
Landscape restoration for increase resilience in urban and peri-urban areas of Bujumbura

Part I: Project Information

GEF ID
10099

Project Type
FSP

Type of Trust Fund
LDCF

CBIT/NGI
☐ CBIT
☐ NGI

Project Title
Landscape restoration for increase resilience in urban and peri-urban areas of Bujumbura

Countries
Burundi

Agency(ies)
UNDP

Other Executing Partner(s)
Ministry of Environment, Agriculture and Livestock

Executing Partner Type
Government

GEF Focal Area

Climate Change

Taxonomy

Focal Areas, Climate Change, Climate Change Adaptation, Disaster risk management, Private sector, Innovation, Climate information, United Nations Framework Convention on Climate Change, Nationally Determined Contribution, Land Degradation, Sustainable Land Management, Restoration and Rehabilitation of Degraded Lands, Income Generating Activities, Influencing models, Deploy innovative financial instruments, Demonstrate innovative approach, Strengthen institutional capacity and decision-making, Convene multi-stakeholder alliances, Stakeholders, Local Communities, Type of Engagement, Partnership, Information Dissemination, Consultation, Participation, Indigenous Peoples, Private Sector, Financial intermediaries and market facilitators, Large corporations, Capital providers, SMEs, Individuals/Entrepreneurs, Beneficiaries, Civil Society, Academia, Non-Governmental Organization, Community Based Organization, Communications, Awareness Raising, Education, Public Campaigns, Gender Equality, Gender Mainstreaming, Sex-disaggregated indicators, Gender-sensitive indicators, Women groups, Gender results areas, Access to benefits and services, Participation and leadership, Knowledge Generation and Exchange, Capacity, Knowledge and Research, Knowledge Generation, Course, Training, Professional Development, Knowledge Exchange, Field Visit, South-South, Learning, Adaptive management, Theory of change, Targeted Research, Community-based adaptation, Climate resilience, Least Developed Countries, Ecosystem-based Adaptation, Livelihoods

Rio Markers**Climate Change Mitigation**

Climate Change Mitigation 0

Climate Change Adaptation

Climate Change Adaptation 2

Duration

60 In Months

Agency Fee(\$)

848,580.00

Submission Date

9/28/2020

A. Indicative Focal/Non-Focal Area Elements

Programming Directions	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
CCA-1	LDCF	8,232,420.00	15,024,270.00
CCA-3	LDCF	700,000.00	1,000,000.00
Total Project Cost (\$)		8,932,420.00	16,024,270.00

B. Indicative Project description summary

Project Objective

Increase resilience of watershed communities in and around Bujumbura through a resilient integrated watershed management for landscape restoration and flood management

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
Component 1: Developing technical capacities for climate-induced flood and erosion risks mapping and their use to inform climate-resilient integrated watershed management and other planning processes.	Technical Assistance	Outcome 1: Enhanced capacity for climate risk modelling and integrated planning in the Ntakangwa watershed and Bujumbura town	<p>Output 1.1: The community-based climate information system supported and improved to monitor changes in key ecological determinants of ecosystem health and resilience in the Ntakangwa watershed.</p> <p>Output 1.2: Training program implemented to enable the use of hydrological and climate models to map out climate-sensitive flood and erosion risks in the Ntakangwa watershed.</p> <p>Output 1.3: A resilient integrated watershed management plan prepared to guide the development and rehabilitation of the Ntakangwa watershed in areas critical for the provision of ecosystem services for flood and erosion control.</p> <p>Output 1.4: Flood and erosion risks maps developed for use in climate-resilient planning (urban development and investment in Bujumbura, local development plans in communes of the Ntakangwa watershed).</p>	LDC F	700,000.00	1,000,000.00

Component 2: Ecosystems services for flood and erosion protection restored and flood protection measures implemented to improve the resilience of communities in the Ntakangwa watershed and in Bujumbura.	Investment	Outcome 2: Landscape restoration and flood management measures to protect communities in the Ntakangwa watershed and Bujumbura from flood and erosion risks.	<p>Output 2.1 Restoration measures of vulnerable hilltops of the Ntakangwa watershed connected to Bujumbura completed through the methods of tree planting and quickset hedges;</p> <p>Output 2.2: Establishment of community-based anti-erosion measures, such as ditches and radical terraces, in vulnerable hills critical for the ecosystem health and resilience of the Ntakangwa watershed;</p> <p>Output 2.3: Flood control measures built along the Ntakangwa river channel in areas of Bujumbura where public and private infrastructures are at imminent risk of landslide during extreme climate events;</p> <p>Output 2.4: Knowledge and guidance material on (i) landscape restoration, and (ii) flood management and protective infrastructures prepared and disseminated within Burundi and via South-South exchanges.</p>	LDC F	6,000,000.00	12,500,000.00
Component 3: Livelihoods options and green entrepreneurship to increase resilience of the urban, peri-urban and rural communities in the Ntakangwa watershed.	Investment	Outcome 3: Community livelihood is improved with sustainable adaptation measures contributing to urban, peri-urban and rural resilience.	Output 3.1: Market analysis conducted, including; i) identifying demand levers that could drive a shift to sustainable resilient practices in the watershed (considering opportunities from/between urban/peri-urban/rural settings); ii) analysing relevant supply chains for climate-resilient agricultural and food products, crops and farming inputs, livestock and fisheries, and non-timber forest products; iii) assessing economic impacts and market barriers; and iv) drafting mitigating strategies to address these barriers.	LDC F	1,807,067.00	1,761,210.00

Output 3.2: Ecosystem-based Adaptation solutions providing resilient livelihoods options compatible with watershed resilience are supported (e.g.: family orchard, food processing and preservation, beekeeping, use of NTFP...);

Output 3.3: Startup creation facilitated through the provision of technical support (training, mentoring) and finance (to invest in resilient practices and technologies);

Output 3.4: Development of micro-finance products (micro-credit) with Micro-Finance Institutions to support small business development, with a focus on women and youth entrepreneurs.

Output 3.5: Knowledge and guidance material on (i) resilient livelihood options and (ii) and green entrepreneurship and startup creation leveraging urban, peri-urban and rural win-win opportunities for climate resilience prepared and disseminated within Burundi and via South-South exchanges.

Sub Total (\$)	8,507,067.00	15,261,210.00
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Project Management Cost (PMC)

LDCF	425,353.00	763,060.00
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Sub Total(\$)	425,353.00	763,060.00
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Total Project Cost(\$)	8,932,420.00	16,024,270.00
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C. Indicative sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
GEF Agency	UNDP	Grant	Investment mobilized	500,000.00
Recipient Country Government	Government of Burundi	Grant	Investment mobilized	15,074,270.00
Beneficiaries	Communes	Public Investment	Investment mobilized	450,000.00
Total Project Cost(\$)				16,024,270.00

Describe how any "Investment Mobilized" was identified

The Government co-financing has been identified during discussions with the governments to identify specific investments in the Ntahangwa watershed area of relevance that will catalyze public resources towards the project. The co-financing correspond to investment mobilized as part of donor-funded project currently executed by the government and including: (i) the Value-Chain Development Programme (PRODEFI II, 2015-2022, US\$ 42.28 million): financed by IFAD, the overall objective of the programme is to promote increases in incomes and improvements in food security for the poor households in 8 provinces of Burundi (Bubanza, Cibitoke, Gitega, Karusi, Kayanza, Muramvya and Ngozi, and Muyinga), some of which adjacent to the Ntahangwa watershed. The FIDA investment includes the development and restoration of wetland and watershed areas (component 1) together with value chain development focusing on dairy and rice production (component 2). Component 3 provides organizational support to the Ministry of Agriculture and Livestock as well as support for knowledge management and facilitation. The co-financing corresponds to baseline investments from the PRODEFI II estimated at US\$ 1,07 million for component 1 and US\$ 1 million for component 2 (implemented by the FAO). The proposed LDCF will ensure that activities of the PRODEFI II in parts of the Ntahangwa watershed are captured in the integrated watershed management plan and that they contribute to making the watershed more resilient to the impacts of climate change; (ii) the "Lake Tanganyika Water Management Project" (LATAWAMA, 2019-2023, EUR 6.9 million) is a project implemented by ENABEL, the Belgian Development Agency and financed by the European Union. The project supports the Lake Tanganyika Authority and aims to control and monitor water quality of Lake Tanganyika and provide evidence-based support for Integrated Water Resources Management of the lake's resources. The project includes a regional component on water quality and pilot projects in five cities bordering Lake Tanganyika. The estimated co-financing for the LDCF intervention is 897,500 USD and corresponds to the LATAWAMA investments on water quality and water sanitation investments piloted in Bujumbura and the use of information on water and water quality from monitoring and control network to be established by ENABEL. Through support for modeling and climate-risk mapping, the proposed LDCF will make use of the information system developed by LATAWAMA to support climate-sensitive planning and decision making under component 1 of the LDCF; (iii) The Burundi - Landscape Restoration and Resilience Project (2018-2023, US\$ 30 million) is a project funded by the World Bank. The objective is to restore land productivity in targeted degraded landscapes and to provide immediate and effective response to eligible crisis or emergency. There are four main components to the project: (1) institutional development and capacity building for landscape restoration and resilience, supporting the development of policies and capacities at the national and local levels to plan and implement land preservation and restoration in the targeted project areas, (2) restoration of degraded landscapes and improved land

management in the provinces of Bujumbura Rural and Muyinga through land certification, landscape restoration and erosion control, and improved practices of crop production, (3) improved management of protected areas and reserves, (4) Contingency Emergency Response (CERC) in case of an emergency. The estimated co-financing for the LDCF intervention is US\$ 10,3 million and corresponds to the investments in land restoration, land management and improved crop production in the province of Bujumbura Rural (Isale commune, part of the Ntahangwa watershed). The proposed LDCF project will capture these co-financed investments in the Ntahangwa watershed as part of the integrated watershed management plan and related Watershed rehabilitation plan and ensure that they are compatible with watershed resilience. The co-financing identified will be refined during the PPG but aims to capture the part of those investment that will contribute to this LDCF project's baseline. They are in large part focusing on specific investment in landscape restoration and food production and security in the area targeted by this LDCF project. In the communes covered by the LDCF project, local authorities will contribute co-financing from their local development budget for mobilized investments contributing to communal development. UNDP will contribute half a million USD to support project activities and the project management unit.

D. Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
UNDP	LDCF	Burundi	Climate Change	NA	8,932,420	848,580	9,781,000.00
Total GEF Resources(\$)					8,932,420.00	848,580.00	9,781,000.00

E. Project Preparation Grant (PPG)
PPG Required



PPG Amount (\$)				PPG Agency Fee (\$)			
200,000				19,000			
Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
UNDP	LDCF	Burundi	Climate Change	NA	200,000	19,000	219,000.00
Total Project Costs(\$)					200,000.00	19,000.00	219,000.00

Core Indicators

Indicator 3 Area of land restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
0.00	0.00	0.00	0.00

Indicator 3.1 Area of degraded agricultural land restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 3.2 Area of Forest and Forest Land restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 3.3 Area of natural grass and shrublands restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 3.4 Area of wetlands (incl. estuaries, mangroves) restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4 Area of landscapes under improved practices (hectares; excluding protected areas)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
0.00	0.00	0.00	0.00

Indicator 4.1 Area of landscapes under improved management to benefit biodiversity (hectares, qualitative assessment, non-certified)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4.2 Area of landscapes that meets national or international third party certification that incorporates biodiversity considerations (hectares)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Type/Name of Third Party Certification

Indicator 4.3 Area of landscapes under sustainable land management in production systems

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4.4 Area of High Conservation Value Forest (HCVF) loss avoided

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Documents (Please upload document(s) that justifies the HCVF)

Title	Submitted

Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female				
Male				
Total	0	0	0	0

Part II. Project Justification

1a. Project Description

1) Adaptation problems, root causes and barriers

Burundi is a small landlocked country of 11 million people. Agriculture is its primary economic sector, employing nearly 80% of its inhabitants who live from subsistence farming. The country is densely populated with a high population growth. Bujumbura is Burundi's biggest city and until February 2019, the capital city before it moved to Gitega. Bujumbura remains the main economic centre of the country and concentrate services and all of the business opportunities. Burundi's landscape presents large swath of mountainous areas with elevations ranging from 770 m up to 2,670 m, on the eastern part of the country, the terrain is dropping to a flat plateau (See *Figure 1* for a physical map of Burundi).

Burundi is subject to cyclical geophysical phenomenon like El Nino that are causing extreme climatic situations, strengthening the country's vulnerability in different sectors, including infrastructure development, transport, housing schemes and urban planning. This increased exposure to the impacts of climate change, together with the high poverty rate – 67% of the population living under the poverty threshold[1] - puts the economy of Burundi as a whole in a very vulnerable and fragile situation. Burundi ranks as one of the country most vulnerable to climate disruptions, ranking 171 out of 181 in the ND-GAIN index for climate vulnerability[2]. The country is the 14th most vulnerable country and the 16th least ready country to combat the expected impact of climate change.





