Rwanda Development Board (RDB) for park management assets and the Rwanda Meteorology Agency (RMA) for the early warning system.

OUTCOME

RELEVANCE OF PDOs
Assessment of Relevance of PDOs and Rating

Rating: High

27.   The project's relevance to national and World Bank support to Rwanda is underscored in the context section. Rwanda's 2014–2018 CPS had highlighted the importance of cross-cutting environmental investments. The project and its objectives remain relevant to the FY21–26 Country Partnership Framework (CPF),[3] which was established to address the country's development priorities as identified in

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[3] World Bank Group. 2020. *Country Partnership Framework for the Republic of Rwanda*. Report No. 148876-RW.

the 2019 Systematic Country Diagnostic (SCD)[4] and Rwanda's National Strategy for Transformation (NST1). The 2019 SCD identified the need to build resilience, which included investing in stable and sustainable landscapes and strengthening resilience through effective environmental management. The CPF states that "Rwanda's growth model cannot be successful without prioritizing environmental sustainability and building resilience against climate change." Specifically, the CPF notes key challenges which this project sought to address. This includes the reduction in forest cover, driven by demand for agricultural land and biomass, the destruction of critical watersheds, and the problems of rural poverty compounded by weather shocks. The CPF sets a priority to develop investments in stable and sustainable landscapes, for which the LAFREC project is serving as a model.

28.   During the life of the project, Vision 2020 was superseded by Vision 2050. Its implementation plans (EDPRS I and II) were replaced by a new NST1 covering 2017–2024. Vision 2050 sets a vision for economic growth, prosperity, and high living standards that follows a sustainable path in terms of the use and management of nature resources and building resilience to cope with climate change. NST1 has an economic transformation pillar. Under this pillar, one priority area is to double tourism revenues between 2016 and 2024. A second priority area is devoted to the sustainable management of natural resources and the environment, and this includes strategic interventions that are focused on forest management and a target to increase and sustain the area covered by forest through forest landscape restoration. It also includes the target to develop a project to manage water flow from the Volcanoes region to mitigate disasters. Finally, a cross-cutting area of NST1 is dedicated to the environment and climate change, with a focus on biodiversity and ecosystem management. The LAFREC project's objectives are aligned with these national objectives.

29.   The project's objectives were also in line with the strategic directions set in the World Bank Group Climate Change Action Plan 2021–2025 (WBGCCAP),[5] with the aim to support high-quality forecasts, EWSs, and climate information services to better prepare people for climate risks, planning for management of floods and droughts, and supporting river basins. In this regard, LAFREC supported the installation of an FEWS in the Sebeya Basin, along with hydrometeorology stations and lightning protection systems, and public footbridges over bridges to aid mobility that in periods of high river levels would reduce the risks to communities.

30.   The project's objectives were outcome oriented, in that the project sought to serve as a model and to build knowledge within the country on how landscape management can contribute to Rwanda's development and be scaled up to other regions. The objective also provides a link with the enhancement of environmental services and climate resilience that can be measured in concrete terms. The project's objective was appropriately pitched given the experience of the World Bank project in this sector. The objective of LAFREC builds upon experience in the Rwanda RSSP, the LWH, and LVEMP II.

31.   LAFREC has successfully demonstrated the landscape approach, and the lessons learned from this project will be fundamental to the scaling-up of the landscape approach into interventions in other parts of Rwanda that are aligned with the CPF and NST1. The CPF has an objective to support the preparation of flagship, climate resilience projects, and programs. The LAFREC approach has already informed the

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[4] World Bank Group. 2019. *Rwanda Systematic Country Diagnostic*. Report No. 138100-RW.
[5] "World Bank Group. 2021. *World Bank Group Climate Change Action Plan 2021–2025: Supporting Green, Resilient, and Inclusive Development*. World Bank, Washington, DC. World Bank.

design of the Green Amayaga or Forest Landscape Restoration in the Amayaga region, a six-year Global Environmental Facility (GEF)-financed project aimed to afforest the degraded ecosystem and restore the natural forests of four districts in Rwanda's southern province. The lessons learned from the LAFREC program will further inform the development of the Volcanoes Community Resilience Project that will address ecological restoration and improved flood risk management in the Volcanoes region. These lessons include the need for community ownership, through participation in planning, the importance of Government coordination, and the mutually reinforcing benefits of boosting livelihoods, reducing flood risk, protecting biodiversity, and supporting ecotourism.

Assessment of Relevance of PDOs and Rating

32.   Overall, the relevance of the PDO has been rated as 'High', which is justified by LAFREC's contribution to national strategies including NST1, World Bank strategies, and beneficiaries' needs. LAFREC has successfully implemented priorities that are aligned to SCD (2019) for Rwanda in which "increased sustainability through addressing environmental degradation, building resilience to climate change" is one of the outcomes to maintain rapid progress toward poverty reduction and shared prosperity. The project design and implementation up to completion provided clear evidence of the alignment of the PDOs to Rwanda's Vision 2020/2050 and its medium-term strategies, NST1, and other national sector plans relevant to environment and climate change as well as the SCD, CPF, and WBGCCAP.

B. ACHIEVEMENT OF PDOs (EFFICACY)
33.   Achievement of the PDO involved a major improvement in the restoration of the highly degraded Gishwati-Mukura landscape to enhance productivity and provide environmental services and climate resilience.

Assessment of Achievement of Each Objective/Outcome

34.   The project outcomes were aligned to the PDO which aimed "to demonstrate landscape management for enhanced environmental services and climate resilience in one priority landscape." The achievement of the PDO is assessed based on four PDO-level outcome indicators complemented by intermediate results on forest-friendly and climate-resilient restoration of the Gishwati-Mukura landscape and research monitoring and management. A summary of the PDO-level indicators is shown below. The detailed information is found in the Results Framework in annex 1.[6]

Table 1. Indicators, Target, and Achievement

Indicator	Target	Achievement
Areas brought under enhanced biodiversity protection (ha)	3,428	3,428
Land area where sustainable land mgt. practices were adopted as a result of project (ha)	3,000	3,215
New areas outside protected areas managed as biodiversity-friendly (ha)	1,200	1,314

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[6] There is a potential for confusion over these indicators. The first PDO indicator (areas brought under enhanced biodiversity protection) relates to areas within the new national park. The second PDO indicator (land area where sustainable land management practices were adopted) refers to areas outside the park. The PDO indicator "new areas outside protected areas managed as biodiversity-friendly" is a subset of the second indicator. Lastly, the intermediate indicator "area restored or re/afforested" includes areas both within and outside the park.

Indicator	Target	Achievement
Households in the project area with access to advanced warning of individual major rainfall or flood events	90	90
Direct project beneficiaries	12,000	40,482
Percentage of female beneficiaries (%)	50	53

Outcome 1: Enhancing Environmental Services and Climate Resilience through Forest-Friendly and Climate Restoration of the Gishwati-Mukura Landscape

35.   **Upgrading and sustainable management of Gishwati and Mukura Forest Reserves resulted in these reserves having enhanced biodiversity protection**. Before the project, the Gishwati Forest Reserve and Mukura Forest Reserves were separate entities with inadequate protected status and capabilities for their management. In 2015, a law was passed in the Rwandan Parliament that created the unified Gishwati-Mukura National Park, as a fully protected area covering 3,428 ha with a buffer zone of 962 ha. While the law could have been passed without the LAFREC project, the project was essential for its implementation by financing restoration activities, park infrastructure, and supporting planning and education. The project was also instrumental in the awarding of the Gishwati-Mukura National Park with UNESCO Biosphere Reserve status, a major achievement.

36.   The achievement of this outcome is demonstrated through a scoring system called the 'Management Effectiveness Tracking Tool' or METT. METT is an international assessment framework used to measure the management of protected areas. The framework covers aspects such as the area's legal status, the existence of management plans, and human and financial resources. A baseline assessment was undertaken at the start of the project, which resulted in a METT score of 21. A final assessment provided a METT score of 89 (and 63 at midterm review [MTR]), exceeding the target of 50, which means that the management of the Gishwati-Mukura National Park is good. While this score has a degree of subjectivity, this represents a major improvement in the management of protected areas.

37.   LAFREC was able to achieve this outcome through the activities that supported the upgrading and sustainable management of the Gishwati and Mukura Forest Reserves. To begin with, all degraded habitats in the Gishwati-Mukura landscape were mapped, and a detailed restoration plan for the degraded habitats was accomplished through participatory planning. Over the course of the project, the physical boundaries of the park and its buffer zone were demarcated. Three park management plans were prepared: (a) a General Park Management Plan, (b) a Tourism Development Master Plan, and (c) a Biodiversity Survey. The project supported the preparation and submission of the proposal for UNESCO Biosphere Reserve status. The project's interventions were instrumental in making a compelling case that ultimately earned the ecosystem a UNESCO Biosphere Reserve status on October 28, 2020.[7] The UNESCO Biosphere Reserve status gives the Gishwati-Mukura landscape international prominence and will open opportunities to attract tourists, investment, and funding. Its prominence can be seen in relevant news articles.[8]

38.   The project financed restoration activities, including the restoration of former illegal mining sites within the national park, and this has resulted in improved biodiversity. This restoration used native (or

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[7] https://en.unesco.org/biosphere/africa/gishwati-mukura-landscape.
[8] https://www.newstatesman.com/environment/climate/2021/11/how-forests-are-helping-rwanda-heal-the-climate-and-its-communities.

indigenous) species to enhance biodiversity which provided an alternative to exotic species that have dominated Rwanda's landscape. The success of using these species is a successful demonstration that can be applied in other landscapes across the country. Research published demonstrated that the restored forests have increased the habitat and range of primate species (notably the endangered Eastern Chimpanzee and endangered Golden Monkey), and at the same time reduced human-primate conflicts.[9]

39.   The project also financed the construction of basic infrastructure including a park headquarters, base camps, and two patrol posts, which were subsequently handed over to the RDB, the body responsible for the management of national parks. A community environmental education program was prepared along with guidelines that supported effective training. The project supported the recruitment and training of 25 park rangers and guides including three females as well as transport facilitation and communication equipment that have been successfully handed over to the RDB to support monitoring and promotion of park activities. Over 90 people were trained on aspects related to tourism in collaboration with the Integrated Polytechnic Regional College (IPRC), Kitabi. The training program had a focus on tourism promotion aspects including tourist guides, interpretation, customer care skills, community-based tourism skills, and housekeeping and culinary arts skills. These skills have been identified as crucial in creating opportunities for the hospitality industry to effectively support promotion and growing opportunities in tourism, a rapidly growing industry in Rwanda. Thus, the growth in tourism has and will continue to demonstrate growth in employment among the residents that considers social inclusion.

