



United Nations Development Programme

Least Developed Country Fund (LDCF)

Project title: Strengthening the resilience of rural livelihoods and sub-national government system to climate risks and variability in Benin	
Country: Benin	Implementing Partner: Ministère du Plan et du Développement
Management Arrangements: National Implementation Modality (NIM)	
UNDAF/Country Programme Outcome 6: By 2018, institutions and populations of the intervention municipalities are able to better manage their environment, their natural and energy resources, the impacts of climate change, and natural disasters Output 6.3: Institutions and communities have increased capacities to be more resilient to climate change, to natural disasters and extreme event and crisis	
UNDP Strategic Plan Outcome 5: Countries are able to reduce the likelihood of conflict and lower the risk of natural disasters, including from climate change Output 5.3: Gender responsive disaster and climate risk management is integrated in the development planning and budgetary frameworks of key sectors (e.g. water, agriculture, health and education)	
UNDP Social and Environmental Screening Category: <i>Medium</i>	UNDP Gender Marker: 2
Atlas Project ID/Award ID number: 00104207	Atlas Output ID/Project ID number: 00105894
UNDP-GEF PIMS ID number: 5433	GEF ID number: 5904
Planned start date: July 2017	Planned end date: May 2022
LPAC date:	
Brief project description	
<p>The objective of the proposed LDCF project is to support resilient agriculture and livelihoods and to mainstream climate risk considerations into national and sub-national planning processes so that local communities are less vulnerable to climate change.</p> <p>To achieve this overall objective, the project is structured around 3 complementary and mutually reinforcing components:</p> <ul style="list-style-type: none"> - Component 1 will strengthen the capacity of departments and municipalities in the targeted areas, as well as of all relevant Ministries, to fully integrate climate change risks and opportunities in their development planning and budgeting work. - Component 2 will reduce the targeted communities' vulnerability to the adverse impacts of climate change by providing technical training and smart investment in productive agriculture 	

infrastructure for water harvest and management, as the alteration of rainfall patterns is the main climate change induced risk to Benin's mainly rain-fed agriculture.

- Component 3 will equally improve the targeted communities' adaptive capacities by supporting the diversification of their income generating activities.

The Republic of Benin is a Sub-Saharan African country of 116,622 km² and close to 11 million inhabitants. Despite moderate GDP growth of between 4 and 5% annually over the past two decades, Benin is still a least developed country and poverty remains widespread and on the rise in Benin, with national poverty rates of 40.1% in 2015, up from 35.2% in 2009.

The country's economy relies heavily on agriculture, in particular cotton exports, which represents one third of the Gross Domestic Product (GDP). Approximately two thirds of the population relies on the agriculture for their livelihood. However, it is estimated that only 13% of the cultivated area of Benin is irrigated, and 80% of agricultural production takes place during the wet season. The dependence on good weather for sustaining livelihoods makes local communities very vulnerable to current and upcoming climate change impacts.

In this context, the project is proposing effective and efficient measure by building among other things on the significant successes and results of the NAPA-1 project (Integrated Adaptation Program for Combating Adverse Effects of Climate Change on Agricultural Production and Food Security in Benin), which was implemented in nine pilot sites across Benin and resulted in enhanced adaptive capacities of many poor farmers, the introduction of adaptation technologies and innovation development, using a research-action approach. The proposed project will build on and scale up the positive impacts and the lessons learnt from this innovative approach, thereby proposing efficient and effective actions.

In order to be as effective and efficient as possible, the proposed project also: i) fits in national priorities and answers local needs as identified during the thorough participatory analysis led during the preparatory phase, ii) builds on and reinforces national and sub national pre-existing structures and capacities, and iii) mainstreams gender in all its activities, outputs and outcomes, as well as makes sure that all beneficiaries will equally access the project's benefits.

The project areas for components 2 and 3 cover 9 villages with a total of 12,936 inhabitants across five Municipalities (2 villages per Municipality except for Bohicon, where only one village is targeted): Avrankou, Bohicon, Bopa and Savalou in the South-East part of the country, and Ouaké in the Middle East part of the country. These Municipalities were chosen as they were in vulnerable agro-ecological zones. Three of these municipalities benefited of NAPA-1, with each of the two villages they comprise benefiting differently from the project. In these Municipalities, the current project will strengthen the results of NAPA-1 results by complementing them and scaling them up without carrying out any redundant action. The two new Municipalities will benefit from the experience acquired though NAPA-1.

The project will be implemented over a period of 5 years (2017-2022) and requests a 4,450,000 USD grant funding from the GEF. It has secured co-financing for 30,000,000 USD, mainly from the Government of Benin.

FINANCING PLAN	
GEF <i>LDCF</i>	4,450,000 USD
UNDP TRAC resources	USD
Cash co-financing to be administered by UNDP	USD
(1) Total Budget administered by UNDP	4,450,000 USD
PARALLEL CO-FINANCING (all other co-financing that is not cash co-financing administered by UNDP)	
Projet Commune du Millénaire de Bonou, pour un développement durable (PCM-BONOU)	15,000,000 USD
Projet Village du Millénaires	12,000,000 USD
Centre pour le Partenariat et l'Expertise pour le Développement Durable (CePED)	3,000,000 USD
(2) Total co-financing	30,000,000 USD

(3) Grand-Total Project Financing (1)+(2)		34,450,000 USD
SIGNATURES		
Signature: print name below	Agreed by Government	Date/Month/Year:
Signature: print name below	Agreed by Implementing Partner	Date/Month/Year:
Signature: print name below	Agreed by UNDP	Date/Month/Year:

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List of Acronyms

ABE	<i>Agence Béninoise pour l'Environnement (Benin Environment Agency)</i>
AMAB	<i>Assurance Mutuelle Agricole du Bénin</i>
ANECA	<i>Association Nationale des Entreprises de Construction des Travaux Publics et des Activités Connexes</i>
ANOPER	<i>Association Nationale des Organisations Professionnelles d'Éleveurs de Ruminants</i>
AWP	Annual Work Plan
CBO	Community Based Organization
CePEB	<i>Centre de partenariats et d'expertise pour le développement durable</i>
CO	Country Office
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CoGeF	<i>Commission de Gestion Foncière</i>
COP	Conference of the Parties
COPS	<i>Comité d'Orientation des Politiques et Stratégies</i>
CCIB	<i>Chambre de Commerce et d'Industrie du Bénin</i>
CSA	Climate-smart agriculture
CSO	Civil Society Organization
EIB	European Investment Bank
EU	European Union
FADeC	<i>Fonds d'Appui au Développement des Communes</i>
FCFAF	CFA franc
FECECAM	<i>Faîtière des Caisses d'Épargne et de Crédit Agricole Mutuel du Bénin</i>
FIES	Food Insecurity Experience Scale
FNDA	<i>Fonds National pour le Développement Agricole</i>
FNEC	<i>Fonds National pour l'Environnement et le Climat</i>
FSA	<i>Faculté des Sciences Agronomiques</i>
FTP	Financial and Technical Partners
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIS	Global Irradiation on Surface
GIZ	<i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i>
GoB	Government of Benin
ha	hectare
IDID	<i>Initiatives pour un Développement Durable</i>
IFC	International Finance Corporation
IMF	International Monetary Fund
INBAR	International Network for Bamboo and Rattan
INDC	Intended Nationally Determined Contribution
INRAB	<i>Institut National des Recherches Agricoles du Bénin</i>
INSAE	<i>Institut National de la Statistique et d'Analyse Economique du Bénin</i>
IPCC	Intergovernmental Panel on Climate Change
INDC	Intended Nationally Determined Contribution
JICA	Japan International Cooperation Agency
LDC	Least Developed Countries
LDCF	Least Developed Countries Fund
MAEP	<i>Ministère de l'Agriculture, de l'Élevage et de la Pêche</i>
M&E	Monitoring and Evaluation

MDG	Millennium Development Goals
MRV	Measuring, Reporting, and Verification
NAMA	Nationally Appropriate Mitigation Action
NAPA	National Adaptation Programme of Action
NAPA-1	Integrated Adaptation Programme to combat the effects of Climate Change on agricultural production and food security in Benin
NGO	Non-Governmental Organisation
NIM	National Implementation Modality
ONAB	<i>Office National du Bois</i>
PAI	<i>Plan Annuel d'Investissement</i>
PARBCC	<i>Projet de renforcement des capacités d'Adaptation des acteurs Ruraux Béninois face aux Changements Climatiques</i>
PDC	<i>Plan de Développement Communal</i>
PDDC	<i>Programme d'appui à la Décentralisation et au Développement Communal (Support Program for Decentralisation and Municipal Development)</i>
PIF	Project Identification Form
PIR	Project Implementation Review
PFR	<i>Plan Foncier Rural</i>
PMU	Project Management Unit
PNGDRN	<i>Programme National de Gestion Durable des Ressources Naturelles (National Program for Sustainable Management of Natural Resources)</i>
PPG	Project Preparation Grant
PPP	Public Private Partnership
PRECAB	<i>Projet de Renforcement des connaissances économiques et de la capacité d'adaptation face aux changements climatiques au Bénin</i>
QPR	Quarterly Progress Report
RCU	Regional Coordination Unit
SBAA	Standard Basic Assistance Agreement
SCRP	<i>Stratégie de Croissance pour la Réduction de la Pauvreté</i>
SDG	Sustainable Development Goals
SME	Small and medium-sized enterprises
SNV	<i>Stechting Nederlandse Vrijwilligers</i>
SONAPRA	<i>Société Nationale pour la Promotion Agricole</i>
SVGF	<i>Section villageoise de gestion foncière</i>
SWC	Soil and Water Conservation
TFP	Technical and financial partners
UEMOA	<i>Union Economique et Monétaire Ouest Africaine</i>
UGP	<i>Unité de Gestion du Projet</i>
UNCCD	United Nations Convention to Combat Desertification
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	US dollar
VRA	Vulnerability and risk assessment

II. DEVELOPMENT CHALLENGES

Geographic and administrative characteristics

The Republic of Benin is a Sub-Saharan African country of 116,622 km² with an estimated **population of nearly 11 million inhabitants** in 2015¹. It is bordered by Togo to the west, Nigeria to the east, and Burkina Faso and Niger to the north, with 125 km of coast in the south. The country is relatively flat, with **five main geomorphologic features**: a sandy coastal plain in the south, sedimentary plateaus, a crystalline peneplain, the Atacora chain and the Gourma plain. Benin's climate is characterized by the annual succession of a dry season and a rainy season. The average annual rainfall ranges from 700 mm (in the extreme north) to 1,500 mm (in the extreme southeast), while temperatures average 27.2°C, with absolute maxima exceeding 45°C in the north.

Administratively, since the 1999 decentralization law, Benin is divided into **12 departments** (Alibori, Atacora, Atlantique, Ouémé, Donga, Collines, Borgou, Couffo, Littoral, Mono, Plateau and Zou), which each have a capital (*préfecture*). There are a total of **77 municipalities** that include 545 town districts (*arrondissements*), subdivided in villages.

Socio-economical context: a vulnerable LDC relying heavily on climate sensitive agriculture

Benin has enjoyed a **stable and democratic political context since 1989**. The last elections were held in 2016 and democratically elected President Patrice Talon as successor of Thomas Boni Yayi for a five-year term.

Over the past two decades, Benin has experienced real gross domestic product (GDP) growth of 4 to 5% per year. More recently, GDP growth rate was 4.6% in 2012, 6.9% in 2013, 6.5% in 2014, and 5% in 2015². It is expected to further drop to 4.6% in 2016 driven by a reduced demand for informal re-exports to Nigeria due to the current economic slowdown in the country and a reduction in cotton production in 2015/2016 compared to 2013/2014. In general, Benin's economy is highly dependent on exports and trade, especially with Nigeria, and is dominated by the primary and tertiary sectors.

Despite modest GDP growth, Benin is a least developed country³ and **poverty** remains widespread and increasing, with a national poverty rate of 40.1% in 2015, up from 35.2% in 2009⁴.

Regarding **gender**, female-headed households experience lower levels of poverty (28% compared to 38% for male-headed households), but women remain more vulnerable and continue to suffer from a lack of economic opportunities⁵. Women are also underrepresented in high-level decision making positions. Benin ranks 144 out of 187 countries on the Gender Inequality Index⁶, with only 7.2% of the Parliament seats held by women and only 15.8% of the female population over 25 having at least some secondary education, against 30.1% for men. The country is in group 5 of the Gender Development Index⁷, meaning it has only attained low equality in Human Development Index (HDI) achievements between women and men (absolute deviation from gender parity of more than 10 percent).

Agriculture is the most important sector of the Beninese economy, the proceeds of which support around two thirds of the population, and provide 80 % of the country's export⁸. The agricultural sector is dominated by cotton, the main cash crop, but also includes pineapple and cashew nuts. The most important food crops are maize, cassava and sorghum. Livestock breeding, still characterised by traditional practices, focuses on cattle, goats, pigs and poultry. In terms of forestry production, the annual production reached 6.9 million m³ in 2013.

¹ <http://data.worldbank.org/country/benin>

² <http://data.worldbank.org/country/benin>

³ http://www.un.org/en/development/desa/policy/cdp/ldc/ldc_list.pdf

⁴ <http://www.worldbank.org/en/country/benin/overview>

⁵ <http://www.worldbank.org/en/country/benin/overview>

⁶ <http://hdr.undp.org/en/composite/GII>

⁷ <http://hdr.undp.org/en/composite/GDI>

⁸ <https://www.giz.de/en/worldwide/18997.html>

Several development strategies⁹ are relying on the agricultural sector to contribute to economic growth and poverty reduction. The 2007 Growth and Poverty Reduction Strategy (SRCP), which aims to make Benin an emerging economy by 2025, sets clear objectives for the agricultural sector:

1. Increasing the availability of food products for urban and rural population, ensuring also their quality and their accessibility for all,
2. Increasing the income of the agricultural sector,
3. Increasing the resources or cutting currency expenditure,
4. Ensuring the preservation of existing jobs and even increasing rural employment,
5. Guaranteeing a sustainable land management, a sustainable breeding approach and a sustainable management of the fishery sector.

However, despite its size, its huge potential (availability of cultivable and irrigable land, important emerging market), and the efforts of the GoB, **the Beninese agricultural sector faces numerous challenges.** Agricultural productivity is low and the agribusiness sector is weak. Barriers also include largely inefficient extension services, uncertainty over land rights, and inadequate access to credit and agricultural inputs, such as seed and fertilizer¹⁰.

Only 13% of the cultivated area of Benin is estimated to be irrigated, and 80% of agricultural production takes place during the wet season. The **dependence on good weather for sustaining livelihoods** is very apparent in statistics and on-the-ground. **Limited access to water and agricultural tools contribute to farmers' vulnerability, and these issues will be further exacerbated by climate change**

Climate change: climate changed induced rainfall patterns alteration and temperature rise hit Benin, highly impacting agriculture and the most vulnerable who rely on agriculture for their subsistence

Benin is **vulnerable to climate change that is expressed in an observed and projected increase in rainfall variability and more frequent extreme weather events.** Medium term climate projections indicate the risk of insufficient levels of rain in certain regions, mainly to the North, but also, increased evapotranspiration and more rainfall variability during the crop seasons. Droughts and floods are already becoming more severe¹¹. This means more stress on natural resources and the agricultural production system – most notably on growing rain-fed crops, regenerating natural trees and grazing animals. However, solutions exist to mitigate the negative impacts of climate change on the economy of Benin. The proposed project aims at promoting such solutions in the country.

A detailed analysis of vulnerability to climate change in the agricultural sector was carried out at the time of the development of the Second National Communication on Climate Change¹² in 2011. Key priorities areas of action to address climate change were identified in this document, in line with the 2008 **NAPA, and reiterated in the 2015 INDC**, though in a summarized way. The proposed solutions to tackle or at least mitigate the impacts of climate change in Benin are the following:

1. Establishment of an early warning and disaster management system;
2. Introduction of adaptive production systems to mitigate the adverse effects of climate change;
3. Introduction of water control measures especially in agricultural systems; and
4. Promotion of aquaculture.

The proposed project **supports 3 of these 4 proposed solutions (2,3,4) thereby fitting in national priorities.**

⁹ Long term development strategy, Alafia, « Objectifs Stratégiques de Développement » (OSD 2006-2011), SCRP.

¹⁰ <https://www.giz.de/en/worldwide/18997.html>

¹¹ http://www.bj.undp.org/content/dam/benin/docs/publication/rapportdevhu/RNDH_2015_SYNTHESE.pdf

¹² <http://unfccc.int/resource/docs/natc/bennc2f.pdf>

Evidence suggests that the **most problematic manifestation of climate change** on precipitation in Benin is an **increase in rainfall variability**. This variability is synonymous with increased uncertainties that impact farmers dependent on rain-fed agriculture, rural workers dependent on farm-based labour opportunities, and women-headed households with limited possibility for women to work outside their household¹³.

At the local level, the **analysis of climate risks and hazards in the five targeted municipalities** carried out during **the preparation phase** of this project shows that **they suffer from climate change impacts**. These impacts include:

- Irregular rainfall, poor allocation of rainfalls, drought as well as strong winds in Bopa;
- Irregular rainfall, poor allocation of rainfalls, droughts as well as high temperatures and strong winds followed by heavy rains in Ouaké;
- Drought and erratic rainfall (delay, interruption, early termination) in Savalou and Avrankou; and
- Invasive flooding in Bohicon, creating physical and economic damage.

Climate change has important impacts on the agricultural sector as it is mainly rain-fed. Agro-climatic parameters are pressuring the agricultural sector, especially in the South-West and in the Far-North that suffer frequent droughts. Rainfall decreases, reduction in the length of the rainy season, the increased variability of severe climate-related events and temperature increase are impacting the agricultural sector¹⁴. Secular agricultural production systems are therefore modified due to the changes in the meteorological conditions of the country.