Figure 1: Physical map of Burundi (www.freeworldmaps.net)

Current trends have shown an overall decrease in precipitation creating shorter wet seasons and a prolonged dry season. An increase in mean temperature of 0.7-0.9°C has been observed since 1930[3]. Climate-induced natural hazards have become more frequent in the past decades with an increase in flood and drought as well as storm surges and landslides[4]. Severe droughts frequently affect Burundi and account for a third of all natural hazards occurring in the country and torrential rains have caused major flooding issues around Lake Tanganyika, including Bujumbura. Between 1999 and 2007, the combined losses from severe flood (2006, 2007) and drought (1999, 2000, 2005) episodes were estimated by the government at 5% of the country's GDP[5]. Severe flooding and landslide have become a common yearly occurrence due to heavier rains than usual during the wet seasons. The country has reported important damages to crops, soil, and infrastructure together with the increased presence of pests and disease that affect food crops and livestock.

Between 2013 and August 2020, the International Organization for Migration recorded 131,336 internally displaced people (IDPs), 83% of them as a result of natural disasters. The major part of these displacements occurred in the provinces of Bujumbura Mairie and Bujumbura Rural where 60,207 IDPs are on records[6]. In January 2014, torrential rains caused rivers throughout the city of Bujumbura to come out of their bed. The flooding affected 220,000 people, 40% of Bujumbura's population. 70 people were reported dead, 4 missing and 182 injured. Physical damage included 2,000 damaged or destroyed houses, the destruction of teaching materials at 7 flooded schools, lost merchandise at 500 stalls in 1 market, several bridges destroyed, 2 main roads cut, and 5000 ha of agricultural land degraded[7]. A month later, in February 2014, floods and landslides in Bujumbura caused 64 deaths, destroyed 940 homes and rendered nearly 12,500 people homeless[8]. Similar events causing deaths and massive destruction have been reported by the United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA) in 2019-2020. In April 2020, floods in Bujumbura Rural displaced 27,972 people and destroyed or damaged 6,010 houses. UN OCHA reported thousands of hectares of crops ready for harvest destroyed as well as an increased trend in prices for basic food commodities. Further increase are expected as traders try to preserve their stocks in anticipation of poor harvests[9].

Regional climate models using both a low and high emission scenarios (RCP 4.5 and RCP 8.5 respectively) indicate that the average annual temperature in the country could increase by 1.7-2.1°C by 2060 and 2.2-4.2°C by 2100 (mean change compared to the average for the 1970–1999). The highest increase is projected to occur during the dry season, which could lead to longer heat waves and more severe drought episodes. Climate models indicate an increase in mean annual precipitation of 5.7%-7.7% by 2060 and 8.6-13.2% by 2100 compared to 1970-1999 (See *Table 1* and *Table 2* below for annual rainfall and temperature projections). Furthermore, most of the regional climate models show an increase in precipitation during the main wet season (November-February) and all the models agree on a positive trend for the months of November and December and dryer conditions the months before the onset of the rainy season[10].

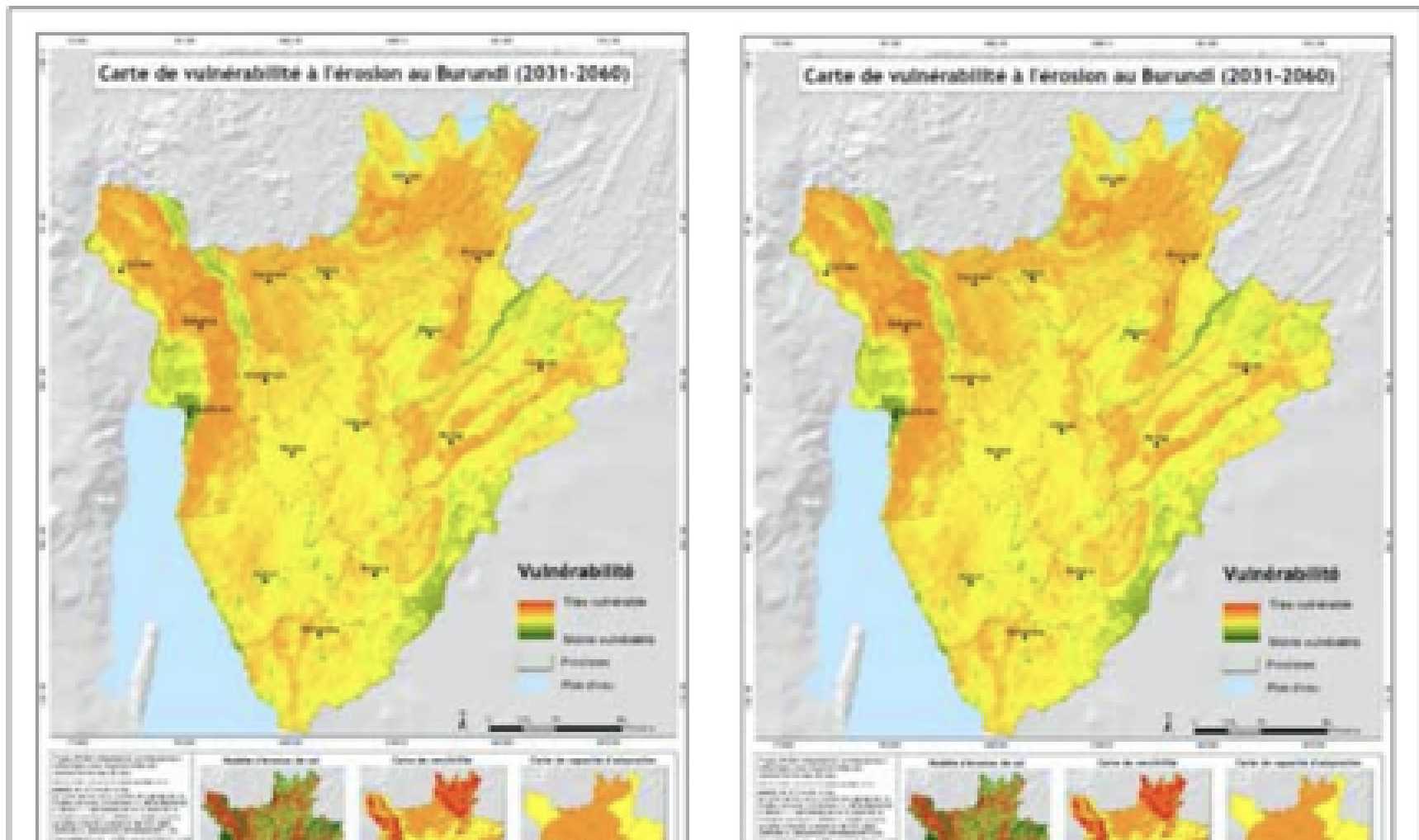
Table 1: *Changes in average annual rainfall (multi-model mean)(Climate Change Projections for Burundi, GIZ, 2014)*

1970-1999		2031-2060			2071-2100		
	mm	Ave. [mm]	%	mm	Ave. [mm]	%	mm
RCP 4.5	1479	1563	5.7	84.1	1607	8.6	127.4
RCP 8.5	1479	1593	7.7	113.6	1675	13.2	195.9

Table 2: *Changes in air temperature (multi-model mean)(Climate Change Projections for Burundi, GIZ, 2014)*

1970-1999		2031-2060		2071-2100	
	°C	Ave. [°C]	K	Ave. [°C]	K
RCP 4.5	19.4	21.1	1.7	21.7	2.2
RCP 8.5	19.4	21.5	2.1	23.6	4.2

These changes and variability will result in challenges to agricultural productivity, food security and livelihoods and a likely increase in the occurrence of climate disasters already observed. While evapo-transpiration will increase due to higher temperatures, the surplus of water from the precipitations is likely to increase the risk of extreme rainfalls, flash floods and landslides. A vulnerability analysis of Burundi showed that the area surrounding Bujumbura is particularly sensitive to erosion due to its mountainous landscape and soil profile, a situation that is likely to continue or worsen over time with climate change (See *Figure 2*). On the other hand, the vulnerability analysis shows that drought is and will continue to remain an issue in the eastern and southern part of the country.

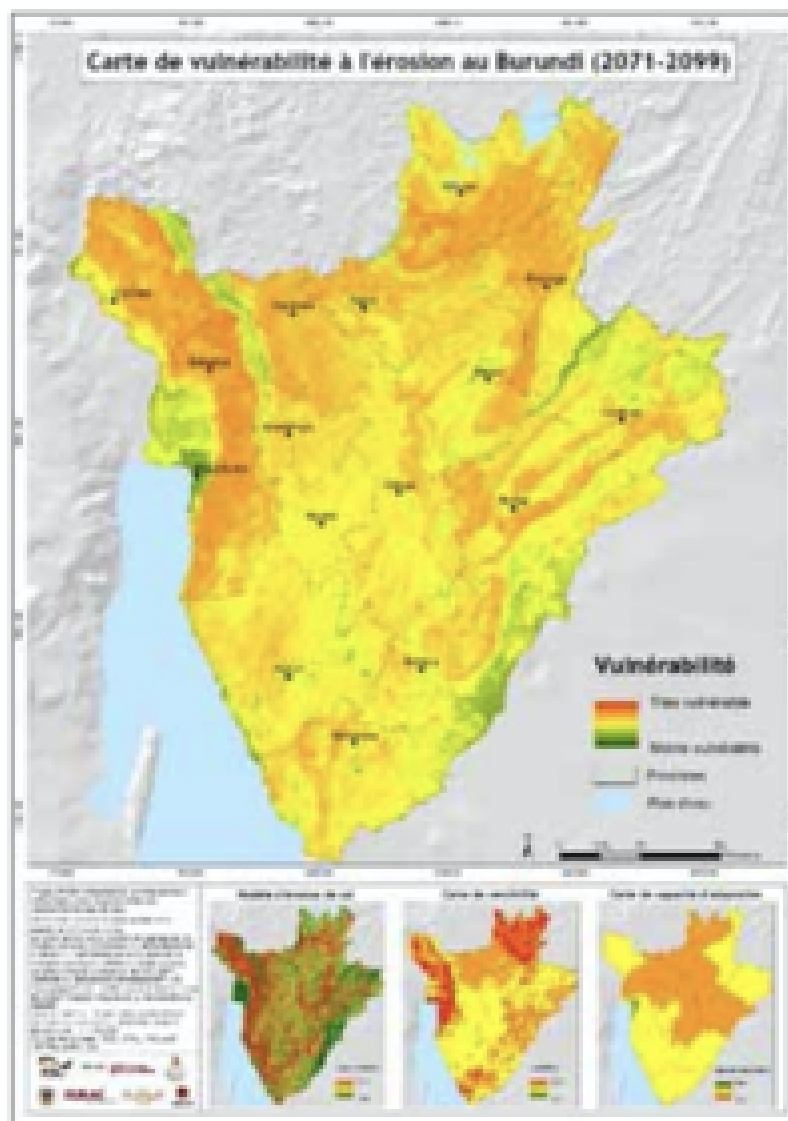




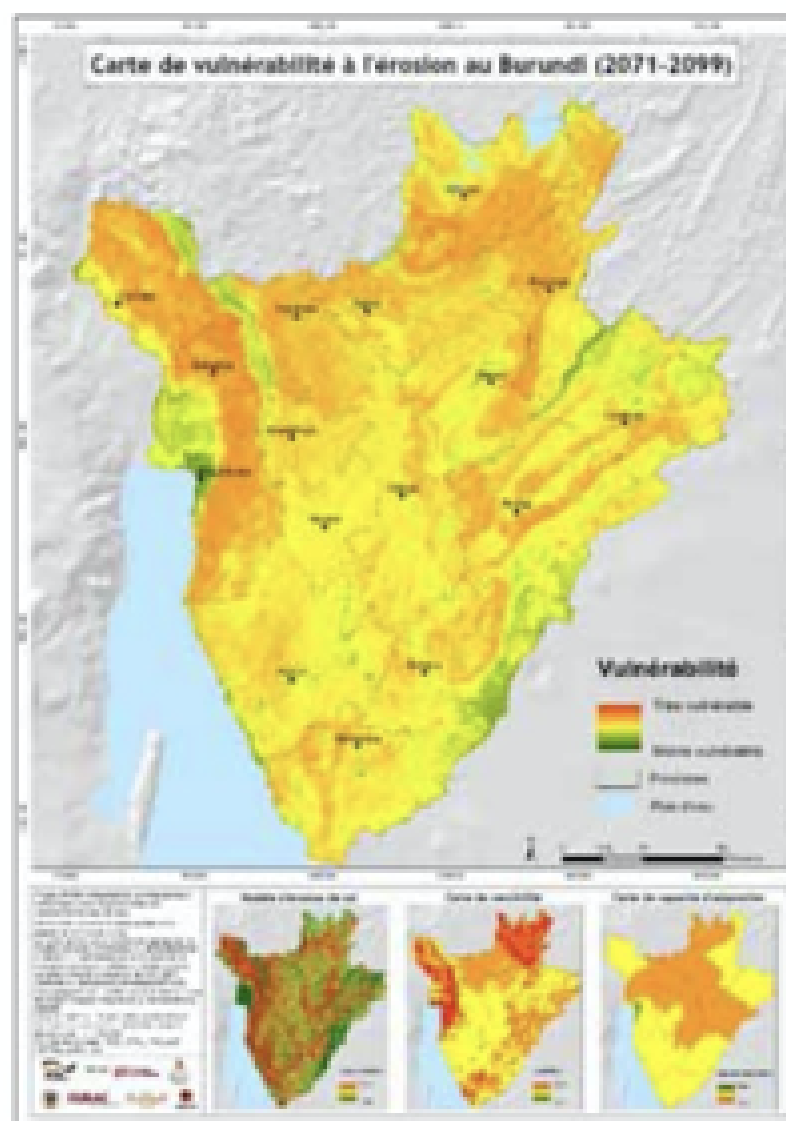
2031-2060 RCP 4.5



2031-2060 RCP 8.5



2071-2099 RCP 4.5



2071-2099 RCP 8.5

Figure 2: *Map showing Burundi's vulnerability to erosion (Integrated Vulnerability Analysis of Burundi, GIZ, 2014)*