40.   LAFREC has had impacts beyond the intervention area. LAFREC implementation signaled the need to set boundaries for all national parks in Rwanda. As a result, a draft law to revise the boundaries of all national parks has been prepared and is ready and planned for cabinet approval to support park operations. Furthermore, the success in, and the lessons learned from, achieving UNESCO Biosphere Reserve status will be carried forward by the Government, which is seeking the same status for the Nyungwe Forest National Park.

41.   The policy support and recognition of the remarkable LAFREC achievement has reinforced ownership, which was demonstrated through handover from the Rwanda Environmental Management Authority (REMA) to the RDB (the national institution with the mandate for promoting tourism private sector investment). This further reinforces the sustainability of the project with knock-on effects of diversifying and expanding tourism products. Rwanda urgently needs to support links among the national parks (notably the Nyungwe Forest National Park to the south and the Volcanoes National Park to the north) to expand tourism opportunities, products, and options that justify longer stays for visitors to the eco-region and to other tourist areas in the country. This should ensure the sustainability of the project's investments.

42.   **Forest restoration and land husbandry in the Gishwati-Mukura landscape resulted in the adoption of sustainable land management practices and the restoration and re/afforestation in the landscape**. In total, sustainable land management practices were adopted over an area of 3,215 ha, compared to a target of 3000 ha. This total comes from sustainable land management within corridor communities covering 2,100 ha, silvo-pastoralism in the Gishwati rangelands covering 434 ha, by

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[9] Tuyisingize, D., Eckardt, W., Caillaud, D., Ngabikwiye, M., & Kaplin, B. A. (2022). Forest Landscape Restoration Contributes to the Conservation of Primates in the Gishwati-Mukura Landscape, Rwanda. International Journal of Primatology, 1-18.

supporting farmers to manage the natural regeneration of pasturelands, and physical demarcation of the reserves was carried out on 681 ha. Furthermore, new areas outside the protected areas, covering 1,314 ha, are now managed in a biodiversity-friendly manner.

43.   The project was able to achieve these outcomes through supporting communities to implement these practices, including restoration of the buffer zone, the implementation of silvo-pastoralism schemes, and support for agroforestry and forest restoration. Across the wider Gishwati-Mukura landscape, 2,675 ha has been restored or re/afforested, exceeding the target of 2,500 ha. This includes areas rehabilitated within reserves and buffer zones and new or rehabilitated production or protection forests outside of the reserves (and therefore this figure has some overlap with other indicators). These sites adopted native species, where possible, to promote biological connectivity across the region. An assessment using satellite imagery (Landsat 8) showed that in the project area, between 2014 and 2021, 5,864 hectares were reforested. This suggests that the project has positively influenced forestation practices more broadly. This demonstrates the potential for scale-up of this approach across the wider Congo-Nile Ridge, connecting Nyungwe National Forest Park in the south, through Gishwati-Mukura Reserve to the Volcanoes National Park in the north. This is vital to transforming Rwanda's tourism industry to make it even more competitive as a regional tourism destination. Sustainable land management practices were carried out following joint land use planning, including participatory planning for micro-watersheds. These results demonstrate the positive effects of LAFREC that were envisioned at appraisal.

44.   An environmental education program targeting local communities and environmental clubs in schools was conducted to explain the importance of effective approaches for biodiversity protection. In addition, an education program addressing the specific responsibilities of residents reinforced the benefits of local ownership in successful landscape restoration efforts. In total, 18,464 households have adopted sustainable land management practices, for which support on education and training was crucial. It was, however, evident that payments for ecosystem (or environmental) services, which has a considerable potential to increase the role of the private sector in landscape restoration, did not gain traction. Such approaches need to draw on pilots that have proven successful. Moreover, it would require the selection of interested groups able to package these approaches to achieve the development objective.

45.   **Sustainable and resilient livelihoods.** The project was able to support communities and cooperatives to develop alternative livelihoods that were climate resilient and supportive of the landscape approach. Before the project, it was known that poverty was widespread in these rural communities. To begin with, a database of project beneficiaries was developed through a participatory approach to identify and select vulnerable households. Technical assistance was provided to support market analysis, the selection of livelihood options, and the development of business plans, which were then implemented. A detailed plan to incentivize communities to adopt forest-friendly activities identified options, which included honey producing and pig farming. Communities were also supported to access markets to generate incomes. Two selling points were established adjacent to road transport links. Through these activities, alternative economic activities were brought to over 2,849 households. This was done through individual support as well as nine community projects which were profitable. About 81 percent of projects made profits, exceeding the target of 70 percent. This level of achievement provides confidence that communities can participate in environmental projects and produce socioeconomic benefits. To provide reliable water supply to communities, a water supply system has been built and a private operator was

selected. The involvement of the private sector will serve to promote the sustainability of the various projects when the LAFREC support ends. In all, project interventions have benefited 40,482 people, of whom 53 percent were female. The construction of tourism facilities in the national park (such as the park headquarters and base camps - see above) will also support ecotourism in the long term. Due to the COVID-19 pandemic and the curtailing of international tourism, this has not yet been translated into livelihood benefits. However, support for ecotourism and market facilities as well as selling points that are now operational show what could be achieved in the post-COVID-19 period when the tourism industry returns to normal.

46.   An impact monitoring survey undertaken in 2020 demonstrated that, compared to a baseline survey undertaken in 2016, incomes are higher, and households have more wealth, as measured by their housing type and other factors. For example, in 2020, 72 percent of the population had savings accounts compared to 54 percent in 2016. It is difficult to tie these improvements directly to the project, partly due to a weakness in the impact monitoring methodology (see below). However, an independent study on the impacts of pedestrian footbridges, primarily supported to reduce flood risk (see below), actually led to increases incomes, of which 25 percent could be attributable to the footbridges. [10]

47.   **Flood forecasting and preparedness, leading to the households with access to advanced warning of individual major rainfall or flood event.** The Sebeya Basin, whose headwaters are found in the Gishwati-Mukura landscape is known to be at risk from flooding, and before the project, flood events had caused severe damage, and in some cases, loss of life. To combat this, the project supported activities to improve flood risk management and contribute to enhanced climate resilience. To begin with, flood hazard and risk mapping was undertaken to identify at-risk areas, based on hydrological analysis and computational modelling. A FEWS, embedded with a National Early Warning Platform (NEWP), available at https://imenyesha.rw, was developed and staff from stakeholder institutions were trained on the operationalization and operation of the NEWP and the FEWS. In addition, training was delivered to 312 community members including 90 households who were able to receive alert messages by SMS. The NEWP serves as the architecture for data sharing, visualization, and the triggering of warnings that are crucial for protecting the communities in the flood-prone Sebeya catchment. The FEWS is integrated into the NEWP with a hydrological model that is updated frequently with new observations and precipitation forecasts. A virtual training program focusing on aspects that include modelling and system maintenance and operation was carried out.

48.   Initially the development of the flood risk maps and the FEWS was intended to be led by the implementing agencies. It was later decided to use additional World Bank-executed grant resources from the Global Facility for Disaster Reduction and Recovery (GFDRR) through the Africa Caribbean Pacific (ACP)-European Union (EU) Natural Disaster Risk Reduction Program. This reduced the client's ownership and added to the already complex institutional arrangements. Additional agreements were needed on data sharing protocols between the institutions. It was also not possible to support Meteo Rwanda to improve numerical weather prediction, and the system is driven by global weather forecasts. Nevertheless, grant resources financed tools for improved quality control of meteorological data.   The project was extended twice to facilitate completion of key activities that included the handover of the

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[10] Thomas, E., A. Bradshaw, , L. Mugabo, , L. MacDonald, , W. Brooks, K. Dickinson, and K. Donovan. 2021. "Engineering Environmental Resilience: A Matched Cohort Study of the Community Benefits of Trailbridges in Rural Rwanda." *Science of The Total Environment* 771: 145275.

EWS to Rwanda Meteorological Agency (RMA) by REMA. For the RMA to continue the management of the EWS, an annual fee payment to the Rwanda Information Society Authority enables the agency to access the National Data Center which hosts the platform. At the close of the project, the NEWP with the integrated FEWS is operational, although no major flood has taken place since the project has closed to fully test its effectiveness.

49.   As part of support to flood risk management, 14 hydrometeorological stations, (4 automatic weather stations and 10 hydrometeorology stations) were installed to support the NEWP, and fencing was installed around 8 automatic weather stations to ensure their protection. With the closing of the LAFREC project, the maintenance and operation of the system will transfer to the Government for support to enhanced institutional coordination that reinforces ownership and effective management of the system. To further reinforce safety against disasters, lightening protection systems have been installed on 13 public institutions in the project area (12 in Rutsiro District and 1 in Rubavu District). A total of seven pedestrian bridges have been constructed across rivers in the Sebeya catchment, in partnership with Bridges to Prosperity. These bridges aid mobility and reduce the risk to lives during extreme events (and have been found to have income benefits [see above]). The construction of dikes along the Sebeya River was dropped due to some of the technical challenges revealed by initial studies. The activity was replaced with the procurement of additional monitoring equipment. This is a clear demonstration that project implementation decisions were guided by evidence and that the project benefited from enhanced national ownership and a demonstration of the project's ability to adapt and evolve to the changing circumstances.

50.   The achievement of the PDO is supported by evidence on 90 households in the project area with access to advanced warning of individual major rainfall or flood events. Furthermore, flood risk maps were validated by the Rwanda Water Resources Board, and hydrological modelling was completed. An example of a flood risk map is shown in annex 6.

51.   **Project beneficiaries.** The project beneficiaries were defined as the number of household members within the project area benefiting directly from improved livelihoods (increase in income because of livelihood diversification activities or increase in agricultural productivity) and indirectly improved livelihoods (including through access to better flood warning systems). Overall, project interventions contributed to the PDO by supporting 40,482 project beneficiaries, of which 53 percent are females. This figure is well in excess of the target of 12,000. The significant overachievement of this indicator is due to the efforts of REMA to engage communities in the project implementation. In addition, the number of households in the project area with access to advanced warning of individual major rainfall or flood events was achieved at 100 percent based on 90 households that were targeted under the project.