Direct impacts of climate change on agriculture concern crop behavior and pedological modifications leading to yield reduction. At the crop level, an increase in average temperatures is shortening the growth cycle and leading to premature blooming. In addition, agricultural yields are declining due to rainfall deficiencies¹⁵. Integrating adaptation practices into the agricultural sector is critical to reducing the vulnerability of the sector and those who depend on it.

The poor, who depend on agriculture for their livelihoods and who have a lower capacity to adapt, will be disproportionately affected by climate change and its impacts on agriculture. The high percentage of households in poverty may limit investment and hinder adoption of adaptive measures. The most vulnerable socio-economic groups are small-scale cattle herders, smallholder farmers and fishermen; smallholder farmers and small-scale cattle herders are to some extent interdependent since herders may depend on farms for the feed for their cattle, partly covered by post-harvest grazing.

There is also a **gender dimension to climate change**: linked to the inequalities mentioned above, women in Benin are more vulnerable to the effects of climate change than men because of their locally defined responsibility for reproductive and domestic roles, limited access to natural resources and income generating activities' diversification, and role in decision making. Consequently, men and women have different adaptive strategies and spatial perceptions that reflect their activities, social positions, and differential access to and control over resources.

Current adaptation policies

The country is aware of climate-related challenges. Benin ratified the United Nations Framework Convention on Climate Change (UNFCCC)¹⁶ in 1994. In the framework of this commitment, an ambitious implementation strategy was developed in collaboration with the Global Environment Facility (GEF): the Republic of Benin launched in January 2008 the process of the National Adaptation Plan of

¹³ Sonneveld et al., 2012

¹⁴ <http://unfccc.int/resource/docs/napa/ben01f.pdf>

¹⁵ Ibidem

¹⁶ http://unfccc.int/essential_background/convention/status_of_ratification/items/2631.php

Actions (NAPA)¹⁷. This included a broad vulnerability assessment of the country across many criteria, such as socio-economic conditions, livelihoods of the rural populations, and the environmental characteristics of the country. **Priority adaptation needs were formulated, with a focus on sustainable natural resources management and vulnerable social groups.**

The conclusions of the 2008 NAPA were the following:

- Droughts and floods due to heavy rainfalls are two major climate-related risks in Benin;
- Strong winds and heat waves are two climatic phenomena that are likely to increase in the near future;
- Some local risks such as sea level rise have a limited geographic imprint but a large social and economic impact;
- In the northern and central agro-ecological zones, the vast majority of the population relies on subsistence agriculture, and is hence particularly exposed to these risks;
- In southern agro-ecological zones, climate change is also affecting fishermen and livestock farmers.

Based on these conclusions, several projects were elaborated. The overall amount required to implement the NAPA was calculated at 15,580,100 USD, while the environmental degradation costs of inaction were estimated to be between 3 and 5% of Benin's GDP, yearly¹⁸.

The long-term solution proposed by the GoB is the promotion of adaptation measures to be adopted by the agricultural sector. This solution is presented in the 2011 document called *Stratégie de Relance du Secteur Agricole* (PSRSA)¹⁹ to boost the agricultural sector. It sets the development of the agricultural sector in a multisector framework in which the State, the producers (and the farmers' organizations), private entrepreneurs, local officials, donors and NGOs all have a role to play. The strategy focuses on developing a resilient agricultural sector to ensure food security and to enable sustainable agriculture and rural development.

The GoB's 2015 INDC to the 21st Conference of the Parties (COP-21) of the UNFCCC also puts emphasis on the agricultural sector. The proposed measures concentrate on the promotion of sustainable farming practices. The implementation of these measures includes the use of rivers for irrigation, agricultural lands management, etc. Technical improvement efforts in the agricultural sector aim to decrease emissions by 20.9 Mt of CO₂ equivalent, compared to the business as usual scenario (20.6% decrease by 2030)²⁰. Both agricultural sector adaptation and mitigation measures presented in the Beninese INDC are additional to the development challenges of the country.

Specific barriers addressed by the project

In this context, the proposed LDCF project is fully aligned with Benin's national priorities and aims to address several barriers that underline the country's low resilience to climate change impacts:

- *Insufficient integration of climate risks and actions into sub-national development planning (capacity and institutional barrier):* At present, climate change risks and adaptation needs are not captured in sub-national development plans and associated investment plans. The inability to set vulnerability reduction targets on the basis of needs and available financing is driven by limited capacity at the institutional level. Ultimately, this lack of capacity hinders identification of adaptive investment actions, the sourcing of proper technical expertise, and access to finance implement related measures.

¹⁷ <http://unfccc.int/resource/docs/napa/ben01f.pdf>

¹⁸ Republic of Benin, National environmental action plan, 2010, p. 5.

¹⁹ http://www.inter-reseaux.org/IMG/pdf/PSRSA_version_finale.pdf

²⁰ <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Benin/1/INDC%20BENIN%20%20Version%20finale%20revue%20septembre%202015.pdf>

- *Low levels of extension advice for agriculture and livelihood diversification (technical capacity barrier):* There are a limited number of experienced agricultural extension officers and NGOs capable of providing climate resilient agricultural assistance. Sufficient technical capacity is critical to raise the productivity of smallholders' agriculture; the extent to which people receive accurate agricultural advice affects the extent to which new techniques and adaptation practices are understood, deployed at scale, and adopted.
- *Limited knowledge of climate-resilient water infrastructure design and climate-related livelihood support (technical capacity barrier):* The national and sub-national levels have insufficient institutional and human resource capacities related to water infrastructure design and climate-related livelihoods support. Given that the main adverse climate change effect in Benin is an increase of rain-fall variability, not being able to master climate resilient water harvest and management infrastructure contributes heavily to Benin's vulnerability.
- *Limited availability and use of information on adaptation options (Information and coordination barrier):* At the country-level, there are a limited number of adaptation examples, such as improved agricultural husbandry or micro-irrigation, to provide demonstrable evidence of the benefits of improving climate resilience. At the same time, there is limited information about alternative livelihood options, rights and entitlements, new agricultural methods, and credit programs that have worked to reduce the vulnerability of climate change.

Enabling the Beninese agricultural sector to identify, develop and deploy solutions for these barriers is critical to adapt to climate change. **Without introducing solutions to these barriers, the relatively new challenge to adapt to changing climatic conditions will remain. This puts an additional burden on top of the development challenges** faced by Benin. Without financing actions to mitigate the adverse effects of climate change in rural areas, the GoB may continue to pay attention to more immediate short-term issues without sufficiently considering **additional risks for the agricultural sector due to climate change and the increasing variability in rainfall patterns.**

III. INTERVENTION STRATEGY

As described in Section II, Benin faces several institutional, technical and financial barriers to effectively reduce and manage the adverse impacts of climate change to the agricultural sector.

Strengthening the resilience of communities will require a step change in current practices. To begin with, a **greater level of awareness and a more robust technical knowledge base of climate change impacts are required at national and sub-national government levels**. This initiative will improve the capacity of policy makers and planners to fully incorporate climate risks and opportunities in their work as its first component is the reinforcement of their capacities.

At the same time, **local communities need both to decrease their direct vulnerability to the adverse effect of climate change and to improve their adaptive capacities to their consequences**. This project will focus on both aspects by supporting climate resilient agricultural infrastructure and techniques, such as more efficient irrigation systems and short cycle crops (Component 2: Resilient agriculture investments), and by helping communities to move beyond subsistence agriculture to food and income security and to shift toward more diverse and less vulnerable livelihoods (component 3: livelihoods diversification). Figure 1 below illustrates the overall theory of change of this project.

In order to be as effective and efficient as possible this project:

- Builds on and scales up some of the positive results obtained by recent projects, the most prominent one being the NAPA-1 project entitled “Integrated Adaptation Programme to Combat the Effects of Climate Change on Agricultural Production and Food Security”²¹
 - Adopts an integrated approach with three complementary and mutually reinforcing components (capacity building, investments in water infrastructure, and livelihoods diversification), as shown in the theory of change below and explained in details in Section IV.
 - Aligns with national priorities, as described in section II above, and answers local needs as identified during the thorough participatory analysis carried out during the project preparation phase,
 - Builds on and reinforces national and sub national pre-existing structures and capacities,
 - Mainstreams gender across its activities, outputs and outcomes, and
 - Ensures equitable access to all targeted project beneficiaries (youth, poor, landless ...).
- **National benefits**

Building on capacities built through the NAPA-1 project, two seminars will be held for all relevant national-level Ministries, such as the Ministry of Planning and Development, the Ministry of Economy and Finance, the Ministry of Agriculture, Breeding and Fisheries, and the Ministry of Industry, Trade and Crafts. The seminars will aim to strengthen and widen their capacities to incorporate climate risks and opportunities in their planning and budgeting work, taking into account gender. They will be especially relevant as several national strategies (e.g. the Growth Strategy for Poverty Reduction (*Stratégie de Croissance pour la réduction de la pauvreté*)) will be updated in the year to come. These government ministries will also be involved in project planning and implementation to ensure that the project is aligned with other initiatives and to maximize benefits at all levels of government. Existing mechanisms will be used to diffuse interventions instead of creating new mechanisms.

Extension agents as well as existing networks of NGOs will also be mobilized, since they are already playing a critical role in supporting communities, especially in remote rural areas.

By incorporating climate change and gender considerations into national and sub-national development plans, climate-smart interventions will be implemented beyond the timeframe of the proposed LDCF project.

²¹ <https://www.thegef.org/project/integrated-adaptation-programme-combat-effects-climate-change-agricultural-production-and>

In addition, by implementing CCA interventions, this LDCF project will support the GoB in reaching its development targets and the SDGs.

- **Local benefits**

In the same way as the above mentioned national government will benefit from capacity building under this project, both departmental and municipal governments will be strengthened in their capacity to incorporate climate risks and opportunities in their planning and budgeting work.

Sites selection

As mentioned above, this project aims at building on, strengthening, and scaling up the positive results achieved by the NAPA-1 project entitled “Integrated Adaptation Programme to Combat the Effects of Climate Change on Agricultural Production and Food Security”. The targeted sites are therefore three Municipalities (60%) that benefited from the NAPA-1 project and 2 Municipalities (40%) that did not benefit from the NAPA-1 project.

Table n°3: Targeted municipalities and population²²

Municipalities (departments name)	Data	
	Population	Weight of each Municipality (%)
Avrankou (Ouémé)	128,050	20.82%
Bohicon (Zou)	171,781	27.93%
Bopa (Mono) (benefited from NAPA-1)	96,281	15.66%
Ouaké (Donga) (benefited from NAPA-1)	74,289	12.08%
Savalou (Collines) (benefited from NAPA-1)	144,549	23.51%
Total	614,950	100%

Municipalities were selected based on the vulnerability of their communities to the adverse effects of climate change. The criteria included:

- Severity index in terms of poverty;
- Most vulnerable agro-ecologic zones (1, 4, 5, 8) according to the NAPA²³;
- Demographic weight of the municipality;
- Share of economically vulnerable households;
- Share of households facing moderated and severe food insecurity; and
- Commitment of the municipality (for the relevant Municipalities) during the implementation of the NAPA-1 project.

Following the selection of the “priority” municipalities, villages were identified, and selected based on objective criteria that were shared with municipal stakeholders. These criteria included that a village:

- Is currently not executing or developing a Resilience Reinforcement Plan;

²² INSAE, RGPH4, 2013

²³ Zone 1 : Karimama, Malanville, Nord-Kandi. Zone 4 : Ouaké, Ouest-Djouougou, Copargo, Tanguiéta, Matéri, Cobli, Boukombé, Natitingou, Toukountouna, Kouandé. Zone 5 : Bassila, Sud-Tchaourou, Aplahoué, Kétou, Bantè, Glazoué, Dassa, Savè, Djidja. Zone 8 : Ouidah, Abomey, Calavi, Cotonou, Sô-Ava, Lokossa, Athiémé, Comé, Grand-Popo, Sèmè-Podji, Aguégués, Dangbo, Adjohoun

- Has a high poverty severity index;
- Is in a low-lying area (vulnerable area);
- Has important land degradation issues; and
- Contributes significantly to the agricultural production of the municipality.

The multi-criteria analysis was validated by all stakeholders during the inception workshop held in Bohicon (26-28 July 2016). A field visit was also organized. Nine (09) villages spread in five (05) municipalities and five (05) departments have been selected to benefit from the present project. All priority sites are heavily dependent on agriculture²⁴.

The following table shows the poverty index, population and demographic weight of concerned villages.

Table n°4: Poverty index, population and demographic weight of the priority villages

Municipalities	Priority sites: name of the villages	Poverty index ²⁵	Population ²⁶	Weight (%)
Avrankou	Kotan	ND	1,355	10.47%
	Damè-Kpossou	ND	1,325	10.24%
Bohicon	Zakanmè	49.8	602	4.65%
Bopa (benefited from NAPA-1)	Agbodji (<i>extension village</i>)	82.3	2,880	22.26%
	Sèhomi (<i>demonstration village</i>)	ND	1,567	12.11%
Ouaké (benefited from NAPA-1)	Kadolassi (<i>demonstration village</i>)	84.3	896	6.93%
	Alitokoum (<i>extension village</i>)	87.4	602	4.65%
Savalou (benefited from NAPA-1)	Aouankanmè (<i>extension village</i>)	ND	2,517	19.46%
	Damè (<i>demonstration village</i>)	ND	1,192	9.21%
Total			12,936	100%

It is important to note that both villages within each Municipalities that have benefited from NAPA-1 where not impacted by NAPA-1 in the same way. One of them (Sèhomi in Bopa, Kadolassi in Ouaké and Damè in Savalou) was a “demonstration village”, which benefited from heavy investments under NAPA-1, whereas the other (Agbodji in Bopa, Alitokoum in Ouaké and Aouankanmè in Savalou) was a “extension village”, with similar vulnerability characteristics but which only benefited from the spill over effect of demonstration villages. It was left up to the Municipal Councils to decide whether to replace these villages by other vulnerable villages which had not benefited from any investment yet, but local authorities decided to keep same villages in order to definitively perpetuate the results achieved under NAPA-1 and use them as a basis to spread to other villages.

The proposed project will of course not impact all villages in the same way. The actions that will be undertaken in former NAPA-1 demonstration villages will only be specific ones that can contribute to strengthening the NAPA-1 results when needed. Actions in demonstration villages will complement and strengthen the first positive results already achieved by NAPA-1 while actions in new

²⁴ For the description of the economic profile of each municipality and village, see the report of the national consultant Cosme Lucien Zounon, Expert National Socio-économiste, "rapport de mission de formulation du projet", version of September 2016.

²⁵ http://www.insae-bj.org/emicoov.html?file=files/enquetes-recensements/emicoov/Evaluation_pauvrete.pdf

²⁶ INSEA, RGPH, 2013

Municipalities will scale up relevant satisfactory actions promoted by NAPA-1. All actions will ensure that the lessons learnt from NAPA-1 will be fully used in the current project and that activity will be redundant.

Targeted populations

The project resources will directly target more than 10,000 farmers, and indirectly, more than 150,000 rural inhabitants who currently do not have secure access to irrigation. Among this population, the project will target as a priority land-poor farmers, women-headed households, and the landless so that their livelihoods are made more resilient to an increasing variability in rainfall patterns under a changing climate. Investments in small-scale rural infrastructure, especially on-farm water management infrastructure for agricultural purposes, are thought to deliver high economic return given their low level of current irrigation coverage. Improved agricultural practices such as conservation agriculture will be adopted by farmers.

At least 300 Government officers and registered contractors will be trained in resilient agricultural infrastructure design and construction. Government officers in the five municipalities will receive technical training on the economics of adaptation and climate resilient planning, and will be supported to integrate this knowledge in medium and long term development plans, budgets and execution. Strengthening the national and sub-national institutional capacities is a means to bring together existing development partners, identify existing support and adaptation gaps, and to provide a package of adaptive livelihood support – a combination of irrigation, integrated farming, soil management, seed purification techniques and climate resilient post-harvest handling practices and treatment methods. The productivity of agriculture is likely to be enhanced. Potential economic benefits to the landless are expected to be high as the project will promote diversification of their livelihoods for at least 3,281 women by introducing alternative skills for employment²⁷. The effectiveness of targeting the most vulnerable populations in rural areas will be enhanced through the use of objective tools that will be embedded in the vulnerability and risk assessments (VRA), the mapping of access to irrigation and the use of resilient agricultural techniques. This will be further enhanced by the improved performance-based incentive mechanisms that will reward those extension services that comply with certain pre-agreed conditions such as targeting of beneficiaries and climate resilient building standards, with greater volume of adaptation grants the following year.

²⁷ Zariatou Brisso, "Intégration du genre dans le projet de renforcement de la résilience des moyens de subsistance ruraux et du système de gouvernement local aux risques et à la variabilité climatique". Rapport de terrain, août 2016.