Infrastructure investments are concentrated in Bujumbura, making the city particularly prone to damage during flooding due to its geographical situation in lowlands surrounded by mountains prone to erosion and landslides. In order to address these issues, the Government of Burundi, through the National Platform of Prevention and Management of Disaster Risks in partnership with UN Agencies has prepared a "Flood contingency plan". However, the existence of the Contingency Plan in absence of technical and financial resources has not brought significant changes to populations who suffer greatly from those disasters. In Bujumbura, city residents in the Nyakabiga, Kigobe, Mutanga and Mugoboka quartiers were forced to abandon their houses after they collapsed due to erosion and landslides. Others public infrastructures and private households are on the brink of collapse along the bank of the river Ntakangwa, putting lives directly at risk. The Ntakangwa watershed covers several districts east of Bujumbura and features steep hills prone to landslide and erosion, which then end up affecting densely populated areas of Bujumbura further downstream. Populations in the Ntakangwa watershed (outside Bujumbura itself) rely mostly on subsistence agriculture and agro-forestry on hills for their livelihoods and are highly vulnerable to the impact of climate change.

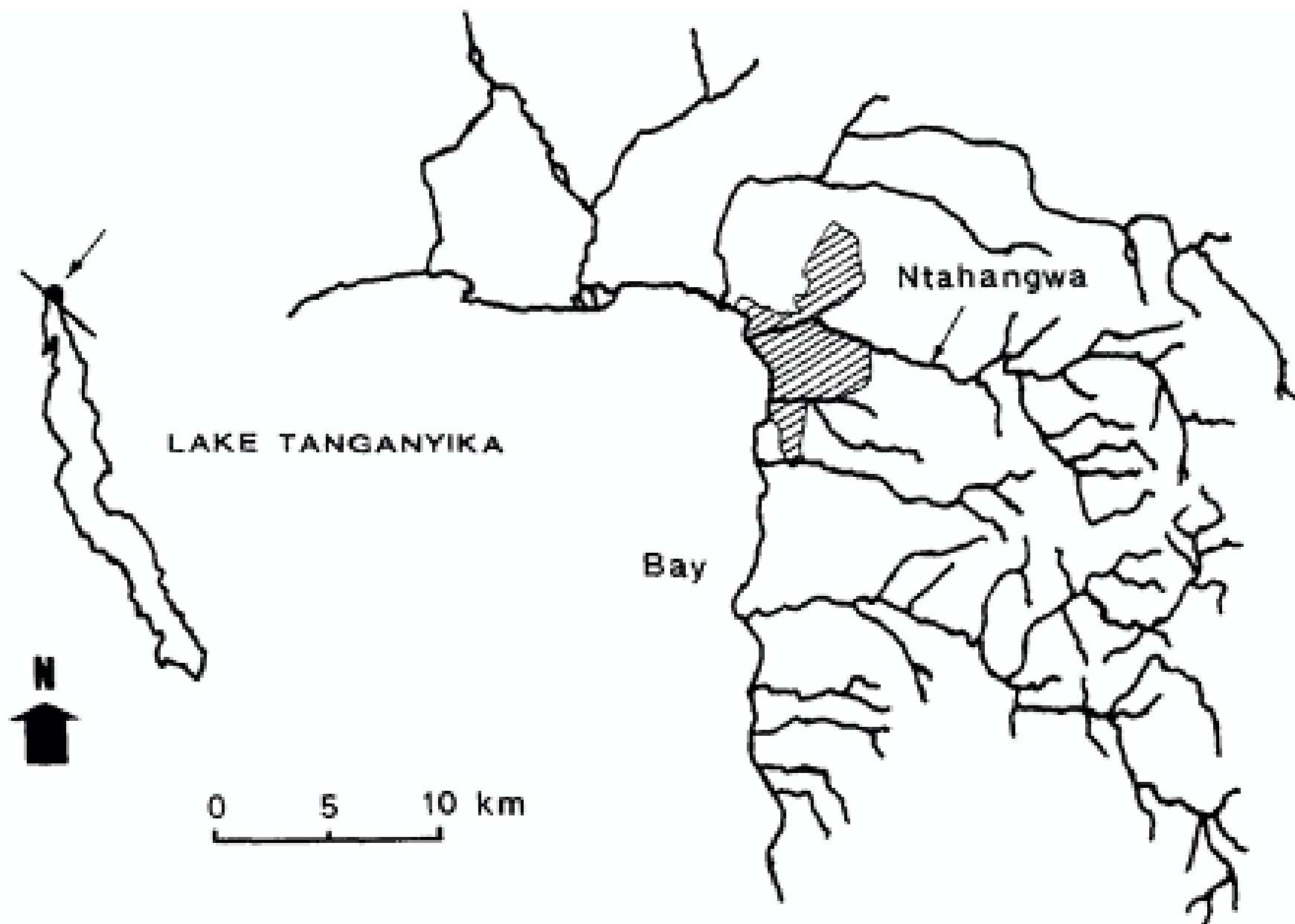


Figure 3: Ntahangwa river system (diagonal hatching: inhabited zone of Bujumbura)(Modified from *Hydrobiologia* 328: 161-171, 1996)

In addition, the country faces aggravating factors, in particular the socio-political crisis that leads to population movements, creating vulnerable groups and a polarization of the population in general. It is also important to highlight the situation of women, who, despite the efforts identified over the last years with regards to political and economic aspects, are still facing inequalities in terms of rights- in particular access to private property. Youth represents a key part of

COVID-19 is expected to impact agricultural production capacities and livelihoods, which could exacerbate food insecurity and limit the resilience capacities of the most vulnerable populations. The crisis has negative effects on food accessibility and price increases have already been observed (e.g. the price of maize is 37-61 percent higher compared to the same time last year). Food prices declined significantly between January and May, falling to their lowest level in seventeen months, but September 2020 marked the fourth consecutive monthly increase in the FAO Food Price Index[13]. Border closure and quarantine requirements have led to a slow-down in trade and a disruption of cross-border markets affecting vulnerable households relying on casual labour and trade with the Democratic Republic of Congo[14]. COVID-19 crisis is impacting Burundi's economic recovery. Some of the most affected sectors include services, hospitality and commercial services (transportation, travel, insurance) as well as agriculture, largely due to travel restrictions, a decline in international trade, waning demand for exports, and supply-chain disruptions.

Burundi has limited fiscal, monetary and financial buffers to cope with the current crisis. The GDP of Burundi had slightly risen to 1.8% in 2019 thanks to higher agricultural yields, but is poised to fall to 0.3% for 2020. As a result, public debt is expected to increase to 63.7 percent of the GDP in 2020 from 58.5 percent in 2019 due to reduced revenues and higher spending on health[15]. Assuming the pandemic brought under control, the outlook could be positive in 2021 and 2022 with a significant rebound of growth supported by increased activity in all sectors.

The COVID-19 recovery efforts present opportunities for Burundi to use ecosystem-based adaptation and green economy principles to create jobs, strengthen agricultural value chains and supply chains from urban and rural areas and rebuild Burundi's economy while addressing climate vulnerabilities and drivers of land degradation.

The proposed LDCF aims to address the vulnerability of urban and peri-urban communities of Bujumbura and the Ntampang watershed to the increased frequency of floods, storm runoffs and landslides projected by climate models. These natural hazards are destroying households and infrastructures of urban communities of Bujumbura along the bank of the Ntampang river and threaten the livelihoods and resilience of highland communities living in the upstream part of the watershed. Erosion is a key factor increasing the vulnerability of highland communities to adapt and solutions to increase their resilience have the potential to reduce the impact felt by lowland communities downstream. Floods and storms directly affect the capacity of the watershed's ecosystem to buffer the impact of climate change, which is made worst by the degradation and deforestation of hills by communities. Despite investments in watershed restoration in the past, there is no planning and management tool at the watershed-level to ensure the long-term resilience of communities. Climate information can support those processes; however, the government lacks the capacity to analyse and make use of data and information for decision-making.

The **long-term solution** is to strengthen integrated watershed management and flood management of the Ntampang river connected to Bujumbura to ensure the resilience of both upstream highland communities and downstream lowland communities living in urban areas. The solution will include a comprehensive planning and management approach making use of climate information available in the country together with specific investments in landscape restoration, flood management measures and resilient livelihoods support. Landscape restoration in areas connected to Bujumbura will help restore flood-related ecosystem protection for both highland upstream communities and lowland urban communities with adaptive solution ranging from tree planting to watershed protection and reinforcement of riverbanks structures. To complement the restoration efforts, livelihood activities are needed to reduce the vulnerability of populations by promoting green entrepreneurship and providing better access to markets (at this stage, the main sectors targeted are agriculture and agro-industry as well as the charcoal sector) connecting urban communities to peri-urban communities in the watershed. The charcoal sector's reliance on trees makes it a prime sector to target through a climate-resilient value chain approach. The agro-business sector will benefit from increasing the value of agricultural products and creating new investment opportunities. The urban focus of this project opens new doors to tap into the nascent startup ecosystems of Bujumbura while providing support for youth entrepreneurship and employment opportunities. Resilient livelihood options and green entrepreneurship are important strategies to rebuild Burundi's economy as part of its post-COVID-19 recovery efforts.

Several **barriers** to this solution have been identified, they will need to be addressed by the proposed LDCF project in order for the project to achieve its results.

Barrier 1: Limited institutional and technical capacity for mapping and analysis of climate risks for resilient integrated watershed management (including flood management). While a climate information system for early warnings has been established in Burundi, operators are receiving training to operationalize the system, but their capacities to make use of data and information beyond early warning (e.g. planning and management) are and will remain limited without dedicated resources. Those capacity gaps need to be addressed before national authorities can analyse trends and develop models to understand flood and erosion risks and support policy and planning processes that can ensure a resilient integrated watershed management of the Ntakangwa river. The development of community development plans (PCDC) has been an important tool to ensure community engagement in shaping programming and investment priorities. However, the absence of an overarching strategic planning process at the watershed level leads to fragmentation and difficulties in developing and measuring the overall impact of interventions across the watershed and broader productive landscape.

Barrier 2: Limited capacities, knowledge and technologies for Ecosystem-based Adaptation. Local authorities do not have the knowledge and expertise to manage climate risks appropriately at their level, even when management measures are identified in a local development plan. Preventive measures are therefore not prioritized and the response to climate-related disasters has remained reactive. This results in significant damage and losses (human, material), which reduces productivity and leads to negative externalities and maladaptation. Communities of the watershed have limited exposure to ecosystem-based adaptation solutions that can improve the resilience of watersheds and restore ecosystem services for flood and erosion protection. They lack the capacity to implement EbA interventions and are not incentivized for doing so. While funding for local development is scarce, human resources are abundant and communities all over the nation willingly give time and effort to benefit their own community. This approach referred to as “labour intensive public work” does not focus on climate resilience, but could be leveraged for the implementation of climate-resilient initiatives with the right incentives.

Barrier 3: Limited livelihood options and entrepreneurship support for climate resilience, in particular for vulnerable and under-represented populations such as women and the youth. Competing needs and interests make it difficult for vulnerable populations to factor in climate risks in their decisions. The lack of resilient alternative livelihood options means they often are forced to continue with maladapted practices despite experiencing increasing negative impacts from climate change every season. Deforestation and unsustainable agricultural practices worsen the slopes' stability and compound the problems as climate change impacts worsens. Alternative options to reduce those pressures are extremely limited or not realistic due to lack of market access. While highland upstream areas become more prone to landslide and erosion during intense rainfall, they also worsen the situation of communities in the lowland downstream areas who face increasing risks of flood, flash floods and landslides. For the Ntakangwa watershed, demand for food and agricultural products is driven by urban population in Bujumbura while some of their needs are met by rural communities upstream. Despite this obvious link, there is a disconnect between the activities to meet urban demand and their impact on ecosystem services that protect them against flood and there is no win-win mechanisms to use market levers to encourage a shift to resilient livelihood options that meet urban demands while reducing pressure on ecosystem services that also benefit urban populations. In general, lack of market access is a barrier making those livelihood options difficult to implement as tools and mitigating strategies to overcome those barriers are limited/inexistent. Support for small business creation by the government is limited, even more for the implementation of innovative technological solutions deemed risky.