Outcome 2: Demonstrating the approach through research, monitoring, and management

52.   LAFREC was designed to be a pilot project, where a major outcome was intended to be demonstration of the approach, so that such approaches could be scaled up across Rwanda. The project sought to achieve this through the development of knowledge products, impact monitoring, research, and institutional strengthening through effective project management. Importantly, the project demonstrated results that have the potential to inform future forest-friendly land rehabilitation approaches. The project created opportunities to leverage the much larger land husbandry investment

programs led by the agriculture sector, as well as investment programs in the water resources or forestry sectors.

53.   **Applied research and impact monitoring, leading to knowledge products.** The interventions under Component 2 contributed to the PDO through intermediate outcome indicators that demonstrated results on knowledge management under Subcomponent 2a, through partnership with the University of Rwanda, research led to 16 master's-level studies that documented the contribution of LAFREC to forest restoration, landscape husbandry, the creation of alternative livelihoods, and effective biodiversity management in the Gishwati-Mukura landscape. The University of Rwanda intends to support the publication of as many of these as possible in international journals. Through support for applied research, partnerships with key research institutions have improved knowledge on the Gishwati-Mukura landscape and restoration techniques, particularly in relation to the scope for native species in new investments, and the replication and scale-up of LAFREC interventions. This knowledge has already informed the GEF/United Nations Development Programme/GoR-financed project known as Green Amayaga, which seeks to replicate and scale up interventions based on lessons learned through LAFREC. Furthermore, by supporting young Rwandan researchers at the University of Rwanda's Center of Excellence in Biodiversity and Natural Resource Management, the LAFREC project has the potential to build long-term research expertise. The project resulted in 23 knowledge products that were disseminated to target audiences, which include the following:

- Three management plans

- Two community education manuals

- One biodiversity survey

- One newsletter

- 16 research projects undertaken by students in master's program.

54.   These knowledge products are crucial to demonstrating LAFREC's impact through its influence on the design of landscape restoration projects including the GEF-financed Green Amayaga and the Green Climate Fund (GCF)-financed project on 'Transforming Eastern Province through Adaptation' (TREPA).

55.   **The project resulted in an impact monitoring report.** To begin with, the project financed a geographical information system (GIS) and remote sensing diagnostic baseline study that was complemented by a video documentary to support knowledge sharing and dissemination.[11] One shortcoming in assessing the efficacy of the project was the lack of an effective whole-project life cycle approach to impact monitoring on environmental conditions and services. The project did not establish a mechanism for assessing aspects such as watershed and landscape health through a baseline evaluation and throughout the project's life. The project most likely contributed to improvements, but the project could have benefitted from an impact evaluation to trace its direct contributions. However, the economic analysis is able to demonstrate the benefits in terms of improved environmental services and increased agricultural productivity resulting from (a) improved land management, silvo-pastoralism, and agroforestry; (b) reduced soil erosion through better land management and reforestation (with consequent reduced siltation in the Sebeya River watershed); (c) reduced vulnerability to flooding through

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[11] https://www.youtube.com/watch?v=l24gNjEAONk.

better forecasting and EWSs; and (d) conservation of biodiversity resources and carbon sequestration, both of which contribute to the preservation of global public good.

56.   In terms of project management, 11 Project Steering Committee meetings were held to provide oversight and ongoing guidance on project implementation. The Steering Committee was technically supported by the National Technical Advisory Committee that was primarily responsible for monitoring of results to support the Steering Committee in evidence-based decision-making. One notable area of project support involved field visits that were conducted regularly to ensure timely deliverables of the expected quality. At the meeting on February 22, 2019, the Steering Committee made a recommendation to evaluate the need for new priorities during the phase-out process. Some of the proposed priorities included the construction of additional suspended pedestrian bridges specifically in Ngororero District, provision of clean water to communities in Rutsiro District, identification of new seed sources in the natural forests, an impact assessment of the woodlot value chain, a business plan for Gishwati-Mukura National Park, and the valuation of ecosystem services in the Gishwati-Mukura landscape. The implication is that baseline planning at appraisal could have provided better guidance on project interventions. However, it is also important to note that the governance systems established for the project were instrumental in providing evidence-based orientation to project interventions to improve achievements toward the PDO.

57.   The overall efficacy rating was assessed as 'Substantial' as the operation achieved its objectives. The project achieved the PDOs of demonstrating landscape management for enhanced environmental services and climate resilience in one priority landscape. Physical works to restore the landscape, the forest and buffer zones, restoration of former illegal mining sites, protection of river corridors, investments in agroforestry and silvo-pastoralism, and support for alternative livelihoods have been achieved with results that met and/or exceeded the targets set at appraisal. Park infrastructure, including the visitors center and guard posts have been handed over to the RDB, to enhance ownership and therefore sustainability of the assets acquired through the project. The Gishwati-Mukura National Park was granted UNESCO Biosphere Reserve status, which is a remarkable achievement for the project with local, national, and global implications for improved management of environmental values and benefits. Work on the FEWS ensured the system is operational and has been accompanied by training and efforts to improve the dissemination of warning messages that enhance protection of local communities against floods and to reinforce social protection. Support for research and the development and dissemination of knowledge products have contributed to how the project has demonstrated the value of its approach.

C. EFFICIENCY

Assessment of Efficiency and Rating

58.   At the PAD stage, an economic analysis was undertaken, which estimated an expected rate of return over 20 years as 35 percent and a net present value (NPV) of US$25.41 million. This analysis assumed a discount rate of 7 percent and estimated the economic benefits arising from (a) revenues from ecotourism, (b) conservation benefits from agricultural productivity gains, (c) reduced negative externalities from silt-laden runoff, and (d) improved earnings from livelihoods support. Benefits that included the reduced impact of natural disasters, revenue sharing, and carbon sequestration could not be monetized in this analysis.

Economic Analysis

59.   The economic assessment has been revised at completion. The economic benefits generated by the project comprised (a) increased tourism and recreational values of the Gishwati-Mukura National Park; (b) increased agricultural productivity resulting from improved land management, silvo-pastoralism, and agroforestry; (c) reduced soil erosion through better land management and reforestation (with consequent reduced siltation in the Sebeya River watershed); (d) diversified and improved livelihoods through off-farm income-generating activities for the project beneficiaries; (e) reduced vulnerability to flooding through better forecasting and EWSs; and (f) conservation of biodiversity resources and carbon sequestration, both of which contribute to the preservation of global public goods. Figure 1, based on analysis undertaken for the ICR, presents the ecosystem values grouped by the type of service (cultural, supporting, regulating, and provisioning). Provisioning services are the products obtained from ecosystems and here, are food, water and raw materials. Regulating services are the benefits obtained from the regulation of ecosystem processes, and here, are air quality, climate mitigation, waste treatment, soil retention, and water regulation. Cultural services are the nonmaterial benefits people obtain from ecosystems, and include spiritual and aesthetic values, indigenous practice, and here, mainly to recreating and tourism services. Supporting services include genetic diversity, pollination, and maintenance of soil fertility. In contrast to other services, they are seen as having indirect impacts over the long-term.

60.   Table 2 presents the disaggregated values, with the totals grouped by both the type of services and project areas (inside or outside the park).

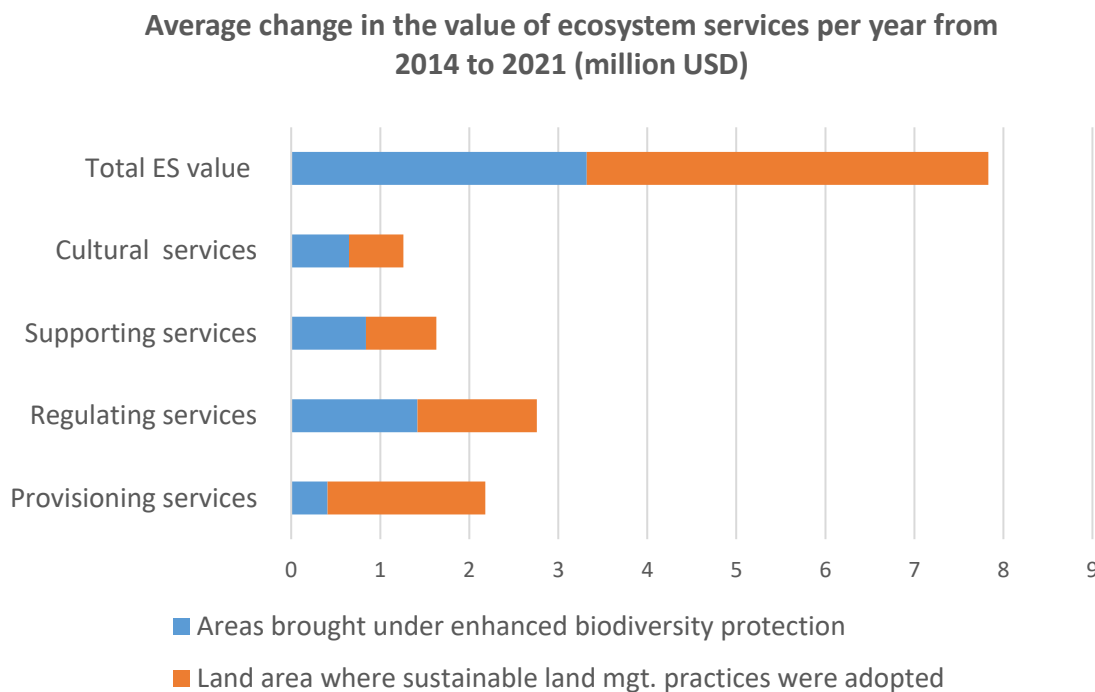**Figure 1. Change in Ecosystem Services from the LAFREC Project**

Average change in the value of ecosystem services per year from 2014 to 2021 (million USD)

Table 2. The Value of Ecosystem Services of the Restored Landscape (in US$)

Improved LULC or Ecosystem Accounts to Enhance Ecosystem Services Flow	Provisioning Services	Regulating Services	Supporting Services	Cultural Services	Total Ecosystem Service Value
Areas brought under enhanced biodiversity protection	411,850	1,427,762	839,125	651,320	**3,330,057**
Land area where sustainable land mgt. practices were adopted	1,770,730	1,338,839	786,864	610,755	**4,507,188**
Total value for respective ecosystem services/US$	**2,182,580**	**2,766,601**	**1,625,989**	**1,262,075**	**7,837,245**

Note: LULC = Land use land cover.