Current situation	Barriers	Planned outputs of the project	Planned outcomes of the project	General objective of the project
<p>Benin is especially vulnerable to climate change, because its agricultural sector represents a main source of employment and revenue. Agriculture is mainly rain-fed and thereby vulnerable to altered rainfall patterns that are induced by climate change.</p>	<p>Insufficient integration of climate risks into the agriculture sector at the national and sub-national development planning (Capacity and institutional barrier)</p>	<p>Output 1.1: The five targeted Departments and Municipalities and all relevant Ministries have integrated gender responsive climate change adaptation in their planning and budgeting work</p> <p>Output 1.2: Agricultural extension agents and local NGOs active in the 5 targeted Municipalites are trained on resilience to climate change</p> <p>Output 1.3: Lessons learned are summarized in a repository and shared</p>	<p>Capacity development</p> <p>Outcome 1: Climate change and gender are included in development plans and budgets at national and sub-national levels</p>	<p>To support resilient agriculture, livelihoods and mainstream climate risk considerations into national and sub-national planning processes so that local communities are less vulnerable to climate change.</p>
	<p>Technical capacity constraints for climate-resilient water infrastructure design and livelihood support (Knowledge and technical barrier)</p>	<p>Output 2.1: At least 9 small scale climate resilient water harvesting infrastructures are designed and implemented in the 9 targeted villages</p> <p>Output 2.2: Risks of floods and riverbanks erosion are reduced through the stabilization of slopes of critical riverbanks using at least 300ha of bamboo plantations</p> <p>Output 2.3: Resilient practices, such as drip irrigation techniques or short cycle improved seeds, are adopted by at least 300 households in the five targeted Municipalities</p>	<p>Resilient agriculture investments</p> <p>Outcome 2: Productive agricultural infrastructure and human skills are improved to cope with altered rainfall patterns</p>	
	<p>Low levels of extension advice for agriculture based livelihood diversification (Technical capacity barrier)</p> <p>Limited availability and use of information on adaptation options (Information and coordination barrier)</p>	<p>Output 3.1: Targeted population's dependency and vulnerability to climate change effects is reduced through the introduction of alternative livelihoods for approximately 4000 persons</p> <p>Output 3.2: All women of target population (3,281 women) are trained on alternative livelihoods to agriculture to better cope with climate change impacts</p> <p>Output 3.3: The capacities of 300 rural entrepreneurs and 50 SMEs (aiming at 50% women) to develop business plans in the field of sustainable craft and small scale manufacture are strengthened in order to stimulate employment and revenue increase</p>	<p>Livelihoods diversification</p> <p>Outcome 3: communities' adaptive capacity is improved by more diversified income generating activities</p>	

Figure 1: Theory of Change of the Proposed LDCF project

IV. RESULTS AND PARTNERSHIPS

i) Expected Results

The objective of the proposed LDCF project is to support resilient agriculture and livelihoods to and mainstream climate risk considerations into national and sub-national planning processes so that local communities are less vulnerable to climate change.

To achieve this overall objective, the project is structured around 3 complementary and mutually reinforcing components:

- Component 1 will strengthen the capacity of departments and municipalities in the targeted areas, as well as of all relevant Ministries, to fully integrate climate change induced risks and opportunities in their development planning and budgeting work.
- Component 2 will reduce the targeted communities' vulnerability to the adverse impacts of climate change by providing technical training and smart investment in productive agriculture infrastructure for water collection and management, as the alteration of rainfall patterns is the main climate change induced risk to Benin's mainly rain-fed agriculture.
- Component 3 will equally improve the targeted communities' adaptive capacities by supporting the diversification of their income generating activities.

The GEF and its network partners developed the concept of "climate-resilient development," defined as "development that meets current and future needs despite a changing climate, as well as the concept of the cost of adaptation being *additional* to the cost of development"²⁸, which meant that the GEF can finance adaptation measures that build on and enhance existing and planned development efforts. The project corresponds fully to this approach.

- **Baseline scenario without LDCF financing**

Under the baseline scenario, the enabling environment to adapt to a changing climate remains weak, with insufficient capacity of and coordination between national authorities, local authorities and communities. Capacities and resources are extremely limited given the fact that Benin is a least developed country. Without the project, poor rural communities would continue to be negatively impacted by climate change and would lack economic alternatives. The field studies in targeted villages have shown that men and women are already exposed to climate hazards (e.g., losing their harvests due to droughts or floods). In the case of extreme shocks, poor and small household use various survival strategies that often include accumulating small debts, resorting to sharecropping arrangements with large-scale farmers, or needing to sell farm assets through destocking. This scenario is already underway and it is not sustainable.

²⁸ https://www.thegef.org/sites/default/files/publications/GEF_Adaptation2016_final_0_0.pdf

In Benin like in many other Sub-Saharan African countries, the livelihoods of rural populations depend on natural resources, which are increasingly degraded and on often unstable market conditions, making populations persistently vulnerable. Without the LDCF support, Benin will continue to be faced by short-term unsustainable solutions ignoring new threats coming from climate change.

- **Alternative project with the LDCF financing**

Coping with the adverse impacts of climate change imposes an additional cost to vulnerable countries in their effort to achieve their development goals. The adaptation benefit, according to the GEF, is the ability to achieve development goals despite a changing climate. Under the alternative scenario, the objective of the LDCF financing is to increase the resilience to the adverse impacts of climate change in vulnerable developing countries, through both near- and long-term adaptation measures in affected sectors, areas and communities, leading to a reduction of expected socio-economic losses associated with climate change.

As described in detail under, the three expected outcomes of the proposed project will reduce the targeted communities' vulnerability to the adverse impacts of climate change as well as improve their adaptive capacities.

The project, by strengthening the resilience of communities in Benin to climate change, requires additional costs that the country cannot afford without the LDCF financing. It follows the *additional costs principle* as it aligns with national priorities that are not currently financed.

Components, outcomes, outputs and activities

During the project formulation, more than 600 persons were consulted at national, municipal, village and community levels regarding the best options to achieve these outcomes. The project activities are based on the needs of the key stakeholders, especially the community based beneficiaries, i.e. the most vulnerable fringe of the rural population in the priority sites. This has allowed identifying priorities in the targeted communities as well as their cost and relevance²⁹. The detailed activities under each outcomes described under will be designed on the basis of these thorough analysis, updated during the early implementation phase of the project.

Components, outcomes, outputs and activities were designed to comply with the GEF criteria: none of the activities would have been needed and hence implemented in the absence of climate change. In other words, these activities are additional measures needed to build adaptive capacity, increase resilience to climate change and reduce vulnerability in the country.

²⁹ Bertin K. Assogba Nongnide, Ingénieur Agronome du Génie Rural, des Eaux & Forêts, Administrateur des Projets de Développement, Rapport de mission "analyse et évaluation de la vulnérabilité et variabilité climatiques dans le cadre de la formulation du projet « Renforcement de la résilience des moyens de subsistance ruraux et du système de gouvernement local aux risques et à la variabilité climatiques au Bénin », version of August 2016 and Strengthening the resilience of rural livelihoods and sub-national government system to climate risks and variability in Benin", contribution to the project formulation, *Cosme Zounon, socio-economic expert. October 2016*

Component 1: Capacity development

Outcome 1: Climate change and gender are included in development plans at national and sub-national levels

Without LDCF financing (baseline situation): Benin is committed to addressing climate change and its effects as shown by its INDC and efforts made at national and sub-national levels. As outlined in the national expert's report³⁰, Benin has encouraged the development and the adoption of several development instruments (plans and strategies) in various sectors of economic activity to integration climate change. It has also set up an institutional framework for climate change issues marked by the establishment of various structures and committees. More details can be found in the executive summary of the report in Annex F.

However, according to the national expert's report³¹, the institutional framework is not currently truly operational and has weaknesses, in particular in the coordination and management of human resources. In the same way, despite the efforts made, the inclusion of climate change into development plans and programs at the national level remains embryonic. Furthermore, there is a lack of coordination of activities concerning different economic sectors.

At the sub-national level, the thorough evaluation of the integration of climate change considerations and evaluation tools in local planning documents carried out as a baseline study for the NAPA-1 project³² of nine Municipal Development Plans (*Plans de Développement Communal*) covering the 2010/11 to 2015/16 period concludes that climate change is only addressed indirectly and partially as part of the environment section and not as a specific topic. Out of 211 actions identified as adaptation-related in the agriculture sector, 91 were assessed "compatible" (i.e., resilient to climate change), whereas 120 were not compatible. This conclusion is still valid as many of these plans are still in the process of being revised for the upcoming years.

In the same way, at the national level, several key strategies are not taking climate change adaptation into account in a satisfactory manner, as for example the Growth Strategy for Poverty Reduction (*Stratégie de croissance pour la Réduction de la Pauvreté*).

Integration of climate change considerations in official planning at national and sub-national levels will only come to reality if it reaches farmers. Extensions services and NGOs are key actors to inform and support local communities about climate change adaptation options, but their resources are limited.

Finally, coordination, communication and capitalization on lessons learnt remain a challenge, for institutional reasons but also because of lack of resources available for these activities. Indeed, in the context of an LDC country with very limited resources, these kinds of activities can be seen as less essential than the actions having direct impact on the ground, even though this reduces their potential impact and efficiency.

³⁰ "Strengthening the resilience of rural livelihoods and sub-national government system to climate risks and variability in Benin" ,contribution to the roject formulation, *Cosme Zounon, socio-economic expert. October 2016*

³¹ "Strengthening the resilience of rural livelihoods and sub-national government system to climate risks and variability in Benin" ,contribution to the roject formulation, *Cosme Zounon, socio-economic expert. October 2016*

³² <file:///C:/Users/User/Dropbox/2%20UNDP/B%C3%A9nin/NAPA/Rapport%20PANA%20Int%C3%A9gration%20OK.pdf>

With LDCF financing (with adaptation benefits):

In this context, this project would ensure that the integration of climate change, taking gender considerations into account, in planning and budgeting at national and sub-national levels are supported as necessary until it is anchored in relevant plans and strategies.

For the Municipalities who have benefited of NAPA-1 (cf Section II.4 on the choice of target sites), the current project will make sure capacities acquired through that project are concretely used and capitalized on. Indeed, these Municipalities have not yet updated their Municipal Development Plans, which means the capacities acquired through NAPA-1 have yet to be applied concretely. For these municipalities, the proposed project will provide “on demand” support to implement the guide to integrate climate change consideration into Municipal Development Plans, as there might be a gap between the theoretical understanding of this issue and the tool and its concrete implementation.

For other Municipalities, this project will build on the expertise and tools developed by the NAPA-1 projects in order to support them to integrate climate in their next Municipal Development Plans, thereby maximizing the efficiency and impact of the PANA-1 achievements. Indeed, these Municipalities benefit from training to develop the necessary expertise on climate change, its impacts and the corresponding adaptation strategies such as alternative livelihoods and resilient techniques. They will also be introduced to the guide to integrate adaptation to climate in Municipal Development Plans developed under PANA-1 and supported in its concrete implementation in the framework of the updating of their Municipal Development Plans.

At national level, support will be provided to the relevant Ministries as they revise national policies such as the Poverty reduction Strategy (*Document de Stratégie pour la réduction de la pauvreté*), sectoral strategies as well as the multiannual budgets (*Document de Programmation Budgétaire Economique Pluriannuelle DPPD Document de Programmation Pluriannuelle des Dépenses*).

Capacities will also be reinforced at Departmental level as this is an important planning level in Benin's administrative organization and the relevant sectoral decentralization plans (*Plans de déconcentration et décentralisation (P2D)*) will be targeted.

The awareness and technical knowledge of relevant climate change adaptation options and of agriculture extension agents and local NGOs working with agriculture will also be strengthened in order to reach the communities. This will be achieved via preliminary sessions to train local trainers so that the appropriate expertise is widespread to experts and national and subnational decision makers beyond the duration of the project.

Finally, communication and capitalization on lessons learnt will be supported in order to maximize the efficiency and impact of the project. The UNDP will make sure the lessons learnt during the concrete implementation of the guide to integrate adaptation to climate in Municipal Development Plans are used to update this guide and make it more operational. Two forums (mid-term and final) will gather the relevant institutions for them to share experience in integrating climate change consideration in planning and budgeting. These forums will promote both exchanges within and across at the different decision levels (municipal, departmental and national) in order to reinforce coordination and communication between the different actors and enhance mutual understanding. Finally, the main implementing partners, the Ministry of Agriculture and local NGOs, will be supported to create a repository of lessons learnt in order for these lessons to be perpetuated in the practices of these actors and disseminated further.

The outputs under outcome 1 include:

- **Output 1.1:** The five targeted Departments and Municipalities and all relevant Ministries have integrated gender responsive climate change adaptation in their planning and budgeting work
- **Output 1.2:** Agricultural extension agents and local NGOs active in the 5 targeted Municipalities are trained on resilience to climate change
- **Output 1.3:** Lessons learned are summarized in a repository and shared

Component 2: Resilient agriculture investments

Outcome 2: Productive agricultural infrastructure and human skills are improved to cope with altered rainfall patterns

Without LDCF financing (baseline situation):

As part of the preparation phase of this project, a detailed and participatory analysis of climate risks and hazards has been undertaken at the village level in the five targeted municipalities. It shows that all five municipalities suffer from climate change induced alteration in rainfall patterns. More specifically:

- Irregular rainfall, poor allocation of rainfalls, drought as well as strong winds in Bopa;
- Irregular rainfall, poor allocation of rainfalls, droughts as well as high temperatures and strong winds followed by heavy rains in Ouaké;
- Drought and erratic rainfall (delay, interruption, early termination) in Savalou and Avrankou; and
- Invasive flooding in Bohicon, creating physical and economic damage.

As outlined in section III Development challenge, Benin is highly dependent on rain-fed agriculture, and climate change induced alterations of rain fall patterns are therefore particularly threatening for its development and its people. Under a business as usual scenario, due to the lack of resources and capacities, farmers continue to rely mainly on non-resilient infrastructures and techniques and therefore to endure important losses due to climate events such as droughts, floods or erratic rainfalls, that are expected to become more and more frequent.

Each Municipality targeted is crossed by water, being it a lake or a river (the Ouémé river, the Ahémé lake or their tributaries), and are therefore specifically reliant on them and vulnerable to the climate change impacts on them, such as floods.

With LDCF financing (with adaptation benefits):

Under the alternative LDCF- funded scenario, communities' resilience to altered rainfall patterns will be strengthened.

The targeted Municipalities will benefit from at least one small-scale water harvesting infrastructure per village (i.e. at least nine in total) to help them manage erratic rainfalls. The specific type of infrastructure relevant for each target village was identified during the preparation phase³³ and target farmers, breeders and fishermen who are largely dependent on rain for their activities. The relevance and costs of the actions identified during the project preparation phase will be reassessed during the beginning of the implementation phase. In Municipalities that have benefited from NAPA-1, these investments can complement those made under NAPA-1 when a need has been identified in the final evaluation.

Some actions will be more innovative, such as the use of bamboos to reduce land erosion and flooding. Bamboo grows naturally in Benin and is used to build houses and fish traps, to make fire, and also to consume as food. However, experience using bamboo to prevent erosion from climate-related events such as floods or extreme winds is lacking. Under the adaptation scenario, at least 300ha of bamboos will be used to stabilize 400km of riverbanks on a 5 meter wide band on both banks and thereby reduce land erosion and flooding and further build resilience against climate change impacts.

In order to ensure the sustainability of the project, the capacities necessary to manage these infrastructures will be built, ensuring women are fully included. Here again, lessons learnt from similar activities under NAPA-1 will be used.

Beyond infrastructures, the target population will be trained in resilient agricultural practices such as irrigation techniques or short cycle improved seeds in order to further strengthen resilience to altered rainfall patterns. Short cycle improved seeds have been introduced in several villages under NAPA-1 with success, which justify the extension of such practices to villages that have not benefited from it yet. The access to adequate inputs, such as organic fertilizers, will be facilitated. Here again, women will play a key role for example by managing municipal shops that provide these agricultural inputs.

The outputs under outcome 2 include:

- **Output 2.1:** At least 9 small scale climate resilient water harvesting infrastructures are designed and implemented in the 9 targeted villages
- **Output 2.2:** Risks of floods and riverbanks erosion are reduced through the stabilization of slopes of critical riverbanks using at least 300ha of bamboo plantations
- **Output 2.3:** Resilient practices, such as drip irrigation techniques or short cycle improved seeds, are adopted by at least 300 households in the five targeted Municipalities

Component 3: Livelihoods diversification

Outcome 3: communities' adaptive capacity is improved by more diversified income generating activities and enabling environment for better access to finance Without LDCF financed intervention (baseline situation):

As outlined in Section III, **poverty** remains widespread and on the rise in Benin, with national poverty rates of 40.1% in 2015, up from 35,2% in 2009³⁴. Benin is also very dependent on mainly rain-fed agriculture that occupies around two thirds of the population, and provides 80 % of the country's export³⁵.

³³ Bertin K. Assogba Nongnide, Ingénieur Agronome du Génie Rural, des Eaux & Forêts, Administrateur des Projets de Développement, Rapport de mission "analyse et évaluation de la vulnérabilité et variabilité climatiques dans le cadre de la formulation du projet « Renforcement de la résilience des moyens de subsistance ruraux et du système de gouvernement local aux risques et à la variabilité climatiques au Bénin », version of August 2016

³⁴ <http://www.worldbank.org/en/country/benin/overview>

The vulnerability analysis carried out during the project preparation phase³⁶ shows clearly that the population of the nine targeted villages are very vulnerable to the adverse impacts of climate change. Moreover, small subsistence farmers always ranked most vulnerable, whereas activities such as manufacturing of agriculture products or cattle breeding were less vulnerable.

In the case of extreme shocks, poor and small household use various survival strategies, which often involve accumulating of small debts, resorting to sharecropping arrangements with large-scale farmers, and selling farm assets through destocking. All of these strategies make households even more vulnerable to future climate shocks, creating a vicious circle. As of 2016, the proportion of population expenditure inferior to one dollar per day in the five targeted Municipalities is: 50.4% in Avrankou, 53.0% in Bohicon, 66.6% in Bopa, in 72.% Ouaké and 46% in Savalou and the average annual income in the targeted Municipalities is 902USD and lack access to finance, which means their adaptive capacities are very weak without the perspective of increased revenues. Furthermore, the livelihoods of rural populations depend on natural resources that are increasingly degraded (land, lake, lowlands, etc.) and on unstable markets, making populations even more vulnerable.

With LDCF-financed intervention (adaptation alternative):

Under the alternative LDCF funded scenario, this vicious circle would be broken by livelihoods diversification.

Indeed, beyond physical vulnerability to the adverse impacts of climate change, poverty and the lack of economic opportunities reduces people's adaptive capacity as they have fewer means to cope. This third component aims therefore at strengthening the resilience of the target population by diversifying their economic opportunities. Building on some actions undertaken as part of component 2, such as the construction of ponds or the plantation of bamboos, it maximizes their impact.

