**REQUEST FOR CEO ENDORSEMENT**
**PROJECT TYPE: FULL-SIZED PROJECT**
**TYPE OF TRUST FUND: LDCF**

For more information about GEF, visit TheGEF.org

## PART I: PROJECT INFORMATION

| Project Title: Community based climate change related disaster risk management in Burundi | | | |
|---|---|---|---|
| Country: | Burundi | GEF Project ID:[1] | 4990 |
| GEF Agency: | UNDP | GEF Agency Project ID: | 4922 |
| Other Executing Partner(s): | IGEBU | Submission Date:<br>Resubmission Date: | May, 2014<br>Oct. 20, 2014 |
| GEF Focal Area (s): | Climate change | Project Duration (Months) | 48 |
| Name of Parent Program (if applicable): | n/a | Agency Fee ($): | 871,500 |

### A. FOCAL AREA STRATEGY FRAMEWORK[2]

| Focal Area Objectives | Expected FA Outcomes | Expected FA Outputs | Trust Fund | Grant Amount ($) | Co-financing ($) |
|---|---|---|---|---|---|
| CCA-1 | Outcome 1.1: Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas | Output 1.1.1: Adaptation measures and necessary budget allocations included in relevant framework | LDCF | 700,000 | 1,000,000 |
| | Outcome 1.2: Reduce vulnerability in development sectors | Output 1.2.1: Vulnerable physical, natural and social assets strengthened in response to climate change impacts, including variability | LDCF | 4,000,000 | 6,000,000 |
| CCA-2 | Outcome 2.1: Increased knowledge and understanding of climate variability and change-induced risks at country level and in targeted vulnerable areas | Output 2.1.1: Risk and vulnerability assessments conducted and updated | LDCF | 2,300,000 | 11,000,000 |
| CCA-3 | Outcome 3.1: Successful demonstration, deployment, and transfer of relevant adaptation technology in targeted areas | Output 3.1.1: Relevant adaptation technology transferred to targeted groups | LDCF | 1,300,000 | 8,000,000 |
| | | Subtotal | | 8,300,000 | 26,000,000 |
| | | Project Management cost | LDCF | 415,000 | 1,000,000 |
| | | **Total project costs** | | 8,715,000 | 27,000,000 |

[1] Project ID number will be assigned by GEFSEC.
[2] Refer to the Focal Area/LDCF/SCCF Results Framework when completing Table A.

**PROJECT FRAMEWORK**

| **Project Objective:** Provincial, communal services and local communities capacitated on disaster risks preparedness and responses management to ensure long term and sustainable emergency and reconstruction phase in Bugasera, Mumirwa and Imbo Lowlands' regions, Republic of Burundi | | | | | | |
|---|---|---|---|---|---|---|
| **Project Component** | **Grant Type** | **Expected Outcomes** | **Expected Outputs** | **Trust Fund** | **Grant Amount ($)** | **Confirmed Co-financing ($)** |
| 1. Strengthening communities preparedness in face to climate related disaster risks | TA | A community-based early warning system established and operationalized as a platform for climate-related disaster risk reduction and for guiding the implementation of climate change adaptation activities | 1.1. Set up the functional structure of the Community Based Early Warning System on climate change related risks in Bujumbura Rural, Kirundo and Makamba Provinces | LDCF | 1,839,450 | 11,000,000 |
| | INV | | 1.2. Upgrading the hydro meteorological network and improving capacity to generate real-time information weather and data series for information dissemination to target communities | | | |
| | TA | | 1.3. Set up an effective and efficient communication and dissemination system to reach all end users | | | |
| 2. Resilience and response capacity of local communities strengthened | TA | Communal services, technical staff departments integrate cost-effective adaptation investments and options into sectoral and local development planning instruments, taking into account weather variability and climate change projections | 2.1. Gender and climate vulnerability assessment to guide the development of a local climate change response | LDCF | 1,460,207 | 1,000,000 |
| | | | 2.2. Local government decision makers, technical staffs and communities assisted with training on proper use of climate risks tools and sensitized on climate changes impacts to support the identification of cost-effective adaptation investments options and adjust plans, programmes and projects given new climatic experiences | | | |
| | | | 1.1. Provincial & Municipal development plans and annual budgets reviewed and updated to integrate effective climate risk management to support more climate-smart investments | | | |

| **Project Objective:** Provincial, communal services and local communities capacitated on disaster risks preparedness and responses management to ensure long term and sustainable emergency and reconstruction phase in Bugasera, Mumirwa and Imbo Lowlands' regions, Republic of Burundi | | | | | | |
|---|---|---|---|---|---|---|
| **Project Component** | **Grant Type** | **Expected Outcomes** | **Expected Outputs** | **Trust Fund** | **Grant Amount ($)** | **Confirmed Co-financing ($)** |
| 3. Effective response to climate risk within a programme of community resilience | INV | Provide necessary investments to protect infrastructures and local livelihoods from climate impacts and build the socio-economic resilience of crisis-affected population | 3.1. Realization of 300 ha of vegetated ditches erosion control in Bugabira, Busoni and Kirundo-rural to protect and preserve communities lands from higher risk of pluvial top soil erosion | LDCF | 5,000,343 | 14,000,000 |
| | | | 3.2. Stabilization works undertaken in Ntahangwa and Gaseyni Rivers to reduce the risks of flooding landslides in Bujumbura City | | | |
| | | | 3.3. Accompanying measure to strengthen the food security of vulnerable households facing to recurrent droughts | | | |
| | | | Subtotal | | 8,300,000 | 26,000,000 |
| | | | Project management Cost (PMC)[3] | | 415,000 | 1,000,000 |
| | | | **Total project costs** | LDCF | 8,715,000 | 27,000,000 |

**B. SOURCES OF CONFIRMED CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME ($)**
Please include letters confirming co-financing for the project with this form

| **SOURCES OF CO-FINANCING** | **NAME OF CO-FINANCIER** | **TYPE OF CO-FINANCING** | **CO-FINANCING AMOUNT ($)** |
|---|---|---|---|
| Recipient Government | IGEBU through the Ministry of Finance | In-kind | 500,000 |
| Recipient Government | Ministry of Finance | Grant | 14,500,000 |
| Other Multilateral agency | World Bank through the Ministry of Finance | Grant | 4,000,000 |
| GEF Agency | UNDP | Grant | 8,000,000 |
| Total Co-financing | | | 27,000,000 |

[3] PMC should be charged proportionately to focal areas based on focal area project grant amount in Table D below.

**C. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY**[1]

| GEF Agency | Type of Trust Fund | Focal Area | Country Name/ Global | (In $) | | |
|---|---|---|---|---|---|---|
| | | | | Grant Amount (a) | Agency Fee (b) [2] | Total c=a+b |
| UNDP | LDCF | Climate change | Burundi | 8,715,000 | 871,500 | 9,586,500 |
| **Total Grant Resources** | | | | 8,715,000 | 871,500 | 9,586,500 |

[1] In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table. PMC amount from Table B should be included proportionately to the focal area amount in this table.

[2] Indicate fees related to this project.

**E. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:**

| Component | Grant Amount ($) | Co-financing ($) | Project Total ($) |
|---|---|---|---|
| International Consultants | 272,300 | 500,000 | 772,300 |
| National/Local Consultants & experts | 520,000 | 700,000 | 1,220,000 |

**F. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT?** No

(If non-grant instruments are used, provide in Annex D an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/NPIF Trust Fund).

## PART II: PROJECT JUSTIFICATION

### A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF[4]

**A.1 National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAS, NAPs, NBSAPs, national communications, TNAs, NCSA, NIPs, PRSPs, NPFE, Biennial Update Reports, etc. N/A**

**A.2: GEF focal area and/or fund(s) strategies, eligibility criteria and priorities. N/A**

**A.3 The GEF Agency's comparative advantage: N/A**

**A.4: The baseline project and the problem that it seeks to address:**

*I.1. Country background information*

Located in Central Africa, Burundi is a landlocked country extended on an area of 27,834 km². In the 2008 census more than 8,053,574 inhabitants were recorded, the majority living in rural areas, with a population growth rate of 2.4% per year. The country is divided into 17 Provinces: Bubanza, Bujumbura Rural, Bujumbura Mairie, Bururi, Cankuzo, Cibitoke, Gitega, Karuzi, Kayanza, Kirundo, Makamba, Muramvya Muyinga Mwaro, Ngozi, Rutana and Ruyigi; there are overall 129 communes. From West to East, there are five different areas in the topography of Burundi: Imbo lowlands corresponding to the Western part of Rift Valley, the region Mumirwa with steep slopes, the mountain area, the central plateaus and the lowland of East and Northeast (Figure 1).


[4] For questions A.1 –A.7 in Part II, if there are no changes since PIF and if not specifically requested in the review sheet at PIF stage, then no need to respond, please enter "NA" after the respective question

Principally based on smallholdings, agriculture is the main sector and accounts for 43% of GDP and employs about 90% of the workforce. Most farmers are women. The main staple crops in Burundi are: beans, cassava, sweet potato, banana, and sorghum. Cash crops include coffee, tea plant, and cotton Agricultural exports (mostly coffee, tea, cotton) represent 70-85% of external revenue. Services account for 32% of GDP, with a growth rate of 5.1% in 2010, mainly from the transport and telecommunications sectors (6.9% and 8.8% in 2009 and 2010, respectively). The industrial sector also recorded better growth (5% in 2010, against 3.7% in 2007), mainly from construction, the mining industry and the energy sector. Burundi has considerable mineral deposits, but the exploitation of these resources is hampered by the lack of road, rail and energy infrastructure.

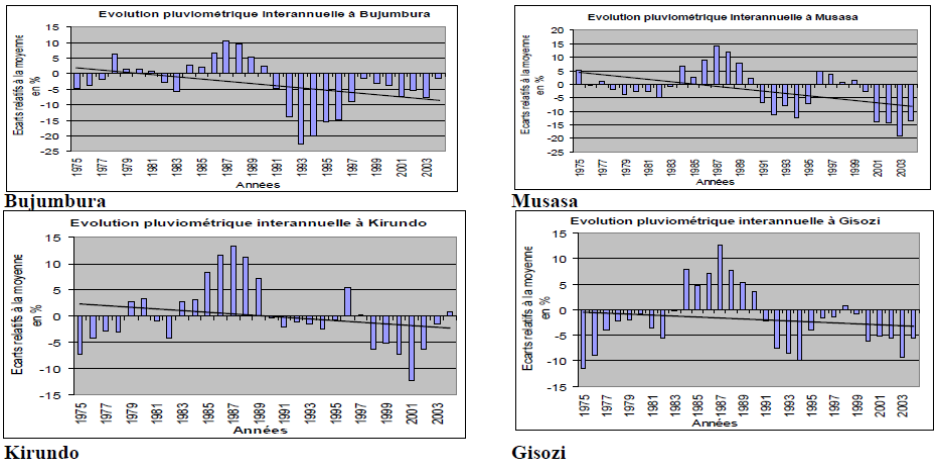
Burundi has emerged from an extremely damaging civil war that lasted more than 12 years. From December 2008, steady progress has been made to restore critical institutions and the country is now overseeing the resettlement and reintegration of thousands of returning refugees and about 150,000 internally displaced persons (IDPs) distributed among 160 camps in the country. The proposed project builds on a number of baseline projects implemented by the Government in the context of disaster risks management and to support the reconstruction phase of Burundi.

Since 2008 Burundi has embarked on extensive economic and social reforms to stimulate growth and regional integration; resulting in progress - albeit slow - in modernizing its economy and administration. According to the World Bank statistics, Burundi's gross domestic product (GDP) is 4% en 2012, with growth estimated to improve to 4.5 percent in 2014. Political stability and the end of the civil war have allowed more aid flows and economic activity has increased. However, despite these achievements, the country remains fragile, particularly in the security domain. It is characterized by an inadequate infrastructure network, a very low human development index, a general lack of capacity, weak governance and high vulnerability to external shocks. The Burundi remains heavily dependent on aid from external donors.

## *I.2. Climate change - induced problem*

Climate models predict extreme weather events in correspondence with an increase in temperature of 1°C and 2°C, combined with alternating 10 years cycle (dry – rainy – dry) rainy sometimes more cyclical episodes of 10 years, from 2010 to 2050. Fluctuations within the same year as we observe them now are expected to continue and even increase. If we consider projection of monthly rain, it appears that variability is very high in October and November and from February to April in Bujumbura and Kirundo, and then it will affect only the high altitude region, Gisozi and Musasa.

Fig. 2: Yearly Rainfall




Change in climate patterns are felt differently in the different natural regions of the country and had diverse impact on anthropic environment. Drought is more prevalent in the northern provinces, especially Kirundo and Muyinga where the situation has been worsening starting in 2000. Drought was so heavy to become a national

disaster as it counted several deaths and environmental refugees because of starvation. Municipalities severely hit are Bugabira, Busoni, Bwambarangwe and Gitobe. According to the Early Warning System and Food Security Monitoring in Burundi (SAP-SSA) managed by FAO, to the Burundi Comprehensive Food Security & Vulnerability Analysis (CFSVA) of WFP[5], and to the Food Security Monitoring System of WFP[6], insecurity still exists today in some parts of the country following the rainfall deficits of the growing season A (i.e.: in 2007, between October and January, a person was dying every day of hunger in Kirundo and Muyinga, despite those regions were considered the country breadbasket before the drought).

Devastating floods remain frequent nowadays especially after excessive rainfall. In the plains of Imbo, some rivers like Kajeke, Dama, Murembwe, Rwaba cause flooding associated with heavy rainfall in the highlands of the Congo-Nile basin. In January 2010 a flood invaded Bujumbura International Airport and blocked the National Road 5 (Figure 3). The rivers Muha and Kanyosha cause regularly flooding, with growing impacts. Floods worsen riverbanks erosion, and their progressive dramatic effects are visible in the town of Bujumbura, especially along main drainage channels crossing from East to West. The riverbanks are in some point devastated, especially along the urban traits of Ntahangwa, Muha and Kanyosha, with impressive damage to private and public infrastructures.

Most of the socio-economic activities are already affected by observed climate change impacts:

- **Agriculture**: The impacts identified on the agricultural sector are the following:
    - A decrease in yield per hectare in both growing seasons A and B on all food crops (except rice) between 1995 and 2001. The most extreme case was the typical wheat whose production has dropped significantly from 1995 to 2005. Yields from season B are overall lower than from season A, as rain season has started earlier in April for more than a decade.
    - A rapid decline in productivity of plantations can also be ascribed to climate variations.
    - Degradation of soil fertility in Bugasera and in the Imbo plain following the rapid deforestation and the prolonged drought 1998-2004.
    - Genetic erosion of traditional species and varieties of sorghum, beans and potato seed observed in several locations because of the disappearance of some cultivars.
- **Livestock**: Analysis carried out on pasture in the Bugasera region indicate that due to reduced rainfall herders were forced to have transhumance and regroup their animals in areas around rivers. In the areas of Imbo Centre and Kumoso early completion of rainy season at the end of April no longer allows forage crops and natural pastures to reach full maturity. Similarly, extreme drought has killed nearly 35% of the animal population between 1998 and 2005, producing a fodder deficit and widespread food crisis for the livestock.
- **Public infrastructure and transportation**: In 1983, 1986, 2006 and 2009 Bujumbura experienced severe flooding due to Ntahangwa river overflow. Those floods have caused enormous losses estimated at about 3 billion BFI, among which the destruction of houses which left many homeless in the Buyenzi neighborhoods in 1983, or the deterioration of equipment of the industrial area, included the destruction of stocks of companies with warehouses in the flooded areas (COGERCO, RAFINA, BRARUDI SEP), and the demolition of the port of Bujumbura.

[5] VAM (2008) *CFSVA Burundi.* World Food Programme. (http://www.wfp.org/content/burundi-comprehensive-food-security-and-vulnerability-analysis-2008)

6 VAM (2013): *Burundi. Système de suivi de la sécurité alimentaire.* World Food Programme. (http://www.wfp.org/content/burundi-systeme-de-suivi-de-la-securite-alimentaire-2013)

Fig 3: Climate change related events in Burundi

Photo 1: Drought in Kirundo, 2005

Photo 2: Water level of Rwegura basin, 2004

Photo 3: Water level of Rwegura basin, 2004

Photo 4: Bujumbura Airport and national road flooded, 11 January 2010

Photo 5: Land slide on the Nyabagere river, 30 March 2011

Photo 6: Land slide on the Ntahangwa river, 27 September 2013

- **Health**: Increases in average temperatures during the rainy season create conditions relatively more favourable to the cycle of transmission and survival of vectors of certain diseases, including malaria, meningitis, measles and cardio-respiratory diseases. Floods cause displacement while destroying infrastructure and reducing the availability of drinking water. The effect of climate change on public health is a direct negative impact.

- **Vulnerable groups**: The impacts of climate change are especially severe on vulnerable groups such as women, youth and the elderly. Women play a very significant role in the country's agro-silvo-pastoral production (97% of the labour force) in Burundi. They take part in farm work and are responsible for market-gardening production and small-scale livestock activities. As regards to forestry production, they take part, as well as men, in production of seedlings, in planting and maintenance of the crops. Women constitute the segment of the population who suffered the most from the interethnic clashes and the socio-political crisis ensued. Mass exodus of men and young people are a common coping strategy which produces social changes and also results in increase of divorces: women become head of household and the only ones to support the needs of the family. Women are consequently likely to suffer more damages from climate risks and have a lower capacity to adapt. Women and children are also largely responsible for collecting water and wood, and other natural resources for use by the household. In the context of Burundi, where only a small percentage of the population has direct access to drinking water, an additional impact of drought is the increased distance to walk for fetching safe drinking water, which in turn limits time and energy for productive – vs. reproductive - activities.

It is anticipated that these impacts will be exacerbated in the near future. Examples of current and possible future impacts and vulnerabilities associated with climate variability and climate change are provided in IPCC WG2

report (2007),[7] which mentions impacts on crops and possible agricultural GDP losses. The report adds that additional risks that could be exacerbated by climate change include greater erosion and deficiencies in yields from rain-fed agriculture, with small-scale farmers being the most severely affected. These impacts will likely cause, among others: loss of incomes, decrease in the quality of life, population displacement and decrease in agricultural production.