2) Baseline scenario and associated baseline projects

In Burundi, the high population density, with 27,834 km² of surface area for a population of 10.5 million inhabitants, makes the pressure on land and water resources very strong. This leads to soil degradation due to the use of unsustainable agricultural practices which is further exacerbated with climate change impacts. Climate change is leading to increased occurrence and intensity of droughts and floods, a change in season cycles with late beginnings of the rainy season and the early end of the same, land erosion, reduced and irregular rainfalls, etc. The Ntarangwa river flows from the eastern part of Bujumbura and ends in Lake Tanganyika. The basin covers an area of 97 km², with an upstream area in mostly hilly highland landscapes and lowland urban areas downstream. The highland area is prone to erosion and landslide. Their impacts will worsen over time and prevent ecosystems from acting as a buffer against flood due to low infiltration rates causing rapid flowing water runoffs. With a combination of poor urban planning and weak infrastructures, Bujumbura gets more affected by the intensified occurrence of floods and landslides.

In a business-as-usual scenario, climate-sensitive agriculture and deforestation will continue to cause widespread degradation on the hills of the watershed and communities will become increasingly vulnerable to the impact of climate change and land degradation. These impacts will be disconnected from the problems facing the downstream urban and peri-urban areas as planning and management of the watershed will remain fragmented with urban development planning and rural development planning processes conducted separately. A climate information system covers critical areas of the Ntarangwa watershed and should be able to provide early warnings to population by 2021. In theory, the data from the climate information system could be exploited for modeling and decision-making purposes, but limited technical capacities limit the scope of their use beyond early warning, for example to model climate risks and to provide tailored risk intelligence that could be used for development planning and decision-making. This treasure trove of data collected by the climate information system will remain unexploited.

The demand for food, agricultural products and charcoal in Bujumbura will continue to drive unsustainable practices in the watershed areas critical to Bujumbura's protection. Opportunities for alternative livelihoods options contributing to maintaining slope's stability while meeting the needs of urban areas are ignored and prevented by difficulties accessing those markets. Lack of capitals (land and savings) and social norms make it harder for women and youth to seek those opportunities as they are bound to rely on family and their decisions for livelihood options.

Capacity to integrate climate change adaptation into policies is generally limited and the impacts of climate change are not always understood and considered. The government has developed strategies and plans to address issues related to climate change, natural disasters and land degradation, but the realization of the ambitions set in those documents rely heavily on externally-funded investments. Some of the relevant strategies and plans supporting this LDCF project include:

- The "Vision 2025": the vision clearly stated its engagement to make the protection and rational management of the environment a priority so that Burundians live in a secure and well managed environment. Through the implementation of the vision, the environment is expected to be reflected in all socio-economic policies as an essential component of sustainable development. In addition, an environmentally aggressive policy will be put in place to ensure a sustainable management of natural resources. It will aim to develop and implement effective mechanisms for preventing and managing natural disasters. In addition, a plan for adaption to climate change will be developed.
- The "Strategic Framework for Growth and Poverty Reduction" (CSLP II) also pointed up to the necessity of taking climate change concerns into account in order to reduce the poverty in Burundi and particularly by undertaking actions to address the priorities identified under the NAPA.
- The National Investment Plan for Agriculture (PNIA) for 2012-2017 (still in effect to this day), conducted by the Ministry of Agriculture and livestock, identifies climate change as a strong risk affecting the agriculture sector and integrates such considerations in its planning.

Several initiatives have been tested and other are being developed to promote the engagement of women and youth in small revenue generating businesses through cooperatives:

§ **UNDP/Burundi 3x6 approach** which consisted in engaging reintegrated persons into high intensity of labor (HIL) and other lucrative activities on a voluntary basis, at the same time promoting savings for the sake of creating small businesses at the end, proved to be very successful. As one of the outcomes of this approach, some self sustained businesses are now still running and have succeeded to create long-term employment.

§ Moreover, as a response to the overwhelming current problem of unemployment in Burundi, mostly among the youth, UNDP/Burundi is also engaged in a project on **Resilience and social cohesion through rural integrated village at Mayengo** which emphasizes on empowering interned displaced population to be more creative in terms of entrepreneurship.

§ **The Association for Women Entrepreneurs in Burundi (AFAB):** AFAB was created in 1992 by a women association that was conscious of the role women had to play in the economic development of Burundi. It is promoting women entrepreneurship through trainings, gatherings, support to the improvement of the business regulatory framework in Burundi and the establishment of international and regional partnerships.

Associated baseline projects

This LDCF project will build on the following baseline initiatives to address the climate-related vulnerabilities in the Ntakangwa watershed. Some of those projects will provide co-financing for the proposed interventions which aims to cover the additional cost of addressing climate change issues in the target area.

Table 3: Externally funded baseline projects

Project title	Project site	Fund and EE	Date	Co-financing
Value-Chain Development Programme (PRO DEFI II)	National with site in target watershed	IFAD	2015–2022	Yes
Burundi - Landscape Restoration and Resilience Project	Bujumbura Rural, Muyinga Province	World Bank	2018-2023	Yes
Lake Tanganyika Water Management	Lake Tanganyika	EU / ENABEL	2019-2023	Yes
Lake Tanganyika Environmental Management Project	Lake Tanganyika	World Bank	2018 - 2022	No

These baseline projects have interventions in parts of the Ntakangwa watershed or have activities that could affect the management of the watershed:

§ The **Value-Chain Development Programme (PRODEFI II, 2015-2022)** implemented by IFAD is contributing to the operationalization of CSLP II. The objective of the programme is to reduce poverty and improve food security in rural areas by strengthening the physical and technical capacities of poor smallholder farmers in order to enable them to protect their environment, increase the productivity of their production (mainly rice and milk), and hence sustainably increase their revenues. The programme is national, but some of its activities are implemented in the Ntakangwa watershed.

§ The **Burundi - Landscape Restoration and Resilience Project (2018-2023)** funded by the World Bank includes a component on sustainable landscape management practices in the commune of Isare covering parts of the Ntakangwa watershed. The funding supports landscape restoration and erosion control and improved practices of crop production. The project aims to improve soil productivity and food security while providing co-benefits in terms of climate

change adaptation. The LDCF intervention will build on and complement this project by developing capacities for resilient integrated watershed management in the Ntakangwa watershed, with a focus on addressing the underlying causes of vulnerability to climate change in the watershed.

§ The “**Lake Tanganyika Water Management**” project is financed by the European Union as part of a regional programme and implemented by Enabel. It supports the Lake Tanganyika Authority in improving the sustainable use of the Lake’s water resources. Water quality and fisheries in the Lake is affected by erosion and sedimentation coming directly from rivers connected to the Lake, including the Ntakangwa river.

§ The “**Lake Tanganyika Environmental Management Project**” financed by the World Bank contribute to the establishment of sustainable integrated watershed and fisheries management in the Lake Tanganyika Basin, while strengthening regional and national institutional framework and capacity to manage natural resources. The project is transboundary with activities in the four countries sharing the Lake. The allocation for Burundi comprises a specific component on landscape restoration and erosion control in the Isare commune covering parts of the Ntakangwa watershed.

3) Proposed alternative scenario

The Government of Burundi is requesting funding from the LDCF to develop the long-term adaptive capacity of communities to employ strategies that reduce land degradation and diversify livelihoods for a transformative and climate resilient development. The target regions will include Bujumbura city and surroundings areas connected to the Ntakangwa river flowing through the city. Bujumbura, while not the capital city, is the economic powerhouse of the country and the government made its protection a priority. The alternative scenario will address the main barriers to climate resilience and address the root causes of vulnerability in the Ntakangwa watershed and use an integrated watershed management approach as leverage to connect urban, peri-urban and rural communities in the watershed for increased resilience. The project objective is to “increase resilience of watershed communities in and around Bujumbura through a resilient integrated watershed management for landscape restoration and flood management”. This will be achieved through three main components:

§ **Component 1:** Developing technical capacities for climate-induced flood and erosion risks mapping and their use to inform climate-resilient integrated watershed management and other planning processes;

§ **Component 2:** Implementing landscape restoration and flood management approaches to restore ecosystem services against flood and erosion in the Ntakangwa watershed in and around Bujumbura;

§ **Component 3:** Livelihoods options and green entrepreneurship to increase resilience of the urban, peri-urban and rural communities in the Ntakangwa watershed.

Knowledge management will be promoted as cross-cutting activities in each of the components to ensure that lessons learned and best practices in resilient integrated watershed management, flood management, land restoration and erosion control, green entrepreneurship are collected and disseminated to inform the upscaling of these interventions in other watersheds in Burundi.

The proposed interventions will contribute to the guiding strategies and plans for sustainable development in Burundi and reflect their priorities for climate change adaptation, disaster resilience, water resources, agriculture and women and youth entrepreneurship. These include: (i) the Vision 2025, as the overarching framework for long-term planning in the country, (ii) the Burundi National Development Plan 2018-2027, in particular the strategic focus “ensuring sustainable management of the environment, mitigate climate change and improve land use planning, (iii) the 2010 National Adaptation Plan of Action for Burundi, which lays out the foundation and activities for all adaptation solutions implemented in Burundi, (iv) the Strategic Framework for Growth and Poverty

Reduction (CSLP II), (iv) the Intended Nationally Determined Contribution (INDC, 2015), which will be renewed with new targets and commitments in 2020/2021. Green economy and green entrepreneurship presents a strong entry point for national COVID-19 recovery efforts to which this LDCF intervention contributes. Additional details on how the project aligns with national priorities are included in Section 7.

Component 1: Developing technical capacities for climate-induced flood and erosion risks mapping and their use to inform climate-resilient integrated watershed management and other planning processes.

The Ntahangwa river connected to Bujumbura is a strategic asset that provides opportunities for productive sectors (e.g. agriculture, fisheries) but is also prone to climate risks and causes important damage due to erosion and landslides during wet seasons. Investments in parts of the Ntahangwa watershed have been made in the past, but they are insufficient to yield their intended results as they are scattered and not chosen based on an overall understanding of the watershed hydrologic processes and ecosystem services. A comprehensive integrated approach to land and water resources management of the Ntahangwa watershed is required to ensure long-term flood and erosion control and increased resilience of the communities in the watershed, including in areas at high risk of flood in densely populated areas of Bujumbura.

Under this component 1, capacities to analyse climate data and develop climate risk models will be enhanced to support climate-resilient integrated planning at the watershed level and inform communal development plans and flood-resilient urban development plans. The outcome under this component will address the first barrier to the long-term solutions identified in section 1. Interventions will cover the urban, peri-urban and rural settings, as they need to be considered together to understand the needs, priorities and constraints of populations in each of those areas to identify opportunities and synergies at the level of the watershed and attribute relevant role and responsibilities accordingly. For example, urban populations downstream need rural communities upstream to prevent soil erosion and reduce surface runoff causing flash floods. Rural communities need urban and peri-urban communities to access markets to sell their products.

§ Outcome1: Enhanced capacity for climate risk modelling and integrated planning in the Ntahangwa watershed and Bujumbura town

Under the LDCF project “Community based climate change related disaster risk management”, a community-based climate information system was developed to collect hydrological information and disseminate early warning information. 30 hydrometeorological stations were installed, with information collected centrally by the Geographic Institute of Burundi (IGEBU) and already covering the Ntahangwa watershed. As of 2021, the early-warning system should be operational, fully managed and funded by the government. Capacities and resources to make use of climate information will remain nonetheless limited and prevent use for planning and decision-making. Outcome 1 will build government capacities to expand the use of the climate information to better understand ecosystem health and their capacity to deliver benefits in terms of resilience under the current human, environmental and climate-related pressures. Modeling capacities also need to be enhanced to develop hydrological models to determine climate risks, more specifically flood and erosion risks, in the Ntahangwa watershed based on current climatic trends and future climate change scenarios. Those are pre-requisites for the development of an evidence-based, climate-resilient, integrated watershed management plan for the Ntahangwa river, as they will guide planning and decision-making processes.

Target areas for the World Bank-funded “Landscape Restoration and Resilience Project”, which constitute part of the baseline for land restoration and erosion control activities, were chosen in relation to their location in the Isare commune, but not primarily for their link to the Ntahangwa river. The resilient integrated watershed management plan will provide an understanding of the key areas in the watershed for the provision of ecosystem services for flood and erosion control and propose a watershed rehabilitation plan for those areas. The determination of priority areas will also confirm the critical gaps in the areas of

treatment in the Ntahangwa watershed. Integrated watershed planning is an exercise requiring cross-sectoral cooperation and intense stakeholders' consultation and participation, involving vulnerable and under-represented groups of people, such as women, youth, and indigenous people (n.b. indigenous Batwas are known to be present in the Ntahangwa watershed). The watershed planning exercise will make use of the climate information systems and climate-sensitive risk maps and evaluate adaptation solutions based on their geographical situation in the watershed. This should be complemented by ecosystem valuations to determine the economic value of ecosystem services provided by the watershed areas. Training will be provided to increase the capacity of relevant provincial and communal government officials, decision-makers and planners. The training will help them identify cost-beneficial ecosystem-based adaptation opportunities (rural as well as urban) and flood protection measures that address the climate threats facing the watershed.