61.   The flow of ecosystem services value was estimated using value/benefit transfer approach whereby values from previous studies were opted to estimate the economic value of ecosystem services. Particularly, by applying the average standardized values per ecosystem service and biome (Int$ per ha per year; 2020 price levels) from www.es-partnership.org/esvd, which covered 4,042 value records obtained from 693 studies .[12] These figures were applied for the project period of seven years. The ecosystem accounts or the improved LULC considered in this analysis were the aggregate areas of the LULC subject to establishment of silvo-pastoral systems and improved micro-catchment management through enhanced forestry and the area of protected forests enhanced under biodiversity protection intervention. Note that to avoid double counting in the ecosystem services value estimate, a subset of the project treatment areas was not included. These included the areas outside of the protected areas which are subject to reforestation activities based on the use of native species, areas rehabilitated within the reserves and buffer zones, and new or rehabilitated production or protection forests outside of reserves were not included. Instead, the analysis focused on the newly established national park and the areas surrounding the park that witnessed investments in sustainable land management practices. The NPV of the project, applying a discount factor of 7 percent is estimated to be US$32.7 million.

Contributing Factors to Efficiency

62.   The overall institutional support was instrumental in contributing to the project efficiency. REMA, the implementing agency, had effective oversight over project FM and procurement and established systems that delivered on all PDO and intermediary outcomes. Although REMA experienced procurement challenges, measures were quickly put in place to fill positions in time to avoid adverse impact to the project performance. The audited statements and procurement records adhered to preestablished standards and procedures which justifies the level of efficiency in the project implementation. The project put in place a strong management structure with staff that had a strong command of the strategic and operational orientation. The Project Steering Committee (PSC), which comprised stakeholder organizations that had been identified in the PAD, was both proactive and dynamic. As a result, the National Technical Advisory Committee (NTAC) facilitated timely decisions. The structures supported efficient project management in translating inputs to outputs. REMA, the districts, stakeholders, and beneficiaries developed mutual knowledge and trust to effectively manage the project. REMA implemented accountability and sound FM measures and ensured activities were delivered, which

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[12] Rudolf, D. G., B. Luke, and S. Stefanos. 2020. *Ecosystem Services Valuation Database (ESVD) Version June 2020*. www.es-partnership.org/esvd.

contributed to the success of the project. It should be noted that although REMA allowed partners to manage limited funds for some activities, it also put in place tracking mechanisms to detect issues and implement corrective measures. Districts, for example, received funds to implement community-based interventions and timely delivery on milestones was supported by an effective monitoring and reporting framework. A simplified M&E framework included a monitoring plan designed and implemented based on a limited number of 'critical path' indicators for all project components and subcomponents. This allowed implementing partners and REMA teams to focus on the critical results of the project and the efficient and effective communication of results and their impacts.

63.   There is strong evidence of the innovations and good practices that have been employed by REMA, especially in procurement, project design, and implementation. The design of strategic plans was to inform interventions and implementation, as well as the use of Steering Committees to communicate progress and manage challenges. There was also a variety of technical assistance activities to improve capacity and sustainability among stakeholders. In addition, REMA put in place procurement measures to accelerate the implementation of projects, including (a) introduction of independent bids and an evaluation review that was conducted within two weeks of evaluation before contract award, (b) introduction of due diligence before contract signing, and (c) increased use of framework contracts. REMA and the districts reported that two factors that had contributed to the successful implementation of project activities and achievement of results were (a) the flexibility to integrate and align activities with the overall project and country priorities and (b) the high relevance of the project objective, which helped ensure the project's efficiency and good response from stakeholders. It is remarkable that despite the project's limited resources, and when comparing the budget to the physical performance, the planned outputs and outcomes were achieved.

Global Environment Benefits

64.   The project was financed by a GEF grant of US$5.49 million and a Least Developed Countries Fund (LDCF) grant of US$4.05 million, for a total project finance of US$9.54 million through the World Bank. LAFREC supported the enhanced protection of the forest reserves which resulted in incremental protection of the globally important biodiversity of the Gishwati-Mukura Reserve considering its current UNESCO Biosphere status. The contribution of the project with respect to carbon sequestration from expanded natural forest as well as the connecting landscape contributed to global environmental benefits as a result of greenhouse gas emission reductions. The forestry and agroforestry and native species introduced in the landscape provided further scope for global environmental values including soil erosion control and fertility management and biodiversity benefits. The lessons learned and the partnership with the University of Rwanda had additional benefits, including the potential to replicate good practices and the scaling-up to other regions beyond the intervention area. A GEO indicator on "Areas brought under enhanced biodiversity protection (ha)" was included in the project Results Framework. This was a proxy indicator that measures biodiversity protection because of the World Bank operation through establishing a functioning management system.

D. JUSTIFICATION OF OVERALL OUTCOME RATING

65.   The project demonstrated (a) a highly relevant PDO, (b) a substantial project performance against the objective of demonstrating landscape management for enhanced environmental services and climate resilience in one priority landscape justified by full achievement of PDO and intermediate indicators, and

(c) a substantial level of efficiency in project implementation based on demonstration of profitability (high NPV, benefit-cost ratio, and internal rate of return) compared to projections at project appraisal with economic benefits and environmental values. There were minor shortcomings in finalizing the early warning activities and the impact monitoring due to COVID 19 pandemic. Therefore, the overall outcome rating is assessed as Satisfactory.

E. OTHER OUTCOMES AND IMPACTS (IF ANY)

Gender

66.   The design and implementation of the LAFREC project considered cross-cutting issues such as gender, social inclusion, governance, and communication. The project targeted 50 percent female representation in all activities. Overall, 53 percent of the beneficiaries were female, which exceeds the target. The project was able to successfully support women's participation in creating alternative livelihoods that reduce pressure on the environment while contributing to increasing women's incomes that facilitated meaningful participation in managing natural resources through national programs such as land ownership. The project has enhanced social inclusion by engaging all groups of population including youth and female demonstrating project effectiveness in translating inputs to outputs.

Institutional Strengthening

67.   The project established governance and representation at all levels from implementing agency to focal beneficiary level (all groups and subgroups of the beneficiaries have coordinating teams). This arrangement supported efficient and effective communication during project implementation on related matters such as conflict management resulting from park and buffer zone demarcation processes. This was crucial to achieving the project objectives and expected outcomes.

68.   Extensive training and capacity building of staff in park management and landscape restoration activities has helped strengthen the institutional capacity on land use and land degradation, sustainable forest and land management, and climate adaptation measures from central to local-level institutions. The institutions that were involved in implementation of LAFREC have all benefited from capacity building and skills development in topics such as the NEWP and FEWS, rangeland management, park management, landscape restoration, and business development. Staff also benefited from capacity building in areas such as safeguards, procurement, and FM. These benefits will contribute to the sustainability of LAFREC achievements and will support future projects.

Mobilizing Private Sector Financing

69.   The project supported the development of a tourism master plan which set a strategy for ecotourism development including local participation in tourism promotion and a business plan for the park. The project provides scope for biological connectivity with Rwanda's other protected areas, Nyungwe to the south and volcanoes to the north as well as the remnant natural forests in the Congo-Nile Ridge that already serve as key tourist destinations. LAFREC investments supported processes that facilitated handover of the park to RDB management to support and accelerate mobilization of private sector financing in tourism but also in conservation that involves landscape restoration.

Poverty Reduction and Shared Prosperity

70.   The project had a positive economic and social impact on households in the project area. In Kinyenkanda (a village in Rutsiro District), the project raised incomes, reduced erosion that was threatening landscapes, reduced malnutrition by improved milk production and yields from the community gardens, and reduced poverty among women who were engaged in alternative activities such as beekeeping. To effectively implement the project activities in the buffer zones and corridor connecting Gishwati and Mukura National Park, LAFREC provided incentives to the communities whose lands fall in the buffer zones and the corridor.

71.   The project also developed community-based ecotourism in the landscape that contributed to local economic development, enabling community empowerment, and preserving the ecosystem. The project developed five community culture-based tourism products including five trails, supported improvements of Rubavu in collaboration with the RDB, and established community basecamps. All these achievements have provided measurable benefits to the communities in and around the project area with examples in silvo-pastoralism where milk production has increased twofold to threefold on relatively smaller pasturelands and communities in Sebeya catchment who have improved social protection measures through access to early warning information.

Other Unintended Outcomes and Impacts

72.   Already, the experience and capacity gained in design and implementation of LAFREC have inspired the design of other GEF-financed projects such as the Green Amayaga. Additionally, partnership with the RDB will enhance the institutional capacity to effectively support the communities surrounding the Gishwati-Mukura National Park to direct resources toward forest restoration and biodiversity conservation using the nationwide revenue sharing scheme from the park fees RDB collects in the national park system. Allocation of resources from the scheme had started with RWF 300 million before COVID-19 and is poised to resume in the post-pandemic period.

III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

A. KEY FACTORS DURING PREPARATION

73.   **Realistic objectives.** In the design phase, the PDO/GEO for the project was 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 reflected that (a) the explicit purpose of the project was to demonstrate a model for application elsewhere in the country; (b) the fact that landscape maintenance is a long-term objective, outside the measurable results of the project within its lifespan; and (c) the need for a simplified PDO, each component of which is linked directly to an indicator. The design created opportunities to partner with the University of Rwanda to facilitate effective knowledge management and dissemination of project outcomes with scale-up potential. The demonstration approach has supported consolidation of measurable achievements that are easily transferrable to inform replication and scale-up.

74. **Coherence in design.** The outcome targets were framed with a focus on measurable outputs and intermediary outcomes. However, the PDO itself could have been stated more clearly to connect the PDO statement to measurable outcomes. The Results Framework was aligned with objectives at the outcome level, informed by participatory analysis. This broad coherence between objectives and the results framework was reflected in the transition from studies and other analytical support to participatory planning that translated into implementation. For example, the PAD included the preparation of the UNESCO Biosphere Reserve proposal following an initial site visit by UNESCO, which concluded that the park could receive the status. This development would allow the Gishwati-Mukura National Park to achieve a higher degree of prominence, improve conservation, improve the chances of promoting nature-based tourism and attracting tourists, investment, and funding.