**Baseline Projects/initiatives**

*Baseline for Component 1*

Co-financing projects

The LDCF funded project builds on the efforts led by the Government of Burundi to operationalize the Strategy of Disaster Risk Reduction through the establishment of Platforms at national provincial and municipal levels. At the national level, the platform is a permanent forum for coordination, management, implementation and support through programs and activities relating to risk reduction, preparedness and emergency response. It maintains a permanent coordination with all relevant stakeholders, as technical committees established within different ministries, public institutions, provincial and communal platforms, agencies of the United Nations, private sector, civil society and NGOs. In the project target areas, three communal platforms are established in following areas: Busoni and Bugabira (Province Kirundo) and Rumonge (Province of Bururi). These levels report to the provincial level, on its turn coordinated by the national level. The communal platforms are well structured and meet, as needed depending on emergencies and other priorities. Contribution from these platforms to the LDCF financed project is related to the mobilisation of key stakeholders to enable the operationalization of the planned early warning system. **This contribution is estimated to be USD500k** during the 5 years cycle of the project. The LDCF investment will be a perfect complement: it will focus on creating the capacity at community level, as the core element of a civil protection system that is not yet developed and lack roots in the communities (*colline* level). Indeed, it shall be noted that currently the existence of grassroots activities for risk prevention, disaster management and adaptation to climate change is very low.

UNDP/BCPR is supporting the implementation of the Action Plan on Disaster Risk Reduction, Preparedness and Response to Emergencies through a "*Project support to build national capacities*" (2014-2016). The project team is under establishment; and among key activities, it is planned to

- Strengthen the operation and coordination mechanisms of the Provincial Platforms and support the establishment of local committees at collines/hills levels linked to existing communal platforms. Where possible, these local committees will be the vehicle of the community based early warning system to be established under LDCF funding;
- Develop support services to analysis and risk assessment tools: database (DESINVENTAR, DEVINFO, etc.), Geographic Information System and Mapping Systems, strengthening national capacities on methodologies for the evaluation, analysis and mapping of natural hazards. Once establish, this support services will contribute in the climate risks mapping exercise to be undertaken at communes and provincial levels.

Expected contribution from **UNDP: USD500,000.**

LDCF financed project will take advantage of IGEBU's exiting capacities to collect, analyze and disseminate weather and hydrological forecast services. Under the hydrometeorology and agro-meteorology Departments, IGEBU is assuming the management of meteorological and hydrological networks (data collection); centralization, control, processing and publication of data from different observation networks (data management); research and analysis (data analysis). The oldest hydrological station in Burundi is established since 1960. A network of 54 stations was established in 1974 but most of them were destroyed during the civil war (1993-2004). In 2008 a program for reconstructing the network started and currently there are 35 working

stations, of which 5 automatic. Data transmission is done though regular mail by IGEBU focal points or transmitted directly by the automatic stations. All data are stored in an electronic database (Access 2000) at IGEBU. An internal communication system is established for the collection of climate data, and a regional communication system for exchanging data from and outside Burundi (e.g. with the World Meteorological Organization under the "Global Telecommunications System (GTS)". The existing warning system at the IGEBU is based particularly on the daily and seasonal forecasts, as well as assistance to aviation forecasts. The expected co-financing associated with **IGEBU activities is USD 10 Millions** during the 5 years cycle of the project, taking into account all investments related to hydro meteorological and agro-meteorological observation network, maintenance, and functional operations (see attached co-financing letter from the General Director of IGEBU).

However, IGEBU weather forecast service has much room for improvement to support effectively a community-based early warning system:

- ✓ The current coverage of weather, climate and hydrological stations requires improvements, specifically in project target sites where sufficient accurate and relevant information on the potential impacts of natural disasters and climate change information are lacking. The existing warning system at the IGEBU does not show sufficiently harmonized or updated regularly. The weather information system is concentrated around the airport infrastructure (Bujumbura), but neglected the agro- climatic zones risks or major watersheds. Coverage in weather, climate and hydrological stations country is low and most of the existing obsolete;
- ✓ The system of meteorological data collection and diffusion is currently not appropriate to support disaster risks preparedness (incomplete data collection, weak analysis and diffusion). IGEBU has no systems to automatically detect and alert forecasters to severe weather events. These include the algorithms to detect downbursts from radar data, or expert systems, which can alert forecasters to the likelihood of severe weather events based on observational or forecast data;
- ✓ There is a weak communications system that provide information to emergency management authorities (platforms) and local communities with lead times that allow adequate response time for emergency managers to complete preparedness action. IGEBU is lacking sound scientific basis for predicting and forecasting hazards and reliable forecasting and warning systems that operate 24 hours a day;
- ✓ Relevant information on the dynamic nature of hazards and vulnerabilities that arise from processes such as urbanization, rural land-use change, environmental degradation and climate change are not analyzed and made available to local decision-makers, grassroots communities and communal technical services to better plan and sustainably manage the risk of natural disasters.

<u>Other relevant initiatives (non part to the co-financing)</u>

1. The **Burundi branch of the Red Cross** is also a key partner of the different platforms on DRR. The organization has developed – at least in the provinces identified as main target of the present project, Bujumbura rural and Bugasera – an impressive structure with high capillary presence at hill level (around 150 volunteers each hill) and locally-based consistent response mechanisms to assist the most vulnerable families with food and other basic items. The Croix Rouge made available warning system, a megaphone, used to alert population in case of fast onset heavy meteorological events, and ask to households living in areas exposed and vulnerable (for position, type of surroundings, and type of housing) to evacuate. Challenges for the Croix Rouge are currently mainly in communication among the lower levels (colline to commune and vice versa). This powerful and community rooted local capacity shall be supported and reinforced while included in the CB EWS to be set up in the project.

2. In the **Food Security Early Warning System** (Système d'Alerte Précoce et Suivi de Sécurité Alimentaire - SAPSSA) of FAO, panel data are collected in each province, but on only 50/60 families ('ménages repères") across the country. Data collection is conducted with the support of NGOs present in the area, normally CARE and CRS. Data are collected on paper questionnaires, then scanned and sent by email to FAO where data are inserted in database. The instrument is sufficient to provide an orientation, but is not fully reliable

due to the sample size. Some of the indicators can be used as early warning, but mostly with a focus on agriculture (i.e.: pests) or generic danger (i.e.: loosen dogs). In the committee to manage the system, together with FAO stand the Ministry of Agriculture, UNICEF, PAM, CARE, CRS.

3. The **Food Security Monitoring Systems** (FSMS) set up by WFP in collaboration with Ministry of Agriculture has an almost national coverage with data collected in provinces. After beginning data collection with the support of NGOs, capacity building of the Statistic Center as well as of provincial officers (DPAE) of the Ministry has been developed to make the system sustainable. The sample is derived from the Comprehensive Food Security and Vulnerability assessment (6000 families) and reduced to about 3000. The provincial officers twice a year collect data through mobile telephones (Samsung GT-S55701) on which a questionnaire developed through a simple interface (open source software) is loaded via internet, and can be updated in case of change. The telephone, with a GPS, is traceable, even if the SIM card is changed. Interviews are conducted with same households to develop panel data. The data from each filled questionnaire can be saved and sent via Internet (at the cost of 200FBU), they are stored into a database; the service to handle and store data is provided by Google Inc. for an un-pricy sum (less than 50USD per year).
4. It is a good instrument for monitoring food system, aligned to sense indicators observed by WFP globally, as food consumption index, but it would not be effective in early warning. The FSMS is mainly an instrument to gauge indicators as household consumption, which is more capable of registering impact of crisis then alerting on their arrival or immediately registering their occurrence. It is a current project of the FSMS to expand the system to use it for the agricultural surveys that are conducted twice a year, making production data more reliable on a scientific sample and immediately available once collected.

### *Baseline for component 2*

Co-financing projects

Component 2 builds on the efforts made by the Government of Burundi to strengthen local development and urban planning. Planning tools have been developed locally, such as:

(i) The *Master Plan And Development Plan Of The City Of Bujumbura 2025*. Following the civil crisis, the city of Bujumbura, capital of Burundi, was subject to significant demographic pressure, and must have an adequate and updated document of urban planning to organize and guide the urban expansion, and anticipate major infrastructure shortfalls in order to promote a sustainable development. The natural site of the city, the environment and status of land, erosion areas, conflicts with the agricultural world, equipment in outlying areas, the economic role of Bujumbura in the sub-region, are challenges that the planning and programming documents for 2025 must address. The Master Plan is under development and following analysis are undertaken: Urban diagnosis, organizational and financial audits, demographic and socio-economic analysis of the mode of production of land for building, economic analysis. Population p
development prospects, infrastructure needs. Strategic guidance. Develop
and its explanatory report. -up structure; implementation;

Institutional set

(ii) The *Provincial Land Use Management Plans* (SPAT in French) are developed under the support of the World Bank and European Union. They materialize the National Strategy for the sustainable use at Province level and address three key issues (i) national integration, (ii) economic and social development and (iii) protection of natural resources. The SPAT of Kirundo, Bujumbura Rural are under validation by national authorities.

(iii) The *Communal Development Plans* (PCDC in French) is a framework reference for both national and international organizations involved in development, which keeps into consideration environmental strengths and social features of the population involved.

This policy baseline provide a good basis from which to plan for climate change at the local level and will contribute to strengthening the overall capacity of local decision makers and targeted rural communities to

understand climate change risks and their impacts on local development. However, local decision-makers have limited knowledge of climate change impacts or adaptation responses and will not address specifically climate variability and climate change projections in the local development plans. Information, including inventory and mapping, is inadequate and staffs from local councils have limited expertise to internalize climate changes into existing local development plan and budgeting framework. Finally, proper gender analysis of risk is not conducted. This will make less chance to include broadly the concrete risks faced by the population, but also its effectiveness will be hampered, since women are the key agents of integrate communication and informal training in families and communities. The additional funding from LDCF will help facilitate the integration of climate change risk management in the local development plans and in the SPAT by providing skills, support of technical expertise and tools to municipal and provincial officials.

Under the UNDP "Public Administration Reform Project", the establishment of "single access point" is initiated in the first 5 Provinces, followed by the signature of memoranda of agreements between several ministries, to build synergy around the Governor. The single access points will be operationalized in 2014. In addition, negotiations are underway on the adoption of management strategy performance. The UNDP baseline is relevant to the project funded by the LDCF since it provides the mechanism for better coordination and well prepared administration that facilitates the integration of climate risk management into local development processes. The resources allocated to the improvement of public administration are estimated at **1,000,000 USD**, which can be considered a co-financing of the project.

### *Baseline for component 3*

Co-financing projects

After several years of devastating civil war (1993-2000) that had a destructive effect on the economy and infrastructures of the country, Burundi is still a very fragile country. The civil war resulted in the destruction or deterioration of existing facilities; combined with a lack of adequate investment, negatively impact service delivery. As of December 2008, steady progress has been made to restore critical institutions and the country is now in the process of overseeing the resettlement and reintegration of thousands of returning refugees and internally displaced about 150,000 people (IDPs) are distributed in 160 camps in the country.

The development baseline initiatives are contributing to the response of challenges posed by the recovery in Burundi, including climate resilience.

- Current investments from the Government of Burundi made available to target communities a number of plots of lands (about 11.321 plot of land produced in 2013 in 10 different sites in the provinces of Bururi, Bubanza, Kayanza Karusi, Makamba, Muramvya) and granting them with cement and steel panels for the construction of houses. The government will continue to support the Villagisation programme under sectoral budget **and the co-financing from the national budget over the 5 years of this LDCF financed Project will be 4 millions** (see Letter from the Ministry of Finances).

- The UN agencies (FAO, UNDP, WFP, UNICEF) support Programme built, from 2011 to 2013, eight incorporated villages to resettle 5,000 returnees, IDPs and vulnerable residents. The Programme allowed the creation of local coordinating committees for the implementation of the National Strategy, and the strengthening of the capacity of communities to prevent and resolve conflicts. The program improved the delivery of basic social services through training of health personnel and the provision of 12 ambulances. The integrated program also helped 244 women to establish food-processing companies to small scale, which allowed them to generate income. Other activities included 89 labor-intensive projects, which temporarily employed 6530 people, including more than 4,000 ex-combatants. A follow up Programme is under design ("*Assistance to internally displaced persons in Burundi*", (**planned 13 Millions USD-expected co-financing to this GEF funded project 6 millions**) and will focus on socio-economic reintegration and income diversification of IDPs in general and women in particular, gathered in associations, small and medium enterprises and pre-cooperative producers movements, through the development of agricultural and non-agricultural sectors.

However, the currents reintegration Programme is no longer specifically taking into account climate changes issues. This will be a limiting factor for the sustainability of the resettlement strategy. In addition, most of reintegration programmes are intervening in most vulnerable areas. For example, Rumonge and Nyanza Lac Provinces are bordering the Lake Tanganyika where water level varied between 772 - 777 m of altitude since 1929 to date because of the variability of precipitations in the catchment's area. The receding of waters lead to shortages in water available for domestic and agricultural uses affecting crop and livestock production. Between 1998 and 2005, drought caused 35% livestock mortality and a widespread food crisis. These Provinces are also located in Mumirwa natural region's where erosion is felt by the population as being the principal factor of the fall in soil fertility, and consequently of the fall in crop productivity. In this primarily agricultural and strongly populated area, the economic survival of the population is related to the preservation of soil productivity capacity. In this region, any land subjected to precipitations undergoes the phenomenon of erosion, i.e. a degradation of the relief, a modification of the chemical composition of the soil and its structure and loss of the outer soil surface that is wiped off by run-off waters. The loss of the outer soil surface impoverishes the farmed lands, making it less fertile and less productive. Erosion control and soil fertility restoration are urgent needs that require adequate circumscribing both in its form (manifestation) and its content (causes) in order to propose strategies adapted to the real land situation. There is a need to establish structural, systemic, and sustainable support that meaningfully recognizes and addresses climate change challenges into integrated village programme in Burundi.

- The LDCF financed project is also designed to take opportunities of current support provided by multilateral partners (e.g. World Bank, AfDB and the European Union) to address the lack of basic infrastructures in key cities. These investments will greatly improved access to socio-economic infrastructure in urban centers and strengthened existing municipal management systems. ***The co-financing associated to the infrastructure Programme is 4 millions*** (see Letter from the Ministry of Finance). As April 2012, the World Bank Project "Public Works and Urban Management" (targeting Bujumbura, Gitega and Ngozi) supported the completion of at least 27 subprojects. These include: (i) 27 km of urban paved roads, (ii) 10 new covered markets, (iii) 54 classrooms for primary schools and 30 classrooms for secondary schools, (iv) 7 health centers, and (v) 40 kilometers of urban drainage systems. An extension phase of this project (2012-2015) is underway and aims to: (i) the implementation of additional work (14 million U.S. dollars equivalent) that intensify the impact of the project, and (ii) continue to support institutional reforms and municipal management practices and policies that affect the sustainability of investments (1 million U.S. dollars equivalent). However, the effects of climate change will threaten the sustainability of these infrastructures. Bujumbura is located in the lowlands of Imbo, especially identified by NAPA as vulnerable sites. This area gets a lot of torrents arising on the Congo - Nile Mumirwa, which are highly watered and steep. Very disastrous situations erosion characterized by landslides and colluvium and alluvium deposits in the lowlands are constantly observed and are likely to be accentuated by the heavy rainfall due to climate change. This type of destructive erosion particularly affects urban areas, particularly the city of Bujumbura. Torrential rains in the years 1937, 1941, 1950, 1960, 1961-1964, 1983, 1986, 1989 and 1991 have caused regular cuts combined roads landslides and huge damage to infrastructure and flooding the population of the city of Bujumbura. During the night of 9 Feb 2014 torrential rains fell for around 10 hours and caused flooding, mudslides and landslides in five communes of Burundi's capital, Bujumbura. As of 12 Feb two more areas, Bujumbura rural province has been affected: 64 people have been reported dead, of which many were children. There is a concern that more people may have been buried. Over 940 homes have been destroyed and nearly 12,500 people are estimated to be homeless.

  However, the effects of climate change will threaten the sustainability of these infrastructures. Bujumbura is located in the lowlands of Imbo, especially identified by NAPA as vulnerable sites. This area gets a lot of torrents arising on the Congo - Nile Mumirwa, which are highly watered and steep. Very disastrous situations erosion characterized by landslides and colluvium and alluvium deposits in the lowlands are constantly observed and are likely to be accentuated by the heavy rainfall due to climate change. This type of destructive erosion particularly affects urban areas, particularly the city of Bujumbura through which 4 of these torrents. Torrential rains in the years 1937, 1941, 1950, 1960, 1961-1964, 1983, 1986, 1989 and 1991 have caused

regular cuts combined roads landslides and huge damage to infrastructure and flooding the population of the city of Bujumbura. In April 2009, the floodwaters reached the previously unaffected areas, "even moving on a road leading to Bujumbura International Airport.
During the night of 9 Feb 2014 torrential rains fell for around 10 hours and caused flooding, mudslides and landslides in five communes of Burundi's capital, Bujumbura. As of 12 Feb two more areas, Bujumbura rural province has been affected: 64 people have been reported dead, of which many were children. There is a concern that more people may have been buried. Over 940 homes have been destroyed and nearly 12,500 people are estimated to be homeless. Most families have lost everything
These floods affect public and private infrastructures of national economic importance such as the companies BRARUDI, COGERCO, RAFINA SEP, and the Port of Bujumbura at the delta of the Ntahangwa. In the natural region of Mumirwa, were Bujumbura is also located, one can observe the events of climate change manifesting as prolonged drought, heavy rains and flooding, and landslides. The vulnerability of this region is also due to its topography with permanent long and steep slopes as well as the abundance hydrological network of rivers that cross the city of Bujumbura and the Imbo Plain lowlands. Landslides change magnitude in case of increased precipitation, and result in destruction of both public (infrastructures, roads, schools, health centers, etc.) and private (houses, fields of populations, etc.). In case of heavy rain, rainfall increases, and rivers and ravines increase their dynamics. Riverbeds are collapsing and riverbanks are crumbling in many places. Rocks and ground eroded torn along rivers and ravines course as a consequence of lateral and vertical erosion, are deposited in areas of low slope and make stream shallow increasing flooding of lowland in the Plain of Imbo.

**Long-term solution and key barriers**

Despite the strategies, policies and measures in place, development in Burundi is strongly negatively affected by climate change. As described above, the sources of income for communities, which are mainly based on agriculture and livestock, will be increasingly affected by climate change. The latter will have negative impacts on agro-pastoral productivity, causing difficult socio-economic situations in villages, facilitating the increase of poverty and undermining national development efforts. The country's aspiration as made explicit in Vision 2025 which aims to: (i) influence the negative trends of GDP by pass it 137 USD in 2008 to 720 USD in 2025; (ii) reducing poverty rate by half (estimated at 67% of population today). The cost of climate change impacts could jeopardize the efforts for advancing development and growth as well.