The resilient integrated watershed planning exercise will be used to inform the preparation or revision of existing urban development plans in Bujumbura and communal local development plans in rural communes of the watershed. Those plans are the main tools to translate watershed-level planning into concrete field intervention on the ground while supporting long-term sustainability of the project activities and as a result long-term climate resilience.

Outcome 1 will support the other outcomes by creating the necessary basis upon which this LDCF project can conduct ecosystem restoration, flood protection and livelihood development activities to increase the resilience of communities in the watershed (in rural, urban and peri-urban areas). The evidence-based framework for planning and investment decisions will help ensure the sustainability and scalability of the project. Improvements to the climate information system will also help with collection of data and information that make monitoring and evaluation of the project's impact easier to measure quantitatively.

Outputs under Outcome 1 are listed below:

§ **Output 1.1:** The community-based climate information system supported and improved to monitor changes in key ecological determinants of ecosystem health and resilience in the Ntahangwa watershed.

§ **Output 1.2:** Training program implemented to enable the use of hydrological and climate models to map out climate-sensitive flood and erosion risks in the Ntahangwa watershed.

§ **Output 1.3:** A resilient integrated watershed management plan prepared to guide the development and rehabilitation of the Ntahangwa watershed in areas critical for the provision of ecosystem services for flood and erosion control.

§ **Output 1.4:** Flood and erosion risks maps developed for use in climate-resilient planning (urban development and investment in Bujumbura, local development plans in communes of the Ntahangwa watershed).

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Component 2: Landscape restoration and flood management measures to protect communities in the Ntahangwa watershed and Bujumbura from flood and erosion risks.

The area surrounding Bujumbura is the most prone to erosion and landslides, a situation which will increase over time according to climate projections[16]. Component 2 will build on the evidence base and the climate-resilient integrated watershed management plan provided in Component 1 to implement ecosystem-based adaptation (EbA) interventions and flood protection measures in strategic locations across the Ntahangwa watershed. The EbA

interventions will restore or maintain ecosystem services for flood and erosion control while protective measures against flood will help stabilize critical riverbanks in at-risk populated areas of Bujumbura. This component represents the bulk of the investments proposed by this LDCF project and will complement and strengthen other investments made in landscape restoration, afforestation and resilience-building activities in parts of the Ntampang watershed (See *Section 2 on Associated baseline projects*).

§ Outcome 2: Ecosystems services for flood and erosion protection restored and flood protection measures implemented to improve the resilience of communities in the Ntampang watershed and in Bujumbura.

Under this outcome, the project will promote ecosystem-based adaptation techniques in the highland upstream areas of the Ntampang watershed. The specific measures include landscape restoration techniques and community-based anti-erosion measures. Landscape restoration techniques will focus on planting trees and creating quickset hedges to stabilize hills in the watershed and will be complemented by anti-erosion contour trenches and terraces. Those techniques are meant to reduce soil erosion, increase soil moisture and reduce surface water runoff, therefore improving ecosystem services provided by the watershed and its streams. During intense rainfall, contour trenches channel water runoff and reduce erosion and crop losses due to flooding. By increasing soil moisture, they also provide added protection against drought and heat waves on crops. These EbA techniques increase land productivity and food security. They bring additional economic benefits to communities as most of the hills in the watershed are used for agricultural production.

The landscape restoration efforts will be implemented directly with the local communities in each of the targeted hills in selected communes of the Ntampang watershed. Local authorities and local communities will enforce a ban on tree cutting and maintain anti-erosion trenches as part of their community work (half a day per week is dedicated to community work) under a labor-intensive public works (LIPW) scheme. Those EbA techniques are appropriate for a LIPW approach as they are low-tech and easy to implement and maintain with little capital. The LIPW approach has been applied successfully in Burundi for many years and is one of the approaches used to implement activities of the local development plans (e.g. *Plan Communal de Développement Communautaire (PCDC)*).

The risk mapping and modelling exercise undertaken under Outcome 1 and the watershed rehabilitation plan will help prioritize the hills and communes of the watershed based on their vulnerability to erosion and landslide and their contribution to the ecological status of the river and streams. This prioritization will also consider current and previous investments in the watershed to avoid overlaps and duplication as well as ensure that other interventions contribute to addressing the climate threats facing the watershed. In total, the project will plant 3,000 ha of specific trees and herbaceous/shrubby quickset hedges in critical degraded areas as well as establish 1,000 km of contour trenches and radical terraces.

Additional protection from flood will be provided through investment in protective infrastructures in lowland downstream areas, more specifically at-risk populated areas of Bujumbura close to the river. While Bujumbura is less prone to erosion, floods have devastating impacts on the city and the rivers flowing through it, including the Ntampang river where critical infrastructures such as schools, churches and habitation are directly at risk of collapsing. Climate change projections indicate that this situation will worsen over time, with increased variability between seasons and increased rainfall causing will increase the frequency of flash flood and landslides. Initial investments in flood protection measures was conducted along the river as part of the previous LDCF intervention. Those measures were considered a success by beneficiaries and the government. The risk mapping exercise under Component 1 will be used to determine the physical location and protective infrastructures options for implementation at a fine-scale level. This work involves civil engineering techniques to reinforce the sides of the river channel with gabions and terraced surfaces. A social and environmental impact assessment will be undertaken before work on the riverbank can start.

These interventions will be supported by tools and technologies to increase communication and knowledge management at the community level to ensure better responses and handling when climate-related disasters occur. These will aim to create awareness and promote targeted interventions to shift response behaviours to improve climate resilience. South-South cooperation and exchanges of experience and lessons learned on EbA solutions for landscape restoration and urban-based flood protection measures will also be explored during the PPG. These activities will promote the sustainability and scalability of the project, in particular for their application in other rivers and watersheds connected to Bujumbura and Lake Tanganyika.

Outputs under Outcome 2 are listed below:

§ **Output 2.1:** Restoration measures of vulnerable hilltops of the Ntampang watershed connected to Bujumbura completed through the methods of tree planting and quickset hedges;

§ **Output 2.2:** Establishment of community-based anti-erosion measures, such as ditches and radical terraces, in vulnerable hills critical for the ecosystem health and resilience of the Ntampang watershed;

§ **Output 2.3:** Flood control measures built along the Ntampang river channel in areas of Bujumbura where public and private infrastructures are at imminent risk of landslide during extreme climate events;

§ **Output 2.4:** Knowledge and guidance material on (i) landscape restoration, and (ii) flood management and protective infrastructures prepared and disseminated within Burundi and via South-South exchanges.

Component 3: Livelihoods options and green entrepreneurship to increase resilience of the urban, peri-urban and rural communities in the Ntampang watershed.

Component 3 aims to support and strengthen the watershed restoration activities under Component 2 by inducing a shift away from unsustainable and vulnerable practices and livelihoods. Livelihoods enhancements and diversification activities proposed under this component will provide incentives to ensure participation and ownership of the project activities by beneficiaries and improve the long-term sustainability of the project results after it ends. The Ntampang river is strategic due to its geographic situation connecting highland areas highly sensitive to climate with major strategic assets for Burundi, the city of Bujumbura and Lake Tanganyika. While the connection between the urban, peri-urban and rural communities of the Ntampang watershed has been ignored or overlooked, the project will identify and build on the synergies between those communities to deliver win-win adaptation solutions benefiting populations of the watershed, no matter their location or situation. This component also provides specific entry points to support women, young people and indigenous people with concrete resilience-building solutions or opportunities and tailored support and incentives. Although rural areas have higher poverty rates, the COVID-19 has had immediate and severe impact in urban areas due to the high dependence of the urban poor on informal and non-wage income streams which easily succumb to crises due to low capacity to adapt to sudden changes in market conditions. The livelihood options and green entrepreneurship opportunities proposed under this component build climate resilience while creating green jobs and contributing to building back better as part of the COVID-19 recovery efforts.

§ **Outcome 3:** Community livelihood is improved with sustainable adaptation measures contributing to urban, peri-urban and rural resilience.

This outcome introduces adaptation measures promoting resilient livelihoods options and green entrepreneurship opportunities building on synergistic opportunities between populations in urban, peri-urban and rural areas of the watershed and resulting in increased resilience to climate change for populations in the watershed. The options and strategies will be informed by a climate-sensitive market analysis looking at demand levers that could be used to trigger climate-resilient offerings reducing land degradation in the watershed. The market analysis will look at relevant value chains and supply chains to make recommendations on the feasibility and cost-effectiveness of climate-resilient strategies, both on-farm and off-farm. Relevant value chains and supply chains would include agricultural and food products, crops and farming inputs, livestock, fisheries, and non-timber forest products (NTFP). The market analysis will assess economic impacts and market barriers and will include mitigating strategies to address these barriers. The market analysis will be gender-sensitive and aim to provide specific strategies and options for vulnerable and under-represented groups. Food supply systems are key sources of livelihoods and income generating opportunities and can be instrumental in strengthening positive rural-urban linkages. The market analysis will consider COVID-19-related constraints on value chains and supply chains to identify resilience building solutions also contributing to a more robust recovery from COVID-19. The results of the market analysis will be used to inform urban and local development plans supported as part of Outcome 1.

Based on the results of the market analysis, the project will support 5 to 8 Ecosystem-based Adaptation solutions providing resilient livelihoods options that are also compatible with watershed resilience. Those solutions could include, but not limited to, family orchard, food processing and preservation, beekeeping, use of NTFP. Family orchard is a promising EbA solutions that could be used in the Ntampang watershed to develop small-scale cultivation systems optimizing the use of space and family labour to produce vegetables, herbs and fruits for both domestic consumption and supplemental income. Family orchard can be implemented in a variety of configurations in both rural and urban settings. Using crop diversification, families can produce food year-round and distribute losses due to climate-induced events. The technique contributes to food security and resilience, it can be complemented by other techniques for increased resilience and autonomy, such as water harvesting techniques, composting and seed management[17]. The project will explore food processing and preservation techniques for agricultural and NTFP products to create added value, reduce post-harvest losses, access new markets and diversify income opportunities, increasing general resilience to climate as a result. While this strategy can be applied to small producers, it could also apply to small agro-business enterprise development.

Under outcome 3, the project aims to foster innovation by supporting green entrepreneurship for urban/peri-urban adaptation. The project will provide investment and support for startup creation, capacity building and skill training, access to improved technologies, mentorship and networking. Green entrepreneurship will aim to tap into the potential of Burundi's burgeoning startup community to come up with innovative solutions for urban and peri-urban resilience. This activity will provide employment opportunities and connect with young people and women, including those with higher education who often fail to find opportunities matching their career ambitions and expectations. For this activity, UNDP will partner with national, regional and global technological hubs, startup incubators and accelerators to connect startups and entrepreneurs with relevant actors and support. Through green entrepreneurship, the project will contribute to building a more resilient, greener economy in Burundi, which UNDP is promoting as a key recovery strategy post-COVID-19. In times of restricted mobility due to the pandemic, digital solutions are emerging as essential to keep businesses active and ensure safety and security. Where possible, the project will use innovative digital tools to make green businesses easier, more inclusive and more capable of sustaining services during crisis.

UNDP initiated discussions to partner with Impact Hub Bujumbura, a local technology hub supporting Burundi's startup ecosystem to tackle the Sustainable Development Goals via entrepreneurial and innovative solutions. To generate ideas and interest, the project will support Impact Hub Bujumbura with the organization of the first Climathon in Burundi, *Climathon x Bujumbura*. Climathon is hackathon programme organized globally under the auspice of Climate-

KIC to translate climate action solutions into tangible projects for climate positive businesses and start-ups and addressing local policy changes. *Climathon x Bujumbura* will gather the startup community to come up with innovative solutions for adaptation and urban resilience. The project, with support from UNDP, will seek to connect startup and entrepreneurs with resources and actors in Burundi, including funding (e.g. UNDP Acceleration Lab, Climate-KIC Accelerator).

Lessons learned from the GEF-LDCF project “Community based climate change related disaster risk management” will be used to guide and inform some of those activities for green entrepreneurship. Such activities include a pilot initiative for briquette production from recycled waste for cooking that is ready for upscaling. Charcoal production is an important driver of deforestation and land degradation in Burundi and the production of briquettes from organic waste contributes to reducing the reliance on wood for charcoal production. The pilot initiative supported by UNDP has created an additional source of income for over 20 young people, men and women, who have learnt the skills needed to prepare the briquettes from waste and build improved cooking stoves. The initiative is generating revenues and has identified areas to improve production bottlenecks for further expansion (e.g. shaping of briquettes with a motorized engine instead of manual work). The market analysis will provide solutions and de-risking incentives to upscale this initiative and will support the establishment of additional briquette production units with, among others, skill training and marketing training, improved production equipments and access to finance.