75. **Stakeholder mapping and implementation arrangements during project preparation.** The GEF Project Identification Form envisaged a 'sustainable national multi-stakeholder mechanism/forum' for landscape management as an output. Rwanda already has several cross-sectoral coordination mechanisms in place, with a developed National Land Use Master Plan and a successful land title program that proved foundational in the Gishwati-Mukura landscape in making local coordination of landscape planning a higher priority. Thus, a cross-sectoral working group was established for the Gishwati-Mukura landscape, to ensure coordination of sector investments and their alignment with District Land Use Plans. A procurement capacity assessment of REMA was undertaken to assess the capacity to implement the World Bank's Procurement Risk Management System. The REMA Single Project Implementation Unit (SPIU) and the district-level risk rating for procurement were considered high. The rating was associated with the recent absence of a dedicated procurement officer with experience in World Bank procurement procedures. Implementation of the mitigation measures required addressing procurement risks to attain a risk rating of moderate. The position was subsequently filled, and procurement support was available until project completion. The conditions laid out by the World Bank included memorandums of understanding between the project implementing agency and each district within which the project operates, detailing mutual responsibilities for the implementation of the project and other terms and conditions as may be approved by the World Bank, an Audit Committee, an Internal Audit Committee, District Project Coordination Teams, and a District Project Coordination Team. These conditions were adhered to.

76. **Adequacy of risk and mitigation measures.** The overall project risk was rated as Substantial due to the project complexity in terms of involvement of multiple stakeholders and the landscape restoration which involves a wide range of interventions for that are critical to successful execution. Therefore, stakeholder, capacity and design considerations were considered to have substantial impact on overall implementation risk. However, the choice of implementing agency and REMA's capacity for and experience with operating an SPIU for World Bank-financed projects proved instrumental in reducing the risk. This was complemented by effective governance structures with leadership of a multistakeholder Steering Committee that reinforced national ownership and enhanced collaboration with the World Bank task team on the project. The overall risk rating was reduced from Substantial at design stage to Medium by the project end as highlighted in table 3.

Table 3. Risk Rating Summary Table

Risk	Rating at Project Design	Rating at Project Completion
Stakeholder risk	S	S
Implementing agency risk		
Capacity	S	L
Governance	M	M
Project risk		
Design	S	M
Social and Environmental	M	M
Program and donor	M	L
Delivery monitoring and sustainability	M	L
Overall implementation risk	**S**	**M**

B. KEY FACTORS DURING IMPLEMENTATION

77.   **Sustained Government commitment.** The GoR demonstrated strong commitment to the project through engagement and close monitoring of the project by the PSC with the support of the NTAC. This was further demonstrated by the multisectoral stakeholder coordination in support for the early warning component which faced challenges, especially on institutional coordination. The NTAC was largely able to resolve challenges, based on the willingness to undertake policy-level interventions to streamline the complex processes. The initial conditions set by the World Bank based on the Financing Agreement included the establishment of a Gishwati Integrated Landscape Planning Working Group with capabilities to fulfil the functions required by the World Bank.

78.   **Communication and knowledge management.** The people surrounding Gishwati-Mukura National Park were regularly sensitized to environmental protection and the benefits from the park, through participatory planning sessions as well as study tours to other parks. Knowledge products produced by the LAFREC project have been and will continue to be instrumental in facilitating knowledge and skills acquisition, attitude change, and promoting practices which ensure the sustainability of current outcomes in the project area.

79.   **Low turnover of task team leaders (TTLs).** The project only went through one change in TTLs supporting the project. Although the TTLs were based at the World Bank headquarters, there was adequate local and international consultancy support which helped ensure continuity in supervision throughout project implementation. The technical support was consistently part of the country-level support which proved instrumental in the World Bank's engagement and consultations.

80.   **Compliance with FM, procurement systems, and safeguards procedures.** The required FM and procurement systems were put in place and FM followed standard procedures as shown by the audited reports. The implementation model, in which key entities were responsible for specific activities, was efficient as it ensured technical soundness, increased buy-in, and clear ownership. REMA was able to manage the Nordic Development Fund (NDF)-supported activities which were integrated into the LAFREC project to improve efficiency and sustainability along charcoal value chains in Northwest Rwanda in

support of forest landscape restoration and rural livelihoods. The World Bank provided timely capacity-building sessions to the GoR project teams to address any potential challenges to project implementation. For example, a training was offered by a procurement specialist to support the GoR procurement staff to enter tenders in the World Bank's Systematic Tracking of Exchanges in Procurement (STEP) system. This training was in response to issues of various tenders that were not duly registered in the system. This ensured the resolution of procurement issues by project completion. The Project Implementation Unit did not have a safeguards specialist appointed to the project team from March 2020, and as a result, the project was not in compliance. REMA agreed to appoint a safeguards specialist by March 2021. REMA recruited the specialist and the required safeguard reports were produced by project completion.

81.   **Climate change.** Adjustments were made to align the project with the GEF/LDCF Focal Area Objectives. In preparation, the objective of "strengthened awareness and ownership of adaptation and climate risk reduction processes at the local level" was dropped citing the requirement to use LDCF funds on investments in flood forecasting and livelihoods, rather than general adaptation awareness and planning. This reduced, but did not eliminate, the ability of the communities to engage in effective adaptation planning in an area that is highly vulnerable to climate change and urgently needs to reinforce community-based adaptation strategies. Support to the NEWP and the direct benefits to the Sebeya catchment communities through improved social protection measures served as useful lessons for affected communities in other areas around the country on the potential for community adaptation to the impacts of climate change.

82.   **Impact of COVID-19 on tourism.** COVID-19 has led to some delays on progress in several areas. The project team closely monitored the effect of COVID-19 on the implementation of project activities and took timely adaptive action. An example of an adaptive measure was the use of drones (unmanned aerial vehicles or UAVs) for remote supervision given COVID-19 travel restrictions. A steep reduction in overall tourism to Rwanda affected the availability and transfer of revenue sharing funds from the RDB to communities as well as delays in arrangements for the handover of management of the Gishwati-Mukura National Park from REMA to the RDB. In addition, the current COVID-19 pandemic affected the access and support to field activities for both project staff and consultants because of lockdowns and restriction to movements. This also affected supply of some required tools and equipment that was essential to support project implementation. As a remedy, LAFREC project management and the World Bank agreed to extend the completion period from September 2019 to September 2021. In addition, the project encountered frequent staff turnover through voluntary resignation which also caused delays in the project implementation. However, REMA's timely response to replace staff ensured implementation remained on track.

IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

A. QUALITY OF MONITORING AND EVALUATION (M&E)

M&E Design

83.   The project M&E involved identification of activities, outputs, intermediate-level outcomes, PDO-level results, and their respective indicators and cumulative target values for milestones covering the project implementation period. Comments were also made against each indicator to clarify and guide implementation to ensure focus on achieving targets was maintained throughout project implementation.

The project indicators were considered relevant and well aligned with the PDO on landscape management for enhanced environmental services and climate resilience in one priority landscape and the intermediate indicators on forest-friendly and climate-resilient restoration of the Gishwati-Mukura landscape and improved coordination, science, and management.

M&E Implementation

84.   Monitoring of performance against the results framework included the formal assessment of project performance as well as GEF/LDCF focal areas of biodiversity, land degradation, sustainable forest management, and climate adaptation. Implementation progress was regularly monitored and reported through Implementation Status and Results Reports (ISRs). This facilitated risk rating to support timely decisions on corrective measures as needed. Procurement and FM monitoring was undertaken using existing systems that made it possible for the project coordinator and SPIU to follow implementation progress. Importantly, Component 2 included an impact monitoring program that facilitated comparative evaluation of environmental and economic impacts in the project target landscape and areas subject to land management interventions in other parts of Rwanda. The Results Framework was regarded adequate from the design and did not undergo any changes throughout the project implementation period.

85.   Partners such as districts indicated that REMA actively sought to facilitate the creation of accessible and appropriate M&E system for the project (web-based GIS M&E system). A monitoring plan with easy-to-use templates was discussed with REMA at the beginning of the project and was used throughout project implementation with remarkable support to timely reporting. In fact, a simplified M&E framework was designed and implemented based on the identification of a limited number of 'critical path' indicators for all priority project components and subcomponents. This allowed implementing partners and REMA teams to focus on the critical results of a project that facilitated efficient communication around the project impact. Across the whole project, 100 percent of outputs have been achieved, that is, 100 percent of project physical performance. This was attributed to project staff management and stakeholders' periodic meetings that provided an effective forum that ensured activities were kept on track. In addition, REMA used its internal M&E system that ensures projects are monitored on a regular basis to support timely decisions at the institutional level through senior management project review meetings that provide technical and timely oversight and guidance to implementing projects.

M&E Utilization

86.   The M&E framework which the LAFREC project had features that facilitated project performance tracking and quality reporting on time. A project with the focus and scope of LAFREC benefited from a robust M&E framework to effectively track results and ultimately the impact of the project. The indicators for measuring the PDO had realistic and achievable targets and as such, there was no revision to the Results Framework throughout the project implementation period.

Justification of Overall Rating of Quality of M&E

87.   An overall 'High' rating was accorded to M & E quality. There were no or only minor shortcomings in the M&E system's design, implementation, or utilization. The M&E framework which the LAFREC project used was designed in an inclusive manner and demonstrated features that facilitated project performance tracking and reporting and provided links to the PDO. This was complemented by governance structures that supported efficient and evidence-based decision-making. M&E findings were

disseminated and used to inform the direction of the project, strategy development, and/or future projects.

B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE

88.   It is important to note that comprehensive analytical work is best performed during a project's design phase. In line with World Bank procedures, a number of analytical works were performed before LAFREC implementation including an Environmental and Social Impact Assessment, Environmental and Social Management Framework (ESMF), Environmental and Social Management Plan, Operational Risk Assessment Framework, Resettlement Action Plan, Resettlement Policy Framework (RPF), and Process Framework have been prepared detailing guidelines for the Resettlement and Compensation Plans. The project prepared an RPF, ESMF, and a Process Framework that were reviewed, cleared, and disclosed both locally and on the World Bank's external website. The project used an incentive-based approach to encourage the communities with activities around the buffer zone to participate in the planned project activities on a voluntary basis. The project did not acquire any land nor physically displace any communities but had economic impacts on the community. The loss of income due to any changes in land use was addressed by the Livelihoods Restoration Plan. There was no restriction to the communities in terms of access to their land. The project prepared a Resettlement Process Framework as a precautionary measure and a livelihood restoration plan as an incentive-based plan to encourage community members to participate in the project activities around the buffer zone. The involved households in the incentive scheme were identified and included in the community-driven development projects as a form of livelihood restoration plan. By doing so, the LAFREC project started implementation with a full understanding of the context, the work to be done, and the strategy to be used to achieve its targets.