The long-term solution would be to better manage climatic factors contributing to the deterioration of livelihoods of communities by reducing climate risk and preventing disasters. This requires good command of information, the establishment of an early warning system and of an adequate risk management system, the implementation of measures of protection and restoration, as well as policies to ensure communities, means and guidance promoting better resilience. However, the implementation of such measures in a context of economic and social reconstruction and little operational decentralization poses challenges that may limit the development of effective local governance for climate change adaptation. Some of the barriers to overcome have been identified, among which:

**Key Barriers to overcome**

***Barrier #1: Lack of an operational system for community based climate related disaster risk management***

A National Platform for Disaster Risk Reduction (DRR) was established in 2007. It is composed of representatives from various ministries and agencies of the United Nations, the Red Cross, and other civil society actors. Regular meetings are organized among members to exchange and share information with partners and to coordinate responses of large disasters within the country. Provincial platforms of DRR are also established to conduct rapid field assessments and support DRR activities. However, the national and local platforms are not fully functioning due to lack of technical and financial resources. For this reason, communities leaving in areas of high risk of extreme weather events are not sufficiently reached in term of prevention and response mechanisms. In addition, the system for collecting, analyzing and disseminating information relating to early warning and

climate risk vulnerability is not yet established at local level. The only existing and functional warning systems are: the "*Système d'Alerte Précoce et de Surveillance de la Sécurité Alimentaire*" (SAPSSA), managed by FAO and the Food Security Monitoring System (FSMS) managed by World Food Programme (WFP). These two systems are more concentrated on food availability and accessibility. Climate related changes and its impacts into livelihoods activities are poorly covered.

***Barrier # 2: Weak capacity of national services to generate hydro-meteorological information for a real-time alert to population.***

The National Geographic Institute (IGEBU) is managing the network of weather and hydrological stations. This network used to be dense, and covered all the national territory; but with the socio-political crisis of 1993, it was disrupted and now reduced. From 169 stations before the crisis, the network has now only 20 weather stations still functioning, while hydrological stations passed from 53 to 37. Among the three automatic weather stations at IGEBU, only one is properly functioning. There is a very limited observation network in rivers affected by frequent floods and the hydro-meteorological Department lack of available and historical data to produce and disseminate reliable information on flood forecasting in the context of management of recurrent floods in the city of Bujumbura and elsewhere.

Data collection remains a crucial problem: data are mainly collected by IGEBU focal points and stored in an external disk. This methodology seems to be less effective and more expensive. Automatic weather stations with Internet data transmission are required to solve this problem. Flood forecasting should be developed on the basis of a strengthening of the hydrological observation network through automatic hydrological stations connected to a server (at least to cover the project areas) and through training on forecasting analysis and dissemination of information through means appropriate to report flood event.

The Hydrometeorology and Agro-meteorology Departments, which shall provide reliable climate information, are still far from having qualified personnel equipped with necessary tools for analysis, production of information, and dissemination on climate risk. The technical skills of its managers and technicians are not sustained by update and retraining, so they cannot fully exploit even the equipment currently available to them, which would enable them to produce some basic weather information.

***Barrier # 3 Limited capacity (technical and financial) to protect local communities and public infrastructures from climate risk and disaster***

Despite the magnitude of disasters related to climate events (floods, droughts), local authorities have limited financial resources and means to cope with disasters. This ultimately depends on lack of human resources and of experience on impact of climate change. Local authorities have very limited information on the risks and opportunities associated with climate change and the potential benefits for development activities potentially proceeding from knowledge related to climate change adaptation. Most policy makers and local communities have little capacity to integrate climate change into development programs in key economic sectors and social development strategies in general. Around the Lake Tanganyika, climate risk management is not always integrated into local development and municipalities are still allocating plots of land in the buffer zone frequently affected by floods.

Policies and strategies alone cannot have concrete results if there is no training and awareness raising among policy makers on the actual risk and evolution of climate change, particularly of its impact on the livelihoods of communities. Operational and developing needs of municipalities go far beyond financial resources available. The socio-political crisis experienced over the past decades has significantly increased the level of poverty of Municipalities, which have very low contributive capacity.

**A.5. Incremental /Additional cost reasoning: describe the incremental (GEF Trust Fund/NPIF) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF/NPIF financing and the associated global environmental benefits (GEF Trust Fund) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:**

**Additional Cost Reasoning of the Proposed Project**

Without, LDCF support, the capacity of communities, local governments, and national government to respond effectively to climate change risks remains limited due to the non-availability of relevant data and management tools, the lack of local technical expertise, and the low contributions in financial resources. There is insufficient indigenous knowledge on weather forecasting indicators and skills in the future. In addition, climate change risks and climate resilient activities are not considered into the planning and budgeting systems at the local government and community levels.

The challenge is to prepare communities and local decision-makers to adapt. The on-going reconstruction in Burundi presents an opportunity to ensure that climate change related risks are integrated into on-going government-led efforts. Resources from LDCF will strengthen local response to climate disaster risks through the application of relevant disaster management tools and the promotion of adaptation technologies in urban and rural areas to ensure the socio-economic resilience and wellbeing of vulnerable communities. Climate change induced disaster risks will have to be taken into account in capacity- and vulnerability assessments and a new development model is needed now – not just based on emergency activities which save lives but also that on process allowing to boost development. New partnerships will have to be forged, not only with governments, NGOs and UN partners but also with local decision-makers and vulnerable communities, particularly when it comes to early warning.

The Long term Transformative Impact is to improve local communities' capacities on climate disaster risks preparedness and responses management to ensure long term and sustainable emergency and reconstruction phase in Bugasera, Mumirwa and Imbo Lowlands' regions. This will be achieved through following mid term catalytic Outcomes:

1. An operational Community Based Early Warning system established capable to engage and reach out target communities for climate change disasters risks prevention and guiding the implementation of adaptation activities ;
2. Communal services, relevant ministry support services and Provincial disaster risks platforms trained to use climate risks management tools for long term planning under climate change variability and projections;
3. Investment on relevant early warning systems and adaptation technologies to protect infrastructures and local livelihoods from climate impacts.

As a result of the consultative process, the project will intervene in following Provinces and Communes (FIG 4)

- **Kirundo**: the municipalities of Bugabira, Busoni affected by the severity of drought and water shortages that impact agricultural production, livestock and timber, as well as deteriorating living conditions of populations, and decrease of water levels of the lakes in the North;
- **Bujumbura Rural**: the municipalities of Isare, Mugongo-Manga, Kanyosha and Nyabiraba present serious soil erosion provoked by runoff from Ntahangwa River. In case of heavy rainfall, large runoffs from the watershed induced flooding in the low areas of Bujumbura City;
- **Makamba**, municipality of Nyanza-Lac highly affected by runoff and flooding of Rwaba river;
- **Bururi**, municipality of Rumonge affected by the runoff of water coming from highlands.

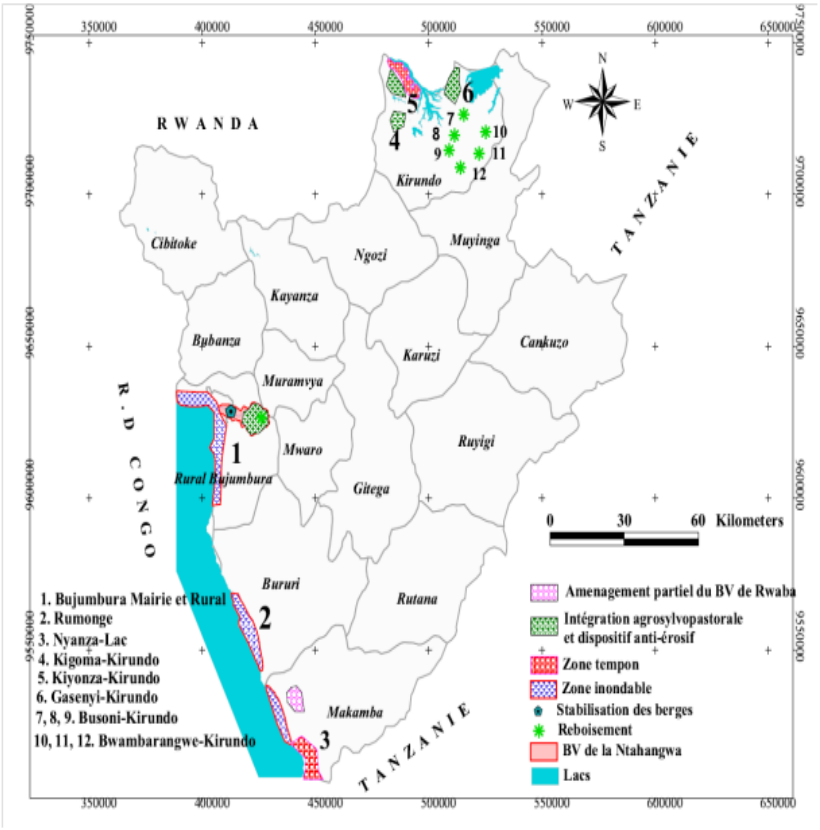



FIG 4: Intervention sites

## Project Outputs/Activities

### Component 1: Strengthening communities' preparedness in face to climate related disaster risks

In the baseline, Burundi has developed a corps of texts for DRR that encompass laws and plan but very little operational capacity, included equipment, communication infrastructure and know-how, can be observed for the key stakeholders in terms of preparedness, risk prevention and response. While literature mapping risks, planning for contingencies, identifying possible solutions or sketching mitigation plans for Burundi is abundant, very limited are practical mechanisms for early warning, measures for risk reduction and response.

Without LDCF intervention, the overall capacity of existing mandated institutions is very restricted by lack of resources, skilled personnel and equipment, but also hampered from a crucial missing link, which is connection with the broader population. A recent Interagency Evaluation of capacity in Disaster Risk Reduction (DRR)[8] has been conducted, with very clear-cut judgment on current situation, synthetically re-proposed. Without the involvement of local authorities and communities at risk, government and institutional interventions and responses to hazard events are likely to be inadequate. The active participation of the population in climate risk prevention and management remains a challenge. During the field visits, it has been found much interest and support for a community based early warning. It seems a priority to invest resources to develop this service and capacity.

With LDCF intervention, a community-based early warning system established and operationalized as a platform for climate-related disaster risk reduction and for guiding the implementation of climate change adaptation. The local communities will have a well decentralize, reliable and functioning organizational system for managing

[8] UNDP BCPR : Rapport D'evaluation Des Capacites Nationales Pour La Reduction Des Risques Au Burundi (July 2013).

climate risk and disaster and coordinate response, not just as receiver but also as stakeholders' part taking in the system. A people centred Early Warning System will be test out as a system capable of involving and reaching communities, putting them in relations to the national level, and also connect it to sensitization activities as well as to infrastructural work to work as a connecting ring between climate changes adaptation measure and DRR interventions. The system will be top down as well as Bottom Up approaches to generate and disseminate climate information effectively. The intervention is oriented at mitigating the low attention to preparedness at local level, and as such it intends to contribute as response to the lack of articulation (and effectiveness) between national and lower levels, highlighted by the Interagency Evaluation of National Capacity for risk reduction in Burundi. It will be based on raising awareness and building capacity of local authorities and the general public on the type of risks lived and experienced by the population itself (by gender and social strata).

The IGEBU information system will be improved by structurally involving the population in the system of data collection, monitoring and alert, whenever possible. As far as the IGEBU systems are concerned, the CB EWS can help reinforce the data collection in the target areas, while also involving and sensitizing population to disaster risks factors. The information system will produce data / primary information to be transmitted up at central (national) level, while also being able to elaborate and disseminate down (even to colline level) weather forecast and information for the public and the interested communities.

The proposed CB EWS is based on existing systems and capacity already developed under the National Platform on Disaster Risks Reduction and management, supported by UNDP-BCPR. The existing data collection systems, particularly hydromet and food security database from IGEBU, WFP FSMS, can provide some elements of an organizational model, together with some technical solutions to replicate and integrate in the CB EWS. Coordination with the existing systems and corresponding organizations can help guaranteeing that information from the CB EWS to be will feed into - and also take from - the other two systems, as relevant, improving chances of better information development and sharing and of coordinated response.

**Outputs and Activities**

5. According to UNISDR (2009), an early warning system is defined as a set of capabilities to produce and disseminate relevant and timely information and alert of a danger to allow individuals, communities, companies, organizations and institutions threatened to be prepared and act appropriately and effectively in a timely manner to reduce the probability of risk and damages. The Community Based EWS here proposed is a multi-level structure that attempts to respect these principles, in order to convey real time climate information to target communities and individuals to effectively anticipate, respond to, and recover from, the impacts of climate changes (drought and flood).

6. The system will be established in priority areas defined during the preparatory phase. This consist of:
    - Province of Kirundo, affected by the severity of drought and water shortages. The intervention will be focused on Bugabira and Busoni Communes and will target at least 12 collines;
    - Province of Bujumbura Rural, the Communes along the Ntahangwa River affected by landslides and flooding during heavy rains. Target communes will be Nyabiraba, Kanyosha, Isale, Gatunguru and Mugongo Manga (total 24 collines targeted);
    - Province of Makamba. Nyanza Lac commune, surrounding the Lake Tanganyika, will host the community-based early warning system.

Four major outputs will contribute to attaining this outcome. They consist of:

### *Output 1.1: Set up the functional structure of the Community Based Early Warning System on climate change related risks in Bujumbura Rural, Kirundo and Makamba Provinces.*

The structure will support the production of primary data from that level to be transferred up to national level, while also being capable of disseminating on large population at colline level information and alerts proceeding from advanced data analysis and meteorological forecasts. Following activities will be undertaken:

Activity 1.1.1. During the project inception phase, a *Participatory Situational Analysis* will be undertaken to ensure successful outcome of the mapping, analysis and effectiveness of the early warning system. This will be done through: (i) the capacity assessment to identify existing capacities in the community on which the early warning system and existing coping (warning) mechanism can be built; (ii) the institution and stakeholder analysis where target communities will identify the organizations and institutions which can support for and be a part of early warning systems; and (iii) the analyze of the organizational, technical, and financial sustainability of the system to set up in place. The Participatory analysis will help also to identify existing communication and dissemination systems and the mechanism and medium for communication and dissemination based on the information and level of risk.

Activity 1.1.2. *Establishment of CB EWS focal points at colline, communal, provincial and national level*

- *At Colline level*, the appointment of focal points (two or three persons per hill) will be done through meetings held with associations and local communities during the phase of participatory analysis (Activity 1.1.1.). The people identified, together with the Chef de colline, will constitute the Colline Committee. Coordination will be developed with IGEBU and Burundi Red Cross to include their focal points for better coherence of intervention, specifically when collecting hydro met data. Half of the focal points coordinators established in the target areas shall be women;
- *at Commune and Province levels*, the establishment of CB EWS focal points will based on existing DRR platforms: (i) Provincial platforms of Kirundo, Bujumbura Rural and Makamba; (ii) Communal platforms of Busoni, Bugabira and Kanyosha. Ongoing discussions with UNDP BCPR project and the National Platform are held to establish in priority communal platforms in other project target sites. In each platform at least two people will be identified as focal points.
- *At the National Platform*, two people will be identified as liaison members with local elements of the CB EWS. They shall be equipped with the same type of phone that provincial coordinators will have. They are responsible for regularly accessing the central database, monitor data quality (according to the SOP be established), and to prepare reports from bottom up data for the Committee of the National Platform on data from bottom to top, as well as monitoring reports on the interaction among focal points and coordinators.

The potential responsibilities of the EWS FPs are presented in below. It will be refined during the project inception phase after the Participatory Situational Analysis.

Table 3: Responsibilities of the CB EWS FPs

| Colline level | Commune level |
|---|---|
| - Measure and communicate through sms (feeding an automatic system) the value of waterfall (in newly established pluviometric station) or height of water, in those selected collines and in sites along the river (Ntahangwa, Kanyosha, Muha, in Bujumbura area) or lake (in province of Kirundo) where pluviometric and hydrologic station will be set up;<br>- Monitor other indicators (or signs) as will be defined in the participated design phase<br>- Facilitate collective identification and alert on emerging | - Organize in collaboration with project staff training and retraining for the focal points.<br>- Monitor the focal points<br>- Assist focal points when asked for conveying appropriate messages<br>- Bring to the DRR Committee request for urgent assistance and in agreement with the rest of the Committee organize the response<br>- Guarantee harmonization of indicators |

| | |
|---|---|
| risks (early signs of appearance of ravines, etc.)<br>- Rapid identification and communication to the Communal committee for DRR of extent and type of needs in the aftermath of a destructive climate event – or of other disasters<br>- Communicate results of sensitization process at the communal committee for DRR by participating in the planned mtgs<br>- Sensitize population on how severe climate aleas – excessive rain, drought – can have a stronger impact and be related to deforestation<br>- Organize community hearing sessions of project radio programme<br>- Sensitize on the importance of land management measures to prevent soil erosion, and to explain the risk caused by wrong interventions (deforestation, uncontrolled fire, path opened perpendicularly to the hillside with no containing interventions, etc.) | used at colline level<br>- Transmit to *colline* level information concerning response plans<br>- Organize regular meetings with focal points (at least twice a year) and maintain good communications<br>- Provide to the digital system and to Provincial and Central level of the Platform for DRR additional information, included pictures and exact locations, in case of a sensitive change on some key indicators (level of water, incipit of new erosions, etc.)<br>- Guarantee timely communication of emerging issues or difficulties in the system to the Project Staff. |

Activity 1.1.3. *Equip focal points*. The focal points will operate on a volunteer basis and will be equipped with: - mobile phones with credit for phone calls and text messages (SMS); - solar powered radio (or at least powered by rechargeable batteries, and a charger fitted to be connected to the solar panel to be installed at the school of the municipality); - boots (1 pair per each focal point) and office equipment; - 1 megaphone by hill. Sustainability concern shall not remove the incentives and considered here, which are needed as basic equipment to start a system, and which also impose requirements in terms of time and commitment of its volunteer members.