Building on the lessons learnt through NAPA-1, which introduced such livelihoods diversification in its target Municipalities, and depending on what is most relevant in each village as identified during the PPG phase, the alternative livelihoods introduced will include cattle farming, pond fishing, aquaculture and manufacturing of bamboo products. Benin is a member of the International Network for Bamboo and Rattan (INBAR)³⁷, an intergovernmental organization registered with the United Nations that promotes bamboo as a sustainable economic opportunity as it has multiple uses in agriculture, medicine, construction etc Annex I gives further insight on the economic potential of bamboo.

The target population will be trained in these new livelihoods opportunity, with a particular focus on woman-headed households, youth and landless farmers, and the access to necessary inputs (head of cattle, veterinary products, gear) will be insured.

As outlined in section [IVV](#), gender inequality sometimes makes activities targeting women necessary. This is why all women in the targeted area will be trained in order to ensure they fully benefit from these potential alternative livelihoods and to enhance their access to decision making and finance.

Finally, the local economy will be strengthened as the project will reinforce the capacities of local entrepreneurs and Small and Medium Enterprises to extend their activities in a sustainable manner and

³⁵ <https://www.giz.de/en/worldwide/18997.html>

³⁶ Bertin K. Assogba Nongnide, Ingénieur Agronome du Génie Rural, des Eaux & Forêts, Administrateur des Projets de Développement, Rapport de mission "analyse et évaluation de la vulnérabilité et variabilité climatiques dans le cadre de la formulation du projet « Renforcement de la résilience des moyens de subsistance ruraux et du système de gouvernement local aux risques et à la variabilité climatiques au Bénin », version of August 2016

³⁷ <http://www.inbar.int/>

better access finance in order to stimulate employment and growth and thereby economic opportunities for the population as well as their revenue. As mentioned in the Project Result Framework (section VI), based on previous experience such as the NAPA-1, the expected increase of revenue resulting of the project is 50% at project completion, with an intermediary objective of 25% increase after 3 years of implementation.

The outputs under outcome 3 include:

- **Output 3.1:** Targeted population's dependency and vulnerability to climate change effects is reduced through the introduction of alternative livelihoods for approximately 4000 persons
- **Output 3.2:** All women of target population (3,281 women) are trained on alternative livelihoods to agriculture to better cope with climate change impacts
- **Output 3.3:** The capacities of 300 rural entrepreneurs and 50 SMEs (aiming at 50% women) to develop business plans in the field of sustainable craft and small scale manufacture are strengthened in order to stimulate employment and revenue increase

ii) Partnerships

In the framework of the project, **several partnerships will be established to maximize cost-effectiveness and cost-efficiency.**

Two main projects on the ground form a baseline for this project to build on.

The first one is the project implemented by IFAD called PACER ("*Projet d'appui à la croissance économique rurale*"), supporting rural economic growth. After a first 5 year phase supporting rural entrepreneurship in 5 value chains: rice, pineapple, manioc, market gardening and soja, the project is entering this year a second five year phase on a 6,5billion FCFA budget financed by the West African Development Bank. In order to support the framework conditions for rural growth, this second phase's expected outputs are:

- To renovate 250km of rural roads
- To rehabilitate 405 hectares of wetlands for rice production and market gardening
- To build 6464m² of storage and market buildings

These activities are relevant for and complementary to some of the activities of the proposed LDCF project, but without a focus on climate change adaptation.

The second one is the previously known as *Projet Songhai* and now entering a second phase called PPEA (*Projet de Promotion de l'Entreprenariat Agricole*: Project to promote agricultural entrepreneurship). It is a national and regional project aiming at providing technical expertise to farmers in the field of sustainable agriculture and livestock rearing but without the climate change angle. It is implemented by the Ceped, which is also the implementing partner for the current LDCF project. One of its intervention zones in Benin is the Municipality of Savalou, also covered by the current LDCF project. Here again, the activities of this project are relevant but not focused on climate change.

This LDCF initiative will ensure that climate change becomes a central issue in the planning, budgeting and execution of Government intervention and support to its rural population.

The LDCF funded SAP/IC project, that aims at providing early warning and climate information to the public and more specifically to farmers via agromet advisories, is also important to mention. It began in 2013 and will end in 2017, targets the development of a national disaster management capacity based on anticipation from reliable and effective alerts, and contributes to an adjustment and an optimization of the

sectoral planning and policy / national adaptation strategies to climate change. Infrastructures such as limnometric or agro-climatic stations will also be installed. The proposed project will therefore build on the results of it in order to address barriers related to climate information and early warning.

Finally, it's also important to mention the NAPA-1 project. The National Adaptation Programmes of Action (NAPAs) ended in 2016 in Benin. This programme provided a process for Least Developed Countries (LDCs) to identify priority activities that respond to their urgent and immediate needs to adapt to climate change, those for which further delay would increase vulnerability and/or costs at a later stage. In Benin, the goal was to increase the abilities of governmental agencies to insulate urban and rural populations from the adverse effects of climate change, through improved capacity building and project identification. In particular, the main human vulnerabilities and livelihood impacts identified for Benin were the reduced agricultural production, water shortage and/or groundwater depletion, increased disease and/or other health problems and food security issues. In particular, the programme allowed achieving following results:

- development of planning and response capacities of sectors linked to climate change by ensuring that national and municipal development plans as well as sectoral policies and associated budgets incorporate adaptation needs ; ii) the expertise and environmental support that communities must have in order to effectively adapt to adverse weather conditions; iii) the sharing of experiences in adaptation at local, national and international levels.
- The soil mulching which limits the evaporation of water in the soil which renders it useful for cultivation. This protects the floor and limits the growth of weeds. Crop residues and straw gradually decompose and mineralize the soil which releases nutrients available to crops and increased yields.
- Mobilization from surfaces waters in order to adapt to climate change in the most vulnerable villages from the Center and the North
- Implementation of a climatic risks forecast and alert system for food security in 4 agro-ecological vulnerable areas
- Rainfall posts and/or stations are installed according to WMO standards, in a park closed with reinforced concrete pillars and locked doors, ensuring optimal safety to the equipment. These advanced equipments reinforce the meteorological park of Benin and are an important support operated by PANA1, and strengthen the climate observations in Benin, especially in areas where such information was mildly available with regard to the reference stations.
- Significant support of PANA1 to communities in the provision of equipment, fish farms, appropriate tools, various supports and shelters. Whether in groups and/or individually, these investments have been important in the light of very low or no investment real powers of these beneficiaries. It's actually a tailored "mini-Marshall Plan" for every site, aimed at enabling beneficiaries to boost their take off of a vicious circle in which the lack of resources often hampers a correct start of the crop year.
- Replanting offast growing forest species. The plantations are the pride of the beneficiaries, whether communal or individual, as some are veritable islands of forest.
- Operationalization of phenological observations of crops on plots identified for this purpose, performed by an on-site observer trained for this purpose. Such information was used to inform the monthly bulletin of agro-meteorological information

These results constitute a strong basis for the current project to build on and scale up.

Beyond these baseline projects, it is important to note that two projects and an institution will **co-finance** the proposed project:

- The **CePED** (Centre de Partenariat et d'Expertise pour le Développement Durable), is the Project **Implementing Partner** of the proposed project and will **co-finance up to 3,000,000USD** over the 5 year period of the project. The CePED is a central institution in building of Benin's resilience to climate change and this partnership will benefit both the project and the institution. Indeed, the project's implementation will be enhanced by the CePED knowledge of CCA options in Benin and

the institutional framework at the national and sub-national levels, as well as by the fact that the CePED's Board gathers all important Beninese actors across Ministries (Planning, Agriculture, Finance...) and the civil society (universities, agricultural actors, NGOs, women groups)³⁸.

- The **Villages du Millénaire programme will co-finance up to 12,000,000 USD**. A first implementation project under this programme has recently been completed, financed by the Government of Japan and executed by the CePED. The project was successful in eradicating extreme poverty in the municipality of Banikoara, identified as one of the poorest in the country, and the expertise and know-how gained from that experience will be a valuable asset for helping the development and implementation of the proposed project.
- The **undergoing project « Commune du Millénaire de Bonou, pour un développement durable (PCM-BONOU) » will co-finance up to 15,000,000 USD**. Here as well, knowledge exchange in order to enhance efficiency and effectiveness will be at the center of this partnership.

More generally, the partnerships established under the proposed projects will be **public-private partnerships**, as well as partnerships with **local NGOs** or other **international organizations**. For instance, with local NGOs, the partnerships will incentivize ownership of the project by the local population and capitalize on expertise and the lessons learned from previous projects. Indeed, several NGOs have already been involved in the building of small infrastructures designed to better adapt to the impacts of climate change in the past and were involved in the PRECAB program aiming to reinforce economic knowledge and adaptation capacities to climate change, in order to improve the resilience of communities to climate change (2011-2014), and in the PARBCC programme, aiming at reinforcing adaptation capacities of rural Beninese stakeholders.

The project will establish a partnership with the **Consortium Alafia-APSF**³⁹, the inter-professional association of Decentralized Financial System in Benin. This association **supports microfinance institutions** by facilitating their professionalization and development and by working to improve the legal, economic and political environment in which they operate. A partnership will also be established with the national cooperative financial network called *Faîtière des Caisses d'Epargne et de Crédit Agricole Mutuel du Bénin* (FECECAM)⁴⁰, which financial center for businesses with a focus on small and medium-sized businesses is very relevant to the third expected outcome of this project ("*Communities' resilience is improved by more diversified income generating activities and better access to finance*"). Better access to finance is indeed one of the positive externalities expected from the livelihood diversification and better financial literacy of entrepreneurs, SMEs and women supported by this project.

To ensure spillover effect to the private sector, the **Beninese national professional building association**, *Association Nationale des Entreprises de Construction des Travaux Publics et des Activités Connexes* (ANECA), will be informed on climate change adaptation and the needs to consider climate-proof infrastructures.

The **Benin Agricultural Research Institute (INRAB)**⁴¹ will be another important partner. After the successful contribution of INRAB in the NAPA-1 project, collaboration will continue by disseminating innovative, adaptive and resilient farming techniques.

The **International Network for Bamboo and Rattan (INBAR)**⁴², an intergovernmental organization established in 1997 to develop and promote innovative solutions to poverty and environmental sustainability using bamboo and rattan will also be involved in the project. The organization totals currently 42 Member States, among which Benin since 1999⁴³. INBAR aims improving the well-being of

³⁸ See Article 12 of the CePED statuts on the composition of its *Conseil de gérance*.

³⁹ <http://www.alafianetwork.org/>

⁴⁰ <http://www.fececam.org/>

⁴¹ <http://www.inrab.org/>

⁴² <http://www.inbar.int/>

⁴³ <http://www.inbar.int/country/benin/>

producers and users of bamboo and rattan in the context of a sustainable bamboo and rattan resource base by consolidating, coordinating and supporting strategic and adaptive research and development. The goal of this partnership will be the organization of bamboo-related activities to mitigate the adverse effects of climate change in a watershed in Benin.

iii) Stakeholders' engagement

An important prerequisite to guarantee the success of any project is to engage stakeholders and final beneficiaries, including in this case: poor farmers, experts in agricultural extension services, NGOs, the targeted municipalities, and the aforementioned partners. The municipalities engaged in the project are Avrankou, Bohicon, Bopa, Ouaké and Savalou. They have been identified as priority areas of intervention by the GoB and the UNDP, and have demonstrated their willingness to participate to the project during the project preparation consultations. Several Municipalities contributed financially during the NAPA-1 project.

The main national partners and stakeholders will be the Ministry of Plan and Development, the Ministry of Agriculture, Livestock and Fishing, the Ministry of Living Environment and Sustainable Development, the Center of Expertise for Partnerships and Sustainable Development, INRAB, and the Ministry of Water, Energy and Mining.

The project will also involve the University of Cotonou, and facilitate international cooperation with other universities and research centers working on climate change adaptation and the agricultural sector.

Table n°5: Matrix of national stakeholders' participation

Ministry / Department / Organizations	Role in the project
Ministry of Plan and Development	<ul style="list-style-type: none"> • Will preside the Orientation Committee for policies and Strategies (COPS) which serves as Project Technical Committee (CTP) through the Partnership and Expertise Center for Sustainable development (see below) • Will coordinate all actions in order to contribute to the success of the project's actions. This will ensure the project ownership by all members of the government • Will act as the National Executing Agency • Will represent the Government in the project
Partnership and Expertise Center for Sustainable Development (CePED)	<ul style="list-style-type: none"> • Will assume the function of National Project Director • Will prepare the technical and decision-making bodies sessions of the Project and will provide the functions of secretariat and Reporting with the support of the management unit • Will act as the National Directorate of the project • Will represent the Government in the implementation of project operations • Will ensure the coherence of the population's expectations with project objectives • Will organize the synergy with other similar projects both nationally and at the communal level • Will support the Project Team in the implementation of

	<ul style="list-style-type: none"> programmed activities Will play a key role in South South and Triangular cooperation (SSTrC)
Ministry of Living Environment and Sustainable Development	<ul style="list-style-type: none"> Will be a member of the <i>CTP</i> Will serve as resource institution for technical aspects of sustainable development. Will provide technical assistance
Ministry of Agriculture, Breeding and Fishery	<ul style="list-style-type: none"> Will co-preside the <i>CTP</i> Will serve as resource institution for technical aspects of crop production, livestock and property and also to secure training sites Will provide technical assistance for water-related activities including the construction of water resource mobilization works for agro-forestry- pastoral purposes Will designate a representative for the project that will assume the role and functions of the Executive or Senior Beneficiary on the draft board
Benin Agricultural Research Institute (INRAB) and other research institutions for bamboos promotion	<ul style="list-style-type: none"> Will be a member of the <i>CTP</i> Will be making research on short-cycle and drought resistant varieties and on adapted cultivation practices, on agro-forestry for the diversification of income sources and on other appropriate technical questions Will conduct research, at the farmer level, on agriculture adaptation activities related to options of cultivation diversification Will be responsible for the demonstration of adapted technologies
Ministry of Energy, Water and Mining (Water Department)	<ul style="list-style-type: none"> Will be a member of the <i>CTP</i> Will be responsible for hydrological data collection; Will provide technical assistance for water-related activities including the construction of dams
United Nations Development Programme (UNDP)	<ul style="list-style-type: none"> Will co-preside the <i>CTP</i> Will provide technical assistance to various project stakeholders during the site selection workshops and project preparatory phase Will be responsible for reporting the progress of the project to the GEF Will be responsible for monitoring and quality assurance of the technical and financial management of the plan for the Project and in the use of project funds; Will facilitate the international dissemination of knowledge and project experience Will be a recipient of information and data from projects to facilitate the incorporation of the predictions

	<p>of climate change in plans, extreme events management policies and programs</p> <ul style="list-style-type: none"> • Supported the Government during the formulation of the PIF and project preparation • Will ensure the connection between the GEF and the Government • Will provide support to the Project Management Unit (<i>Unité de Gestion du Projet, UGP</i>) for the implementation of project components • Will mobilize and coordinate the support of international partners through a global network
Municipalities	<ul style="list-style-type: none"> • Will play a vital role in securing demonstration sites • Will be key beneficiaries and will participate in the planning and implementation of project interventions in Municipality • Will be key players in all phases of the formulation, implementation, evaluation and monitoring of the project
Universities, Agriculture vocational schools and the Faculty of Agricultural Sciences, and apply ecology laboratory	<ul style="list-style-type: none"> • Acted as resource institutions during the PIF et PPG • Will disseminate knowledge in the field of climate change resilience among young generations of agricultural entrepreneurs
Local Communities/CBOs	<ul style="list-style-type: none"> • Will be the key beneficiaries and will participate in the planning and implementation of project interventions at the community level • Will be key partners in the planning and implementation of project interventions at the community level, as a member of the Technical Support Mechanism (<i>Mécanisme d'appui technique</i>) • Will participate in a series of briefings and awareness raising workshops at project start organised under the leadership of local authorities and making sure that all groups are included (women, youth, poor) • Will be recruited for the relevant project activities, such as infrastructure building and will benefit in this framework of the relevant capacity building. • Will be involved in multi-stakeholders' platform at the municipal and regional levels, under the project Management units
Small Grant Programme (UNOPS-UNDP)	<ul style="list-style-type: none"> • Will define, in collaboration with the national leadership of the Project Management Unit, the Environmental Quality/ poverty reduction interface, and in terms of capacity-building of communities and vulnerable groups, while effectively involving all parties concerned • Will support local initiatives, following a program approach, and by focusing on niche themes and geographical concentration which optimize the effectiveness and efficiency of interventions

	<ul style="list-style-type: none"> • Will ensure an accompaniment to CSOs/ CBOs project beneficiaries which will enhance their technical, organizational and institutional capabilities • Will contribute to enhance the potential for change that contain the internal dynamics (focusing on concrete activities and broader issues, role of leaders, learning through exchange, emulation, self-diffusion of innovation, involvement of rural actors in local democracy, improvement of social relations ...) while intensifying patrimonial negotiations to optimize the use of livelihoods • Will contribute to strengthen the quality of partnerships between CSOs/CBOs and Municipalities to increase the consistency of interventions with the Communal Development Plans and to ensure municipal support • Will ensure the sustainability of the achievements and knowledge, through the organization of periodic meetings of exchanges between stakeholders as the basis of participatory analysis and enrichment of the diversity of knowledge and experience
United Nations Volunteers programme	<ul style="list-style-type: none"> • Will bring a substantial support for the project through: <ul style="list-style-type: none"> ○ The provision of qualified human resources for the promotion of national and international volunteering ○ The Monitoring of activities of volunteers on the Project intervention sites ○ The strengthening of the work of volunteering at community level and at the communal level in the project intervention areas
ANOPER (<i>Association Nationale des Organisations Professionnelles d'Eleveurs de Ruminants</i>)	<ul style="list-style-type: none"> • Rural organization with 35 000 breeders in 48 local authorities (75% of the territory of Benin), it will share expertise with the project management unit on living and working conditions for farmers of ruminants in Benin and will come in support concerning activity 2.3.7, by helping drawing limits for paths corridors
<i>Africaine des Garanties du Bénin</i>	<ul style="list-style-type: none"> • Role in the project: partnership with banks to facilitate operation credit to vulnerable groups at bearable interest rate and this in a local economy context;

The centerpiece of the stakeholders' engagement strategy will be the targeted Municipalities to ensure a optimal decentralization and transfer of competencies from sectorial ministries to these Municipalities. This is the best guarantee to maximize the project impacts to the final beneficiaries, i.e., the most vulnerable farmers and women of the nine priority villages.