89.   At appraisal, the LAFREC project was assigned 'Category B' basing on the potential to trigger various social and environmental safeguards during implementation as discussed below:

(a)   **Environmental Assessment (OP 4.01).** The ESMF was developed and used to implement and monitor mitigation measures for negative environmental and social impacts on a regular basis.

(b)   **Natural Habitats (OP 4.04).** Natural habitats, including Gishwati and Mukura natural forests were restored and enhanced, and LAFREC supported the process of Gishwati-Mukura designation as a UNESCO Biosphere Reserve.

(c)   **Pest Management (OP 4.09).** The Integrated Pest Management plan was in place for LVEMP II, which covered most of the pest problems and was followed during implementation of the LAFREC project and was used to train the local population to use non-toxic pesticides.

(d)   **Forests (OP 4.36).** The project had great positive impact on the forests with the previously heavily degraded Gishwati and Mukura Forests restored and upgraded to Rwanda's fourth national park status. The project contributed to the increase of forest cover in the landscape by afforestation and reforestation through agroforestry and silvo-pastoralism.

(e)   **Involuntary Resettlement (OP 4.12).** There was no involuntary land acquisition and resettlement during implementation of LAFREC, but the project incentivized communities that were involved in co-management of the buffer zones.

(f) **Physical Cultural Resources (OP 4.11) and Projects on International Waterways (OP 7.50).** At its beginning, LAFREC adapted a safeguards frameworks prepared for LVEMP II because LAFREC activities had considerable similarities with those of LVEMP II. The level of preparedness for project implementation was satisfactory. As was anticipated during the LAFREC project formulation phase, the project activities were not expected to cause any appreciable harm to other riparian countries or to be harmed by their possible water use. The project received an exception to the notification requirement under clause 7b of OP 7.50 because no water storage infrastructure would be built.

Financial Management (FM)

90. The project complied with FM procedures during its duration, with FM always rated as 'Satisfactory'. FM arrangements were adequate in terms of being capable of recording correctly all transactions and balances, supporting the preparation of regular and reliable financial statements, safeguarding the entity's assets, and maintaining auditing arrangements acceptable to the World Bank. Overall, the FM was successful with the overall spending of 100 percent of the total planned budget. The planned project completion period was threatened by the COVID-19 outbreak in the final year of implementation, which led to a no-cost extension to the implementation period by one year. Therefore, the project complied with all the FM covenants and submitted the financial and audit reports on time, justifying its rating as 'Good'.

Procurement

91. REMA developed a simplified Procurement Plan, acceptable to the World Bank and consistent with the simple project design, with focus on investment activities and technical assistance. The Procurement Plan that was developed in the Project Implementation Manual during project design was updated as required to reflect the improvements in institutional capacity, as well as actual project implementation needs, consistent with the World Bank's January 2011 Procurement Guidelines as well as existing Rwanda Public Procurement Authority guidelines and in compliance with the Public Procurement Legal Framework of Rwanda. Despite the consequences of the COVID-19 outbreak, which affected the project implementation, the project was timely implemented, mostly depending on the capacity of procurement and contracts management of REMA. In addition to the head of procurement of REMA-SPIU, two additional procurement officers with experience in World Bank procurement procedures were hired to ensure sufficient and competent procurement staff for timely implementation of the LAFREC project. All tenders were executed according to plan and in compliance with the Procurement Guidelines. Basing on the review of the status of the procurement function, procurement reports as well as World Bank Aide Memoire reports and one-on-one interviews with the LAFREC project staff, the procurement performance was rated as 'Good' with the project meeting expectations on procurement management.

C. BANK PERFORMANCE

Quality at Entry

92. The World Bank recognized potential for value addition based on (a) the World Bank's experience in supporting protected areas, landscape, and sustainable land management over several decades and the ability to draw from global experience and lessons learned from its work in this domain across multiple

countries; (b) the projects including LVEMP, LWH, and RSSP that the World Bank had been supporting at the national level and therefore the knowledge of the local context, lessons to build on, and synergies to exploit; and (c) the World Bank's convening power with the ability to draw on a rich array of external expertise to inform its work on the project. Provisions for safeguards, procurement, and FM were adequate at entry as well as the economic case and technical case were clear from design considerations. 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 one target landscape to allow a critical mass of local impact, particularly in relation to watershed function and biodiversity connectivity.

Quality of Supervision

93.   The project was supported through supervision/implementation support missions, including a comprehensive MTR mission. With just one change in task team leadership, the project enjoyed stable project management. The task team relied on the project implementation institutions and country ownership to monitor and report on project implementation. A local consultant was continuously on ground and regularly attended Steering Committee meetings to ensure completion of activities and prompt attention to implementation issues. Thus, there was reliable monitoring of implementation challenges and issues that needed attention, key milestones effectively and efficiently guided decisions with positive results on the project. There was sufficient support/interaction with and oversight/guidance by World Bank FM and procurement specialists and disbursement/procurement challenges were mutually discussed and resolved, and this has led to the increased level of trust and confidence that the Country Management Unit has in REMA's ability to manage World Bank-financed projects.

Justification of Overall Rating of Bank Performance

94.   The overall rating of World Bank performance is 'Satisfactory' based on (a) project design that relied on a solid analysis with realistic targets and GEF/LDCF funding which provided opportunities for leveraging other resources; (b) supervision conducted regularly and proactively, with a seamless TTL change and a local consultant who provided day-to-day follow-up support to implementing institutions; (c) proactive engagement by the World Bank team during implementation through properly targeted field missions that facilitated timely interactions with beneficiaries and provided essential on-ground technical support. Strategically planned missions even during the COVID-19 pandemic facilitated policy-level engagement and action-oriented decisions that were instrumental in keeping the project focus on achieving outputs as well as PDO and intermediate outcomes.

D. RISK TO DEVELOPMENT OUTCOME

95.   The onset of the COVID-19 pandemic has not only had adverse impact on nature-based tourism, but the urgent need to respond to the pandemic has directed resources and investment priorities away from landscape management, environment, and climate change to health and social protection sectors. There is a perception that the environment and climate change sectors are better positioned to attract and benefit from grant funding and there is little appetite to consider the sector for IDA loans which are usually essential to leverage potential public or private investments. This ICR has the potential to showcase the achievements of LAFREC that purposely demonstrated the local, national, and global benefits of large-scale landscape restoration and building resilience to climate change as potential

investment areas that are crucial to achieving sustainable national development. While health and social protection address basic needs, landscape projects are equally important given that they address longer-term land and livelihood resilience and, if well implemented, creating long-lasting impacts.

V. LESSONS AND RECOMMENDATIONS

Lessons

96.   **The success of the landscape approach can be improved through multisectoral investments, working across government.** In 2017, the project was expanded with parallel NDF support to improve the efficiency and sustainability of charcoal and wood fuel value chains. These wood fuel value chains have a direct impact on the livelihoods of local communities and their willingness to protect biodiversity. In the absence of the LAFREC project, additional NDF investments would not have been realized. The success of LAFREC is due, in part, to its success in working across government with partners that included the RDB, Rwanda Water Resources Board, and the Rwanda Forestry Authority.

97.   **When working across government, it is important to allocate ownership of project activities to the appropriate authorities.** In the case of the EWS, project design did not give the RMA a sufficient oversight role. The institutional lead role by the RMA is critical to the sustainability of the FEWS. The project was extended twice to facilitate completion of key activities that could not be finalized by the initial project closing date of December 31, 2019, for handover of the EWS to the RMA by REMA. The RMA is yet to make the arrangements needed to facilitate handover. This experience has led to additional efforts for World Bank support to the GoR to develop a new project that target the RMA's lead role in managing the NEWP. Additional World Bank-financed projects currently in design stages are using LAFREC as a model. These include Progreen and the Volcanoes Community Resilience Project which will involve World Bank funding and will deliberately address the design challenges around the lead role of the RMA in generation and application of meteorological services.

98.   **Upgrading protected areas to the status of biosphere reserves promotes sustainable development by involving communities in their management and conservation with improved livelihoods benefits.** The restoration of the Gishwati-Mukura Forest Reserves and the accreditation by UNESCO was capitalized upon by community producers, which improved the marketability of these products and their access to regional, national, and global markets. The pertinent national institutions were cognizant of these opportunities and therefore supported landscape restoration within the park and buffer zone and improved park management planning that created momentum for smooth handover to the mandated institution RDB. This level of national ownership and policy support is crucial for landscape restoration, biodiversity conservation, and adaptation to a changing climate. The biosphere status generated interest for the Government to seek the same for Nyungwe National Park to the south of the Gishwati-Mukura Forest Reserve.

99.   **Education and research can contribute to the long-term sustainability of the landscape approach.** The achievements of the education and research component include research projects undertaken by the University of Rwanda, which have resulted in a number of theses. The development of the theses into publishable articles in scientific literature will showcase good practices from LAFREC to a global audience and further enhance support for restoration of degraded ecosystems, environmental

values, and climate resilience. Furthermore, this dialogue with the university has contributed to national capacities which will support this and other programs in the future. Graduates from these centers will be leaders in government entities who will be implementing and designing future activities and will be able to implement innovation into these activities.

100. **Comprehensive studies informed a clear understanding of the context and the strategy that was critical to achieving the targets.** Initially, the beneficiary communities were skeptical about the importance and benefits of the project, especially in the co-management of buffer zones and the corridor connecting Gishwati and Mukura Forest Reserves. The project developed a detailed restoration plan for the degraded habitats through participatory planning and mapping of all degraded habitats which were appropriately targeted for forest restoration interventions. Awareness raising was instrumental in changing attitudes toward project activities. Thus, multi-stakeholder platforms and good landscape governance played an influential role in negotiating a shared vision for well-functioning landscapes.