To facilitate investments and entrepreneurship, the project includes a specific activity on access to micro-finance for smallholder farmers and small-scale entrepreneurs, with a specific focus on women and youth entrepreneurs. This will include capacity building in financial literacy to give beneficiaries a better understanding of credit and business models applicable to their livelihood activities. The project will establish partnerships with banks and micro-finance institutions to develop credit products at affordable interest rates and accessible by vulnerable groups. During the PPG, de-risking measures to incentivize micro-finance institutions and banks will be explored. Strategies to facilitate positive impact on women and other vulnerable groups will form the basis for tailoring policies, practices and products that better address gender equality and promote women’s empowerment. The project will train MFI’s staff member on gender analysis and help them incorporate empowerment indicators (e.g. proportion of women in the loan portfolio) into their client monitoring and assessment processes and help them adjust their financial services to respond to diverse client needs (e.g. adapting loan amounts and repayment schedules for women). The project will build on and strengthen women’s network and conduct marketing campaigns to influence people’s attitudes on women’s status and employment to facilitate community approval of women’s projects and build women’s self-confidence.

As in Outcome 2, Outcome 3 will promote communication and knowledge management, and explore mechanisms to share experience and lessons learned and promote sustainability and scalability of the project’s livelihood options for EbA and green entrepreneurship initiatives.

§ Output 3.1: Market analysis conducted, including; i) identifying demand levers that could to drive a shift to sustainable resilient practices in the watershed (considering opportunities from/between urban/peri-urban/rural settings); ii) analysing relevant supply chains for climate-resilient agricultural and food products, crops and farming inputs, livestock and fisheries, and non-timber forest products; iii) assessing economic impacts and market barriers; and iv) drafting mitigating strategies to address these barriers.

§ Output 3.2: Ecosystem-based Adaptation solutions providing resilient livelihoods options compatible with watershed resilience are supported (e.g.: family orchard, food processing and preservation, beekeeping, use of NTFP...);

§ Output 3.3: Startup creation facilitated through the provision of technical support (training, mentoring) and finance (to invest in resilient practices and technologies);

§ Output 3.4: Development of micro-finance products (micro-credit) with Micro-Finance Institutions to support small business development, with a focus on women and youth entrepreneurs.

§ Output 3.5: Knowledge and guidance material on (i) resilient livelihood options and (ii) and green entrepreneurship and startup creation leveraging urban, peri-urban and rural win-win opportunities for climate resilience prepared and disseminated within Burundi and via South-South exchanges.

4) Alignment with GEF focal area;

The project is fully aligned with the GEF LDCF programming strategy and all the activities contribute to increase adaptive capacities of beneficiaries in the project target areas. The project responds to needs clearly identified by the government and confirmed during the PIF preparation to ensure full ownership of the project by the executing agency. Additional considerations include vulnerable groups as beneficiaries of this project, youth and women. Incidentally, this aspect will also support stronger engagement of the private sector in this project in line with the GEF-7 strategic considerations provided to the GEF Agencies. In particular, the project is designed to address two GEF7 focal areas:

CCA1: Reduce vulnerability and increase resilience through innovation and technology transfer for climate change adaptation

The project will provide specific solutions to put in place resilient techniques for watershed rehabilitation and river protection techniques that will reduce the vulnerability of communities at different levels of the watershed, be they in urban, peri-urban or rural areas. Some of those solutions will involve innovation and technology transfer for increased resilience (land restoration, anti-erosion techniques, flood protection measures). The EbA options for watershed resilience and livelihood diversification proposed by the project will also favor innovation and technology transfer. The support to green entrepreneurship aims to foster the creation of businesses and startups developing innovative technological solutions specifically tailored to the local context and specificities of Bujumbura. The project will provide tools, support and partnership opportunities to ensure to create the best possible conditions for innovation and technology development and transfer to occur.

CCA3: Foster enabling conditions for effective and integrated climate change adaptation

Component 1 of the project will provide capacity building and training to broaden the use of climate information for climate risk modeling, planning and decision-making, creating the evidence base necessary to facilitate the adoption of a climate-resilient integrated watershed management approach. These activities will create the necessary conditions for a comprehensive, effective and integrated management of the Ntakangwa watershed that can plug into and inform key development planning tools in Burundi, including the PDCD and urban development plans in Bujumbura.

5) Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing;

Climate considerations are rarely included in the design of public infrastructures or land management. This directly affects the resilience of infrastructures and productive lands to climate change impacts and extreme-weather events. At present, investments in resilient infrastructure are limited and recent floods, erosion and landslides are already impacting the country's economy with increased incidents and deaths in period of floods as well as the destruction of homes, community structures, and public roads in Bujumbura and around. The World Bank estimates that land degradation and deforestation is costing Burundi 12% of its Gross Domestic Products, a situation set to worsen over time with climate change. By strengthening landscapes in the Ntakangwa watershed, the project will contribute to increasing land productivity and resilience as well as restore ecosystem services in terms of erosion and flood control

in the downstream part of the watershed, which is critical for Bujumbura, the economic powerhouse of the country. Flood control in Bujumbura is necessary along stretches of the Ntakangwa identified as high risk of landslide during periods of floods, in some case as last resort measures to save the imminent collapse of buildings, entire streets and public roads. Disaster risk reduction is also a cost-effective measure to ensure that the population is informed and can react to extreme weather events that may affect them. This will be achieved at a low-cost by the project making use of the already existing Early Warning System adapted to send tailored messages for populations in the target area. Meteorological and hydrological instruments are already spread throughout the Ntakangwa watershed and collecting data on a routine basis to feed into a national-level database.

Several initiatives and investments in landscape restoration, water resources management and flood protection measures constitute the baseline of this project. They correspond to already existing or planned public investment where climate is either not considered or an incidental consequence of the chosen intervention. The LDCF investment will ensure complementarity by adding climate considerations in the landscape approach and infrastructure development. The baseline corresponds to activity taking place in the Ntakangwa watershed and the co-financing captured in this PIF represents the estimated contribution of those investments to the project. In the case of national interventions or interventions beyond the Ntakangwa area, efforts have been made to evaluate the part contributing to the LDCF project area. Baseline investments under Outcome 3 corresponds mostly to investments in value chain development and food processing. Additional incremental co-financing for green entrepreneurship is expected to be identified during the project preparation (e.g. seed funding for project incubation and acceleration).

In total, at PIF stage, the co-financing from the baseline from donor-funded public investments is estimated at USD 15,074,270 with an additional incremental co-financing estimated at USD 950,000.

6) Adaptation benefits

The project will build on the previous LDCF intervention in the Ntakangwa watershed to increase the resilience of at least 120,000 people from the two Bujumbura Provinces, Bujumbura Mairie and Bujumbura Rural, or about 8% of the total estimated population in these two provinces (1,466,568) based on the 2020 projections from the Institute for Statistics and Economic Studies of Burundi (Isteebu). Those two provinces also have the highest population density in the country and projections from Isteebu points to a worsening of this trend in the 2030 horizon. Although the Ministry of Environment, Agriculture and Livestock has received requests from communes in the Ntakangwa watershed to participate in landscape restoration, the exact list of communes to be supported will be determined by the climate-resilient watershed management plan and related watershed rehabilitation plan. On top of those beneficiaries, the project will restore 3,000 ha of degraded areas through tree planting, an additional 1,000 km of anti-erosion ditches and terraces and 1.5 km of flood control infrastructures along the Ntakangwa river in Bujumbura itself. The results of this project will build on the achievements of the previous LDCF intervention on community-based climate change related disaster risk management.

In addition, taking into account the urban focus of the new project scope, complementary measures are proposed to increase urban/peri-urban resilience through EbA solutions and green entrepreneurship with a specific focus on innovation and supporting women and the youth through youth organizations and women's association. The youth in Burundi, and in particular women, are some of the most vulnerable population in Burundi, a situation also made difficult given the high level of unemployment and poverty of the urban youth (15-24 year old) compared to other age tranche of the active population. University educated youth often are unable to find employment in their area of expertise and are forced to seek low-skill jobs in the traditional market. In total, the project aims to identify and implement 5 to 8 Ecosystem-based Adaptation solutions providing resilient livelihoods options that are also compatible with watershed resilience and will support 3 to 5 innovative business and startup ideas contributing to urban/peri-urban climate resilience.

Support to entrepreneurship is difficult to access for poor and vulnerable households, and women and young are even more strongly left apart in this autonomisation process. The activities promoting entrepreneurship will support these populations in engaging in entrepreneurship and improve their livelihoods through an improved access to micro-grants and micro-insurance. This is expected to provide large benefits to these groups who are otherwise not able to access finance or insurance. Additionally, promoting green entrepreneurship is considered as a very efficient tool to address the needs for climate change adaptation financing, in particular, the UNEP Adaptation Gap Finance report produced in 2016[14], identified private sector as one of the main actor to fill the adaptation finance gap.

7) Innovation, sustainability and potential for scaling up

The complementary measures for EbA solutions providing resilient livelihood opportunities and green entrepreneurship have been introduced with innovation in mind and to tap into Burundi's burgeoning startup ecosystem and develop solutions for urban/peri-urban resilience anchored in the specific context of Bujumbura. In order to connect with these stakeholders, UNDP will partner with Impact Hub Bujumbura to host the first Climathon in Bujumbura (Climathon x Bujumbura). The aim is to connect with a group of stakeholders from the youth and startup community not traditionally involved in LDCF projects in Burundi. The involvement of skilled youth and startup will also aim to attract additional seed funding for incubation and acceleration of startup developing solutions for urban/peri-urban adaptation.

An example of initiative previously supported by the LDCF was the briquette production initiative. These briquettes are manufactured from solid waste that will be collected from the public and private waste disposal facilities. The initiative provides permanent and decent employment opportunities to women and youth. The briquettes are disseminated to the targeted local communities to minimize wood charcoal utilization in both urban and rural areas and hence reduce the deforestation phenomenon which is currently a big challenge in Burundi. The pilot has shown promising results and is now ready for scale up as part of the new LDCF intervention. This is one of many new ideas that could come up as part of the Climathon x Bujumbura and that could be supported by the project.

To promote sustainability by ensuring country and beneficiary ownership, the project is well aligned with national, provincial and district development and adaptation priorities. This ownership and buy-in will further be promoted throughout project development and implementation, through ongoing participatory consultations and stakeholder engagement. The project also builds upon previous and ongoing projects in the area/sector, working with stakeholders and partners to address gaps, avoid redundancy and promote complementarity. Furthermore, project sustainability will be enhanced through the activities in Component 1, which will build institutional and technical capacity; facilitate development and land-use planning, as well as the creation of flood management strategies; update current hydrological networks and early-warning systems to improve resilience after project completion. The sustainability of investments into EbA and protective infrastructure in Component 2 lies on the engagement of communities through the LIPW scheme, which also includes long-term commitment to maintenance efforts after the project ends and does not require additional public funds. As part of Component 3, communities are provided incentives and support for livelihood options contributing to the watershed's resilience and building on the synergies between the urban/peri-urban areas of the watershed with rural ones, thus promoting self-reliance and long-term resilience. The project promotes communication and knowledge management tools and technologies as a cross-cutting activities. The knowledge management and M&E interventions aim to capture and institute the lessons and results of the project for scaling up in the future. As such, the model of watershed management can be used in other provinces and communes to achieve the targets and results laid out in the government's climate-related plans and strategies.

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- [18] Microfinance for Ecosystem-based Adaptation: Options, costs and benefits, UNEP, 2013.
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1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

Specific site locations are not decided at this stage and will be agreed upon during the programme preparation.

Table 1. Project locations with geo-referenced information

Site	geonames.org ID	Brief description
Bujumbura Province	7303940	Capital and Province in the central part of Burundi
Bujumbura Mairie	422233	Province in the South of Burundi





Fig. 4 : Administrative provinces targeted by the project

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Indigenous Peoples and Local Communities Yes

Civil Society Organizations Yes

Private Sector Entities Yes

If none of the above, please explain why: No

In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement.

The PIF development started with a consultation between the GEF OFP and the GEF Agencies at which UNDP was asked to design an intervention addressing the climate vulnerabilities of the Ntakangwa watershed. The development of the PIF was undertaken through a close collaboration between the Ministry of Environment, Agriculture and Livestock (MINEAGRIE) and UNDP. The PIF preparation took into consideration stakeholder perspectives based on field experience in parts of the Ntakangwa watershed where IGEBU conducts activities as part of the LDCF project “Community based climate change related disaster risk management”. UNDP undertook a mission to Bujumbura and the Ntakangwa watershed in November 2019 to meet with MINEAGRIE and IGEBU staff and visit communities affected by flood and erosion in the Ntakangwa watershed. Communities and local authorities of the following localities were visited:

- Mutanga Sud and Mugoboka (districts in the city of Bujumbura): local authorities and riverine populations at risk from flood and erosion;
- Kanyosha Haut (commune of Nyabiraba) and Rushubi (commune of Isare): local authorities hosting and maintaining hydrometeorological equipments in the Ntakangwa watershed;
- Kayoyo (commune of Mugongo-Manga) and Kibuye (commune of Isare): rural communities of the Ntakangwa watershed involved in land restoration activities.

Following the mission, Climate-KIC facilitated an initial discussion with Impact Hub Bujumbura to collect information on the startup ecosystem in Burundi and the possibility of organizing a Climathon (Climathon x Bujumbura) to engage entrepreneurs and innovators. In the context of COVID-19, no wider stakeholder consultations were possible in 2020. The stakeholders and their respective contributions and roles in the project (*See Table 2*) will be confirmed during the PPG phase, through a participatory approach with stakeholder consultation and validation for all major activities. The project includes provisions for stakeholder engagement throughout implementation and a stakeholder engagement plan will be prepared during the PPG to guide the implementation.