At project start, information and awareness raising activities towards the main stakeholders is necessary. These actions will inform them on the project objectives and climate change adaptation issues, on the upcoming project activities.

In practice, a series of briefings and awareness-raising workshops will be organized in the framework of the project involving the poor vulnerable communities in the nine targeted villages. These meetings will bring together not only the traditional authorities (chiefs), but also local elites and politicians (members of the Parliament, mayors). All social strata will be present, including women, young people, and poor farmers. These events will be organized under the leadership of the local administrative authorities.

During the implementation phase, local people will be recruited for the ad hoc project activities. These persons will benefit from trainings and capacity building activities, to prepare the exit strategy from the beginning. Local organizations (CSOs and NGOs) already working with communities will also be invited to implement various project activities.

At the municipality level, the project will establish a multi-stakeholders' platform to involve and inform all the representatives of the following structures: local NGOs, women and youth associations, municipalities, local authorities, farmers' associations. In the project areas, the project will facilitate the establishment of a platform composed of elected MPs, senators and mayors. At the regional level, a governance platform, chaired by each Governor will be composed of various heads from the related agricultural services, representatives from the private sector, officers from NGOs, and any other elected representatives. The Project Management Unit will establish as a functional mechanism for all platforms.

iv) Mainstreaming gender

Even though the Constitution of Benin affirms equality between men and women and progress is being made to enhance **gender equality**, this issue **remains a challenge in Benin**. As outlined in Section III, Benin ranks 144 out of 187 countries on the Gender Inequality Index⁴⁴, with only 7,2% of seats at the Parliament held by women and only 15,8% of the female population over 25 having at least some secondary education, against 30,1% for men. The country is in group 5 of the Gender Development Index⁴⁵, meaning it has only attained low equality in Human Development Index (HDI) achievements between women and men (absolute deviation from gender parity of more than 10 percent).

As a result, men and women are impacted differently by climate change and require different things to build their adaptive capacities. In order to better understand these differences and to design the project to tackle them accordingly, **an extensive consultation has been led during the project preparation phase** in the 5 targeted Municipalities and synthesized in a report⁴⁶, which executive summary can be found in Annex F. The report confirms that in the 5 targeted Municipalities, men and women are impacted differently by climate change impacts due to their different social roles in the society. Women have for example less access to land. Another example reported by several women in different targeted municipalities is that they are the one who are cleaning up after a flood, therefore carrying more of the work burden implied, beyond economic and other losses implied by the flood. The report also highlights that gender is an important parameter to be taken into account, but is intersectional, meaning there are parameters that can worsen or minimize the gender unbalance such as age, wealth, social position, handicap. These parameters must be kept in mind when designing a project.

This consultation led to the identification of the elements of activities addressing the vulnerability of women and synthesized in an **action plan to integrate gender to the project**⁴⁷. According to this action plan, **the current project has been carefully designed both to mainstream gender in all its components, outcomes, outputs and activities and corresponding M&E indicators, but also to target women specifically when needed.** Experience shows that setting targets to reach women in all activities is important, but that these targets can be difficult to achieve, for example because of women's social roles. Thus, in outcome 3 concerning livelihood diversification, output 3.3 will aim at having at least 50% of women trained as part of the entrepreneurs and SME training, but output 3.2 will train specifically women in livelihood diversification as not so many women are currently entrepreneurs or head of SMEs,

⁴⁴ <http://hdr.undp.org/en/composite/GII>

⁴⁵ <http://hdr.undp.org/en/composite/GDI>

⁴⁶ Zariatou Brisso, gender expert, "Intégration du genre dans le projet de "renforcement de la résilience des moyens de subsistance ruraux et du système de gouvernement local aux risques et à la variabilité climatique", version of August 2016.

⁴⁷ Idem

but this will give them a chance to become one and better access finance. In the same way, some infrastructures, for instance some food products storage rooms to be built in Bohicon will be managed by women's groups in order to reinforce these groups and empower women, as they traditionally have less access to management positions.

From the project organisation's point of view, 50% of the operational organization staff for the implementation of the project will be composed of women, in order to make sure women are fully involved in the implementation and management bodies of the project. The **operational organization staff will also be trained to be able to use tools for analysis and integration of gender issues**. These measures will **ensure that specific impacts on women and other vulnerable groups will be kept in mind in the implementation of the project**.

This attention to gender and the concrete implementation of the Gender Action Plan are clearly reflected in the **gender specific indicators** used in the Project Results Framework presented in section [IV.4](#).

As an element of context, according to the fourth General Census of Population and Housing⁴⁸ from 2013, **the targeted population of this project in the nine villages comprises 3,281 women between 15 and 54 years old⁴⁹**.

v) South-South and Triangular Cooperation (SSTrC)

This project is country specific, however, it borrows from the global principles of CCA practices. The project's learning and knowledge aspect includes an exchange of lessons and best practices in adaptation with other countries in the region facing similar climate change impacts, and similar barriers to adaptation such as Niger, Togo, Burkina Faso, or even Uganda. No collaboration with these countries for the implementation of project activities is planned but knowledge platforms within UNDP between country offices and regional offices can be used to share experiences at a regional level and between LDCs in the region.

Under the supervision of the Ministry of Plan and Development, via the institution in charge of the implementation of South-South Cooperation activities for sustainable development, the CePED plays a key role in the South-South and Triangular Cooperation (SSTrC) in Benin. One example of successful SSTrC project is the Strategic Partnership Agreement signed between Benin, Bhutan and Costa Rica, in Johannesburg on August 2002. This partnership catalyzes the transition to sustainability by supporting innovation in policies, seeding initiatives, replicating successes, establishing new partnerships with civil society organizations and disseminating information between the partner countries. It concentrates on five thematic areas: sustainable tourism, sustainable consumption and production chains, biodiversity conservation, and access to sustainable energy, energy efficiency and gender equity. As the CePED is the Implementing Partner of this project, Benin's South-South Cooperation partners will benefit from the lessons learnt from this project on how to increase agriculture's resilience to the adverse impacts of climate change.

⁴⁸ INSAE, Quatrième Recensement Général de la Population et de l'habitation (RGPH), Disponible en ligne : <http://www.insae-bj.org/recensement-population.html>

⁴⁹ According to the Census, within the nine targeted villages, there is a population of 12,936 residents of both genders, among which there are 6,684 women (51.66 % of the total population of the nine (9) villages selected for the project). Among this population of women, 3,281 women are between 15 and 54 years old⁴⁹.

V. FEASIBILITY

i) Cost efficiency and cost effectiveness

The proposed project builds on, among other things, the significant success of the NAPA-1 project (Integrated Adaptation Program for Combating Adverse Effects of Climate Change on Agricultural Production and Food Security in Benin)⁵⁰. Using a research-action approach implemented in nine pilot sites across Benin, this project resulted in enhanced adaptive capacities of many poor farmers through the introduction of innovative adaptation technologies. A multi-criteria analysis was undertaken to prioritize actions according to their potential for positive effects on economic development, social capital and environmental management. As such, the actions proposed by the NAPA-1 project were not only the most urgent and most pressing ones as identified in Benin's NAPA, but have also been assessed to be cost-effective⁵¹.

As this proposed LDCF project scales up and builds on the results and lessons learnt from NAPA-1, it should ensure the effectiveness of the activities undertaken. This project moves from the research-action approach utilized in NAPA-1 to implementation of the results; we now know “what works” and have good evidence to better design activities that were not satisfactory or did not reach their full potential during the NAPA-1 research-action phase.

This proposed LDCF project is not only built on strong evidence from NAPA-1, but also on a thorough preparation phase during which the costs of each activity in the different villages were quantified to optimize the choice of the most cost-effective activities in each priority area⁵². The costs of climate change adaptation interventions were determined through various consultations undertaken at municipal and village levels, as well as at the lower community and household levels. Hence, the most vulnerable groups including smallholder farmers, women and unemployed youths were consulted during the project preparation phase to ensure maximum benefits to all project beneficiaries. As mentioned above, these elements will be reassessed in the early stages of the implementation phase. The thorough project preparation phase also enabled the elaboration of a risk management strategy described in Section V that mitigates external risks that could threaten the efficiency and effectiveness of the project.

As outlined in Section [IIII](#). Strategy, in order to be as effective and efficient as possible, the proposed project also:

- Adopts an integrated approach with three complementary and mutually reinforcing components (capacity building, investments in water infrastructure and livelihoods diversification), as explained in details in section [IVIV](#).
- Aligns with national priorities, as described in Section [IIII](#), and answers local needs as identified during the thorough participatory analysis carried out during the project preparation phase,

⁵⁰ <https://www.thegef.org/project/integrated-adaptation-programme-combat-effects-climate-change-agricultural-production-and>

⁵¹ Terminal Evaluation Report, Project title: “Integrated Adaptation Programme to combat the effects of Climate Change on agricultural production and food security in Benin (PANA-1)”, UNDP / GEF (GEF ID 3704), Cotonou, Benin, October 2015.

⁵² Bertin K. Assogba Nongnide, Ingénieur Agronome du Génie Rural, des Eaux & Forêts, Administrateur des Projets de Développement, Rapport de mission "analyse et évaluation de la vulnérabilité et variabilité climatiques dans le cadre de la formulation du projet « Renforcement de la résilience des moyens de subsistance ruraux et du système de gouvernement local aux risques et à la variabilité climatiques au Bénin », version of August 2016

- Builds on and reinforces national and sub national pre-existing structures and capacities,
- Mainstreams gender across its activities, outputs and outcomes, and
- Ensures equitable access to all targeted project beneficiaries (youth, poor, landless...).

The measures that this projects proposes to implement were identified as no-regret⁵³, tangible and cost-effective measures, as they: i) prioritize the needs at the project design of local communities; ii) optimize the spending of the funds to meet the needs of the local communities; and iii) ensure that the project is well understood by all the beneficiaries and facilitates a full country ownership and an efficient use of financial resources.

Concretely, in terms of project design, this focus on cost effectiveness and efficiency meant for example:

- That an integrated approach between component 2 and 3 has been chosen and refined during the project preparation phase. Indeed, it has been considered to focus the project only on reducing the communities' vulnerability (component 2) or only on improving their adaptive capacities by supporting livelihood diversification (component 3). However, NAPA-1 experience as well as analysis showed that an integrated approach is much more cost effective. Indeed, if one takes the stabilization of river banks to reduce the risk of floods and erosion as an example, one alternative approach would have been to use mechanical stabilization methods such as laying rip-rap. However, the bamboo approach has been chosen, not only because it is more environmentally friendly, but also because it is much more cost-efficient: in the long term, due to the revenue generation of the bamboo collected, its cost could even be negative (i.e. it would generate more revenue than the initial investment and the maintenance). Moreover, the revenue generation provides incentive for proper maintenance, which in turns also increases the cost effectiveness.
- That a "training of trainers" approach is used for capacity building activities whereby extension agents will undergo technical capacity building in order to be able to train other people. This is a cost-effective approach as it maximizes the number of beneficiaries to reach a wider audience as the trainers themselves will further disseminate climate change concepts amongst local communities, ensuring sustainability and scalability.

Regarding project activities, resilient techniques introduced as a part of component 2 will for example include mulching. Indeed, qualitative and quantitative data collected on NAPA-1 showed that they were a cost efficient and profitable way of combating soil erosion. NAPA-1 beneficiaries praised the activity⁵⁴ and the data shows that for gombo production, mulching increased the gross profit margin by 300% and the benefit generated by 100USD of investment was 220USD for beneficiaries who adopting mulching against 50USD for those who did not.

It is also important to note that the sustainability of the results does impact positively the cost-effectiveness⁵⁵ of the project, as long lasting results increase the total value of the project's positive effects over time. The terminal evaluation process of the NAPA-1 project achieved by the end of 2015 concluded that farmers keep adapting and trying new adaptation technologies even after the project

53 No-regret options are those that are justified by current climate conditions and further justified when climate change is considered, e.g. additional off-farm sources of income will provide livelihood benefits extreme weather events increase in frequency. Lim. B, and E. Spanger-Siegfried. 2004. Adaptation policy frameworks for climate change: developing strategies, policies and measures. Cambridge University Press, Cambridge, UK pp 253.

54 Terminal Evaluation Report, Project title: "Integrated Adaptation Programme to combat the effects of Climate Change on agricultural production and food security in Benin (PANA-1)", UNDP / GEF (GEF ID 3704), Cotonou, Benin, October 2015.

55 **Cost-effectiveness** is the extent to which the program has achieved or is expected to achieve its results at a lower cost compared with alternatives, .

implementation period, underlying their interests in sustaining project activities and adaptation investments beyond implementation period: “The activities introduced during the project implementation have created a dynamic in the villages and, with few exceptions, the population suggested that innovations of NAPA-1 would continue”⁵⁶. Indeed, techniques acquired through NAPA-1 such as the use of climate resilient short cycle seeds, off season crops, mulching in order to reduce soil erosion and restore soil fertility or some diversified livelihoods such as rabbits or catfish farming have now become part of the normal way of doing things for population who benefited from the NAPA-1 project. This bodes well for the sustainability of the proposed project, which builds on these results.

Finally, it is important to note that careful M&E as detailed in Section [VI.VI](#). Project Result Framework, which will ensure a close follow up of expected results through SMART indicators, and Section VII. Monitoring and Evaluation Plan, which includes a Midterm Evaluation and will enable the project management team to follow up on the efficiency and effectiveness of the activities undertaken and allow them to adjust project implementation if necessary.

⁵⁶ Terminal Evaluation Report, Project title: “Integrated Adaptation Programme to combat the effects of Climate Change on agricultural production and food security in Benin (PANA-1)”, UNDP / GEF (GEF ID 3704), Cotonou, Benin, October 2015.

ii) **Risk Management**

Project risks				
Description	Type	Impact, Probability and risk assessment	Mitigation Measures	Owner
Unavailability of requisite human resources and data	Organizational	P=2 I=4 <i>Medium</i>	The issue of the unavailability of requisite human resources will be mitigated by recruitment of international consultants who will work closely with in-country counterparts (MAEP) and by targeted capacity building activities. Training activities of local personnel will also be part of all aspects of the work and the relevant institutions will be encouraged to expand the staff base if it is weak in particular areas.	<i>Project manager</i>
Extreme climate events such as floods and droughts could disrupt project activities and/or damage ecosystems and infrastructure.	Environmental	P=3 I=3 <i>Medium</i>	Coordination will be undertaken with partners for disaster response in order to ensure that disaster relief interventions are directed towards demonstration sites impacted by extreme climatic events. Appropriate species will be used for project interventions in order to minimize the potential impacts in the medium and long-term. Where damage occurs before ecosystem management adaptation approaches can reduce the impacts of extreme events, supplementary infrastructural approaches and planting will be undertaken.	<i>Project manager</i>
The insertion of climate change resilient species (flora) could put pressure on local ecosystems and biodiversity.	Environmental (See Annex C for more information)	P=2 I=3 <i>Low</i>	Careful analysis of targeted location's ecosystem as well as presence/absence of special status species will be undertaken prior to any insertion. If the resilient specie has potential invasive characteristics, best practices in managing the spread of said specie will be implemented, along with concomitant trainings and capacity-building of the culture's governance body.	<i>Project Manager</i>
The preparation, construction and operation of some hydrological infrastructures aimed at increasing resiliency could have temporary detrimental	Environmental and social (See Annex C for more information)	P=3 I=2 <i>Low</i>	Environmental and social studies conducted prior to any infrastructure work susceptible to have an impact will identify best mitigation measures. As a general rule, contractors will have to follow the general guidelines described in the Environmental and Social Management Plan (ESMP) and develop site-specific mitigation measures. This latter element will be part of the capacity-building effort targeted at contractors. Also, surveillance and monitoring will be	<i>Project Manager</i>

effects on physical, biological or human environments.			performed by villagers with the help of qualified authorities and/or specialists. Finally, with regards to risks posed by the presence of ponds on health and safety (drowning risks and vector-based diseases proliferation), the relevant authorities will be brought into play to raise awareness on those risks and include new infrastructures in their ongoing disease control measures.	
The increased resiliency (and therefore productivity) of hitherto poor land could generate some intra/inter-communal tensions regarding access to the new, richer land.	Social (See Annex F for more information)	P=3 I=3 Medium	Specific activities to address this issue are included in the project (cf Output 2.2 and 2.3)	<i>Project Manager and local/regional authorities</i>
Limited capacity within Relevant ministries/insufficient human resources. Irrigation work could generate real or perceived usage conflicts between communities as well as put pressure on ecosystems	Organizational Environmental and Social (See Annex F for more information)	P=1 I=3 Low	A major part of the project aims to strengthen institutional and technical capacity for planning, designing and implementing local level adaptation actions. Technical and capacity building expertise will be contracted to work with and train local technical staff. A dedicated Project Manager will be assisted with short term national and international specialist support to ensure smooth and timely delivery of project outputs. Environmental and Social studies will ensure that the design of any irrigation work does not infringe on other communities' usage of the water resource. In the same spirit, environmental studies will ensure that reserved ecological debits are respected in cases where the water withdraw is non-marginal. All such infrastructures will include a broad group of stakeholders in their design and preparation as to minimize risks of conflict. All stakeholders will have access to the governance body responsible for the infrastructure as well as formal means to voice their concerns.	<i>Project manager and national authorities Project Manager and local/regional authorities</i>
Poor provincial responses to the leadership role from MAEP Limited capacity within Relevant ministries/insufficient qualified human capacity.	Organizational Organizational	P=2 I=4 Medium	Provincial authorities have been individually consulted during preparatory phase, and have endorsed the LDCF project. The PSC will engage with relevant provincial authorities throughout the duration of the project. A major part of the project aims to strengthen institutional and technical capacity for planning, designing and implementing local level adaptation actions. Technical and capacity building expertise will be contracted to work with and train local technical staff. A dedicated Project Manager will be assisted with short term national and	<i>Project Manager and local authorities Project manager and national authorities</i>

			international specialist support to ensure smooth and timely delivery of project outputs.	
Insufficient willingness to implement the tools for planning or budgeting climate change at the national as communal level Poor provincial responses to the leadership role from MAEP	Political Organizational	P=2 I=3 Low	Strong consultative process and awareness raising will be conducted to raise concern and interest of local authorities in the benefits of planning and budgeting climate change. Provincial authorities have been individually consulted during preparatory phase, and have endorsed the LDCF project. The PSC will engage with relevant provincial authorities throughout the duration of the project.	<i>National and local authorities Project Manager and local authorities</i>

As per standard UNDP requirements, the Project Manager will monitor risks quarterly and report on the status of risks to the UNDP Country Office. The UNDP Country Office will record progress in the UNDP ATLAS risk log. Risks will be reported as critical when the impact and probability are high (i.e. when impact is rated as 5, and when impact is rated as 4 and probability is rated at 3 or higher). Management responses to critical risks will also be reported to the GEF in the annual PIR.

iii) Social and environmental safeguards

The UNDP environmental and social safeguards requirements have been followed in the development of this project. In accordance with the *UNDP Social and Environmental Screening Procedure*, this project is rated as having a moderate environmental and social risk. Annex C provides more information through the completed *Social and Environmental Screening Template*.