Activity 1.1.4. *Trainings for CB-EWS focal points and the members of the National Platform, provincial and municipal* will be organized to enable them to become familiar with CB EWS, understanding indicators and functioning of the CB EWS, its information transmission systems (including SMS updates bottom up and top down) and understanding SOPs of the CB EWS and learning to use it. In addition, they will be engaged to identify; (ii) the type of response to natural disasters that can be provided or improved with existing resources (ii) the actions and measures to improve coordination of mitigation and adaptation interventions through existing measures, projects and active partners (iii) the gaps and plan for future interventions to reduce risk, strengthen preparedness and improve responses. Following steps are planned: (i) assessment of training needs; development of the training materials; organization of at least 2 training a year; and monitoring and evaluation of trainings.

***Output 1.2: Upgrading the hydro meteorological network and improving capacity to generate real-time information weather and data series for information dissemination to target communities:***

Insufficient hydro meteorological forecasting as well as response capacity is a urgent problem addressed in this project. The development of a Community Base Early Warning System (CBEWS) to reinforce the hydro meteorological observation network is a very important part to complete. The process will take time, and for this reasons it shall begin in the early implementation steps. Beside generating bottom up information through primary data collection, the CB EWS shall also be used –from its initial steps- to disseminate top down reliable and place specific weather forecast on a weekly basis (or more frequently as needed) initiated in the initial phase of the project to disseminate simple and reliable weather forecasts to population. Following activities are planned:

Activity 1.2.1. *Need assessment*: A joint assessment team with representatives from the, EWS taskforce at colline levels, project staff and government staff (members of the Platforms and IGEBU) will assess the stations to determine whether they can provide relevant information for an early warning system. The assessment team will identify the relationship between the observer stations and downstream communities. The team will look into quantity and quality of the monitoring devices, human resources available, need for capacity building, and possibilities for communication, additional equipment and necessary maintenance.

Activity 1.2.2. *Upgrading the existing hydro meteorological network*

Although this project financed under LDCFs cannot rehabilitate the entire data collection network of IGEBU, many stations will be added through the set up of CBEWS: many new or to-be-restored rainfall and water level measuring stations will become operational as they will be entrusted to CBEWS local focal points. The recorded data will be transmitted daily via SMS by a group of focal points living near the stations. To strengthen the technical capacity of the IGEBU, the following equipment will be purchased and actions implemented:

- ✓ At least two new differential GPS (with training for intended responsible users in IGEBU staff);
    - ✓ At least three automatic hydrological stations (with ADCP server) rivers Ntahangwa, Muha and Kanyosha, for automating recording of water level, and 2 limnimetric scales for Cohoha lake;
    - ✓ Installation of 1 synoptic station, 9 automatic meteorological stations with servers in line with WMO standards in target provinces, municipalities (Bujumbura Mairie, Bugabira, Busoni, Kirundo province rural, Isale, Mugongo-Manga, Kanyosha, Nyabiraba, Nyanza-Lac and Rumonge), and of 200 rain gauges in target collines (5 gauges/colline);
    - ✓ At least 3 new computers (and proper training for the intended users among IGEBU staff).

This list will be updated and refined taking in account recommendations from the need assessment (Activity 1.2.1) and the EWS focal point will select the most feasible location for the monitoring water level and rainfall devices with external technical advice.

Activity 1.2.3. *Trainings for the collection, processing and analysis of data and of messages top down*

While installing monitoring devices, it will be important to ensure that people operating the system have relevant knowledge and skills required for the collection, processing and analysis of data and of messages top down. Main target audience for the capacity building should be IGEBU staffs, gauge/rainfall observers, CB EWS focal points. Suggested content for capacity building is:

a. A series of courses will be organized for the IGEBU staff to develop and produce accurate meteorological and hydrological forecasts, and also to develop capacity and methodology to analyze, test and improve information from CB EWS. This include:
    - ✓ An advanced remote sensing and satellite image interpretation for 8 people for a period of at least two months possibly spread over the four years of project training;
    - ✓ An advanced training on meteorological and hydrological analysis, with scholarships for 2 or 3 IGEBU staff (keep quota male/female even, and at least one male/female on 3 posts), in regional institutions like the African School of Meteorology and Civil Aviation in Niamey or at IMTR Nairobi Hydrology.
    - ✓ Advance training on: (i) how to conduct regular maintenance and integration of database (ii) how to add new indicators coded and to be updated with coded SMS strings, (iii) how to create report with preformatted quest, (iv) how to write and run query functions, also extracting the data by geographic parameters.

b. The CB-EWS focal points will be trained and regularly re-trained. The content of sessions will include:
    - ✓ Measure and communicate through sms (feeding an automatic system) the value of waterfall (in newly established pluviometric station) or height of water, in those selected collines and in sites along the river (Nahangwa in Bujumbura area) or lake (in Bugasera province) where pluviometric and hydrologic station will be set up;
    - ✓ Identification and alert on emerging risks (early signs of appearance of ravines, etc.) and monitoring other indicators (or signs) as will be defined in the participated design phase
    - ✓ Communicating results of sensitization process at the communal committee for DRR by participating in the planned meetings
    - ✓ Introduction to climate risk and to vulnerability in a gender sensitive way to better sensitizing target communities on (i) how severe climate aleas – excessive rain, drought – can have a stronger impact and be related to deforestation, addressing with proper communication also young people (ii) the importance of land management measures to prevent soil erosion, and to explain the risk caused by wrong interventions (deforestation, uncontrolled fire, path opened perpendicularly to the hillside with no

containing interventions, etc.)

- ✓ Organize community hearing sessions of project radio programme

The CB EWS focal points shall also be prepared for transferring information in the aftermath of disasters. Training shall be developed, the automatic system prepared, and SOPs defined to guide the CB EWS focal point to transfer basic but key information for response:

- Number of people injured and in need of evacuation
- Number of people dead
- Type of losses observed
- Situation of crops

### *Output 1.3: Set up an effective and efficient communication and dissemination system to reach all end users*

This step will focus on transferring the information gathered during observation and monitoring of hazard to target communities on risks. A reliable and well-organized dissemination system will be in place for on time information dissemination. It is therefore essential to develop and agree on a flow of information that needs to be well understood by all stakeholders. The communication and dissemination system should offer alternative methods in case of failures of one or more communication channels. Communication between the different level of CBEWS will operate in both directions: - bottom up, from hill level (colline) up towards the municipal level and then towards the central level; - top down, from the central or municipal to the hill level. Besides voice communication, an automated system will be implemented (in collaboration with telecommunications providers), who will read and store coded message strings bringing update values on the different indicators. The following activities are planned:

Activity 1.3.1: *Develop the functional database to analyze and produce relevant information and linked to existing information systems (FAO, WFP, IGEBU)*

The data to be collected through the CB EWS will be handled by software interfacing with a central database established at IGEBU. The software to be developed could be preferentially open source, and among requirements needs to include the capacity to:

- ✓ Handle and recognize the telephone numbers of the CB EWS focal point and allow those numbers to input data in database through SMS
- ✓ Predefine a list of choices for the users to be able to categorize the information they need to send (i.e.: rainfall data: ID of rainfall station; level of water at a given time (date and hour); or geological data: new ravine just opened) or to be able to send free text messages in case the information is new and uncategorized yet
- ✓ Properly store the data obtained by SMS in different categories/tables with clear connection with the ID and geographical location (colline of residence) of the focal point who has sent the info
- ✓ Re-send immediately to key members of the organization within the system (i.e.: communal coordinator, national coordinator, project coordinator, etc.) the critical SMSs which are classed with alert code (i.e.: #111# could mean: "we need immediate assistance for evacuation", or #112# "we need assistance for shelter/food"; or #112:85# number of households in immediate need of shelter or food in a given colline). Those messages will precede bottom up from the CB EWS focal points and need an immediate response. A document with Standard Operating Procedures (SOPs) will define what are the possibilities that can be handled and answered.

The database will be designed in a way to maximize compatibility with the already existing database supporting the WFP FSMS system, so that data from both sources could be periodically merged and cumulatively analyzed. The database system will include data set, containing indicators significantly more on the early warning and emergency side than the ones inscribed in the FSMS, and will allow to trigger targeted response on short time lag. While messages classed as highest alert can reach key resource persons in real time, regular reports shall be produced on a weekly basis and response action called within a maximum of ten days.

To facilitate the preparation of weekly reports, the structure of a news report with minimum content will be identified, and the basic queries prepared and developed on the database itself to be used (and possibly

customized) in a user friendly fashion, so to enlarge the basis of the IGEBU staff who potentially can – if authorized - operate on it.

Activity 1.3.2. *Develop Standard Operating Procedures (SOPs)*
Resources will be allocated for the development of SOPs for correct, consistent and durable functioning of the CBEWS. The SOPs will specify time intervals of data collection and transmission. The preparation of SOPs will be participative, involving *colline* Focal Points and other members of the Municipal Committee, as well as the National and Provincial Disaster Risk Reduction platform, the IGEBU and the humanitarian and development agencies (Red Cross, WFP, FAO, UNDP, international NGOs, etc.). Under this framework, a set of indicators will be developed as a key moment in the work of awareness rising that the project also entails. The indicators will be easy to monitor but also capable to inform on the factors influencing different risk to which not only different communities, depending on land use and level of land degradation, but even different type of people (for sex, age, social class as well as for house location, mobility patterns and livelihoods) are exposed. The work on indicators will start in parallel to the gender sensitive risk analysis (Outcome 2) and will be as participative and inclusive as possible.

Activity 1.3.3: *Information transfer and dissemination system*
Communication and dissemination of messages will be conducted according to the SOP and depending on the type of information and the urgency. Different communication and dissemination systems can be applied to communicate information from gauge station to CB-EWS focal points, and stakeholders; and to disseminate the information to all the members of the community. Options for communication flows from bottom up and top down are proposed under the EWS rapports (PPG Report 2).
Messages and alerts will be communicated:

- Either through the automated path, through a software handling mobile text messages coded in categories of indicators and users (closed string messages)
- Or relying on direct person-to-person communication, via voice or text message, between member of the same level or of different level of the CBEWS.

Moreover, an existing public building will be identified, in each target colline, as a basis for the activities of the CB EWS, where also storing equipment for focal points. An agreement with the Ministry of Education will be developed to use primary school at hill level, given the level of funding required for the construction of structures ex novo, and difficulties in many areas to find a common / federal land readily available. Schools exist on every *colline*, and the buildings are relatively solid. The school will be available for the CB EWS focal points to organize outreach activities including public sessions. Minimum equipment will be installed in schools to facilitate the organization of SAP (photovoltaic panel, external board with few key indicators to be update in writing) activities.
During the Project inception phase, these options and propositions will be refined according to the recommendations from the participatory assessment (Activity 1.1.1) that identify the mechanism and medium for communication and dissemination based on the information and level of risk.

**Component 2: Resilience and response capacity of local communities strenghtened**

This second component will provide relevant information and skills to local government decision makers and community leaders for defining their adaptation priorities and planning necessary budget for their implementation. The results provide a solid foundation for the identification of practical strategies to facilitate community-based adaptation to climate change.

Without LDCF support, local institutions do not yet have enough technical capacity (included on the equipment side) that would allow mapping, measuring, and monitoring and timely communicating the risks associated with climate change. This gap is also visible at the level of governmental institutions involved in the Platform for disaster risk management platform and IGEBU limiting their ability to respond to rapid assessment when disaster strikes.

With the LDCF funding will also help to strengthen the skills of national technical experts committed to supporting decentralization thorough understanding of risk associated with climate change, the ability to analyze it in gender sensitive ways, and how to use knowledge on risk in in planning.

A gender sensitive climate risk assessment is needed and shall be conducted in a participatory fashion and with significant attention to gender analysis in the first step of the implementation of the CB EWS. This preparatory phase is needed to ground the actions in in-depth local knowledge, beyond illusion of gender-neutral description, and to set up and root at community level the whole project. A gendered analysis of risk shall be conducted with the use of participatory tools as well as with existing risk assessment frameworks to mainstream gender in climate disaster preparedness are an absolute necessity.

Without GEF intervention, the communities will not access to relevant information on climate changes and it's impacts, adaptation opportunities and will not have the capacity to participate in the integration process of climate change aspects into development planning. In Burundi there is one national radio (RTN) which has nation wide coverage, plus several private radios, some of them thematic (as the CCIB with information relevant for commercial activities and investments) others, as RPA (which has national coverage), treating same variety of themes but considered less oriented and monitored by government. Community radios do not exist, and in the rural areas people mostly listen to national radio, also by the use of radio receiver on mobile phone. None of them has meteorological services information. IGEBU could not disseminate Meteo info through them since airing messages and communication requires a budget that IGEBU does not have. The creation of a specific radio emissions dedicated to environment has been proposed as a key action to be a component of the early warning system but also the main instrument to carry on a cost effective information and training initiative at different level, from the institutional one down to communities in collines.

Three major outputs will contribute to attaining this outcome. They consist of:

### *Output 2.1: Gender and climate vulnerability assessment to guide the development of a local climate change response*

Vulnerability and adaptation assessments are a critical first step in developing the climate change profile at Provincial and Communal levels. The integration of gender sensitive climate risk management in Municipal Development Plans and financing for adaptation need to have first an analysis of the impact that climate change is having and will have on the country and its activities. The results provide a solid foundation for the identification of practical strategies to facilitate community-based adaptation to climate change.

*Activity 2.1.1: Climate changes and vulnerability assessment for target Provinces and municipalities*

This activity will provide a framework for analyzing vulnerability and capacity to adapt to climate change at the community level. By combining local knowledge with scientific data, the process builds people's understanding about climate risks and adaptation strategies. The main steps concern:

- ✓ ***Step 1:*** General organization of vulnerability diagnostics: This step aims to prepare diagnostic for defining the scope of actions (geographical and sector development), resources (consultants, teams and organization) planning interventions, mobilizing stakeholders and budgets. An international consultant will facilitate and organize a series of meetings with public beneficiaries.
- ✓ ***Step 2:*** Analysis of exposure and sensitivity to climate in the past: identification of exposure (weather conditions that have been suffered in a certain area) and sensitivity (the socio-economic impacts that these hazards have had on the municipality, on infrastructure and on population, according to gender, age, class) to past climatic events (period of ten, twenty or even a hundred years). Three sources of information will be used: (i) data records of climate observation from local weather stations, to provide information on actual local changes on long term weather patterns; (ii) archive documents, including press, municipal and institutional documents, literature; (iii) consultation of collective knowledge for formalizing collective memory and letting different demographic and social profiles of vulnerability emerge: interviews and focus group discussions with different leaders of the communities and with population groups of different sex, age and social level to understand how gender patterns, age and class interplay in defining individual vulnerability to climate change and determine different severity of impact.

- ✓ ***Step 3***: Analysis of current and of future sensitivity. This step has the overall goal of understanding climate change scenarios in the future (2030, 2050 or 2100) and estimating the impact, in different geographic areas as well as on different socio-economical profiles. There are three sub-steps: (i) description and selection of scenarios; (ii) Projection of the future sensitivity; (iii) Consultation of collective knowledge;
- ✓ ***Step 4***: Hierarchy of levels of vulnerability. The outcome of diagnosis is to identify the levels of vulnerability of public services – in relation to their intended users - and of the different activity sectors of the municipality against a disturbance or chock on elements of the environment and population by a given time;
- ✓ ***Step 5:*** Identification of adaptation actions: it will be based on (i) Research; (ii) detailed analysis on adaptation paths that take into account the different climate scenarios and the connected impacts on different geographical areas and social groups; (iii) costs-benefits analysis of different adaptation options to control whether these measures are effective and efficient;
- ✓ *Step 6:* Setting up a mechanism for monitoring and evaluation feeding in an adaptive management approach;
- ✓ *Step 7:* Presentation and communication of results to stakeholders and communities.

*Activity 2.1.2: Gender sensitive risk analysis*

The gender sensitive risk analysis shall be conducted with the involvement of population. The objective is to understand how men and women (but also youth, elderly, disabled people) in the region of intervention of the project experience disaster differently and can differently benefit of preventative measures or of interventions, due to their gendered identities (and also their age and ability) that define in a variety of different ways their primary roles and responsibilities, opportunities, capabilities, access to resources, coping strategies, decision making power in household and community. This understanding, in the form of a document output, will underpin the implementation of all the project to make sure the measures implemented reinforce resilience of the entire population and reduce gender and age gap. The objective is not only to conduct a qualitative analysis, but also to engage the communities in a reflection on the existing risk, on the identification of indicators to monitor the risk, on possible preventative measures, and on the type of response that community itself can either provide or request outside in case of lack of internal resources. The design and conduction of gender sensitive risk assessment component needs to include:

- ✓ Review of relevant documents, national laws and international laws and conventions signed by the Burundi government
- ✓ Gender audit of the institutions to involve in risks analysis and management;
- ✓ Interview with key informants operating at National, Provincial, Communal and *colline* level
- ✓ Organization of focus group discussions inclusive of different groups
- ✓ Participative workshops at *colline* level, providing several meetings in each *colline*, with very robust interactive facilitation, to collectively identify risk and risk determinants, areas at risk, indicators, preventative measure, possible responses, possible actors involved in response.

During conduction of the gender analysis of risk project staff shall all be involved, obtaining hands-on training on gender analysis technique, and getting involved in community sensitization and mobilization.

The completion of the gender sensitive risk analysis shall be followed by a:

- Proper diffusion of results (as a stakeholder workshop with working groups to start suggest possible transformations in the different domain touched upon);
- Solid incorporation in project staff training as well as in all project components design and implementation of the analysis finding (with explanation of methodology and dissemination of reference texts);
- Readjustment of CB EWS initial design to the gender sensitive risk analysis finding to make the CB EWS as well, as any disaster preparedness and disaster response measures, structurally gender-sensitive and gender-inclusive;

- Review of all project components to adjust approach and work plan according to the finding of the analysis;
- Full integration of the gender risk analysis into the climate risk study and vulnerability assessment, and their dissemination.

### *Output 2.2: Local government decision makers, technical staffs and communities assisted with training on proper use of climate risks tools and sensitisation on climate changes impacts to support the identification of cost-effective adaptation investments options and adjust plans, programmes and projects given new climatic experiences*

*Activity 2.2.1: Train 50 members of Provincial and Communes councils on climate change planning tools.*
Provincial and Communal council members will be trained on the proper use of probabilistic modeling concepts, weather forecasts and predictions, climate change projections and relevant environmental and socio-economic data to adjust urban, watershed, infrastructures management plans, programmes and projects given new climatic conditions. Specific activities include:

- Identifying needs and developing training modules;
- Organizing 3 training sessions, assuring the participation of women;
- Monitoring and evaluation of trainings to assure their usefulness.