Table 2: List of stakeholders and their possible contributions and roles in the proposed project.

Stakeholder name - institution	Responsible Ministry	Institutional Mandate	Participation in the project
Ministry of Environment, Agriculture and Livestock (MINEAGRIE)	Ministry of Environment, Agriculture and Livestock	National GEF Focal Point	Overall coordination of activities; Ensure coordination among ministries involved in the project
Ministry of Interiors Affairs and Local Development	Ministry of Interiors Affairs and Local Development	Technical support and collaboration with the	Provide inputs on local development planning and budgeting.

	al Development	(MINEAGRIE)	
IGEBU	(MINEAGRIE)	Meteorological, agro meteorological observation Climate and weather forecasting	Agro-meteorological observation, development of seasonal forecasts and agricultural calendars, support training on climate information.
ISABU	Ministry of Environment, Agriculture and Livestock	Agricultural extension services	Support the development of agriculture interventions through the food transformation units.
Woman and Young Associations (including AFAB)	Civil society	Awareness, supervision and training of women farmers	Awareness raising Project beneficiaries Replication of project lessons
Universities and research centers	Ministry of National Education	Research and Development	Contribute to data collection and weather monitoring system as well as agriculture practices, educate youth that could be involved in the green entrepreneurship promoted in the project.
Bujumbura Mairie & Bujumbura Province authority representatives	Provincial & communal & communities of Bujumbura Mairie & Bujumbura province	Representation, integration and coordination of activities by all decentralized ministries	Facilitate the implementation of the activities at the local level, link with beneficiaries in the target communes and localities
MFIs	Ministry of Finance and Economic Development Planning	Partner with vulnerable farmers	Improve the access to micro-credits and micro insurance for MSEs
Media	Ministry of Transport, Post and Telecommunication	Communication, awareness raising and knowledge dissemination	Communicate on the results of the project and support the mainstreaming of the activities
Impact Hub Bujumbura		Link to the startup community, training and event organization	Organize the first Climathon x Bujumbura in October 2020 during the project preparation, link the project to the startup community

As GEF focal point, the MINEAGRIE will facilitate the project preparation process including organisation of preparatory inception, consultation /validation meetings, support consultants with key information and views that are critical for finalising the UNDP-GEF/LDCF compliant project document. The MINEAGRIE will also support with the securing of co-financing letters.

The MINEAGRIE will commence a comprehensive consultation process involving government actors (head of state's office, environment, finance and planning bodies, sector and sub-national bodies, political parties and parliament, national statistics office and judicial system), non-governmental actors (civil society, academia, business and industry, general public and communities, and the media) and development actors.

3. Gender Equality and Women's Empowerment

Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).

In order to integrate gender concern during the formulation of the project document, special care will be given to consult with and engage women groups and representatives during the different consultations and workshops that are planned to take place during the PPG phase. The screening of social and environmental safeguard risk identified management measures to ensure that proper assessment and analysis is conducted during project development. Vulnerability and risk assessment particularly of women headed households will be conducted to identify the roles, needs, priorities and differences among men and women involved as part of the project. From this consultative exercise will raise a proposition of strategy to mainstream gender in adaptation actions. Moreover, a gender analysis and gender action plan will be used to further refine the activities and to develop gender-sensitive indicators and targets for the project. In addition, national experts on gender will be included in stakeholder consultations and form part of ongoing project management to ensure that context-specific gender considerations are mainstreamed throughout the project. The GEF policies, standards and guidelines on gender equality will be applied throughout development and implementation of the proposed project.

The proposed activities already promote gender equality, women's rights and the empowerment of women in several ways. Activities have been designed taking into account that (i) women's household roles should be considered in any interventions concerning natural resource management, land-use planning and decision-making, (ii) gendered division of labour needs to be understood prior to the introduction of any livelihood interventions; and (iii) women need to have access to, and control over, ecosystem goods and services. The integrated watershed management planning processes will promote women's participation and identify watershed's development strategies benefiting vulnerable populations, including women. This document will ensure that watershed development activities identified trickle down to women beneficiaries of the interventions proposed in component 2 and component 3. The market analysis (component 3) feeds the integrated watershed management processes and will actively involve women in identifying EbA interventions and green entrepreneurship opportunities that will support them in safeguarding the watershed's resources and promoting their economic development. Outcome 3 will also benefit women by ensuring that more than 65% of the beneficiaries of trainings and interventions are women and youth.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment? Yes

closing gender gaps in access to and control over natural resources; Yes

improving women's participation and decision-making; and/or Yes

generating socio-economic benefits or services for women. Yes

Will the project's results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Will there be private sector engagement in the project?

Yes

Please briefly explain the rationale behind your answer.

This project includes several entry points for private sector engagement with its specific focus on small and medium enterprise for green entrepreneurship and agri-food processing as well as the micro-finance sector. Most of the private sector engagement will occur as part of Component 3 as a result. As mentioned earlier, the specific focus on entrepreneurship is meant to encourage business and startup creation providing innovative solutions for urban/peri-urban resilience and adaptation. Those will be explored by connecting with Burundi's startup ecosystem and where possible attract external investment for incubation and acceleration of promising ideas. UNDP has launched Accelerator Lab facilities in several locations across Africa and other funds are in place to provide support for incubation and acceleration of innovative ideas, including for climate change adaptation and resilience. The urban focus of the LDCF intervention will make it easier to connect with innovators in Bujumbura. UNDP has initiated contact with Impact Hub Bujumbura to connect with this group of stakeholders often underutilized in UNDP's projects, the youth and women, in particular those with higher education who have difficulties finding opportunities in innovative technology development matching their ambitions and expectations. The organization of Climathon x Bujumbura with Impact Hub Burundi aims to close this gap and initiate a concrete consultative process with the startup community and create greater engagement and investment in climate change adaptation solutions by the private sector.

The support to agri-food processing is meant to create value for agricultural products and attract investments and business development to diversify options beyond traditional on-farm rural-based employment. The micro-finance sector will complement this effort with specific derisking measures for micro-finance and micro-insurance products. The project will aim to bring together MFI and entrepreneurs who can greatly benefit from those services and hedge their risks associated with climate change impacts on their activities.

5. Risks to Achieving Project Objectives

Indicate risks, including climate change, potential social and environmental risks that might prevent the Project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the Project design (table format acceptable)

Risks	Categories	Risk Mitigation Measures
<i>If there is Low commitment from local and national authorities, there will be low community mobilization and participation leading to low ownership and sustainability of project results by local actors</i>	Organizational P=2 I=3	The project will fully engage targeted institutions and local communities for the implementation of the landscape restoration activities, which is essential to the long-term sustainability of the LDCF investment. The approach has been used in the previous LDCF project and has proven successful, probing neighbouring communes to request similar partnership arrangement to restore hills of the Ntahangwa watershed.
<i>If there is political instability, project actors will not be able to fully perform their role, which may hamper or slow down the implementation of the activities</i>	Political P=3 I=3	Capacity building activities will be organized for partners to enable them to adapt to changes to project environment and risks. Moreover, the UN is actively engaged in supporting the dialogue at the national and regional level.
<i>If Women and youth are not fully involved in the project's activities, there will be likelihood that needs specific to the shall not be considered during project implementation</i>	Strategical P=2 I=3	The component 2 will have a strong focus on women and youth with the prioritization of support for project development provided for this category of the population.
<i>Vulnerable populations are not willing to engage in entrepreneurship</i>	Strategical: P=2 I=4	Awareness raising and specific incentives through micro-finance institutions will be necessary to attract investment and entrepreneurship.
<i>If MFIs are not willing to provide micro-credits and micro-insurance for new businesses, community members will not be interested in engaging in small businesses thus, increasing their dependence on natural resources for livelihoods</i>	Financial P=3 I=3	The activities under this output will first raise awareness of MFIs on these benefits. It will also financially support the access of entrepreneurs to micro-credit (by insuring the MFI in case the entrepreneur is not able to reimburse) and to micro-insurance (by subsidizing the initial payments) and therefore reduce the initial reluctance of MFI to invest in MSEs. The project will conduct awareness raising activ

		ities to promote the benefits of engaging in private sector and working towards adding value to agricultural products. The awareness will also be raised through the sharing of the success of the 40 entrepreneur associations supported with the output 3.1. In addition, the selection of beneficiaries will be conducted on a voluntary basis to ensure the willingness of the participant to take the risk of starting a new business.
<i>Unexpected disasters or health crisis (e.g. COVID-19, malaria epidemics, climate-related disaster) causes lasting disruptions to the project implementation and could jeopardize the intended results of the project.</i>	Organizational P = 3 I = 4	The disruptions caused by the COVID-19 proved dramatic world-wide and impacted Burundi as well as many of the UNDP-GEF projects. As a result of this crisis, UNDP developed strategies and allocated resources to minimize or mitigate impacts on project activities. As part of the PPG, UNDP will identify mitigation measures and specific considerations to ensure that the project is fit-for-purpose should the COVID-19 crisis linger on or new situations cause disruptions of the same nature.
<i>Non-compliance with UNDP policies or misuse of resources disrupt the implementation of the project.</i>	Financial P = 2 I = 4	UNDP enforces strong financial safeguards to limit its exposure to financial risks. This includes regular assessments of implementation partners and project audits to determine appropriate financial management procedures that ensure the highest level of fiduciary responsibility.
<i>Flood protection measures and land restoration activities, while they are meant to address issues related to climate factors, are also by nature highly sensitive to climate change and could fail to address those issues correctly if not designed properly.</i>	Technical P = 3 I = 4	Climate change is likely to affect the infrastructures constructed as well as the livelihoods improved as part of the project. Project activities that are particularly sensitive to climate conditions will be carefully scheduled taking into account weather forecast. This risk will be assessed as part of an Environment Safeguard Management Framework during the PPG to help determine appropriate management measures for this risk (e.g. ESIA).
<i>Prolonged economic slowdown and supply chain disruptions may lead to increased costs and av</i>	Financial P = 3 I = 3	During the PPG phase, adequate budgetary provision will be made to accommodate and price increases and achieve maximum efficiency in sou

<i>Availability of outsourced services and equipment</i>		ricing of materials and services, drawing on local and regional options where possible, to avoid delays in supply.
<i>Local and international travel restrictions may lead to disruptions in project implementation and lack of availability of technical expertise</i>	Organizational P = 3 I =2	<p>Measures to avoid disruptions are already used in other UNDP project and will be considered for this proposed project as part of the PPG. They include the use of safe transportation arrangements, social distancing, use of PPE and hand hygiene to limit risks of transmission.</p> <p>Wherever possible, external expert inputs should be locally-or regionally-sourced to limit the disruptions that travel restrictions may present. However, where the services of off-continent experts cannot be substituted for with national or regional capacity, adequate budgetary provision will be made to enable effective virtual engagement, and adequate time must be built into contracts to accommodate the greater time margins required to offset the inefficiencies associated with remote working conditions.</p>
<i>Difficulties of implementing community engagement activities due to COVID-19 restrictions</i>	Organizational P = 3 I =3	Community consultations will comply with government guidelines and UNDP-CO guidelines. Teams for field visits and consultations will be small, and they will likely meet and consult with small group sizes. Additionally, COVID protocol will be developed and followed, such as testing, and supply of sanitizer and masks. In any case where either party is not comfortable to engage in discussions, it will not proceed. As much as possible, remote connections will be sought, for example via local government offices visiting communities.

6. Coordination

Outline the institutional structure of the project including monitoring and evaluation coordination at the project level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.

The project will be executed by the Ministry of Environment, Agriculture and Livestock (MINEAGRIE). The MINEAGRIE will coordinate and implement project activities and ensure the engagement of relevant line ministries/government entities responsible for rural development, public infrastructure, agriculture and agri-food processing, water and disaster risk reduction, youth and women as well as relevant rural communes, technical agencies and technical organizations (including CSOs and the private sector). A dedicated Project Management Unit (PMU) will be established to manage day-to-day activities of the project. The PMU will be also responsible for reporting and monitoring for the effective use of the GEF resources. A Programme Steering Committee will provide programme oversight and will be chaired by the MINEAGRIE with the PMU acting as secretariat of the meeting. Exact arrangement responsibilities and structure of the PMU and Steering committee will be confirmed during the PPG.

Independently from the PMU, UNDP as the GEF agency will provide an oversight and quality insurance role to the project with support from UNDP at country, regional and headquarter levels Country offices. The quality assurance role supports the Steering committee and PMU by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. A Harmonised Approach to Cash Transfers (HACT) Micro Assessment will be carried out during the PPG to determine the government's capacity rating to handle cash transfers from UN entities. Based on findings of the HACT Assessment, the means through which payments and implementation of activities takes place will be decided during project development. Options for augmenting government capacity, including the identification of a third-party service provider, will be further explored during project development. No DPC will be included in this project.