With regards to the overall project, the only activities that are deemed to represent some level of risk are those under Outputs 2.1 and 2.2, the other Outputs having little to no potential negative environmental or social effects. Overwhelmingly, activities covered in Outputs 2.1 and 2.2 are aimed at reducing human capital vulnerabilities to climate change through increased resiliency and productivity of the underlying natural capital. Given this logic, there are no tradeoffs between environmental and socioeconomic objectives. The potential negative environmental and social effects of the project are thus mainly those of unintended consequences, largely preventable with the implementation of appropriate studies, sound mitigation measures, surveillance of work as well as monitoring mechanisms. Also: the extent of potential impacts, even without any kind of mitigation action, are generally limited in time and space as well as reversible.

Furthermore, given the broad range of possible measures included in the project's framework, output-specific social and environmental assessments conducted in the first phases of the project will very quickly identify: (1) the best technical measures to be put forward in each targeted community, prohibiting certain measures if environmental and social impacts associated with them in a specific environment are likely to be significant; (2) the best sites within a given location for each measure as to reduce negative impacts to a minimum; and (3) environmental and social management measures to be included in the Terms of Reference of contractors.

During the project preparation phase, an international environmental expert consulted the project documentation to evaluate the likely environmental and social risks posed by the project as well as attended the workshop held in Bohicon in July of 2016 to gather feedback and information from authorities and stakeholders. As proof of the inclusion of environmental concerns in the project preparation, participants to the workshop elected to exclude large water infrastructures and dams from project activities and focused instead on smaller, more manageable and localized infrastructures.

Finally, field surveys conducted in August 2016 sought to document any socio-environmental characteristics of targeted sites that might be of relevance for environmental and social management going forward. These precise and specific information will inform the next steps and contribute to making sure project activities' are tailored to local environmental and social contexts.

Environmental and social grievances will be reported to the GEF in the annual PIR.

iv) Sustainability and Scaling Up

The project has been designed to have a sustainable impact, at the local as well as the national levels.

Firstly, as outline in Section [III](#), the project addresses the key priorities of national development. It therefore benefits from strong institutional backing, which will ensure its sustainability. This is also true at

the local level, as the thorough consultations led during the project preparation phase identified the populations' needs and the project has been designed to address them.

The integrated approach taken for the design of the project also supports its sustainability: the three components (i.e., capacity building, resilient agriculture investment and livelihoods diversification) are complementary and mutually reinforcing. For example, bamboos will be used in component 2 to stabilize riverbanks and thereby reduce the risks of flood and erosion. But this new resource will feed in component 3 to create new livelihood activities based on bamboo. In this way, actions taken to reduce vulnerability to the adverse impacts of climate change and those to increase adaptive capacity to respond to the impacts of climate change are mutually reinforcing, multiplying thereby the incentives to be sustainable in time.

The strong focus on capacity building will also enable project sustainability. Capacity building in risk assessment, risk reduction, vulnerabilities assessment, and adaptation technologies, including development policy frameworks, training of staff, and institutional building and strengthening, will underpin the sustainability of the project outcomes. Investments made and new techniques introduced will be coupled with building of necessary management capacities. For example, when small water harvesting infrastructure are built under component 2, functional management committees including women will be set up in order to ensure their good use and maintenance. The training the trainers approach followed also contributes to sustainability ensuring that capacity remains and can continue to be built as needed well after the end of the project. The third component of the project aims at developing higher income and better access to finance. This will in turn consolidate the project's results beyond its implementation time.

Moreover, the proposed project is building on the successes and results of the NAPA-1 project. The implementation of this project resulted in enhanced adaptive capacities of farmers, the introduction of adaptation technologies and innovation development. The terminal evaluation process of the NAPA-1 project achieved by the end of 2015 concluded that farmers keep adapting and trying new adaptation technologies even after the project implementation period, underlying their interests in sustaining project activities and adaptation investments beyond implementation period: "The activities introduced during the project implementation have created a dynamic in the villages and, with few exceptions, the population suggested that innovations of NAPA-1 would continue"⁵⁷. Contrarily to the NAPA-1, the goal of the proposed project isn't to make "research-action" by testing activities in selected villages. Three municipalities (Bopa, Ouaké, Savalou) among the five selected municipalities were already part of the NAPA-1 and activities selected in this project are based on the results of this project and on the lessons that were drawn from it.

There is potential for scaling up this project upon satisfactory completion as the proposed project will focus on five municipalities (and nine villages), but Benin has declared 21 Municipalities most vulnerable to climate change (i.e., where there is an acute need to build resilience of socio-economic activities to climate change). The success of the proposed project will pave the way for its extension to these other Municipalities; this project aims to demonstrate and scale up some of the best practices in climate change adaptation in order to support the GoB in its efforts to scale up to the entire country.

Institutional capacity enhancement and technical support will facilitate the scaling up of the project by enabling relevant ministries to comprehensively and iteratively assess development needs and climate

⁵⁷ Terminal Evaluation Report, Project title: "Integrated Adaptation Programme to combat the effects of Climate Change on agricultural production and food security in Benin (PANA-1)", UNDP / GEF (GEF ID 3704), Cotonou, Benin, October 2015.

vulnerabilities, and in fine to integrate climate change adaptation into national and sub-national development and sectoral planning.

Finally, it is worth mentioning that in May 2017, Benin's Ministry of Agriculture requested assistance through the CTCN to enhance its agro-meteorological information system in order to strengthen climate resilience of its agriculture producers⁵⁸. By tackling the barrier that the lack of relevant and available agro-meteorological information and capacity to use the information represents for Benin's agriculture resilience, this CTCN assistance will usefully complement the proposed project and enhance both its sustainability and its potential to be scaled up.

v) *Economic and/or financial analysis*

N/A

⁵⁸ <https://www.ctc-n.org/news/agro-meteorological-information-system-strengthen-climate-resilience-agriculture-producers>

VI. PROJECT RESULTS FRAMEWORK

This project will contribute to the following Sustainable Development Goal (s):): SDG 8 – Promote sustained inclusive and sustainable economic growth, full and productive employment and decent work for all; SDG 12 – Achieve food security and improved nutrition and promote sustainable agriculture; SDG 13 – Take urgent action to combat climate change and its impacts; and SDG 15 – protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

This project will contribute to the following UNDAF/Country Programme Outcome 6: By 2018, institutions and populations of the intervention municipalities are able to better manage their environment, their natural and energy resources, the impacts of climate change, and natural disasters

This project will contribute to the following UNDP Strategic Plan Output 5.3: Gender responsive disaster and climate risk management is integrated in the development planning and budgetary frameworks of key sectors (e.g. water, agriculture, health and education)

	Objective and Outcome Indicators	Baseline	Mid-term Target	End of Project Target	Assumptions
<p>Project Objective:</p> <p>To support resilient agriculture, livelihoods and mainstream climate risk considerations into national and sub-national planning processes so that local communities are less vulnerable to climate change</p>	<p>Indicator 1: Vulnerability assessments show decrease in vulnerability in all 9 villages as per the methodology used in the preparation phase vulnerability assessment⁵⁹.</p>	<p>Preparation phase vulnerability assessment:</p> <p>This figures can be updated during the first year of implementation</p>	<p>Average vulnerability is reduced by 10% in all PANA-1 villages and 20% in non PANA-1 villages (the relevance of this target shall be assessed during the first year of implementation)</p>	<p>Average vulnerability is reduced by 30% in all PANA-1 villages and 50% in non PANA-1 villages (the relevance of this target shall be assessed during the first year of implementation)</p>	<p>As all impact indicators, this indicator is precious to follow up on the general objective of the project but is also influenced by many variables outside of the project.</p> <p>The effects of the projects are strong and quick enough to be reflected in a decrease in vulnerability and other factors are not too important to impede attribution.</p> <p>All targeted villages participate actively and implementation goes well</p>
	<p>Indicator 2: Target population's average annual income level</p> <p><i>Data disaggregated by sex</i></p>	<p>902 USD/year</p>	<p>25% increase</p>	<p>50% increase</p>	<p>902 USD (586,000 FCFA)</p> <p>Currently, the proportion of population expenditure is less than one dollar per day in the five municipalities concerned is: Avrankou: 50.4% - Bohicon: 53.0% - Bopa:</p>

⁵⁹ Bertin K. Assogba Nongnide, Ingénieur Agronome du Génie Rural, des Eaux & Forêts, Administrateur des Projets de Développement, Rapport de mission "analyse et évaluation de la vulnérabilité et variabilité climatiques dans le cadre de la formulation du projet « Renforcement de la résilience des moyens de subsistance ruraux et du système de gouvernement local aux risques et à la variabilité climatiques au Bénin », version of August 2016

					66.6% - Ouaké: 72.0 % And Savalou: 46.0%. Qualitative data collected is sufficient to attribute increase partly or totally to the project
Component 1: Capacity development Outcome 1: Climate change and gender are included in development plans at national and sub-national levels	Indicator 3: Number of Municipalities that have considered climate change and gender in their PDC (communal development plan) and PAI (Annual investment plan) <i>Data including how gender is integrated</i>	0 (to be confirmed during the first 6 months of implementation)	All targeted Municipalities that will be in the process of reviewing their PDC and/ or PAI during this period (to be confirmed during the first 6 months of implementation) have taken steps to integrate climate change and gender in these documents	All targeted Municipalities that have reviewed their PDC and/ or PAI during this period (to be confirmed during the first 6 months of implementation) have integrated climate change and gender in these documents	The PDC of 3rd generation are being finalized, will require that UNDP take practical steps to ensure the inclusion of aspects of climate change and gender in the PDC before validation All Municipalities willing to incorporate budget lines for activities related to climate change, including gender perspective.
	Indicator 4: Number of extension agents and NGOs skilled to deliver adaptation extension and TOTs. <i>Data disaggregated by sex</i>	100	Numerical targets will be established during the inception phase of the project, based on the relevant assessments.	Numerical targets will be established during the inception phase of the project, based on the relevant assessments.	Trained trainers will stay in position and use their training actively to train further people themselves
Component 2: Resilient agriculture investments Outcome 2: Productive agricultural infrastructure and human skills are improved to cope with altered rainfall patterns	Indicator 5: Number of operating financed water infrastructures per municipality, including management <i>Data disaggregated by sex for management (and if possible age, wealth and handicap)</i>	0 (precise targets per Municipalities to be updated from project preparation phase vulnerability analysis during the first 6 months of the project)	At least 50% of the planned infrastructure per municipality is operational, as well as the capacities to operate them in a sustainable way and including women	At least 90% of the planned infrastructure per municipality is operational, as well as the capacities to operate them in a sustainable way and including women	All infrastructures identified as relevant can be built according to the proposed timeline (no lack of human capital or other resources) Target population including women are willing and able to participate in managing the financed water infrastructures
	Indicator 6: Number of people who master and use climate resilient techniques promoted by the project (e.g, drip	340	At least 3080 = 50% of target population mastering and	16,163 =100% of target population mastering and using climate	All households in the area of intervention are committed to participating in the project activities and

	irrigation, short cycle seeds ...) <i>Data disaggregated by sex (and if possible age, wealth and handicap)</i>		using climate resilient techniques promoted by the project	resilient techniques promoted by the project	are adopting climate resilient technologies and practices.
Component 3: Livelihoods diversification Outcome 3: communities' resilience is improved by more diversified income generating activities and enabling environment for better access to finance	Indicator 7: Number of women engaged in subsistence agriculture trained / strengthened on alternative livelihoods to agriculture <i>Sex specific data</i>	720 women	At least 1640 = 50% of women in target population) women engaged in subsistence agriculture trained/ strengthened on alternative livelihoods to agriculture	3281 women (=100% of women in target population) engaged in subsistence agriculture) trained / strengthened on alternative livelihoods to agriculture	Women will be willing and able to engage in training
	Indicator 8: number of farmers with access to finance as a result of training and more diversified activities <i>Data disaggregated by sex (and if possible age, wealth and handicap)</i>	0	At least 40% of people trained through the project who requested a loan got it	At least 75% of people trained through the project who requested a loan got it	Micro finance institutes are sensitive to better finance literacy and willing and able to lend to the trained farmers

VII. MONITORING AND EVALUATION (M&E) PLAN

The project results as outlined in the project results framework will be monitored annually and evaluated periodically during project implementation to ensure the project effectively achieves these results.

Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the UNDP POPP and UNDP Evaluation Policy. While these UNDP requirements are not outlined in this project document, the UNDP Country Office will work with the relevant project stakeholders to ensure UNDP M&E requirements are met in a timely fashion and to high quality standards. Additional mandatory GEF-specific M&E requirements (as outlined below) will be undertaken in accordance with the GEF M&E policy and other relevant GEF policies.

In addition to these mandatory UNDP and GEF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop and will be detailed in the Inception Report. This will include the exact role of project target groups and other stakeholders in project M&E activities including the GEF Operational Focal Point and national/regional institutes assigned to undertake project monitoring. The GEF Operational Focal Point will strive to ensure consistency in the approach taken to the GEF-specific M&E requirements (notably the GEF Tracking Tools) across all GEF-financed projects in the country. This could be achieved for example by using one national institute to complete the GEF Tracking Tools for all GEF-financed projects in the country, including projects supported by other GEF Agencies.

M&E Oversight and monitoring responsibilities:

Project Manager: The Project Manager is responsible for day-to-day project management and regular monitoring of project results and risks, including social and environmental risks. The Project Manager will ensure that all project staff maintain a high level of transparency, responsibility and accountability in M&E and reporting of project results. The Project Manager will inform the Project Board, the UNDP Country Office and the UNDP-GEF RTA of any delays or difficulties as they arise during implementation so that appropriate support and corrective measures can be adopted.

The Project Manager will develop annual work plans based on the multi-year work plan included in Annex A, including annual output targets to support the efficient implementation of the project. The Project Manager will ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality. This includes, but is not limited to, ensuring the results framework indicators are monitored annually in time for evidence-based reporting in the GEF PIR, and that the monitoring of risks and the various plans/strategies developed to support project implementation (e.g. gender strategy, KM strategy etc..) occur on a regular basis.

Project Board: The Project Board will take corrective action as needed to ensure the project achieves the desired results. The Project Board will hold project reviews to assess the performance of the project and appraise the Annual Work Plan for the following year. In the project's final year, the Project Board will hold an end-of-project review to capture lessons learned and discuss opportunities for scaling up and to highlight project results and lessons learned with relevant audiences. This final review meeting will also discuss the findings outlined in the project terminal evaluation report and the management response.

Project Implementing Partner: The Implementing Partner is responsible for providing any and all required information and data necessary for timely, comprehensive and evidence-based project reporting,

including results and financial data, as necessary and appropriate. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes, and is aligned with national systems so that the data used by and generated by the project supports national systems.

UNDP Country Office: The UNDP Country Office will support the Project Manager as needed, including through annual supervision missions. The annual supervision missions will take place according to the schedule outlined in the annual work plan. Supervision mission reports will be circulated to the project team and Project Board within one month of the mission. The UNDP Country Office will initiate and organize key GEF M&E activities including the annual GEF PIR, the *independent mid-term review* and the independent terminal evaluation. The UNDP Country Office will also ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality.

The UNDP Country Office is responsible for complying with all UNDP project-level M&E requirements as outlined in the UNDP POPP. This includes ensuring the UNDP Quality Assurance Assessment during implementation is undertaken annually; that annual targets at the output level are developed, and monitored and reported using UNDP corporate systems; the regular updating of the ATLAS risk log; and, the updating of the UNDP gender marker on an annual basis based on gender mainstreaming progress reported in the GEF PIR and the UNDP ROAR. Any quality concerns flagged during these M&E activities (e.g. annual GEF PIR quality assessment ratings) must be addressed by the UNDP Country Office and the Project Manager.

The UNDP Country Office will retain all M&E records for this project for up to seven years after project financial closure in order to support ex-post evaluations undertaken by the UNDP Independent Evaluation Office (IEO) and/or the GEF Independent Evaluation Office (IEO).

Project Management Unit: located within the Ministry, it is the operational body in charge of planning, management and coordination of the implementation of the project. It will be placed under the authority of the project manager, and it will include one administrative staff, one adaptation expert, and one monitoring evaluation expert. In addition, 4 United Nations volunteers will be recruited to support the national project management unit.

UNDP-GEF Unit: Additional M&E and implementation quality assurance and troubleshooting support will be provided by the UNDP-GEF Regional Technical Advisor and the UNDP-GEF Directorate as needed.