Two national consultants with expertise in local planning and climate change will be recruited to facilitate the development of tools and to organize training workshops. They will help develop monitoring and evaluation tools in partnership with local agents in charge of planning within targeted Provinces and Communes.

*Activity 2.2.2: Training 150 technicians of decentralized services (agriculture, health, environment and water, livestock, etc.) on integrating climate risk management into socio-economic planning.*
Training sessions for about 150 officers (respecting equal quotas for male and female officers) proceeding from Provincial level teams of: the General Directorate of Agricultural Extension, the Agency for Water Management in Rural Area, the Directorate General of the Public Health Department, The Directorate General of Forests and Environment and the Directorate General of Planning and Protection of land. The curriculum will include: (i) in depth information on variety of climate risks; (ii) gender sensitive tools to assess the variety of sectoral socio-economic vulnerability; (iii) management of climate risks and adaptation strategies in different response sector (agriculture, etc.) highlighting gender impacts of different choices. The skills and tools developed during climate risk mapping and vulnerability assessment will be largely used, and integrated as needed (gender sensitive vulnerability assessment, map development from spatial and geo-referenced data, understanding weather information, understanding functioning of alert systems, etc.). Applications will be developed to demonstrate the impact that climate change may have on socio-economic activities, and the variation of impact according to existing gender patterns, and how to consider the potential impact in planning and management. Specific modules on adaptation technologies will also be developed. Specific activities include:

- ✓ Identifying specific training needs and preparation of training materials;
- ✓ The development of a detailed training program on the use of tools for gender sensitive climate risk management in the planning and management of socio-economic activities across provinces;
- ✓ The organization of at least four thematic training ensuring equal participation of men and women;
- ✓ Monitoring and evaluation of training activities, focusing on actual knowledge developed for its application in a proper climate risk responsive and gender sensitive planning and management of socio-economic activities.

Development of tools and mentoring of beneficiaries in the implementation will be conducted by consultants.

*Activity 2.2.3. Interventions for government, public officials and administrators*
During consultations in Rumonge and also in Bujumbura town both interviews and field visits clarified how some issues related to excess water and damages provoked by water during heavy rains are more dependent on the way infrastructures were designed, implemented and managed than on the intensity of water itself. In

Rumonge, the enormous ravines developed along the road seems to be significantly connected with the lack of proper water canalization, with insufficient length of reinforced channels, which leave water falling and generating waterfalls on fragile soil even inside the town. In Bujumbura town, many areas seem to flood because the water channels are clogged (mostly by plastic and organic waste, also by mud and other debris) and do not evacuate water properly.

A helpful intervention can be organizing three seminars, inviting staff and political representative of relevant ministries, as well as technical services of the different municipalities in the country, and members of the platform:

- Seminar 1 – Lessons learnt in public works. Objective of the seminar is to develop - with the contribution of all participants – shared knowledge of negative impact resulting from public works, especially those conducted without a preliminary evaluation of environmental impact. The case will be presented with photos and possibly recorded interviews of people impacted, and brief technical assessment of the features and causes producing the unintended effects. Output of the seminar will be a compilation of the cases and a checklist of sensitive features in projecting and implementing public works that shall be particularly thought through, monitored, and adjusted as needed.
- Seminar 2 – Maintaining and managing water systems in the fast-growing Capital of Bujumbura. Objective of the seminar is identifying urgent and structural measures to improve the management of water in the town, highlighting the critical points (lack of funds for maintenance, development in areas that are not fit for hosting large number of people, etc.) and suggesting practical governance measures (i.e.: water company paying a percentage to Municipal Technical Services to maintain rain water collectors clean, etc.) to be considered by the legislators. Expected output of the seminar is a list of critical issues accompanied by a list of possible mitigation measures or suggested solutions to the issues highlighted.
- Seminar 3 - Gender, population growth and natural resources under the pressure of climate change. The demographic issues and population growth is a very sensitive ground, and societies with strong patriarchal legacies where gender equality is not achieved (which are still the vast majority at a global level) are particularly at risk of unethical drift of policy solutions. As a contribution to inspire ethical policy measures that are complying with current understanding of human rights and reproductive rights (as for example: increase of girls level of education, not only school attendance but also increase of school retention over years as it is proven to correspond to a reduction in fertility rates), it is important to foreseen in the project a dedicated high level seminar, focused on gender, population growth and natural resources under the pressure of climate change. The seminar will be open to political and administrative decision makers, but also to representative of civil society, and will have as objective the revision of existing policies and initiatives for the promotion of family planning, by keeping in focus a non-discrimination and women empowerment approach that only UN promoted projects and programme can effectively sustain. The workshop will also be an opportunity to disseminate the results of the gender sensitive risk analysis.

*Activity 2.2.4: Awareness-raising and targeted messaging on climate change, human interactions with the environment, as well as on extreme hydro meteorological factors.*

During consultations, all stakeholders stressed the need to work with the population to develop greater awareness and solid information on human interactions with the environment, including extreme meteorological and hydrological events patterns. Messages received during consultations could have an impact on specific content tailored to different categories of public. Two main activities have been identified to articulate and convey the messages across the project:

- Organization of awareness campaigns: All the work developed at community level shall be seen as intervention to reinforce awareness and understanding of basic environmental dynamics of the population leaving in the target areas. In particular, each phase of the project will bring about participatory work focused on a variety of topics: risk reduction, risk management, and response encompassing: sessions, animation with youth, distribution of materials, common hearing session of radio programmes with debate following, etc. Exchange information will be organized among each

other's, across same communes and among different communes, and will organize visit of groups of population in other collines if good results emerge out of land management interventions.

- Radio Programmes: This specific action in the project could aim at creating radio programmes in at least 20 transmissions (but more could be realized if partnership with interested actors – as GIZ - are developed) focused on articulating and disseminating ecology and climate change notions, adaptive and mitigation measures, and also serving as part of the early warning system. The expected results will be a-production radio programmes (with at least 20 issues) in Kirundi conveying:
    - Essential terms, the cause and effect of climate change, particularly in different region of the country
    - Local practical behaviors towards natural environment contribute to worsen or mitigate the effect of climate change (ex: protection of soil vs. extreme exploitation of forests, river borders and soil as construction material; indiscriminate use of wood vs. controlled exploitation of forest together with reforestation or afforestation – which plants – and use of devices as high efficiency stove and solar ovens)
    - Descriptions of type of interventions and infrastructures conducted within the project (reforestation, plantation of appropriate species of plants, conducive to rearing livestock as well, construction of small artificial water reserves and small scale irrigation plant, etc) with interview to local people who have been involved in the development of the project as workers and beneficiaries. This information can be conveyed with transmission developed in situ, with the involvement of population who has been engaged in the realization of the project
    - Explanation of soil conservation techniques and the different interaction with the environment of different species of plants, and why certain plants are not appropriate in drought prone areas (i.e., plantation of palms, which are increasing and being pursued by local rich investors for the high economic revenues that they guaranteed)
    - Explanation and vulgarization of key existing norms as Code de l'eau, establishing clear boundaries and thresholds (i.e. in terms of minimum distance from lakes' or rivers' banks for constructions or agriculture
    - Key early warning messages in accord to the CB EWS established in the project (see CB EWS paragraph)
    - Meteorological information proceeding from a reinforced IGEBU to guide the agriculturalists in taking actions at appropriate moments (if rains are expected, when, intensity).

***Output 2.3: Provincial & Municipal development plans and annual budgets reviewed and updated to integrate effective climate risk management to support more climate-smart investments.***

Based on skills acquired through trainings conducted as part of Output 2.2, climate information collected as part of Output 2.1, the SPAT, PCDC, Bujumbura City Master Plan, and their annual budgets will be reviewed and updated to include risks and opportunities associated with long-term climate change and to make community investments more resilient. Following activities are planned:

- ✓ *Activity 2.3.1*: A preparation phase, consisting of: (i) coordination of decision makers and the service provider team selected to revisit the local planning instrument; and (ii) sharing tools for mainstreaming climate changes issues;
- ✓ *Activity 2.3.2*: Updating local development plans and SPAT. The different steps for this phase will include: (i) Development of a plan of priority actions using the results of vulnerability analysis; and (ii) Consensus among key actors.
- ✓ *Activity 2.3.3*: Plan adoption and compliance control: developed or revised document will be adopted in accordance with prescribed procedures. The document adopted by the Provincial or Municipal board is subject to the control of conformity according to prescribed procedures
- ✓ *Activity 2.3.4*: identify funding mechanisms for adaptation measures and early warning system at the community level.
- ✓ *Activity 2.3.5*: Dissemination of revised local development plans and SPAT

**Component 3: Effective response to climate risk within a programme of community resilience**

Without LDCF intervention, the lowlands of the Imbo and Mumirwa regions will continue to be threatened by the impacts of increased precipitation that result in the amplification of linear erosion along watercourses that are causing destruction and/or damage to many public and private infrastructure located in different districts of Bujumbura. If river bed corrections of the multiple streams and protection works are not carried out, Bujumbura will continue to experience heavy flooding. These events have very negative impacts on the national economy and on people's health because they are the basis of: contraction in agricultural and livestock production, malnutrition of populations, and the contraction of water level in the North Lake. The protection of natural resources in an environment with high density population, appalling level of poverty and problematic governance needs to be conducted while keeping human rights and particularly right to food in focus, and with careful understanding of local vulnerabilities and power patterns.

LDCF funded project will come in additionality to these on-going efforts of resettlement and urbanization by providing necessary investments to protect infrastructures and local livelihoods from climate impacts and build the socio-economic resilience of crisis-affected population. The funded LCDF project seeks to implement measures that could simultaneously reduce risk, enhance ecosystems and vulnerable households through strengthening livelihoods. LDCF resources will complement these efforts during relocation and improvement of urban infrastructures by reducing local causes of climate change through reforestation. While increasing adaptation level by strengthening the collines with the appropriate land management and plant use, and while also keeping the safety of people as a pivot value, it is important that the livelihoods of people are not affected negatively.

**Outputs and activities**

Three key outputs will contribute to this result:

*Output 3.1: Realization of 300 ha of vegetated ditches erosion control in Bugabira, Busoni and Kirundo-rural to protect and preserve communities lands from higher risk of pluvial top soil erosion*

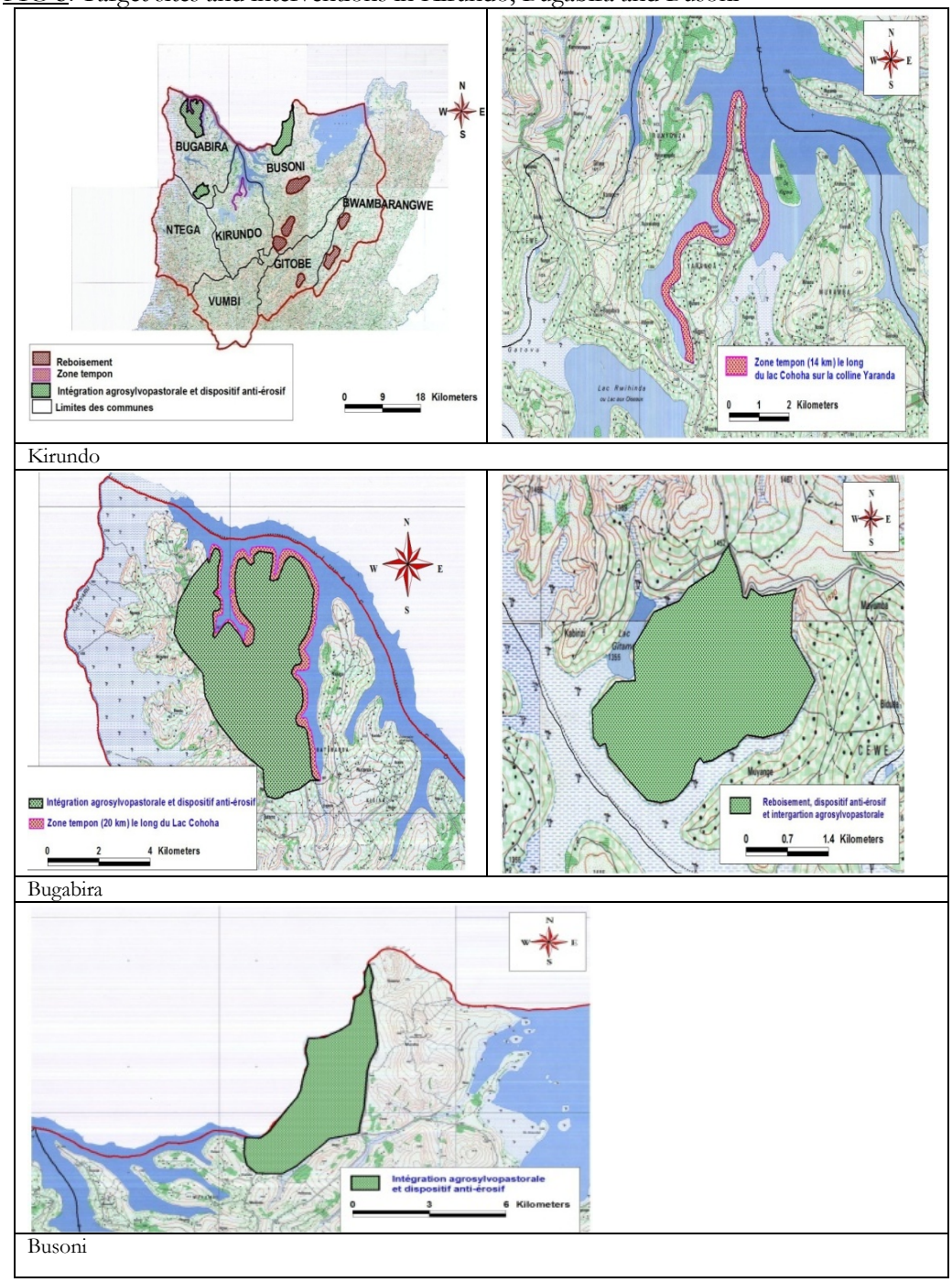
Well maintained vegetated ditches is a technology providing three main advantages: the preservation of soil fertility through prevention – and interruption - of erosion; the possibility of feeding livestock with forage grasses; and the possibility of introducing plant species for agroforestry, or improved banana trees. Following activities in target sites are planned. The implementation of anti-erosion vegetated ditches will enable agro-forestry-pastoral integration and protection of Lake Cohoha. The following activities will be performed:

*Activity3.1.1:* *Production of plant nurseries* (i) 3million of agroforestry plants and 3,000 fruit plants to be planted in agricultural plots in the of Communes of Bugabira and Busoni plants, (ii) 500,000 plants fodder shrubs, purchase of 1,250,000 tufts of stabilizing plants to be planted in hedges on slopes and along roads to control erosion, retain water, and reclaim ground by improving its quality and preparing it for re-vegetation. Target communities, specifically women groups, will do the multiplication of plants and the seedling.

*Activity 3.1.2:* *Realization of protection works*: Communities, supervised by technical services, will undertake the reforestation of 300 ha in following hills: Kirerama (54ha), Kagirasoni (60 ha), Mukerwa (34ha) Mutarishwa (45ha), Budahunga (50ha) and Nyarukeza (57ha). They will be also realized the digging ditches for erosion control on 500 km in the farm communities of the municipality of Bugabira (Kiyonza and Kigoma areas);

*Activity 3.1.3:* *Facilitate the engagement of communities*: at least 2 workshops per year will be organized to sensitize communities on the maintenance of plantations established and on the work for erosion control. The Colline Management Committee (50/50 male/female) will be set up for the maintenance of the system.

FIG 5: Target sites and interventions in Kirundo, Bugabira and Busoni




*Output 3.2: Stabilization works undertaken in Ntahangwa and Gaseyni Rivers to reduce the risk of flooding landslides in Bujumbura City*

From February 9-10, 2014, Burundi experienced heavy rainfall that generated intense runoff in the watersheds, together with landslides and the outburst of a small-unplanned reservoir on the Gaseyni River. The main road RN1 and the populated un-serviced neighborhood of Gatunguru in Kinama, downstream Gaseyni River, were

washed away by a violent flash flood, responsible for the majority of the casualties. After the catastrophe, the agencies and programs of the United Nations (UNDP, UNICEF, WFP, FAO, IOM), the European Union, the African Development Bank and the World Bank have been working closely to support the government in the development of this rapid assessment. Among the priority activities, the join team identified the protection of infrastructure weakened by the disaster, to prevent further damage or collapse, which is imminent in some cases with erosion due to the rainy season. As medium Crosscutting disaster risks management activities, like sustainable lands and water management are also identified. The Resources from LDCF will support the government of Burundi to realize urgent, medium and long-term activities identified by the assessment. Under the component 1, the financed LDCF project will establish a community early warning system in communes already affected by the disaster (e.g. Isale, Gatunguru). Under the component 3, stabilization works will be undertaken in catchment upstream of Bujumbura (Ntahangwa & Gaseyni Rivers) to protect Bujumbura city against the risk of ravinement, landslide, mudslide, and to gradually reduce runoff.

*Activity 3.2.1: Preliminary slope stabilization works in watershed upstream of Bujumbura (Ntahangwa & Gaseyni Rivers)*

It will be undertaken:

- The Production of plant nurseries and consequent planting of 800.000 agroforestry plant, and of 3,000 fruit plant in Isale, Mugongo-Manga, Nyabiraba, Kanyosha (*Ntahangwa watershed)* and Kinama (*Gaseyni* watershed)
- The production of plant nurseries and the seedlings of 800.000 fodder shrubs; purchase of 1,250,000 tufts of stabilizing plants to be planted in hedges.
- The reforestation of the top of hills on 300ha in the area of haute Mumirwa in the Municipality of Isale, Mugongo-Manga, Nyabiraba, Kanyosha and Kinama.
- Digging erosion control ditches for 800 km according to location and nature of the soil on the farm in the Municipalities above mentioned;
- Organization of workshops to sensitize communities on the maintenance of planted vegetation and erosion control works
- Implementation of the Colline Management Committee for system maintenance.