Recommendations

101. **The LAFREC approach should be scaled up to other regions in Rwanda.** LAFREC has established a model for landscape restoration and connectivity with the potential to catalyze investments that could particularly benefit the rural poor. The LAFREC approach demonstrated the value of public investments in improved natural resources management environmental goods and services including building climate resilience that directly benefit the rural poor with remarkable social protection benefits. This will create opportunities and momentum for global environmental benefits and shared prosperity through wider adoption. The most immediate opportunity to scale up LAFREC good practices is through the Volcanoes Community Resilience Project, which is under development. The program also aims to unlock private investments building on grant-based public resources. The lessons from this approach could also inform future CPFs.

102. **Ecotourism approaches should be further integrated with landscape approaches.** The RDB has a real potential to demonstrate how investment in communities can effectively support conservation and promote uptake and growth of community nature-based tourism starting with uptake of lessons from LAFREC, particularly those that present ample opportunities to attract private investments in conservation and tourism. One area that could benefit from robust efforts and the support of the RDB is the payment for ecosystem services. This aspect did not gain traction in the project, and experience has to be drawn from other cases where this has worked. This is likely to require significant involvement of the private sector.

103. **Attention should be paid to understanding the biophysical impacts of the landscape approach.** While the project resulted in afforestation, reforestation, and landscape restoration, it was difficult to directly link these activities to biophysical improvements such as improved water quality and soil health. Future investments should make a concerted effort to put in place approaches to monitor the effects of the project. Such approaches could make use of low-cost sensors, UAVs/drones, and citizen science approaches (working with volunteers to gather observational data).

ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

A. RESULTS INDICATORS

A.1 PDO Indicators

Objective/Outcome: Demonstrate landscape management for enhanced environmental services and climate resilience

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Areas brought under enhanced biodiversity protection (ha)	Hectare(Ha)	0.00 01-May-2014	3,428.00 31-Dec-2019		3,428.00 30-Sep-2021

Comments (achievements against targets):
Achieved (100%). This is a proxy indicator that measures biodiversity protection as a result of the World Bank operation through establishing a functioning management system. The completion of the above interventions has significantly contributed to the achievement of the PDO that emphasized biodiversity protection based on an METT score of 89 that exceeds the 50 projected at project appraisal for Gishwati-Mukura National Park. All degraded habitat in Gishwati - Mukura Landscape were mapped; detailed restoration plan for the degraded habitats accomplished through participatory planning. The interventions were instrumental in making a compelling case that ultimately earned the ecosystem a UNESCO Biosphere Reserve status. Data source: Project execution reports.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion

Indicator Name	Unit of Measure	Baseline	Original Target		Actual Achieved at Completion
Land area where sustainable land mgt. practices were adopted as a result of proj	Hectare(Ha)	0.00 01-May-2014	3,000.00 31-Dec-2019		3,214.50 30-Sep-2021

Comments (achievements against targets):

Achieved (107%). The Park restoration activities, including restoration of former illegal mining sites within the National Park considered the use of indigenous species to enhance biodiversity which provided an alternative to exotic species that have dominated the broader Rwanda's landscape. Data source: Project execution reports

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
New areas outside protected areas managed as biodiversity-friendly (ha)	Number	0.00 01-May-2014	1,200.00 31-Dec-2019		1,313.88 30-Sep-2021

Comments (achievements against targets):

Achieved (109%). Of the total area covered, Sustainable land management with corridor communities covered 2099.5 Ha, Silvo-pastoralism in Gishwati rangelands covered 446 Ha through support for farmers to manage natural regeneration of pasturelands and physical demarcation of the reserves was carried out on 680.7 Ha. Data source: Project execution reports

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Households in the project	Number	0.00	90.00		90.00

area with access to advanced warning of individual major rainfall or flood events		01-May-2014	31-Dec-2019	30-Sep-2021

Comments (achievements against targets):

Achieved (100%). The flood early warning system has been developed. Training was delivered to 312 community members including 90 who were targeted by the project to receive alert messages. The government (with World Bank support) is working on defining a suitable approach for the wider dissemination of early warnings. Data source: Project execution reports

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Direct project beneficiaries	Number	0.00	12,000.00		40,482.00
		01-May-2014	31-Dec-2019		30-Sep-2021
Female beneficiaries	Percentage	0.00	50.00		53.00

Comments (achievements against targets):

Overall project interventions contributed to the PDO by supporting project beneficiaries with an achievement of 337% well beyond the target of 12,000 projected at appraisal of which 53% are females which is above the 50% planned at project appraisal. Data source: Project execution reports

A.2 Intermediate Results Indicators

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

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
UNESCO Biosphere Reserve proposal submitted	Yes/No	No 01-May-2014	Yes 31-Dec-2019		Yes 30-Sep-2021

Comments (achievements against targets):
The achievement of this indicator laid the groundwork for the approval of UNESCO Biosphere reserve status for Gishwati-Mukura. The proposal was submitted to UNESCO Secretariat and the application was approved, and the Biosphere Reserve status granted to the Park. Data source: Project execution reports

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Area restored or re/afforested	Hectare(Ha)	0.00 01-May-2014	2,500.00 31-Dec-2019		2,675.30 30-Sep-2021

Comments (achievements against targets):
Achieved (107%). Area restored or re/afforested totaled 2,675 Ha compared to 2,500 Ha project target. These included areas rehabilitated within reserves and buffer zones, and new or rehabilitated production or protection forests outside of reserves. Data source: Project execution reports

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Land users adopting sustainable land mgt. practices as a result of the project	Number	0.00 01-May-2014	10,000.00 31-Dec-2019		18,464.00 30-Sep-2021

Comments (achievements against targets):
Achieved (185%) of the total area covered. Sustainable land management with corridor communities covered 2099.5 Ha, Silvo-pastoralism in Gishwati rangelands covered 446 Ha through support for farmers to manage natural regeneration of pasturelands and Physical demarcation of the reserves was carried out on 680.7 Ha. These initiatives provide scope for the demonstration effect of LAFREC that was envisioned at the project appraisal. Data source: Project execution reports

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Subprojects generating profits from new or enhanced livelihoods	Percentage	0.00 01-May-2014	70.00 31-Dec-2019		81.00 30-Sep-2021

Comments (achievements against targets):
A detailed plan to incentivize communities to adopt forest-friendly activities supported identification of options and delivery of alternative economic activities to over 2,849 households. This was done through individual support as well as 9 collective community projects demonstrating profitability. The projects were profitable at a level of 81% exceeding the target of 70% projected at appraisal. Data source: Data Source: Project execution reports

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Flood risk mapping and hydrological model developed for at least 1 target basin	Yes/No	No 01-May-2014	Yes 31-Dec-2019		Yes 30-Sep-2021

Comments (achievements against targets):
A National Early Warning Platform (NEWP) and a Flood Early Warning System (FEWS) were developed and staff from stakeholder institutions were trained in operationalization of the NEWP. The NEWP serves as the architecture for data sharing, visualization, and triggers warnings which are crucial in protecting the communities in the flood prone Sebeya catchment. This was realized through FEWS for Sebeya catchment (flood hazard maps for Sebeya as well as Flood Forecasting model) which are now operational. Data Source: Project execution reports

Component: Research, monitoring and management

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Impact monitoring study on land rehabilitation techniques produced	Yes/No	No 01-May-2014	Yes 31-Dec-2019		Yes 30-Sep-2021

Comments (achievements against targets):
The project financed GIS (Geographical Information System) and remote sensing diagnostic baseline study that was complimented by a baseline Video documentary to support knowledge sharing and dissemination. Data Source: Project execution reports

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of knowledge products on landscape management disseminated to target audience	Number	0.00 01-May-2014	12.00 31-Dec-2019		23.00 30-Sep-2021

Comments (achievements against targets):
The project promoted research through partnership with the University of Rwanda and this led to 16 masters level research that were conducted to document the contribution of LAFREC in forest restoration of the Gishwati-Mukura landscape. A total of three Management Plans two Community education manuals one Biodiversity survey and one newsletter constitutes knowledge products on landscape management that were produced and disseminated to target audience, and this is complementary to the project impact assessment. These knowledge products demonstrated by LAFREC are increasingly influencing the design of landscape restoration projects in other parts of Rwanda. Data Source: Project execution reports

B. KEY OUTPUTS BY COMPONENT

Objective: Demonstrate landscape management for enhanced environmental services and climate resilience	
Outcome Indicators	1. Area of protected forests (Gishwati-Mukura Reserves / National Park) under enhanced biodiversity protection 2. Land area where sustainable land management practices have been adopted as a result of the project 3. Households in the project area with access to advanced warning of individual major rainfall or flood event 4. Project beneficiaries 5. Percentage of female beneficiaries
Intermediate Results Indicators	1. UNESCO Biosphere Reserve proposal submitted 2. Area restored or re/afforested 3. Land users adopting sustainable land management practices because of the project 4. Subprojects generating profits from new or enhanced livelihoods 5. Flood risk mapping and hydrological model developed for at least 1 target basin 6. Impact monitoring report on land rehabilitation techniques was produced 7. Number of knowledge products on landscape management disseminated to target audience
Key Outputs by Component	*Component 1: Key outputs* Restoration of degraded habitat; established national park with demarcated boundaries and gazetted; construction of park infrastructure including visitor center and guard posts; trained park staff; proposal for UNESCO Biosphere Reserve; park management plan, tourism master plan; biodiversity survey; trained farmers and cooperatives on sustainable land management approaches; subproject plans and groups provided with material for projects (for example, cattle, pigs, honey manufacturing equipment; FEWS (and NEWP) which is accessible at https://imenyesha.rw/#/login*;* flood risk maps and hydrological models; community education manuals *Component 2: Key outputs* Impact monitoring study; GIS platform for monitoring and evaluation; Masters level research theses; regular meetings of NTAC and PSC.

ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION

A. TASK TEAM MEMBERS

Name	Role
Preparation	
Stephen Ling	Task Team Leader(s)
Yasmin Tayyab	Social Specialist
Jane A. N. Kibbassa	Social Specialist
Supervision/ICR	
Pablo Cesar Benitez Ponce	Task Team Leader(s)
Mulugeta Dinka	Procurement Specialist(s)
Mkombozi Bosco Karake	Financial Management Specialist
Lynette Doreen MacAdam	Procurement Team
Gibwa A. Kajubi	Social Specialist
Leoncie Niyonahabonye	Team Member
Antoinette Kamanzi	Team Member
Dimitrie Mukanyiligira Sissi	Procurement Team
Belinda Mutesi	Team Member
Sandra M Kuwaza	Team Member
Christine Kasedde	Environmental Specialist
Michael John Hammond	Team Member
Esther Bea	Team Member
Narae Choi	Team Member
John Kalisa	Team Member
George Bob Nkulanga	Social Specialist

B. STAFF TIME AND COST

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US$ (including travel and consultant costs)
Preparation		
FY13	7.887	54,643.55
FY14	14.470	80,234.42
FY15	7.122	37,434.53
FY16	4.119	19,996.50
Total	**33.60**	**192,309.00**
Supervision/ICR		
FY16	7.774	62,271.37
FY17	10.304	85,911.26
FY18	17.531	219,662.25
FY19	12.467	192,440.25
FY20	28.493	254,424.38
Total	**76.57**	**814,709.51**

ANNEX 3. PROJECT COST BY COMPONENT

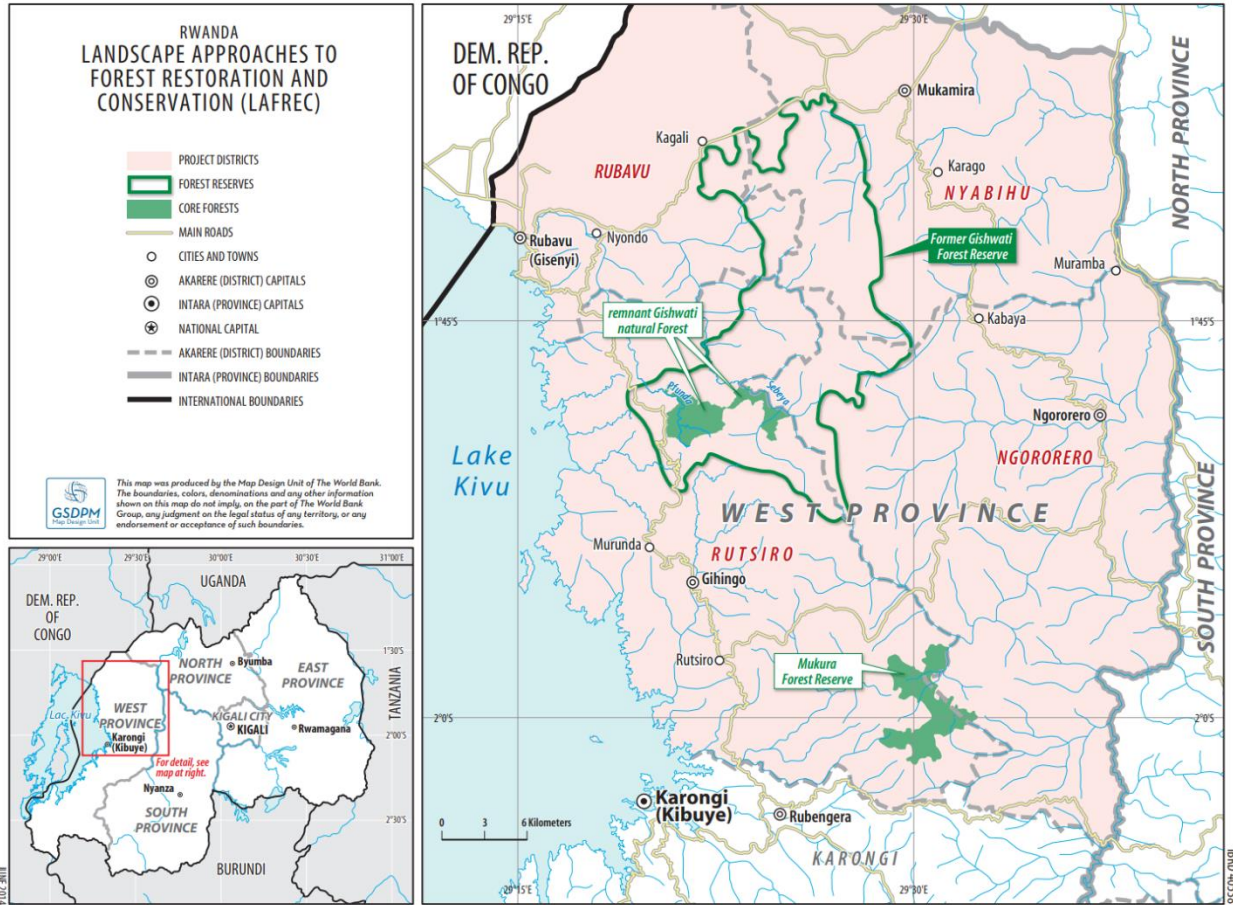| Components	Amount at Approval (US$, millions)	Actual at Project Closing (US$, millions)	Percentage of Approval
Forest-friendly and climate-resilient restoration of Gishwati-Mukura landscape	8.227	8.22	100
Research, monitoring and management	1.305	1.31	100
Total	**9.532**	**9.53**	**100**

ANNEX 4. BORROWER, CO-FINANCIER AND OTHER PARTNER/STAKEHOLDER COMMENTS

The Project Coordination Team (within REMA) was invited to provide comments on the ICR on 29 April 2022. Feedback was received on 14 May 2022. The comments were largely of an editorial nature, and these were integrated into the ICR.
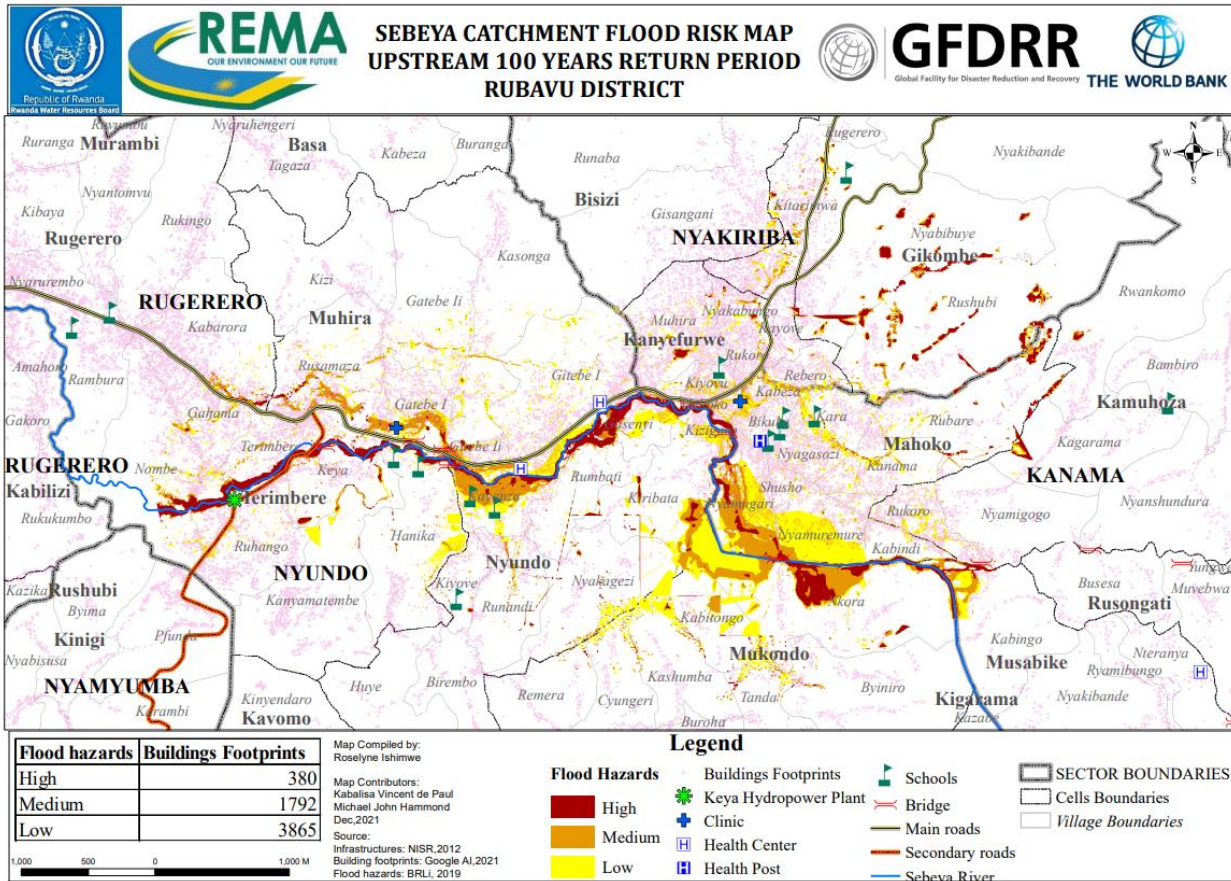
ANNEX 5. MAP OF PROJECT SITES

Source: Project Appraisal Document

ANNEX 6. FLOOD RISK MAP

SEBEYA CATCHMENT FLOOD RISK MAP
UPSTREAM 100 YEARS RETURN PERIOD
RUBAVU DISTRICT

Flood hazards	Buildings Footprints
High	380
Medium	1792
Low	3865

Map Compiled by:
Roselyne Ishimwe

Map Contributors:
Kabalisa Vincent de Paul
Michael John Hammond
Dec,2021

Source:
Infrastructures: NISR,2012
Building footprints: Google AI,2021
Flood hazards: BRLi, 2019

Legend

Flood Hazards
- High
- Medium
- Low

Buildings Footprints
Keya Hydropower Plant
Clinic
Health Center
Health Post

Schools
Bridge
Main roads
Secondary roads
Sebeya River

SECTOR BOUNDARIES
Cells Boundaries
Village Boundaries

ANNEX 7. SUPPORTING DOCUMENTS (IF ANY)

- World Bank (2014) Project Appraisal Document: LAFREC

- Aide Memoires

- Implementation Status and Results Reports

- Project Completion Report prepared by REMA

- Mid Term Review Report (January 29–Feb 9, 2018)

- Project Technical Reports (Management plans [3])

- Environmental and Social Safeguard Frameworks (Environment and Social Management Framework [ESMF], Indigenous Peoples Planning Framework {IPPF])

- Project Baseline Reports

- Financial Reports

- Audit Reports

- Rwanda's first Intended Nationally Determined Contribution (INDC) Submitted to the United Nations

- Framework Convention on Climate Change (United Nations Framework Convention on Climate Change [UNFCCC])

- REMA Annual Report 2021

- Revised Report-Economic Analysis-LAFREC project- 28.7.2021-1 version 2

- Rwanda CPS 2014

- Rwanda-Systematic-Country-Diagnostic