Audit: The project will be audited according to UNDP Financial Regulations and Rules and applicable audit policies on NIM implemented projects.⁶⁰

Additional GEF monitoring and reporting requirements:

Inception Workshop and Report: A project inception workshop will be held within two months after the project document has been signed by all relevant parties to, amongst others:

- a) Re-orient project stakeholders to the project strategy and discuss any changes in the overall context that influence project implementation;
- b) Discuss the roles and responsibilities of the project team, including reporting and communication lines and conflict resolution mechanisms;
- c) Review the results framework and finalize the indicators, means of verification and monitoring plan;

⁶⁰ See guidance here: <https://info.undp.org/global/popp/frm/pages/financial-management-and-execution-modalities.aspx>

- d) Discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E budget; identify national/regional institutes to be involved in project-level M&E; discuss the role of the GEF OFP in M&E;
- e) Update and review responsibilities for monitoring the various project plans and strategies, including the risk log; Environmental and Social Management Plan and other safeguard requirements; the gender strategy; the knowledge management strategy, and other relevant strategies;
- f) Review financial reporting procedures and mandatory requirements, and agree on the arrangements for the annual audit; and
- g) Plan and schedule Project Board meetings and finalize the first year annual work plan.

The Project Manager will prepare the inception report no later than one month after the inception workshop. The inception report will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser, and will be approved by the Project Board.

GEF Project Implementation Report (PIR): The Project Manager, the UNDP Country Office, and the UNDP-GEF Regional Technical Advisor will provide objective input to the annual GEF PIR covering the reporting period July (previous year) to June (current year) for each year of project implementation. The Project Manager will ensure that the indicators included in the project results framework are monitored annually in advance of the PIR submission deadline so that progress can be reported in the PIR. Any environmental and social risks and related management plans will be monitored regularly, and progress will be reported in the PIR.

The PIR submitted to the GEF will be shared with the Project Board. The UNDP Country Office will coordinate the input of the GEF Operational Focal Point and other stakeholders to the PIR as appropriate. The quality rating of the previous year's PIR will be used to inform the preparation of the subsequent PIR.

Lessons learned and knowledge generation: Results from the project will be disseminated within and beyond the project intervention area through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to the project. The project will identify, analyse and share lessons learned that might be beneficial to the design and implementation of similar projects and disseminate these lessons widely. There will be continuous information exchange between this project and other projects of similar focus in the same country, region and globally.

GEF Focal Area Tracking Tools: The following GEF Tracking Tool(s) will be used to monitor global environmental benefit results:

The baseline/CEO Endorsement GEF Focal Area Tracking Tool(s) – submitted in Annex D to this project document – will be updated by the Project Manager/Team and shared with *the* mid-term review consultants and terminal evaluation consultants (not the evaluation consultants hired to undertake the *MTE* or the *TE*) before the required review/evaluation missions take place. The updated GEF Tracking Tool(s) will be submitted to the GEF along with the completed Mid-term Review report and Terminal Evaluation report.

Independent Mid-term Evaluation (MTE): An independent mid-term review process will begin after the second PIR has been submitted to the GEF, and the MTE report will be submitted to the GEF in the same year as the 3rd PIR. The MTE findings and responses outlined in the management response will be incorporated as recommendations for enhanced implementation during the final half of the project's duration. The terms of reference, the review process and the MTE report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the UNDP

Evaluation Resource Center (ERC). As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final MTE report will be available in English and will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser, and approved by the Project Board.

Terminal Evaluation (TE): An independent terminal evaluation (TE) will take place upon completion of all major project outputs and activities. The terminal evaluation process will begin three months before operational closure of the project allowing the evaluation mission to proceed while the project team is still in place, yet ensuring the project is close enough to completion for the evaluation team to reach conclusions on key aspects such as project sustainability. The Project Manager will remain on contract until the TE report and management response have been finalized. The terms of reference, the evaluation process and the final TE report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the UNDP Evaluation Resource Center. As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final TE report will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser, and will be approved by the Project Board. The TE report will be publicly available in English on the UNDP ERC.

The UNDP Country Office will include the planned project terminal evaluation in the UNDP Country Office evaluation plan, and will upload the final terminal evaluation report in English and the corresponding management response to the UNDP Evaluation Resource Centre (ERC). Once uploaded to the ERC, the UNDP IEO will undertake a quality assessment and validate the findings and ratings in the TE report, and rate the quality of the TE report. The UNDP IEO assessment report will be sent to the GEF IEO along with the project terminal evaluation report.

Final Report: The project's terminal PIR along with the terminal evaluation (TE) report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the Project Board during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

Mandatory GEF M&E Requirements and M&E Budget

GEF M&E requirements	Primary responsibility	Indicative costs to be charged to the Project Budget ⁶¹ (USD)		Time frame
		GEF grant	Co-financing	
Inception Workshop	UNDP Country Office	USD 11,000		Within two months of project document signature
Inception Report	Project Manager	None	None	Within two weeks of inception workshop
Standard UNDP monitoring and reporting requirements as outlined in the UNDP POPP	UNDP Country Office	None	None	Quarterly, annually
Monitoring of indicators in project results framework	Project Manager	Per year: USD 4,000		Annually
GEF Project Implementation Report (PIR)	Project Manager and UNDP Country Office and UNDP-GEF team	None	None	Annually
NIM Audit as per UNDP audit policies	UNDP Country Office	Per year: USD 3,000 – 5,000		Annually or other frequency as per UNDP Audit policies
Lessons learned and knowledge generation	Project Manager			Annually
Monitoring of environmental and social risks, and corresponding management plans as relevant	Project Manager UNDP CO	None		On-going
Addressing environmental and social grievances	Project Manager UNDP Country Office BPPS as needed	None for time of project manager, and UNDP CO		
Project Board meetings	Project Board UNDP Country Office Project Manager			At minimum annually
Supervision missions	UNDP Country Office	None ⁶²		Annually
Oversight missions	UNDP-GEF team	None ⁶²		Troubleshooting as needed
Knowledge management as outlined	Project Manager	1% of GEF grant		On-going
GEF Secretariat learning missions/site visits	UNDP Country Office and Project Manager and UNDP-GEF team	None		To be determined.
Mid-term GEF Tracking Tool to be updated by (add name of	Project Manager	USD 10,000		Before mid-term review mission

⁶¹ Excluding project team staff time and UNDP staff time and travel expenses.

⁶² The costs of UNDP Country Office and UNDP-GEF Unit's participation and time are charged to the GEF Agency Fee.

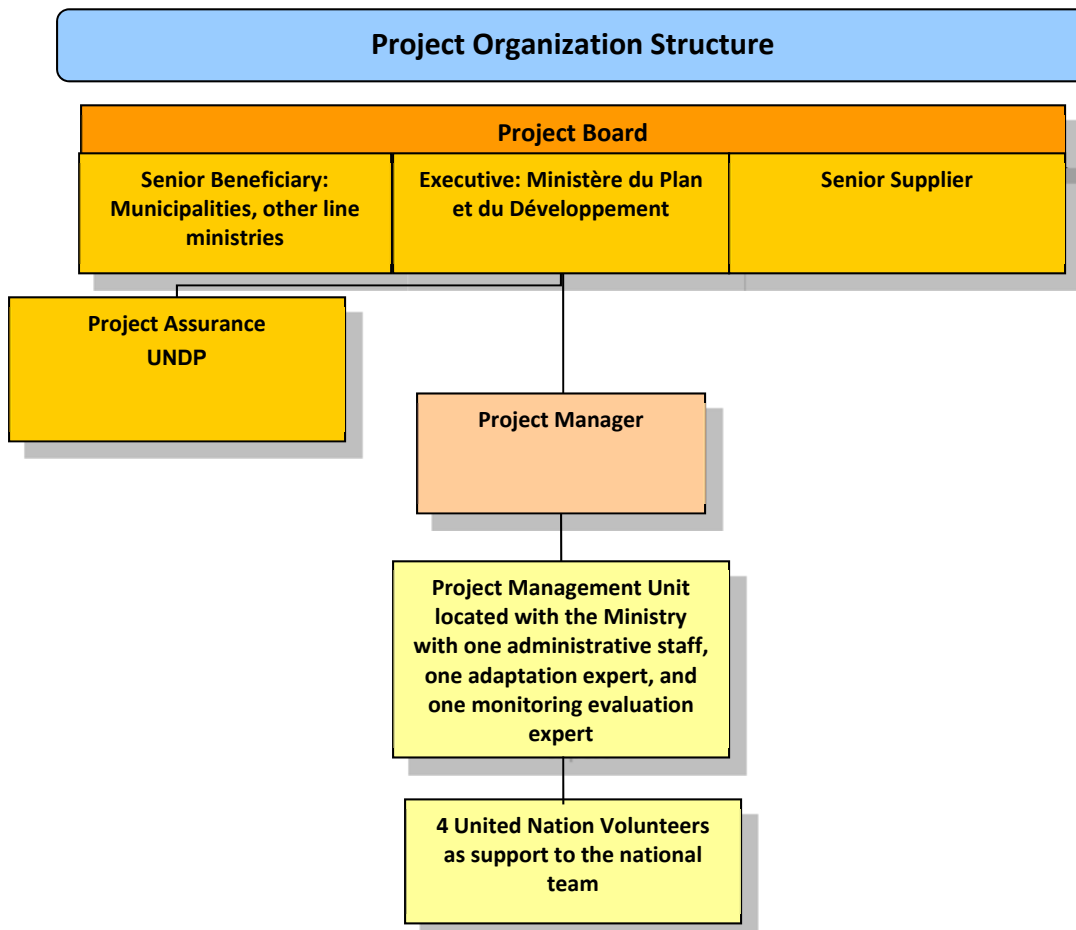
GEF M&E requirements	Primary responsibility	Indicative costs to be charged to the Project Budget ⁶¹ (USD)		Time frame
		GEF grant	Co-financing	
national/regional institute if relevant)				takes place.
Independent Mid-term Evaluation (MTE) and management response	UNDP Country Office and Project team and UNDP-GEF team	USD 20,000 - 30,000		Between 2 nd and 3 rd PIR.
Terminal GEF Tracking Tool to be updated by (add name of national/regional institute if relevant)	Project Manager	USD 10,000		Before terminal evaluation mission takes place
Independent Terminal Evaluation (TE) included in UNDP evaluation plan, and management response	UNDP Country Office and Project team and UNDP-GEF team	USD 30,000 - 60,000		At least three months before operational closure
Translation of MTE and TE reports into English	UNDP Country Office	USD 2,000 – 10,000		
TOTAL indicative COST Excluding project team staff time, and UNDP staff and travel expenses		USD150,000		

VIII. GOVERNANCE AND MANAGEMENT ARRANGEMENTS

Roles and responsibilities of the project's governance mechanism: The project will be implemented following UNDP's national implementation modality, according to the Standard Basic Assistance Agreement between UNDP and the Government of Benin, and the Country Programme.

The **Implementing Partner** for this project is the CePED. The Implementing Partner is responsible and accountable for managing this project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of UNDP resources.

The project organisation structure is as follows:



The **Project Board** (also called Project Steering Committee) is responsible for making by consensus, management decisions when guidance is required by the Project Manager, including recommendation for UNDP/Implementing Partner approval of project plans and revisions. In order to ensure UNDP's ultimate accountability, Project Board decisions should be made in accordance with standards that shall ensure

management for development results, best value money, fairness, integrity, transparency and effective international competition. In case a consensus cannot be reached within the Board, final decision shall rest with the UNDP Programme Manager. The terms of reference for the Project Board are contained in Annex.

The **Project Manager** will run the project on a day-to-day basis on behalf of the Implementing Partner within the constraints laid down by the Board. The Project Manager function will end when the final project terminal evaluation report, and other documentation required by the GEF and UNDP, has been completed and submitted to UNDP (including operational closure of the project).

The **project assurance** roll will be provided by the UNDP Country Office. Additional quality assurance will be provided by the UNDP Regional Technical Advisor as needed.

Agreement on intellectual property rights and use of logo on the project's deliverables and disclosure of information: In order to accord proper acknowledgement to the GEF for providing grant funding, the GEF logo will appear together with the UNDP logo on all promotional materials, other written materials like publications developed by the project, and project hardware. Any citation on publications regarding projects funded by the GEF will also accord proper acknowledgement to the GEF. Information will be disclosed in accordance with relevant policies notably the UNDP Disclosure Policy⁶³ and the GEF policy on public involvement⁶⁴.

In terms of coordination, two mechanisms are worth mentioning:

At the national level, a coordination committee has been created in June 2015⁶⁵ («Comité de Pilotage du sous Programme Environnement, Changement Climatique, Energie et Développement Durable») to ensure the national leadership and ownership of all projects and programmes implemented by UN agencies in the sectors of Environment, Climate change, Energy and Sustainable Development. This Committee oversees all projects in these areas and the proposed LDCF project will be no exception. As detailed in the legal text, on the Benin Government side this Committee is composed of one representant of each relevant Ministry and it convenes at least twice a year. The project team will submit all the information required to the Committee and implement the recommandations it may have regarding coordination.

At the operational level, the UNDP as developed a synergy matrix and a synergie plan that is systematically used and developed for every project starting, and reviewed periodically. This tool allows to prevent duplication and helps concentrate efforts and resources by screening all relevant projects in order to identify synergies at all levels (activities, resources mobilised, events organised...).

These mechanisms will contribute to ensure good coordination with relevant ongoing projects as described in the baseline section.

⁶³ See http://www.undp.org/content/undp/en/home/operations/transparency/information_disclosurepolicy/

⁶⁴ See https://www.thegef.org/gef/policies_guidelines

⁶⁵ As established by the Arrêté interministériel 2015 n° 042/MEGCCRPRNF/MERPMEDER/DC/SGM/CTJ/DPP/SA from June 12th, 2015

IX. FINANCIAL PLANNING AND MANAGEMENT

The total cost of the project is USD 34,450,000. This is financed through a LDCF grant of USD 4,450,000, USD 30,000,000 in cash or kind co-financing to be administered by UNDP. The UNDP, as the GEF Implementing Agency, is responsible for the execution of the GEF resources and the cash co-financing transferred to UNDP bank account only.

Parallel co-financing: The actual realization of project co-financing will be monitored during the mid-term review and terminal evaluation process and will be reported to the GEF. The planned parallel co-financing will be used as follows:

Co-financing source	Co-financing type	Co-financing amount	Planned Activities/Outputs
<i>Projet Commune du Millénaire de Bonou, pour un développement durable (PCM-BONOU)</i>	Grant	15,000,000 USD	Funding of activities related to the agricultural diversification program for the enhancement of valleys
<i>Projet Village du Millénaires</i>	Grant	12,000,000 USD	Funding of activities for poverty reduction, related to agriculture diversification
<i>Centre pour le Partenariat et l'Expertise pour le Développement Durable (CePED)</i>	Grant	3,000,000 USD	Funding of activities related to the support of rural economic growth

Budget Revision and Tolerance: As per UNDP requirements outlined in the UNDP POPP, the project board will agree on a budget tolerance level for each plan under the overall annual work plan allowing the project manager to expend up to the tolerance level beyond the approved project budget amount for the year without requiring a revision from the Project Board. Should the following deviations occur, the Project Manager and UNDP Country Office will seek the approval of the UNDP-GEF team as these are considered major amendments by the GEF:

- a) Budget re-allocations among components in the project with amounts involving 10% of the total project grant or more;
- b) Introduction of new budget items/or components that exceed 5% of original GEF allocation.

Any over expenditure incurred beyond the available GEF grant amount will be absorbed by non-GEF resources (e.g. UNDP TRAC or cash co-financing).

Refund to Donor: Should a refund of unspent funds to the GEF be necessary, this will be managed directly by the UNDP-GEF Unit in New York.

Project Closure: Project closure will be conducted as per UNDP requirements outlined in the UNDP POPP. On an exceptional basis only, a no-cost extension beyond the initial duration of the project will be sought from in-country UNDP colleagues and then the UNDP-GEF Executive Coordinator.

Operational completion: The project will be operationally completed when the last UNDP-financed inputs have been provided and the related activities have been completed. This includes the final clearance of the Terminal Evaluation Report (that will be available in English) and the corresponding management response, and the end-of-project review Project Board meeting. The Implementing Partner through a Project Board decision will notify the UNDP Country Office when operational closure has been completed. At this time, the relevant parties will have already agreed and confirmed in writing on the arrangements for the disposal of any equipment that is still the property of UNDP.

Financial completion: The project will be financially closed when the following conditions have been met:

- a) The project is operationally completed or has been cancelled;
- b) The Implementing Partner has reported all financial transactions to UNDP;
- c) UNDP has closed the accounts for the project;
- d) UNDP and the Implementing Partner have certified a final Combined Delivery Report (which serves as final budget revision).

The project will be financially completed within 12 months of operational closure or after the date of cancellation. Between operational and financial closure, the implementing partner will identify and settle all financial obligations and prepare a final expenditure report. The UNDP Country Office will send the final signed closure documents including confirmation of final cumulative expenditure and unspent balance to the UNDP-GEF Unit for confirmation before the project will be financially closed in Atlas by the UNDP Country Office.