*Activity 3.2.2. Advanced slope stabilization works in Ntahangwa River*

It will undertaken:


FIG 7: Planned interventions in Ntahangwa River

- The feasibility studies with complementary assessments to finalize the cost-effectiveness and due-diligence with respect to socio-environmental and other standards. Identification of measures will be based on current and future vulnerability using different climate scenarios through the downscaling of available climate data and coupling with matching socio-economic information;
- The construction of 8 gabion small dams and 200m of gabion retaining walls to reinforce banks upstream of the Ntahangwa bridge's
- The construction of 2 reinforced retaining walls under vulnerable public infrastructures and houses;
- The completion of sloping banks works through the inclination of the slope gradient to 60degree to make them more stable;
- The stabilization works of the Ntahangwa Bridge at Boulevard du 28 November through the construction of assign on reinforced concrete for the reduction of hydropower that erodes the foot of the bridge;
- The redirection of hydraulic flow over 800m.

*Output 3.3: Accompanying measures to strengthen the food security of vulnerable households*

During the PPG field mission, communities have expressed their needs to develop adaptation measures that could simultaneously reduce risk, enhance ecosystems and target vulnerable households through strengthening livelihoods. This is why a number of accompanying measure have been identified and here proposed, so that environment protection measures and land management interventions do not result in losses of access to natural resources for vulnerable households, nor interested populations are set as passive spectators of interventions developed with top down approach.

*Activity 3.3.2: At least 100 households around the lake Cohoha supported to undertake climate resilient IGA*

The Lake Cohoha is facing persistent drought by climatic changes resulting from unfriendly human practices—over-cultivation, deforestation and unregulated livestock farming methods. Due to human activities such as farming and grazing, at least 30 meters of Lake Cohoha's shores have been lost so far. The Burundi code on protection of water resources states that: "50 meters from the lake should be a buffer zone, unfarmed or affected by any human activities". Many families have already been enforced to regress and leave the land closer to the lake (around 50m belt) but had no support for this. In the testimony of some women interviewed, this measure has caused severe food insecurity and increased poverty (due to high prices of food in the area) since the land by the lake was much more productive even in case of insufficient rain and drought. Means and capacities will be provided to women groups to identify and select relevant and profitable alternative livelihoods to reinforce food security considering the loss of access (not of property) to more productive land. Following actions will be undertaken;

- Rapid Assessment of potential opportunities to diversify women incomes during the project inception phase. Also, as the Ministry of Agriculture (Center for Planning and Research) is exploring, consider promoting apiculture as a more sustainable breeding activity to reinforce household food security, also very important to increase plant pollination and fruit production.
- Distribution of goats and poultry with proper sensitization and direction. Consider proposing ranching over free range as the appropriate way to raise the goats in high population density zone, with collection of manure and distribution on field.
- Facilitate the access of climate resilient seeds for horticulture and use of collective pump (or hand or foot operated) every 500 meters to 100 meters from the lake, to maintain the small family garden. This activity will be done in coordination with FAO, that shown its interest in adding funds to install two pilot solar pumps (300m from the lake) and the local irrigation system.
- Tutorial and accompanying extension sustainable agriculture and farming techniques. Training will be organized on the maintenance of irrigation schemes.

*Activity 3.3.2: Demonstrating the benefits of water collection from the watershed, in combination with set up of vegetable gardens (for communities leaving in the hills)*

These measures must be implemented on the hills where people will show greater participation and good results on the CB EWS and in protection of created infrastructure. On houses with tin roof simple solution for water collection can be applied on a number of about 100 households to start. The sequence shall encompass:

- Sensitization and direct observation of the effects on the ground of un-catched water proceeding from roofs
- Self targeting of households who accept to participate in the initiative (explaining what is required and what will be given)
- Set up of gutters in tin roofs of houses of the participating families
- Distribution and positioning of 100 liter small tanks / container in position for water collection
- Set up of kitchen garden for each household participating in the programme. Identify best design according to average available size (consider option of small vertical terraced tower scheme)
- Distribute climate resilient seeds for horticulture to be used in the kitchen garden and provide direction on watering (min and max per day according to available water and season)

- Consider exploring apiculture as direct enhancement of food security and natural improvement of plant pollination (and fruit production)
- Regular monitoring and tutoring
- When plants begin to bear fruits, organize visit of other collines on the pilot place.

*Activity 3.3.3- At least 50 households supported with climate resilient cooking technology to reduce wood consumption*
As many intervention of reforestations, according to local authorities, were hampered in their effectiveness due to high level of exploitation of trees, included young plants providing very little biomass for charcoal, rethinking the approach to replanting trees seems needed. On one side, it might be important to opt for indigenous variety, slower in growth, but more appropriate for soil and for climate, and less demanding in terms of water needs than the mainstreamed eucalyptus, commercially valuable and difficult to protect. On the other side, the very level of consumption of wood at least of population living in target areas need to be addressed and reduced with interventions on improving available cooking technologies. The project therefore will envisage:
- Training of women organization to build high efficiency stoves[9]
- Distribution of high efficiency stoves to the very vulnerable or labor constrained families
- Assess the potential for developing briquette from vegetable waste with minimal technology requirement. Environmental and social impacts assessment will be conduct to avoid generating excessive pressure on available biomass, which could be negatively impacting availability of natural fertilizer for soil degraded areas.

**A.6. Risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and measures that address these risks:**
The proposed project indicator framework follows the GEF-5 Adaptation Monitoring and Assessment Tool (AMAT) and is aligned with the UNDP M&E Framework for Adaptation. Objective level indicators and outcome level indicators are specified according to the UNDP nomenclature of Results Based Management (RBM). The project design further foresees the development of more specific M&E tools, especially at the local implementation level. Participatory local level M&E can be a powerful management and communication tool, especially for tracking and demonstrating project results in demonstration sites. It is foreseen that a more detailed M&E project framework will be developed during the project inception phase for national management purposes. An overall project M&E plan has been devised and is included in the respective section of the project document below. It foresees regular progress reports, as well as audits, a mid-term evaluation and an end-of-project evaluation.

Most risks are organizational or strategic in nature, and mainly relate to relatively low current institutional and individual capacities of the public service structure in terms of adaptation. In summary, the following key risks were identified:

- Social conflict
- Political instability
- Insufficient institutional support and political commitment
- Low Institutional/ Execution Capacity
- Duplication and lack of coordination with other initiatives, resulting in inefficient use of resources, and a los Unavailability of requisite human resources and data
- Duplication and lack of coordination with other initiatives, resulting in inefficient use of resources, and a loss of opportunity for building climate change resilience
- s of opportunity for building climate change resilience
- Lack financial sustainability
- Unavailability of requisite human resources and data
- Sustainability of investment due to low capacity of communities to maintain infrastructures

[9] *Example from a SGEF fund in Ivory coast, as a measure to reduce wood consumption and as income generating for women.*

- Potential Environmental and social risks mainly linked to activities
- Impacts of climate change far greater than predicted
- Insufficient institutional support and political commitment
- Target communities in collines do not see the benefit of new practices or social conflicts hinder taking up the practices.

From an environmental and social safeguard point of view, the project is rated as a Category 3a, with small scale, site-specific and manageable environmental and social impacts. No adverse long-term impacts are anticipated. Under Component 1 (Community Based Early Warning system), the project will enhance communities understanding of climate risks to prepare them to cope with the impact of climate disaster risks by facilitating information access and data resources, disseminate project-generated data and information, and foster public awareness about the potential impacts of climate change. Under Component 2, the project expect to have positive impact in the planning process at subnational levels by strengthening national capacities in climate risks management by providing necessary knowledge and tools for development decision-making in the selected Provinces and Communes. National Government technical staffs and subnational decision makers will be provided with appropriate training, policy/legal tools and integrated coordination mechanisms to improve /support policy design and implementation in dealing with current and long-term climate challenges. Under component 3: The net social and environmental effect of the project is expected to be highly positive. By providing better protection against floods in urban and rural areas reduces risk of losing livelihoods and assets, such as housing and crops. The project is also expected to improve the food security status of households, as crops will not be as susceptible to losses due to floods and drought.

The anticipated negative environmental and social impacts of the project would result mainly from civil works associated with (i) the realization of vegetated ditches erosion control and (ii) the stabilization works undertaken in Ntahangwa and Gaseyni Rivers to reduce the risk of flooding landslides in Bujumbura City. The Government undertakes an Environmental and Social Management Framework (ESMF) that will provide guidance and measures with clear roles and responsibilities, a long with capacity strengthening measures for effective implementation and monitoring. The document will provide key steps for screening all project components, outlines procedures for preparing, reviewing, clearing, disclosing and monitoring subproject-specific Environmental and Social Impact Assessments (ESIAs)/Environmental and Social Management Plan (ESMPs). The document will be validated during the LPAC meeting.

Coordination and implementation of the Project‘s environmental and social safeguards will be carried out by the PCU, which has recruited an M & E expert to be responsible for overseeing Project compliance with the environmental and social guidelines established under the ESMF. An MOU will be developed with the Burundi Association for Environmental Impact Assessment (ABEIE) for external monitoring and evaluation of safeguards. Finally, UNDP will develop key guidelines to ensure that during overseeing missions, the UNDP GEF RTA will report on the progress of the safeguards.

**A.7. Coordination with other relevant GEF financed initiatives**

This second LDCF funded project will complement other programmes and projects being implemented in the same region but with different objectives and priorities. The National Steering Committee (NSC), to be chaired by the Minister of Water, Environment and land Management (MEEATU), and composed of representatives of key ministries, Provinces and Municipalities, will ensure coherence between the Project and other UNDP-supported projects in Burundi, as well as with relevant projects and activities funded or implemented by other development partners (included African Development Bank and GIZ). The project will harness results and outputs of these initiatives will use their lessons learned, the tools developed, and will cooperate with the local partners who proved more reliable. It will generate information on cost effectiveness of intervention in each project area.

## B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:

**B.1 Describe how the stakeholders will be engaged in project implementation**.

The success of project intervention requires the active involvement and participation of the different stakeholders. Key stakeholders for the project include (i) ministries, local governments and other public institutions implementing the project and/or benefiting from it, (ii) cooperating partners, NGOs, and Civil Society Organizations (CSOs) involved in direct support, and (iii) communities that are living in the targeted rural areas, including the participation of potentially vulnerable groups such as women. The present Plan was designed based on the series of meetings organized with stakeholders during the project inception, for agreeing on project content and operationalization (situation analysis, priority sites for intervention, priority criteria, management arrangements).

Table 2: Stakeholder Participation Plan

| Outputs | Lead institution & role | Stakeholders & roles |
|---|---|---|
| 1.1. Set up the functional structure of the Community Based Early Warning System on climate change related risks in Bujumbura Rural, Kirundo and Makamba Provinces | Direction of the Civil Protection/National platform on DRR<br>Establish the Community Based Early Warning System | Local committee DRR /community organization groups) in target Provinces & Communes<br>Contribute to the designing and establishment of the structure of the Community Based Early Warning System on climate change related risks |
| 1.2. Upgrading the hydro meteorological network and improving capacity to generate real-time information weather and data series for information dissemination to target communities | IGEBU<br>Assessment of infrastructure and capacity need;<br>Establishment of the hydro meteorological network and running the system | Local committee DRR /community organization groups) in target Provinces & Communes<br><br>Participate to assessment and capacity need |
| 1.3. Set up an effective and efficient communication and dissemination system to reach all end users | National platform on DRR: participate in the (i) Standard Operating Procedures and (ii) communication and dissemination of messages<br><br>& IGEBU Develop the functional database to analyze and produce relevant information | Local committee DRR /community organization groups) in target Provinces & Communes: participate in the (i) Standard Operating Procedures and (ii) communication and dissemination of messages<br><br>Other partners: FAO, WFP, Red Cross: participate in the (i) Standard Operating Procedures |
| 2.1. Gender and climate vulnerability assessment to guide the development of a local climate change response | Local government: General organization of vulnerability diagnostics;<br><br>IGEBU: develop TOR for the assessment and provide necessary financial and technical support under the project budget | Province and Municipal council staffs, community organization, research centers:<br>– Analysis of exposure and sensitivity to climate in the past;<br>– Analysis of and of future sensitivity<br>– Hierarchy of levels of vulnerability<br>– Identification of adaptation actions<br>– Setting up a mechanism for monitoring and evaluation |
| 2.2. Local government decision makers, technical staffs and communities assisted with training on proper use of climate risks tools and sensitization on climate changes impacts to support the identification of cost-effective adaptation investments options and adjust plans, programmes and | Local government and target Ministries: General organization of the training<br>IGEBU: develop TOR for the training and provide necessary financial and technical support under the project budget; monitoring of trainings | Province and Municipal council staffs, community organizations:<br>Identification of training needs;<br>Beneficiaries of trainings |

| Outputs | Lead institution & role | Stakeholders & roles |
|---|---|---|
| projects given new climatic experiences | | |
| 2.3. Provincial & Municipal development plans and annual budgets reviewed and updated to integrate effective climate risk management to support more climate-smart investments | Local government: organization of policy review | Province and Municipal council staffs, community organization: validation of the review policy |
| 3.1. Realization of 300 ha of vegetated ditches erosion control in Bugabira, Busoni and Kirundo-rural to protect and preserve communities lands from higher risk of pluvial top soil erosion (AMAT 3.1.1.2) | Ministries of Water, Environment, Land Management and Urban Development: planning and supervision of works | Local government & community organization: Extension services: technical supports to communities |
| 3.2. Stabilization works undertaken in Ntahangwa and Gaseyni Rivers to reduce the risk of flooding landslides in Bujumbura City | Municipality of Bujumbura Mairie: planning and supervision of works | Local government & community organization: beneficiaries of adaptations activities |
| 3.3. Accompanying measure to strengthen the food security of vulnerable households | Local government: Planning and supervision of activities | Community organization: beneficiaries of adaptations activities<br>Extension services: technical supports to communities |

**B.2 Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCF/SCCF)**:

The incorporation of climate change risk management principles into urban and rural policy processes is done with the expectation that it will incentivize and lead to the identification of new development priorities, revised strategies, evolution of supportive by-laws, and law enforcement mechanisms, as well as monitoring and evaluation frameworks. Burundi will address important investment gaps in adaptation related technologies focused on floods and erosion by installing biological devices such as herbaceous and shrubby quickset hedges to fix the unstable grounds and the slopes; and popularising anti-erosion physical devices such as ditches, radical terraces and stone alignments. Bujumbura inhabitants will also be supported to undertake work of correction and stabilization on these rivers.

The project will ensure that all key outputs take account of the specific gender related concerns, such as the linkages between women and children and natural disasters and differences in access to key infrastructure between men and women. Specifically, the implementing partner and communities will mainstream gender concerns when designing soft and hard adaptation measure that will be implemented. Gender and the specific role of women in the use and maintenance of village and household level infrastructure, specifically water provisioning infrastructure and measures to mitigate disaster risk, is a critical element that the proposed initiative will promote. Information about climate change and adaptation measures will be designed and disseminated to ensure that women and girls – especially those who are poor or have been denied the right to an education – can easily have access to and absorb the necessary information. During the project formulation phase, a gender expert will systematically analyse and address in all outputs the specific needs of both women and men; and targeted interventions to enable women and men to participate in – and benefit equally from – development efforts.

Gender considerations have been part of the formulation process. In the consultation phase, efforts were done to reach out to individual women and to women's group – as civil society active member, farmers, and institutional leaders – as allowed by the time and budget available. Key issues have been identified in the process, included the need to inform of gender knowledge the DRR tools and mechanisms. For this reason in

Component 2 it is planned to conduct a gender risk analysis (Output 2.2) for better tailoring adaptation intervention, early warning indicators and mechanism, planning policies. Moreover, the outputs and outcomes of the project will contribute to understand how adaptation measures to increase resilience and response mechanisms in emergencies can allow progress towards gender equality. The project aims at implementing adaptation measures in a very participative fashion, through the inclusion of all social groups, included marginalized, to guarantee maximum coverage of impact and structural consideration in planning adaptation intervention and early warning of the most vulnerable (and exposed to the impact of climate change) in the group receiving beneficial effects

**B.3. Explain how cost-effectiveness is reflected in the project design**:

The Burundi is facing recurrent floods that resulted in substantial damages to infrastructure and economic losses. On February 2014, up to 182 persons have been injured, with 84 of them seriously injured. Over 940 homes have been completely destroyed and nearly 12,500 people are estimated to be homeless. Infrastructures have been destroyed, including roads, power supplies, as well as crops and livelihoods.

The proposed LDCF financed projects will the Government of BURUNDI to overcome key barriers identified as major issues that contributed to the climate disaster. These are: (i) denuded vegetation and land degradation in upstream areas, including watersheds; (ii) People settled close to lake edges or near lowlands and marshes are likely to be flooded; (iii) lack of early warning communication, preparedness and evacuation of affected communities; and (viii) limited capacity of local deciders to protect communities and infrastructures from climate disasters. The development of medium to long-term activities is needed to better cope with the underlying causes of drought, floods and landslides in Burundi. Using techniques such as the mapping of risks, improved early warning systems and urban planning, it is hoped future landslides and floods can be prevented. It also addresses the priorities 1,6 & 10 that have been identified in the NAPA as urgent and immediate adaptation priorities. These priorities have been weighed for cost-effectiveness and sustainability before the proposed project components were selected and elaborated.

The project is designed to strengthen local response to climate disaster risks through the application of relevant climate disaster management tools and the promotion of adaptation technologies in urban and rural areas to ensure the socio-economic resilience and wellbeing of vulnerable communities. The total project cost is estimated at US$8,75 million over the period of five years. The project area includes the Provinces of Bujumbura Rural, Kirundo, Makamba and Bururi (total: 36 collines).

During the project design, a number of adaption priorities have been assessed through documentation review, consultations at the national, provincial municipal and local levels, and sites visit. After initial consultations conducted as part of the PPG, prioritized pilot adaptation activities identified by stakeholders were the following:

- Continuation of water canalization path with solid materials, including stone cages and cement to prevent further erosion, and water barriers to reduce water speed and prevent debris to flow into the lake, accompanied by regular and intense maintenance and cleaning measures;
- Reinforcing ravines borders and reducing access borders of bamboo;
- Support household or neighborhood based solutions to manage organic waste with controlled areas for goats to roam and pasture on organic fraction of kitchen waste (to avoid bamboo plantation along Ravine borders to be destructed, and for reducing waste in water channels);
- Organize sensitization of effects of households solid waste not properly discharged;
- Explore organizing association/cooperatives for recuperation and sale of plastic to industry;
- Creation of Risk reduction and disaster management committees at lowest possible level, inclusive of at least 50% of women, including members of different ages, economic classes and capabilities (at least 1 physically disabled person). In the work of the committees, include discussions on avoidance of buildings and possibly cultivations in risk areas, with the focus on finding agreed solutions for land tenure of those with essential (not redundant) property in risky areas;
- Consider compensation of those in risky areas with concomitant relocation in anticipatively agreed lots, and exclusion of dangerous areas from available lots;

- Increase IGEBU capacity on weather forecast included wind strengths and patterns;
- Reinforce communication aiming at weekly and then daily exchange with all field civil protection officer of easy to understand weather forecast by zones;
- Consider installation of wind measurement stations in critical points (fisherman main docks, up hills);
- Develop civil protection officers (not only managers) capacity in weather forecasts understanding, and in collecting data for IGEBU from newly established stations.