The proposed project will build on the results and experience of other LDCF projects implemented or under implementation in Burundi. This includes:

- The UNDP-LDCF project "*Community based climate change related disaster risk management*" (2016 – 2020): the project is coming to an end in December 2020, it contributed to reducing the vulnerability of smallholder farmers to climate change impacts in 5 provinces (Kirundo, Makamba, Rumonge, Bujumbura Rural and Bujumbura-Mairie). The proposed LDCF project will build on the results achieved in Bujumbura Rural and Bujumbura-Mairie where the Ntangani watershed is situated. On the assumption that watershed issues cannot be resolved in isolation, the project aims to achieve long-lasting adaptation benefits through evidence-based integrated watershed management. Unlike the previous intervention, this integrated approach allows solutions taking into account areas of the watershed with very different dynamics and priorities at the broader landscape level, as is the case between the urban areas and the peri-urban/rural areas of the watershed. The project will provide specific tools and incentives to stimulate land use and livelihood strategies conducive to watershed resilience, flood and erosion protection, and climate resilience. The terminal evaluation of the ongoing UNDP-GEF project is due end of 2020, it will be used to inform the preparation of the project document.
- the AfDB-LDCF project "*Enhancing Climate Risk Management and Adaptation in Burundi*": The project ended in 2019 and built the basis of the climate information system used by the IGEBU to collect hydrogeological and climate data and information in Burundi. The proposed LDCF project will use and build on this climate information system and use lessons learned and knowledge generated by the AfDB project to augment the modeling capacity of staff at the IGEBU.

- The FAO-LDCF project “Natural landscapes rehabilitation and Climate Change Adaptation in the provinces of Bujumbura and Bujumbura Mayor through a Farmer Field School approach” (2019-2022): the project aims to address climate-related vulnerabilities of smallholder farmers and the agricultural sector through (i) the application of climate smart agriculture for farmers and agro-sylvo-pastoralists, (ii) decision making support and extension services through a Farmer Field School approach, (iii) support for detailed assessments on natural resources use and climate risks; and (iv) piloting an ecosystem-based adaptation solution for resilient livelihoods by restoring and collectively managing forests and strengthening agrobiodiversity. Both projects are/will be executed by the Ministry of Environment, Agriculture and Livestock. Like the proposed LDCF intervention, the FAO project focuses on the provinces of Bujumbura and Bujumbura Mairie, but the sites are situated mostly outside of the Ntakangwa watershed, as decided by the government to avoid duplication of efforts. Opportunities for cooperation between both projects will be numerous as the proposed LDCF can use the results and approaches in the FAO project to (a) inform the development of the integrated watershed management plan for the Ntakangwa watershed (Output 1.3), (b) help identify opportunities to improve agricultural value chains as part of the market analysis (Output 3.1) and (c) adapt some of the EbA solutions to be used in the Ntakangwa watershed.

7. Consistency with National Priorities

Is the Project consistent with the National Strategies and plans or reports and assessments under relevant conventions

Yes

If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc

As a Least Developed Country (LDC), Burundi is eligible for the Least Developed Countries Fund (LDCF) managed by GEF. Burundi has ratified the Climate Change Convention in 1997 and is now a party to the United Nations Framework Convention on Climate Change (UNFCCC). Burundi has also ratified the Kyoto Protocol in 2001. As required by the UNFCCC, Burundi prepared the first National Communication in 2001. The country already submitted to UNFCCC Initial and Second National Communications (INC in 2001 and SNC in 2010). A number of strategies and development plans have already been developed at the national level, but the extent of climate considerations remain limited. The government has limited capacities to integrate climate change adaptation into policies and the impacts of climate change are not always understood and efficiently considered.

Some of the relevant strategies and plan with that regard include:

§ NAPA: Burundi has submitted its NAPA in 2010 to identify where the national priorities for adaptation were identified and classified according to the vulnerability to climate risks. The project will promote the following adaptation solutions identified as part of the NAPA, including:

- Improvement of seasonal early warning climate forecasts
- Set up erosion control mechanisms in sensitive areas
- Establish and protect strategic buffer zones in Lake Tanganyika floodplain
- Identify and popularise improved techniques of use of wood and renewable new energies
- Control the river dynamics of watercourses and torrents in Mimirwa, including the city of Bujumbura
- Train and inform decision makers and other actors, including local communities, on the methods of adaptation to climate variability

§ Vision 2025: This document provides a long-term planning tool that guides policies and strategies at the national and local level for a sustainable development. In this framework six challenges have been identified, in particular the project will respond to:

- o Challenge 2: Control population growth and food security
- o Challenge 4: Diversify and promote a healthy and competitive economy

§ Burundi National Development Plan 2018-2027: This document was adopted in June 2018 and describes the general situation of the country and outlines the main strategic orientations for making Burundi an emerging country by the year 2030. One of the five strategic directions laid out in the plan that is relevant to this project focuses on “ensuring sustainable management of the environment, mitigate climate change and improve land use planning”.

§ UNDAF (2019-2023): This document approved in 2019 guides the actions of all UN agencies in Burundi. The project will contribute to UNDAF Outcome 4, which focuses on increasing resilience of vulnerable populations to the impact of climate change, and UNDAF Outcome 3 on empowerment of women, youth and vulnerable groups.

§ Intended Nationally Determined Contribution (INDC, 2015): The INDC identified water and agriculture as some of the main areas where climate change is expected to have an impact – as have the LDCF project –, together with the energy sector, health, landscapes and terrestrial ecosystems.

§ CSLP II: This framework aims at promoting growth and reducing poverty. The framework has four axes: (i) Strengthening the rule of law, consolidating good governance and promoting gender equality; (ii) Transformation of the Burundian economy for sustained growth and job creation; (iii) Improving the accessibility and the quality of basic social services and strengthening the basis of social protection; and (iv) Space and environment management for sustainable development. The LDCF project will contribute to these axes by supporting vulnerable populations to face climate change and drive them towards improved livelihoods.

§ The National Investment Plan for Agriculture (PNIA) for 2012-2017 is a national plan that drives investments in Agriculture in a coordinated way for public and private as well as national and international financing and identifies the priorities for the agricultural sector in Burundi. Four programmes have been identified to achieve the objective of the PNIA: (i) Sustainable growth in production and food security, (ii) Professionalization of producers and promoting innovation, (iii) Developing value-chains and agri-business, and (iv) Strengthen public institutions. The activities of the project will directly support the attainment of the four programmes through the importance given to the improvement of the agricultural sector.

§ Intended Nationally Determined Contribution (INDC, 2015): The INDC identified water and agriculture as some of the main areas where climate change is expected to have an impact – as have the LDCF project –, together with the energy sector, health, landscapes and terrestrial ecosystems. The second NDC will be updated in 2020 with the support and commitment of UNDP through the UNDP Climate Promise. During the project preparation, UNDP will ensure full alignment with the revised NDC.

UNDP supports the development of Burundi's National Adaptation Plan and Nationally determined contributions (NDCs). Both documents are currently under development and due for completion and approval in 2021. The proposed project is built on the national strategies presented above and which contributes to the NAP and the NDC. Once the NAP and the NDC are approved, the proposed project will include considerations on how it supports and is consistent with those documents.

8. Knowledge Management

Outline the Knowledge management approach for the Project, including, if any, plans for the Project to learn from other relevant Projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

The project will consider the GEF approach to knowledge management during its design to ensure that knowledge from the project is used for better and lasting impacts. This is especially important for a country like Burundi, where knowledge is limited but essential to inform the new strategies and policies needed for resilient development and build on best practices for replication and scaling up of initiative. This project will ensure that knowledge generation and services contribute to resilience building through the landscape restoration solutions proposed.

The project will ensure that information and knowledge accumulated within the project will be codified and documented for sharing and replication efforts. It will do this through annual rigorous project implementation review exercises, mid-term and final project review, as well as publication of knowledge papers and communication pieces. As per its normal practice, UNDP will create a webpage for the project where relevant knowledge products and services can be accessed and shared.

Knowledge management activities and practices will be promoted across all components. Some of the activities proposed by this project build on the knowledge built during previous LDCF intervention, in particular the project on community-based climate change related disaster risk management, which has already accumulated significant lessons learnt and best practices through its work on afforestation, anti-erosion measures and flood control. Other community aggregations such as youth and women's organizations and the startup community will be used as important platforms for awareness raising, knowledge dissemination, business development and practice replication and scaling. The project will collate and use available information (generated by this project and others) and convert it into materials of learning for trainers and CBOs. Materials thus produced will be shared under an appropriate variant of the open source Creative Commons license. Specific indicators will be developed during PPG stage to measure and assess the impact of knowledge management as part of the project.

9. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification*

PIF

CEO Endorsement/Approval MTR

TE

High or Substantial

Measures to address identified risks and impacts

Provide preliminary information on the types and levels of risk classifications/ratings of any identified environmental and social risks and potential impacts associated with the project (considering the GEF ESS Minimum Standards) and describe measures to address these risks during the project design.

At PIF stage, the overall risk for the project is High. The identified risks will be revised based on further assessment and information gather during project formulation.

To meet the SES requirements, at the PPG stage, the following will be prepared:

- (i) ESMF with FPIC procedures (as confirmed)
- (ii) comprehensive Stakeholder Engagement Plan
- (iii) Gender Analysis and Gender Action Plan
- (v) project level GRM (draft outline/TOR)
- (vi) initial FPIC consultations (as feasible and per the SES)

An ESIA/ESMP will be prepared early in project implementation, prior to the start of any activities that could cause harm.

Supporting Documents

Upload available ESS supporting documents.

Title

Submitted

PIMS 5879 LDCF_Burundi_PRESESP_23092020 final (1)

Part III: Approval/Endorsement By GEF Operational Focal Point(S) And Gef Agency(ies)

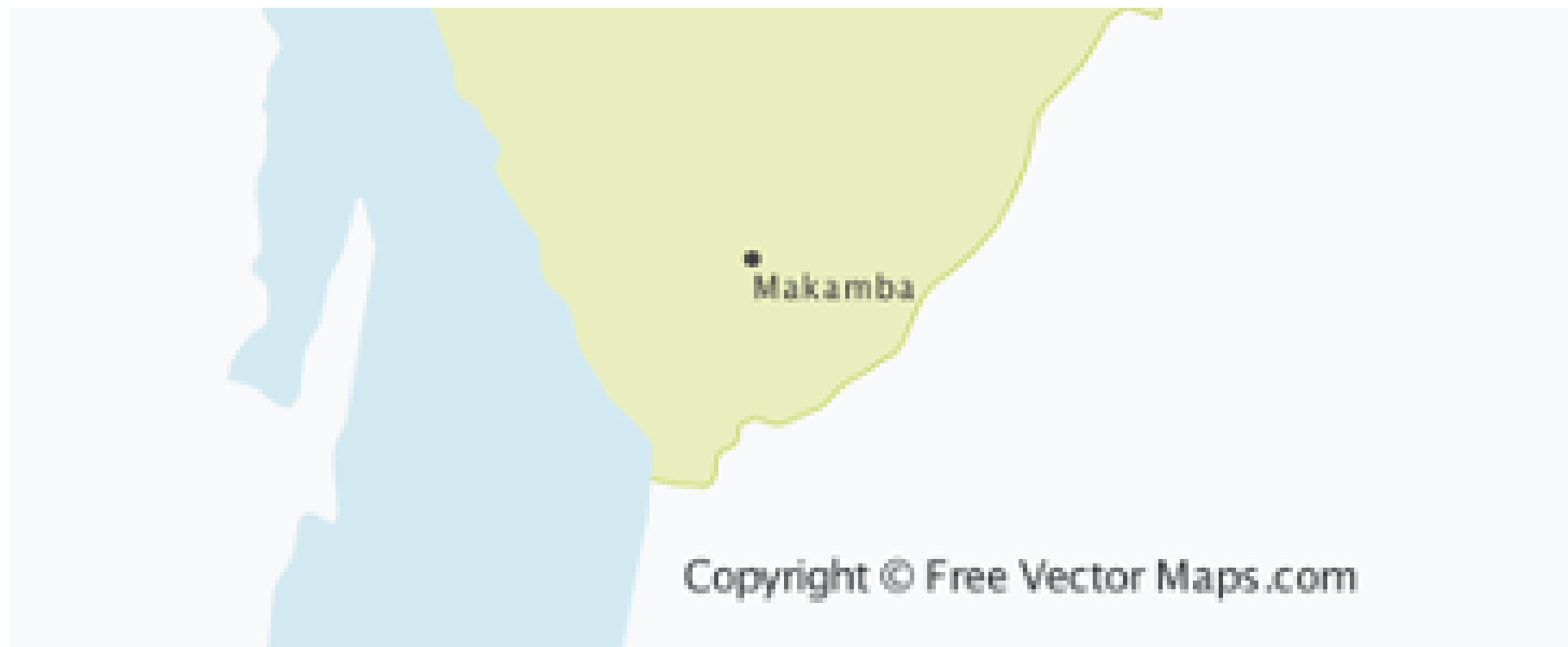
A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter with this template).

Name	Position	Ministry	Date
Ndorimana Emmanuel	GEF Operational Focal Point and Permanent Secretary	Ministry of Environment, Agriculture and Livestock	11/12/2019

ANNEX A: Project Map and Geographic Coordinates

Please provide geo-referenced information and map where the project intervention takes place





Administrative provinces targeted by the project