After careful and in-depth analysis, it has been decided to focus on 3 specific options: (i) the establishment of an operational Community Based Early Warning system (1,817,560 USD); (ii) the training of communal services, relevant ministry support services and Provincial disaster risks platforms on to use climate risks management tools (1,119,720 USD); and (iii) the financial support on relevant early warning systems and adaptation technologies to protect infrastructures and local livelihoods from climate impacts (5,362,720). These options have been selected on the basis of significant direct and indirect economic impacts on the economy of the project areas.

Given the nature of this project, it is difficult to quantify the potential project benefits and estimate the economic rate of return to project investments. First, the project has only a few revenue generating activities that can be used to quantify the benefits. Second, the project has allocated almost 12% of the project cost to strengthen the disaster risk management capacity of local government and civil society organizations and the potential benefits, while very large, are difficult to quantify.

The project has other direct and indirect potential benefits that are briefly summarized below:

- Involving population in the analysis, design and functioning will make the system structurally relevant and more effective in providing relevant and timely information in emergency to the vulnerable ones;
- Based at the community level the system can generate granular highly relevant real time bottom up information, accurate and useful for alerting all those concerned by an event and to activate well targeted response;
- Developed in a gender sensitive way can provide operable information to national and international levels for designing more relevant interventions oriented at strengthening resilience and at filling gender gap in vulnerability;
- The development and functioning of the system requires an investment on community mobilisation that will pay off in terms of improved awareness on good practices (and negative ones) of land management and use vis a vis climate change, and as preparedness to minimize the toll of disastrous events.
- Involvement of communities in monitoring climate and the territory can build the engagement of the populations living on the land for the protection of the natural habitat and resources, including a better and more informed use of forests and of other natural resources;
- Increasing public managers' as well as population's knowledge of dynamics involved in climate change, included deforestation, land use change and water management, can increase good governance (better information for more sustainable decision) while also obtaining an increase of the accountability standard (better informed population can exercise better control on public decision on land management).

The project has allocated almost 12% of the project resources to strengthening technical and institutional capacity in the urban and rural areas. The likely impact of the project on capacity strengthening is summarized as follows: - First, the project interventions will strengthen IGEBU capacity to generate real-time warnings information for vulnerable areas. - Second, technical experts engaged in decentralization process will be provided with skills on climate risks concepts, analysis and use of information for planning purpose. - Third, communities engaged in CB EWS will be harnessed to improve response mechanism; and finally, staff and political representative of relevant ministries, as well as technical services of the different municipalities in the country, and members of the platform will received information on maintaining and managing water systems in the fast-growing under climate variability and changes. The advantages of this approach are manifold, in particular: (i) a good level of knowledge from all categories of staff and local population enables a common understanding of

the problems generated by climate change as well as the adaptation options responding to local needs; and (ii) community involvement in the various activities will ensure buy-in of promoted activities and scaling-up to a broader audience of the promoted measures.

The LDCF financed project intervention's will not only strengthen technical and institutional capacity but will also improve alignment with and implementation of various Government initiatives that deal with DRR, DRM and climate change. These initiatives include (i) National Platform for DRR (ii) National Strategy and plan for Disaster Risk Prevention and Reduction; (iii) National Adaptation Program for Action (NAPA) under the UN Framework Convention on Climate Change (UNFCCC).

The project will have a positive impact on agricultural growth due to several project interventions. With the installation of 300 ha of erosion control and reforestation of 300 ha in hills, it is expected that at least 2,000 ha of agricultural land will be protected from floods and landslide through erosion control in the Bugasera and Mumirwa regions. This would be added to the total irrigable area to enhance food security in the target regions. In term of environmental benefits, the erosion control works will help slow down runoff and consequently curb soil erosion, favor sedimentation of fine particles to increase water retention and improve water infiltration and consequently the refilling of the water table. The combination of woodlots with these works and the planting of binding grass will protect farmlands against erosion and improve their fertility.

The cost effectiveness of the project is demonstrated by using examples of the impact of project investments in protecting infrastructures and local livelihoods from climate impacts (Component 3). The project will help mitigate the impact of future climate disasters and increase Burundi's overall resilience capability. If the project investments in flood protection (Component 3) and disaster risk management (Component 1) are made, as proposed, and properly maintained over a period of 25 years, the project will have substantial economic impact by avoiding the damages and losses due to future floods in the absence of this project. According to the history of the last 50 years, Burundi experiences floods 11 times and the estimated value of the damage and some economic losses due to the flood on January 2014 was US$ 3 million.

The project interventions will not only improve capacity but will also protect urban infrastructure through river stabilization in order to improve efficient delivery of critical public urban services. As the share of urban population in the country is likely to increase to at least 50% by 2050, the protection of critical public urban facilities/services is absolutely essential. This will have a major impact for improving the quality of life in Bujumbura Rural and Mairie. This will also reduce any interruptions of urban public services due to any future disasters like these floods.

Finally, the project will induce 16,424 temporary jobs (with at least 40% of women) in community erosion control works and infrastructure protection and income generating activities. This situation will lead to an improvement of the socio-economic indicators and a significant reduction of the incidence of poverty. Income-generating activities such as bee keeping, market gardening and fruit growing will contribute to economic growth, and notably to the wellbeing of women and children. This increase in incomes will relieve the poorest populations of the project area who will then be able to bear certain expenditures on food, health and education.

### *Sustainability*

Overall sustainability of the project relies on the full commitment of the Government of Burundi in coordinating and providing guidance on climate changes and disaster risks management.

- The mainstreaming of adaptive measures to address additional risks posed by climate change within the local and regional development strategies of the targets Provinces and Communes (target: 2 SPAT and 3 PCDC) will ensure institutional sustainability. This project will effectively mainstream climate change into relevant planning mechanisms such as the local development plans and budgets, thus ensuring sustainability of the intervention.
- Critical factors for project institutional sustainability will be also addressed through a full collaboration with institutions at national and local levels and adequate M&E procedures carried out by different national agencies. The project will provide support to the entities to strengthen their capacities in line with their role

in the project. The project team will be based in close proximity to the municipalities - within provincial administration services - and a number of civil servants will be identified, equipped and trained at the provincial municipal and collines levels in order to work with the project team and closely monitor project activities and results. Along the same line of ensuring the project's sustainability, a strategy for replicating site-level interventions will be developed.

- The long-term project viability and sustainability will depend greatly on its 'ownership' and on the 'institutionalization' of capacity built by the project. All capacity building activities foreseen in the project have been planned so as to have a lasting impact, both at the local and national levels, e.g. training components will be planned based on needs assessments. At the local level, the project will be associated with local NGOs and community organizations and the private sector, building their capacities and thus ensuring long-term buy-in. Empowering all local-level stakeholders, including the dissemination of timely and meaningful climate & warning information and erosion control techniques to the communities and through a whole range of capacity building activities tailored to their specific needs and defining and implementing an efficient knowledge management and sharing system to efficiently capitalize lessons learned will also contribute to institutional sustainability.
- The beneficiaries will directly take part in early warning system and implementing activities related to erosion control. Such involvement of the populations and their role in the implementation of project activities is likely to guarantee the sustainability of the actions, enhance their capacities to prevent and management climate disaster risks and obtain additional resources. The envisaged training of the population and extension services will build their capacities and will create the conditions for sustainable resilience and local development, by fostering the emergence of community groups capable to act appropriately and in sufficient time to reduce the possibility of harm or loss. The developments, which will be carried out at the request of beneficiaries, will use simple techniques that are adapted and easily grasped by the populations.
- Finally, lessons learned from the implementation of this project will be compiled and diffused to a broad range of stakeholders, using a systemic framework, and the project will make use of the ALM to ensure that the lessons learnt from the project contribute to, and benefit from, experiences in adapting to climate change across the entire LDCF portfolio.

### *Replicability*

The project is designed to scale up effective and efficient community-based adaptation measures and practices. It is designed to ensure a wide adoption and diffusion of these practices. Such an approach will ensure the sustainability and replicability of the results achieved. Furthermore, by organizing exchange visits between farmers from other Prefectures, it is expected that other communities will replicate community-based adaptation initiatives. The **replication mechanism** is embedded in project components.

- Potential for organizational scaling up is developed under the Component 2 in the view that training activities will increase organizational strength of selected extension institutions on climate changes risks management and vulnerability assessment, allowing them to adjust regulations and policies governing development sectors (such as water, infrastructures, environment, etc.) and disaster risks reduction strategies at national and local level (Provincial & local development plans). From the baseline, individual and institutional capacities on climate changes adaptation do not exist. At the end of the project at least 4 ministerial & decentralized institutions, 36 collines DRR committees' representatives (all estimated to be at least 300 people) will increase their capacity on climate risks management and assessment (output 2.1).
- In term of political scaling up, it will be facilitated the integration of climate changes adaptation concerns into the political agenda at Provincial and communes levels and foster local government engagement to adjust local policies and inclusion and the provision of climate smart finance (output 2.2).
- Documenting adaptation practices and technologies constitutes a precondition and point of departure for the process of scaling up and out (quantitative scaling up). Under Output 1.e, project lessons learned will be generating, sharing, capturing, and disseminating among current stakeholders but also future stakeholders who want to promote and implement effective, sustainable, large-scale climate resilient

water infrastructure and management practices. The participatory processes and other collaborative planning approaches to be developed at local level by of the project will enable multiple stakeholders to share knowledge, develop awareness, and improve learning and foster replication in other sites. In addition, the skilling communities members in appropriate climate resilient adaptation techniques (Output 2.3) will facilitate further upscale the application of these technologies. Finally, a functional knowledge management documents (adaptation guides on CB EWS, planning, gender, etc.) will be developed under each component to ensure that the outcomes find their way into national development planning and negotiation with investment partners.

## C. DESCRIBE THE BUDGETED M &E PLAN:

The project will be monitored through the following M& E activities. The M&E budget is provided in the table below. The M&E framework set out in the Project Results Framework in Part III of this project document is aligned with the AMAT and UNDP M&E frameworks.

**Project start**: A Project Inception Workshop will be held within the first 2 months of project start with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and programme advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership of the project results and to plan the first year annual work plan.

The Inception **Workshop** should address a number of key issues including:

Assist all partners to fully understand and take ownership of the project: detail the roles, support services and complementary responsibilities of UNDP CO and RCU staff vis-à-vis the project team; discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms; discuss the Terms of Reference for project staff again as needed.

Based on the project results framework and the LDCF related AMAT set out in the Project Results Framework in Section III of this project document; finalize the first annual work plan; review and agree on the indicators, targets and their means of verification; and recheck assumptions and risks.

Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements: agree on and schedule the Monitoring and Evaluation work plan and budget.

Discuss financial reporting procedures, obligations, and arrangements for annual audits.

Plan and schedule PB meetings: clarify the roles and responsibilities of all individuals in the project organisation structure and plan meetings; preferably hold the first PB meeting within the first 12 months following the inception workshop.

An Inception **Workshop report** is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

**Quarterly**:

Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform.

Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS. Risks become critical when the impact and probability are high. Note that for UNDP/GEF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of ESCOs are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies a classification as critical).

Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot.

Other ATLAS logs will be used to monitor issues and lessons learned. The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

**Annually:** Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and GEF reporting requirements.

The APR/PIR includes, but is not limited to, reporting on the following:

Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative);

Project outputs delivered per project outcome (annual);
Lessons learned/good practices;
AWP and other expenditure reports;
Risk and adaptive management;
ATLAS QPR.

**Periodic Monitoring** through site visits: UNDP CO and the UNDP-GEF regionally-based staff will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated to the project team and Project Board members no less than one month after the visit.

**Mid-term of project cycle**: The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation (expected to be in October 2015). The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; highlight issues requiring decisions and actions; and present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties of the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the UNDP Evaluation Office Evaluation Resource Centre (ERC). The LDFC/SCCF AMAT as set out in the Project Results Framework in Section III of this project document) will also be completed during the mid-term evaluation cycle.

**End of Project**: An independent Terminal Evaluation will take place three months prior to the final PB meeting and will be undertaken in accordance with UNDP-GEF guidance. The terminal evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). The Terminal evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response, which should be uploaded to PIMS and to the UNDP ERC.

**Learning and knowledge sharing**: Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums.

The project will identify and participate, as relevant and appropriate, in scientific, policy-based roundtables and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyse, and share lessons learned that might be beneficial in the design and implementation of similar future projects.

There will be a two-way flow of information between this project and other projects of a similar focus.

**Audit:** Project will be audited in accordance with UNDP Financial Regulations and Rules and applicable audit policies.

Table 3: Project Monitoring and Evaluation

| **Type of M&E activity** | **Responsible Parties** | **Budget USD** *Excluding project team staff time* | **Time frame** |
|---|---|---|---|
| Inception Workshop and Report | Project Manager (PIU)<br>Project Director (CNEDD)<br>UNDP CO, UNDP GEF | Indicative cost: 10,000 | Within first two months of project start up |
| Measurement of Means of Verification of project results. | UNDP GEF RTA/Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members.<br>PIU, esp. M&E expert | To be finalized in Inception Phase and Workshop. | Start, mid and end of project (during evaluation cycle) and annually when required. |
| Measurement of Means of Verification for Project Progress on *output and implementation* | Oversight by Project Manager<br>PIU, esp. M&E expert<br>Implementation teams | To be determined as part of the Annual Work Plan's preparation.<br><br>Indicative cost is 25,000 | Annually prior to ARR/PIR and to the definition of annual work plans |
| ARR/PIR | Project manager (PIU)<br>UNDP CO<br>UNDP RTA<br>UNDP EEG | None | Annually |
| Periodic status/ progress reports | Project manager and team | None | Quarterly |
| Mid-term Review | Project manager (PIU)<br>UNDP CO<br>UNDP RCU<br>External Consultants (i.e. evaluation team) | Indicative cost: 30,000 | At the mid-point of project implementation. |
| Terminal Evaluation | Project manager (PIU)<br>UNDP CO<br>UNDP RCU<br>External Consultants (i.e. evaluation team) | Indicative cost : 45,000 | At least three months before the end of project implementation |
| Audit | UNDP CO<br>Project manager (PIU) | Indicative cost per year: 3,000 (12,000 total) | Yearly |
| Visits to field sites | UNDP CO<br>UNDP RCU (as appropriate)<br>Government representatives | For GEF supported projects, paid from IA fees and operational budget | Yearly for UNDP CO, as required by UNDP RCU |
| **TOTAL indicative COST**<br>Excluding project team staff time and UNDP staff and travel expenses | | USD 122,000<br>(+/- 3.2% of total LDCF budget) | |

## 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(s) with this form. For SGP, use this OFP endorsement letter).

| NAME | POSITION | MINISTRY | DATE *(MM/dd/yyyy)* |
|---|---|---|---|
| **Murengerantiwan Epimaque** | GEF Focal Point | MINISTRY OF WATER, ENVIRONMENT AND URBAN PLANNING | APRIL 23, 2012 |

**B. GEF AGENCY(IES) CERTIFICATION**

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for CEO endorsement/approval of project.

| Agency Coordinator, Agency Name | Signature | Date *(Month, day, year)* | Project Contact Person | Telephone | Email Address |
|---|---|---|---|---|---|
| Adriana Dinu Executive Coordinator, UNDP/GEF |  | Oct. 20, 2014 | Mame Diop RTS, GLECRDS | +25191939 6499 | mame.diop@undp.org |

## ANNEX A: PROJECT RESULTS FRAMEWORK

| |
|---|
| **This project will contribute to achieving the following Country Programme Outcome as defined in CPAP 2014-2016:**<br>Outcome 2.1.6: The institutional, organisational and technical capacities at national, local and community levels for the management of the environment, natural resources et climate changes adaptation are strengthened<br>Outcome 2.2.1: The institutional, organisational and technical capacities at national, local and community levels for the prevention, preparation of disasters risks, including natural, are strengthened |
| **Country Programme Outcome Indicators:**<br>Number of mechanisms and tools for the regulation, coordination, management and expertise of the environment and natural resources, climate change and disaster risk revitalized and / or established, and operational.<br>Number of techniques, technologies and infrastructure for the preservation of the environment and resources, and the resilience to the impacts of climate change and natural disasters<br>Existence of an integrated and functional information, evaluation and supervision system on Climate change & disasters risks and reduction<br>Existence of technical tools, technical expertise and appropriate equipment<br>Existence of a climate risks adaptation program |
| **Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page, circle one):**<br>3. Promote climate change adaptation |
| **Applicable GEF Strategic Objective and Program:**<br>CCA-1: Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level<br>CCA-2: Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level<br>CCA-3: Promote transfer and adoption of adaptation technology |
| **Applicable GEF Expected Outcomes:**<br>Outcome 1.1: Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas<br>Outcome 2.3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level<br>Outcome 3.1: Successful demonstration, deployment, and transfer of relevant adaptation technology in targeted areas |
| **Applicable GEF Outcome Indicators: (following AMAT tool)**<br>Indicator 1.1.1. Adaptation actions implemented in national/sub-regional development frameworks<br>Indicator 2.3.1. % of targeted population awareness of predicted adverse impacts of climate change and appropriate responses<br>Indicator 3.1.2. Type of relevant climate change adaptation technology implemented in selected areas by participatory stakeholders |

| | Indicator | Baseline | Targets<br>End of Project | Source of verification | Risks and Assumptions |
|---|---|---|---|---|---|
| **Project Objective**[10]<br>*Provincial, communal services and local communities capacitated on disaster risks preparedness and responses management to ensure long term and sustainable emergency and reconstruction phase in Bugesera, Mumirwa and Imbo Lowlands' regions*<br>**(equivalent to output in ATLAS)** | No. and type of actors in Kirundo, Makamba, Bururi and Bujumbura Provinces with increased adaptive capacity to reduce risks of and response to climate variability *(AMAT indicator 2.2.1.)* | Type and level: 0<br>The capacity of communities, local governments, and national government to respond effectively to climate change risks remains limited due to the non-availability of relevant data and management tools, the lack of local technical expertise, and the low contributions in financial resources. There is insufficient indigenous knowledge on weather forecasting indicators and skills in the future. In addition, climate change risks and climate resilient activities are not considered into the planning and budgeting systems at the local government and community levels. | At least, 150 technical staffs from extension services, municipalities, 50 members of DRR platforms and 1000 households (with a gender balance) implement adaptive and more resilient measures to climate change impacts | Survey<br>Interviews<br><br>APRs/PIR | Assumptions<br>➢ Good coordination and better coherence of disaster risks management<br>➢ Participation and commitment of target communities<br><br>Risks<br>➢ Social conflict<br>➢ Political instability<br>➢ Insufficient institutional support and political commitment<br>➢ Low Institutional/ Execution Capacity<br>➢ Duplication and lack of coordination with other initiatives, resulting in inefficient use of resources, and a loss of opportunity for building climate change resilience |
| Outcome 1[11]<br>*An operational Community Based Early Warning system established capable to engage and reach out target communities for climate change disasters risks prevention and guiding the implementation of adaptation activities.*<br>(Equivalent to activity in ATLAS) | No. and type of stakeholders targeted in target collines with access to information and alerts proceeding from advanced data analysis and hydro meteorological forecasts (gender disaggregated) *(AMAT indicator 2.1.1.)* | No. and type: at least 500 households received alert messages from Civil Protection officers and the Burundi branch of the Croix Rouge. Civil protection officers use megaphone to encourage evacuation in case of strong rains and floods.<br><br>The Burundi branch of the Croix Rouge has developed – at least in the provinces identified as main target of the present project, Bujumbura rural and Bugasera – an impressive structure with high | At least 2000 households in the 36 target collines have access frequently to climate risks information and alerts proceeding from advanced data analysis and hydro meteorological forecasts | Survey Reports;<br><br>Monitoring reports from DRR platforms<br><br>IGEBU annual reports<br><br>APRs/PIR | Assumptions<br>➢ Existence of an operational Disaster Risks platforms at different levels ;<br>➢ Participation and commitment of target communities<br><br>Risks<br>➢ Unavailability of requisite human resources and data<br>➢ Duplication and lack of |

[10] *Objective (Atlas output) monitored quarterly ERBM and annually in APR/PIR*
[11] *All outcomes monitored annually in the APR/PIR. It is highly recommended not to have more than 4 outcomes.*

| | Indicator | Baseline | Targets<br>End of Project | Source of verification | Risks and Assumptions |
|---|---|---|---|---|---|
| | | capillary presence at hill level (around 150 volunteers each hill) and locally-based consistent response mechanisms to assist the most vulnerable families with food and other basic items. | | | coordination with other initiatives, resulting in inefficient use of resources, and a loss of opportunity for building climate change resilience |
| | Type and No. of information systems in place to support community based early warning system in target collines *(AMAT indicator 2.1.2)* | Type and No.: 2<br>FAO and WFP, have developed nation wide monitoring systems: the "*Systeme d'Alerte Precoce et Suivi de Securite' Alimentaire"* (SAPSSA). But, the FAO's system is more focused on agricultural production and animal husbandry, while WFP FSMS more on food security and access to food. | At least 10 community based Early Warning systems established to convey down accurate hydro-meteorological previsions messages & climate risks alerts to population | | |
| **Outcome 2**<br>*Communal services, relevant ministry support services and Provincial disaster risks platforms trained to use climate risks management tools for long term planning under climate change variability and projections* (equivalent to activity in ATLAS) | No. and types of staffs trained on adaptation and climate risks management themes and tools (gender disaggregated) *(AMAT indicator 2.2.1.1)* | No and types: 0<br>No climate risks tools available to extension services and DRR Platform to support communities on climate disaster risks management<br>Low capacity of staffs from IGEBU to produce real-time information on weather forecasts, climatic and agro-climatic | At least 50 staffs from extension services and 100 members from DRR Platforms trained on climate changes themes including climate risks management, and functioning of CB EWS<br>At least 15 staffs from IGEBU trained on Geographic Information System tools and software, remote sensing and satellite image interpretation, meteorological analysis, climate disaster risks information management | Training evaluation and monitoring Reports;<br><br>APRs/PIR | <u>Assumption</u><br>➢ Commitment of national institutions, local government, civil society, and research institutions;<br>➢ Effective intersectoral collaboration<br><br><u>Risks</u><br>➢ Lack financial sustainability<br>➢ Unavailability of requisite human resources and data |
| | Number of SPAT & PLDC including specific actions and budget for climate change adaptation *(AMAT indicator 1.1.1.1)* | Num. 0<br>Most of local deciders and communities have limited ability to integrate climate change in all relevant sectoral activities and in development strategies in general. | At least 2 SPAT et 3 PCDC are updated to include climate risks and climate change issues (including budget), and to support the implementation of adaptation actions | | |

| | Indicator | Baseline | Targets<br>End of Project | Source of verification | Risks and Assumptions |
|---|---|---|---|---|---|
| | % of community groups sensitized on predicted adverse impacts of climate change, risk reduction, risk management, and appropriate adaptation responses (gender disaggregated) *(AMAT indicator 2.3.1)* | Low (<15%) : the civil protection officers operating megaphones in case of violent weather phenomenon arrives, for requesting households in risky areas (as those along ravines) to evacuate. There is a limited understanding of the risks and opportunities related to climate change and the potential development benefits of climate change related activities | High>75% of targeted population aware of predicted impacts of climate change and appropriate adaptation responses, including at least 50% of women. | | |
| **Outcome 3**<br>*Investment on relevant early warning systems and adaptation technologies to protect infrastructures and local livelihoods from climate impacts*<br>(Equivalent to activity in ATLAS) | Type of relevant climate change adaptation technology implemented in selected areas by participatory stakeholders *(AMAT Indicator 3.1.1.2)* | The lowlands of the Imbo and Mumirwa regions are threatened by the impacts of increased precipitation that result in the amplification of linear erosion along watercourses that are causing destruction and/or damage to many public and private infrastructure located in different districts of Bujumbura.<br>Most of current investments (e.g. roads, schools, urban drainage systems) are addressing the lack of basic infrastructures in key cities such as Bujumbura, Gitega and Ngozi. Very little and scattered investments are underway in target sites to mitigate erosion impacts. | At most 300 ha of vegetated ditches erosion control in Imbo and Mumirwa and 300ha of reforestation undertaken to stabilize watershed upstream of Bujumbura;<br>And slope stabilization works realized to correct the Ntahangwa riverbed | Survey Reports;<br><br>Service providers execution reports<br><br>APRs/PIR | <u>Assumptions</u><br>➢ Participation and commitment of target communities<br>➢ Effective intersectoral collaboration<br><br><u>Risks</u><br>➢ Sustainability of investment due to low capacity of communities to maintain infrastructures<br>➢ Potential Environmental and social risks mainly linked to activities<br>➢ Impacts of climate change far greater than predicted<br>➢ Insufficient institutional support and political commitment<br>➢ Target communities in collines do not see the benefit of new practices or social conflicts hinder taking up the practices |
| | Number of targeted households that have adopted resilient livelihoods under existing and projected climate change *(AMAT indicator 1.3.1.1)* | <u>Baseline</u>: At least 25 households are involved in livelihoods activities such as fisheries.<br>Many families have already been enforced to regress and leave the land closer to the lake Cohoha (around 50m belt) much more productive even in case of insufficient rain and drought. However, they had no alternative | <u>Target</u>: At least 100 households, including at least 25% of female headed households, have access to relevant climate resilient livelihood measures *(e.g. IGA, water collection and associated vegetable gardens, cooking technology)* to strengthen the food security of vulnerable households | | |

| | Indicator | Baseline | Targets<br>End of Project | Source of verification | Risks and Assumptions |
|---|---|---|---|---|---|
| | | support causing severe food insecurity and increased poverty (due to high prices of food in the area). In addition, communities hamper reforestations activities in their effectiveness due to high level of exploitation of trees. | | | |

**ANNEX B: RESPONSES TO PROJECT REVIEWS (**from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

| | | |
|---|---|---|
| 10. Does the proposal clearly articulate how the capacities developed, if any, will contribute to the sustainability of project outcomes? | By CEO Endorsement, please present a comprehensive strategy to ensure the sustainability of the investments proposed under Component 2, including adequate institutional capacity building, regulatory measures, and incentive structures. | Overall sustainability of the project relies on the full commitment of the Government of Burundi in coordinating and providing guidance on climate changes and disaster risks management.<br>The mainstreaming of adaptive measures to address additional risks posed by climate change within the local and regional development strategies of the targets Provinces and Communes (target: 2 SPAT and 3 PCDC) will ensure **institutional sustainability**. This project will effectively mainstream climate change into relevant planning mechanisms such as the local development plans and budgets, thus ensuring sustainability of the intervention. Critical factors for project institutional sustainability will be also addressed through a full collaboration with institutions at national and local levels and adequate M&E procedures carried out by different national agencies. The project will provide support to the entities to strengthen their capacities in line with their role in the project. The project team will be based in close proximity to the municipalities - within provincial administration services - and a number of civil servants will be identified, equipped and trained at the provincial municipal and collines levels in order to work with the project team and closely monitor project activities and results. Along the same line of ensuring the project's sustainability, a strategy for replicating site-level interventions will be developed.<br><br>The **long-term project viability and sustainability** will depend greatly on its 'ownership' and on the 'institutionalization' of capacity built by the project. All capacity building activities foreseen in the project have been planned so as to have a lasting impact, both at the local and national levels, e.g. training components will be planned based on needs assessments. At the local level, the project will be associated with local NGOs and community organizations and the private sector, building their capacities and thus ensuring long-term buy-in. Empowering all local-level stakeholders, including the dissemination of timely and meaningful climate & warning information and erosion control techniques to the communities and through a whole range of capacity building activities tailored to their specific needs and defining and implementing an efficient knowledge management and sharing system to efficiently capitalize lessons learned will also contribute to institutional sustainability.<br><br>The beneficiaries will directly take part in early warning system and implementing activities related to erosion control. Such involvement of the populations and their role in the implementation of project activities is likely to guarantee the sustainability of the actions, enhance their capacities to prevent and management climate disaster risks and obtain additional resources. The envisaged training of the population and extension services will build their capacities and will create the conditions for sustainable resilience and local development, by fostering the emergence of community groups capable to act appropriately and in sufficient time to reduce the possibility of harm or loss. The developments, which will be carried out at the request of beneficiaries, will use simple techniques that are adapted and easily grasped by the populations. |

| | | |
|---|---|---|
| 18. Does the project take into account potential major risks, including the consequences of climate change and provides sufficient risk mitigation measures? (i.e., climate resilience) | By CEO Endorsement, please provide a more detailed analysis of the political and financial risks associated with the investments proposed under Component 2. | A complete risk log, including mitigation measures, is annexed to the UNDP Project Document. It describes all risks identified, their type/impact, and identified management measure.<br><br><u>Political instability</u><br>The fragility of the peace process both at the domestic and sub regional level constitutes a major risk that could, in general hamper, the proper implementation of and limit project impact. While there has been significant progress in terms of consolidation of the democratic process, internal peace remains fragile. The implementation of the Poverty Reduction and Growth Facility in 2004, in spite of the political context and strong social pressure, constitutes a mark of the determination by the Government to restore the fundamental balances of the economy. The will of the Government to consolidate peace as well as the support envisaged by the international community should make it possible to create the conditions for satisfactory implementation in Burundi. Today The International Community is engaged to support Burundi in the process of internal reconciliation and democratization within all the states of the region to promote a stable, democratic community of nations that will work toward mutual social, economic, and security interests.<br><br><u>Lack financial sustainability</u><br>UNDP and the World Bank are working with national and local government to ensure coordination mechanisms on aid, leveraging of financial resources at national and international levels. In addition, the project will develop framework for investment with the revision of local plan to introduce adaptation options and investments.<br>Analysis of the financing of adaptation measures and early warning system will be undertaken as part of the revision of Local Development Plan (Component 2). The outcome will be a financing strategies developed and discussed with the government and development actors involved in the disaster management in Burundi. |

**Responses to <u>US</u> Comments**

| US Comments | UNDP Response at CEO Endorsement submission stage |
|---|---|
| 1. We ask UNDP to provide more information regarding how component 1, "Developing disaster risks preparedness capacities for local development that is robust in the face of climate uncertainty", and 2, "Effective disaster risk responses for long term and climate resilient emergency and reconstruction programme", will be integrated. Will component 1 inform actions under component 2 | The Component 1 on the Community early warning system and the component 3 on practical adaptation measures for climate disaster risks are complementary<br>The first component will generate and disseminate climate information to target communities for managing climate risk and disaster and coordinate response, not just as receiver but as stakeholders part taking in the system. While the third component will support the appropriate land management and plant use, and while also keeping the safety of people as a pivot value, it is important that the livelihoods of people are not affected negatively. |
| 2. We note the importance of conducting risk assessments for livelihoods and infrastructure. However environmental concerns should also be accounted for, especially given the issues with erosion. As such, we request that UNDP take into consideration risks to the | Under UNDP support, the Government undertake an Environmental and Social Management Framework (ESMF) that will provide guidance and measures with clear roles and responsibilities, a long with capacity strengthening measures for effective implementation and monitoring. The document |

| US Comments | UNDP Response at CEO Endorsement submission stage |
|---|---|
| natural environment and ecosystem services (page 11). | will provide key steps for screening all project components, outlines procedures for preparing, reviewing, clearing, disclosing and monitoring subproject-specific Environmental and Social Impact Assessments (ESIAs)/Environmental and Social Management Plan (ESMPs).<br>Coordination and implementation of the Project's environmental and social safeguards will be carried out by the PCU, which has recruited an M & E expert to be responsible for overseeing Project compliance with the environmental and social guidelines established under the ESMF. An MOU will be developed with the Burundi Association for Environmental Impact Assessment (ABEIE) for external monitoring and evaluation of safeguards. Finally, UNDP will develop key guidelines to ensure that during overseeing missions, the UNDP GEF RTA will report on the progress of the safeguards. |
| 3. We understand that comprehensively designing and disseminating information about climate change and adaptation measures is critical to ensure that even the poorest, most isolated populations have access to and absorb the necessary information. We request that UNDP in developing activities in output 1.1 articulate how it will ensure that early warning systems will be people-centered, e.g., will activities include capacity building for communities on what to do when early warnings are received, such as simulation drills? | The component 1 is dedicated to the Community early warning system. The local communities in the 40 target collines will have a well decentralize, reliable and functioning organisational system for managing climate risk and disaster and coordinate response, not just as receiver but also as stakeholders' part taking in the system. A people centred Early Warning System will be test out as a system capable of involving and reaching communities, putting them in relations to the national level, and also connect it to sensitization activities as well as to infrastructural work to work as a connecting ring between climate changes adaptation measure and DRR interventions. The system will be top down as well as Bottom Up approaches to generate and disseminate climate information effectively. |
| 4. With regard to output 2.1, we request that UNDP consider how the infrastructure described in the baseline projects themselves could be made more climate-resilient (for example, could they be built above the flood plain?). | The stabilization works will be undertaken in catchment upstream of Bujumbura (Ntahangwa & Gaseyni Rivers) to protect Bujumbura city against the risk of ravinement, landslide, mudslide, and to gradually reduce runoff. Identification of measures will be based on current and future vulnerability using different climate scenarios through the downscaling of available climate data and coupling with matching socio-economic information<br>The vegetated ditches of vegetated ditches erosion control will allow: the preservation of soil fertility through prevention – and interruption - of erosion; the possibility of feeding livestock with forage grasses; and the possibility of introducing plant species for agroforestry, or improved banana trees |
| 5. We note that under section B.5, the PIF does not include the African Centre for Meteorological Application for Development (ACMAD) and the Global Climate Observing System (GCOS) for the climate data and modelling components. We strongly request that UNDP consider including ACMAD and GCOS, given the nature of the PIF. | An advanced training on meteorological and hydrological analysis, will be organized with scholarships for 2 or 3 IGEBU staff (keep quota male/female even, and at least one male/female on 3 posts), in regional institutions like the African School of Meteorology and Civil Aviation in Niamey or at IMTR Nairobi Hydrology.<br><br>IGEBU, the Project manager is already working with GEO (Group on Earth Observations), AfriGEOSS and the WMO-Global Framework for Climate Services in to transmit and received regionally and globally information |

| US Comments | UNDP Response at CEO Endorsement submission stage |
|---|---|
| | and data enabling forecasting and downscale operations. This capacity will be use for the designing of the Community based early warning system. |
| 6. Given that UNDP country office level operations are supported by regional advisory capacity based in the UNDP/GEF Regional Centre in Pretoria, we recommend that UNDP explain how it could scale-up or mainstream adaptation into regional policy-making apparatuses, in addition to the mentioned national mechanisms. | UNDP will capitalize lessons learned from the project, specifically the component 2 dedicated to the integration of cost-effective adaptation investments and options into local development planning and budgeting instruments, taking into account weather variability and climate change projections. UNDP is running with UNEP the Global NAP Programme to assisting LDCs to mainstream climate change adaptation into medium and long-term national planning processes. The lessons learned from Burundi will be share with the platform created and best practices duplicated. |

**ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS**[12]

A. DESCRIBE FINDINGS THAT MIGHT AFFECT THE PROJECT DESIGN OR ANY CONCERNS ON PROJECT IMPLEMENTATION, IF ANY:

B. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES FINANCING STATUS IN THE TABLE BELOW:

| PPG Grant Approved at PIF: | | | |
|---|---|---|---|
| *Project Preparation Activities Implemented* | *GEF/LDCF/SCCF/NPIF Amount ($)* | | |
| | *Budgeted Amount* | *Amount Spent To date* | *Amount Committed* |
| Activity 1: Needs assessment and technical feasibility of adaptation options and measures | 40,000 | 0 | 12,500 |
| Activity 2: Project Development | 7,500 | 18,595 | 16,197 |
| Activity 3: Stakeholders Consultation | | 2,981 | 10,727 |
| Activity 4: Develop a financial plan and co-funding scheme | 22,500 | | 9,000 |
| **Total** | **70,000** | **21,576** | 48,424 |

[12] If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities.

**ANNEX D: CALENDAR OF EXPECTED REFLOWS (**if non-grant instrument is used**)**

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/NPIF Trust Fund or to your Agency (and/or revolving fund that will be set up)