X. TOTAL BUDGET AND WORK PLAN

Total Budget and Work Plan			
Atlas Proposal or Award ID:	00104207	Atlas Primary Output Project ID:	00105894
Atlas Proposal or Award Title:	Strengthening the resilience of rural livelihoods and sub-national government system to climate risks and variability in Benin		
Atlas Business Unit	BEN10		
Atlas Primary Output Project Title	Strengthening the resilience of rural livelihoods and sub-national government system to climate risks and variability in Benin		
UNDP-GEF PIMS No.	5433		
Implementing Partner	Ministère du Plan et du Développement		

Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Amount (USD) total	See Budget Note:
62160	LDCF	71200	International Consultants	27 000	45 000	27 000	18000	18000	135 000	1
62160	LDCF	71300	Local Consultants	18 000	30 000	18 000	18 000	18 000	102 000	2
62160	LDCF	71600	Travel	10 000	16 667	10 000	6 667	6 666	50 000	3
62160	LDCF	72200	Equipment and Furniture	8 000	13 334	8 000	5 333	5 333	40 000	4
62160	LDCF	75700	Training, Workshops and Confer	44 000	73 334	44 000	29 333	29 333	220 000	5
62160	LDCF	74200	Audio Visual&Print Prod Costs	4 000	5 333	4 000	2 667	4 000	20 000	6
62160	LDCF	74500	Miscellaneous	2 000	2 000	2 000	2 000	2 000	10 000	7
			Total Outcome 1	113 000	185 668	113 000	82 000	83 332	577 000	
62160	LDCF	71200	International Consultants	9 000	24 000	30 000	27 000	27 000	117 000	8
62160	LDCF	71300	Local Consultants	12 000	14 000	16 000	14 000	14 000	70 000	9
62160	LDCF	71600	Travel	5 926	17 778	20 740	17 778	17 778	80 000	10
62160	LDCF	72100	Contractual Services-Companies	103 578	310 733	362 523	310 733	310 733	1 398 300	11
62160	LDCF	72300	Materials & Goods	29 630	88 889	103 703	88 889	88 889	400 000	12
62160	LDCF	75700	Training, Workshops and Confer	7 407	22 222	25 927	22 222	22 222	100 000	13
62160	LDCF	74200	Audio Visual&Print Prod Costs	4 000	5 333	4 000	2 667	4 000	20 000	14
62160	LDCF	74500	Miscellaneous	2 500	2 500	2 500	2 500	2 500	12 500	15
			Total Outcome 2	174 041	485 455	565 393	485 789	487 122	2 197 800	
62160	LDCF	71200	International Consultants	12 000	24 000	18 000	18 000	33 000	105 000	16

62160	LDCF	71300	Local Consultants	12 000	24 000	12 000	12 000	24 000	84 000	17
62160	LDCF	71600	Travel	14 286	28 571	14 286	14 286	28 571	100 000	18
62160	LDCF	72100	Contractual Services-Companies	85 714	171 429	85 714	85 714	171 429	600 000	19
62160	LDCF	72200	Equipment and Furniture	18 572	37 143	18 571	18 571	37 143	130 000	20
62160	LDCF	75700	Training, Workshops and Confer	42 857	85 714	42 858	42 857	85 714	300 000	21
62160	LDCF	74200	Audio Visual&Print Prod Costs	4 000	5 333	4 000	2 667	4 000	20 000	22
62160	LDCF	74500	Miscellaneous	2 000	2 000	2 000	2 000	2 000	10 000	23
			Total Outcome 3	191 429	378 190	197 429	196 095	385 857	1 349 000	
62160	LDCF	71200	International Consultants	-	-	30 000	-	33 000	63 000	24
62160	LDCF	71300	Local Consultants	-	-	8 100	-	8 100	16 200	25
62160	LDCF	72100	Contractual Services-Companies	-	-	1 000	-	2 000	3 000	26
62160	LDCF	74100	Professional Services	3 000	3 000	3 000	3 000	3 000	15 000	27
62160	LDCF	74200	Audio Visual&Print Prod Costs	-	-	1 000	-	2 000	3 000	28
62160	LDCF	75700	Training, Workshops and Confer	-	-	2 000	-	4 000	6 000	29
			Total Outcome 4	3 000	3 000	45 100	3 000	52 100	106 200	
62160	LDCF	71600	Travel	7 000	7 000	7 000	7 000	7 000	35 000	30
62160	LDCF	74596	Direct project cost	30 000	30 000	30 000	30 000	30 000	150 000	31
62160	LDCF	74100	Professional Services (Audit)	4 000	4 000	4 000	4 000	4 000	20 000	32
62160	LDCF	74500	Miscellaneous	3 000	3 000	3 000	3 000	3 000	15 000	33
			Total Project Management	44 000	44 000	44 000	44 000	44 000	220 000	
			PROJECT TOTAL	525 470	1 096 313	964 922	810 884	1 052 411	4 450 000	

Budget Notes

Component 1: Capacity development	
Outcome 1: Climate change and gender are included in development plans at national and sub-national levels (total: 577,000 USD)	
1	Costs of contractual appointment of a senior international Technical Advisor (@\$600/day for 40days/ year in average (see Annex A Multi year work plan for the details), with strong profile in Legal Framework and Public Policies, Institutional Development, Capacity Development & Training. (Output 1,1 and 1,2). Costs of contractual appointment of a senior international Technical Advisor (@\$600/day for 5 days/ year in average) to support the formulation and implementation of the communication strategy
2	Contractual appointment of a team of local experts to provide professional, technical and legal support and design training programs to activities under Output 1.1 and 1.2 Contractual appointment of a team of local experts to provide to support the formulation and implementation of the communication strategy
3	Travel in connection with activities in this Component, but not lumped into consultants' offers.
4	Procurement of furniture required to elaborate and distribute developed templates and guidelines (Output 1.1). Procurement of furniture and demonstration material for extension agents and NGOs trainer of trainers (Output 1.2). Procurement of furniture and demonstration material for communication and knowledge sharing strategy (Output 1.3).
5	Costs of hosting (venue, catering, equipment hire, informational materials, etc.) for the seminar basic training, advanced training, annual refresher training and train-the-trainer courses for community liaison staff and future trainers (Output 1.1, 1.2 and 1.3).
6	Costs associated to communication and knowledge sharing regarding this outcome not included above
7	Insurance, bank charges, etc. in connection with activities in this Component
Component 2: Resilient agriculture investments	
Outcome 2: Productive agricultural infrastructure and human skills are improved to cope with altered rainfall patterns (total: 2,197,800USD)	
8	Costs of contractual appointment of senior international Technical Advisor(s, can be on or several advisors depending on profile) (@\$600/day for 40days/ year in average): <ul style="list-style-type: none"> - Small scale water harvest and management infrastructure design and implementation - Management skills for small scale water infrastructure sustainable management, including women - Land erosion and land management including reforestation, river bank stabilization and bamboo production - Aquaculture - Resilient agriculture practices and techniques
9	Contractual appointment of a team of local experts (@\$200/day for 60days/ year in average) to provide professional, technical and legal support for output 2.1 to 2.3, profile of budget note 7 above
10	Travel in connection with activities in this Component, but not lumped into consultants' offers.
11	Costs of contractual services of companies to provide all necessary inputs for Small scale water harvest and management infrastructure design and implementation as well as resilient agriculture practices and techniques (including resilient seeds, drip irrigation material, setting up of municipal stores of agricultural inputs managed by women)
12	Procurement of all necessary inputs to outcome 2.1 to 2.3 in link with budgetary note 10 above
13	Design of local participatory sustainable management mechanisms to operate and maintain the built infrastructure, including women in decision making. Training sessions to reinforce the necessary management skills.
14	Costs associated to communication and knowledge sharing regarding this outcome
15	Insurance, bank charges, etc. in connection with activities in this Component

Component 3: Livelihoods diversification	
Outcome 3: communities' adaptive capacity is improved by more diversified income generating activities and enabling environment for better access to finance (total: 1,349,000USD)	
16	Costs of contractual appointment of senior international Technical Advisor(s, can be on or several advisors depending on profile) (@\$600/day for 35days/ year in average): <ul style="list-style-type: none"> - An advisor with a strong profile in livelihood diversification, including gender aspects (output 3.1) - An advisor with a strong profile in women empowerment, livelihood diversification , sustainable business development, financial literacy and micro finance (output 3.2) - An advisor with a strong profile in sustainable business development, financial literacy and micro finance (output 3.3)
17	Contractual appointment of a team of local experts (@\$200/day for 80days/ year in average) to provide support in design an implementation of outputs 3.1 to 3.3. Profile of budget note n. 13
18	Travel in connection with activities in this Component, but not lumped into consultants' offers.
19	Costs of contractual services of companies to provide all necessary inputs for livelihood diversification (specific activities to be designed on the basis of the preparation phase report updated in the first 6 months of implementation): short cycle seeds, poultry, cattle, transformation units for example for bamboo products...
20	Procurement of demonstration material for output 3.1 to 3.3
21	Training, Workshops and Conference: <ul style="list-style-type: none"> - Seminars in each village focused on the specific alternative livelihoods introduced there - Seminars targeting women to increase their capacities in new resilient livelihoods, sustainable business development, financial literacy and micro finance. Seminar scan be grouped in villages that are close to each other in order to widen women's networks beyond their own village - Seminars targeting entrepreneurs and SMEs in order to enhance their sustainable business development, financial literacy and thereby increase their access to (micro) finance
22	Costs associated to communication and knowledge sharing regarding this outcome
23	Insurance, bank charges, etc. in connection with activities in this Component
Outcome 4: Knowledge Management and Monitoring& Evaluation (total: 106,200 USD)	
24	MTE: costs of contracting the services of an international senior mid-term evaluation consultant (10 weeks @US3000/wk) Final Evaluation: costs of contracting the services of an international final senior evaluation consultant (11weeks @US3000/wk)
25	MTE: costs of contracting the services of a local mid-term evaluation consultant (9 weeks @US900/wk) Final Evaluation: costs of contracting the services of a local evaluation consultant (9 weeks @US900/wk)
26	Translation of evaluation reports from French to English (or vice versa)
27	Annual audit 3000USD per year
28	Printing of evaluation reports or material based on these reports for knowledge sharing
29	Restitution workshop of the MTE for the key stakeholders Restitution workshops for key stakeholders, partners and other interested parties for knowledge sharing
Project Management Unit (total: 220,000 USD)	
30	International/domestic travel to project sites
31	Project Personnel/management related cost (please refer to the LOA for more details)
32	Services for annual financial audit of the Project
33	Utilities, internet, bank and insurance, security, adverts, etc

Summary of Funds:

	Amount Year 1	Amount Year 2	Amount Year 3	Amount Year 4	Amount Year 5	Total
GEF	525,469.00	1,096,313.00	964,921.00	810,884.00	1,052,413.00	4,450,000.00
<i>Projet Commune du Millénaire de Bonou, pour un développement durable (PCM-BONOU)</i>	3,000,000.00	3,000,000.00	3,000,000.00	3,000,000.00	3,000,000.00	15,000,000.00
Projet Village du Millénaires	2,400,000.00	2,400,000.00	2,400,000.00	2,400,000.00	2,400,000.00	12,000,000.00
<i>Centre pour le Partenariat et l'Expertise pour le Développement Durable (CePED)</i>	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00	3,000,000.00
Total	6, 525,469.00	7,096,313.00	6,964,921.00	6,810,884.00	7,052,413.00	10,450,000.00

XI. LEGAL CONTEXT

1. Any designations on maps or other references employed in this project document do not imply the expression of any opinion whatsoever on the part of UNDP concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.
2. This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement between the Government of Benin and the UNDP, signed by the parties on 06th November 1981. The host country's implementing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement.
3. The UNDP Country Director in Cotonou is authorized to effect in writing the following types of revision to this Project Document, and is assured that the other signatories to the Project Document have no objection to the proposed changes:
 - i. Revision of, or addition to, any of the annexes to the Project Document;
 - ii. Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;
 - iii. Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and
 - iv. Inclusion of additional annexes and attachments only as set out here in this Project Document
4. The implementing partner shall:
 - i. put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried out;
 - ii. Assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.
5. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.
6. The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via <http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm>. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

XII. MANDATORY ANNEXES

- A. Multi-Year Work Plan
- B. Monitoring Plan
- C. UNDP Social and Environmental and Social Screening Template (SESP)
- D. Environmental and Social Management Plan (ESMP) for moderate and high risk projects only
- E. Detailed profile of the targeted villages
- F. Synthesis of the reports of national consultants
- G. List of consulted people (national and village level), provided in a separate PDF file.
- H. Diverse uses of bamboo in adapting to climate change
- I. Climate change insurance mechanism in Benin

i) ANNEX A: Multi Year Work Plan

Task	Responsible Party	Year 1				Year 2				Year 3				Year 4				Year 5			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 1.1: The five targeted Departments and Municipalities and all relevant Ministries have integrated gender responsive climate change adaptation in their planning and budgeting work	MPD, Municipalities, Departmental councils																				
Output 1.2: Agricultural extension agents and local NGOs active in the 5 targeted Municipalities are trained on resilience to climate change	MPD, Universities and agricultural vocational schools, local NGOs, CBOs																				
Output 1.3: Lessons learned are summarized in a repository and shared	MPD, MAEP																				
Output 2.1: At least 9 small scale climate resilient	MPD, Min Water, Municipalities,																				

water harvesting infrastructures are designed and implemented in the 9 targeted villages	CBOs, local NGOs																			
Output 2.2: Risks of floods and riverbanks erosion are reduced through the stabilization of slopes of critical riverbanks using at least 300ha of bamboo plantations	MPD, Min Water, INRAB, Municipalities, local NGOs, CBOs																			
Output 2.3: Resilient practices, Resilient practices, such as drip irrigation techniques or short cycle improved seeds, are adopted by at least 300 households in the five targeted Municipalities	MPD, MAEP, CEPED, Min Water, Municipalities, local NGOs, CBOs																			
Output 3.1: Targeted population's dependency and vulnerability to climate change effects is reduced through the introduction of alternative	MPD, Min Water, Municipalities, Local NGOs, MFIs (consortium <i>Alafia-APSFD</i>)																			

livelihoods for approximately 4000 persons																				
Output 3.2: All women of target population (3,281 women) are trained on alternative livelihoods to agriculture to better cope with climate change impacts	MPD, MAEP, Universities, INBAR, Local NGOs, CBOs, Women organizations, MFIs (consortium <i>Alafia-APSF</i>)																			
Output 3.3: The capacities of 300 rural entrepreneurs and 50 SMEs (aiming at 50% women) to develop business plans in the field of sustainable craft and small scale manufacture are strengthened in order to stimulate employment and revenue increase	MPD, Local NGOs, CBOs, MFIs (consortium <i>Alafia-APSF</i>)																			

ii) ANNEX B: Monitoring Plan

The Project Manager will collect results data according to the following monitoring plan.

Monitoring	Indicators	Description	Data source/Collection Methods	Frequency	Responsible for data collection	Means of verification	Assumptions and Risks
<p>Project objective:</p> <p>To support resilient agriculture, livelihoods and mainstream climate risk considerations into national and sub-national planning processes so that local communities</p>	Indicator 1:	Vulnerability assessments show decrease in vulnerability in all 9 villages as per the methodology used in the preparation phase vulnerability assessment ⁶⁶ .	<i>Survey in local communities in each target villages</i>	<p>During MTE and Final Evaluation</p> <p>Reported in DO tab of the GEF PIR</p>	<i>Project Manager</i>	<i>M&E report</i>	<p>As all impact indicators, this indicator is precious to follow up on the general objective of the project but is also influenced by many variables outside of the project.</p> <p>The effects of the projects are strong and quick enough to be reflected in a decrease in vulnerability and other factors are not too important to impede attribution.</p> <p>All targeted villages participate actively and implementation goes well</p>

⁶⁶ Bertin K. Assogba Nongnide, Ingénieur Agronome du Génie Rural, des Eaux & Forêts, Administrateur des Projets de Développement, Rapport de mission "analyse et évaluation de la vulnérabilité et variabilité climatiques dans le cadre de la formulation du projet « Renforcement de la résilience des moyens de subsistance ruraux et du système de gouvernement local aux risques et à la variabilité climatiques au Bénin », version of August 2016

<p>are less vulnerable to climate change.</p>	<p>Indicator 2:</p>	<p>Target population's average annual income level</p> <p><i>Data disaggregated by sex</i></p>	<p><i>Activity reports</i></p>	<p>Annually</p> <p>Reported in DO tab of the GEF PIR</p>	<p><i>Project Manager</i></p>	<p><i>M&E report</i></p>	<p>902 USD (586,000 FCFA)</p> <p>Currently, the proportion of population expenditure is less than one dollar per day in the five municipalities concerned is: Avrankou: 50.4% - Bohicon: 53.0% - Bopa: 66.6% - Ouaké: 72.0 % And Savalou: 46.0%.</p> <p>As an impact indicator, attribution can prove challenging, Qualitative data will have to be collected in order to be able to attribute an increase totally or partially to the project.</p>
<p>Component 1: Capacity development</p> <p>Outcome 1: Climate change and gender are included in development plans at national and sub-national levels</p>	<p>Indicator 3:</p>	<p>Indicator 3: Number of Municipalities that have considered climate change and gender in their PDC (communal development plan) and PAI (Annual investment plan)</p> <p><i>Data including how gender is integrated</i></p>	<p><i>Review of PDC and PAI</i></p> <p><i>Consultation with national and sub-national government officials within MPD and MAEP to determine extent of adoption of climate change and gender considerations in plans, strategies, policies, programmes and budgets</i></p>	<p>Annually</p> <p>Reported in DO tab of the GEF PIR</p>	<p><i>Project Manager</i></p>	<p><i>M&E report, PDC and PAI</i></p>	<p>The PDC of 3rd generation are being finalized, will require that UNDP take practical steps to ensure the inclusion of aspects of climate change and gender in the PDC before validation.</p> <p>All Municipalities willing to incorporate budget lines for activities related to climate change, including gender perspective.</p>

	Indicator 4:	Number of extension agents and NGOs skilled to deliver adaptation extension and TOTs. <i>Data disaggregated by sex</i>	<i>Survey within NGOs and extension services Activity reports</i>	Annually Reported in DO tab of the GEF PIR	<i>Project Manager</i>	<i>M&E report</i>	Trained trainers will stay in position and use their training actively to train further people themselves
Component 2: Resilient agriculture investments Outcome 2: Productive agricultural infrastructure and human skills are improved to cope with altered rainfall	Indicator 5:	Number of operating financed water infrastructures per municipality, including management <i>Data disaggregated by sex for management (and if possible age, wealth and handicap)</i>	Field visits	Annually Reported in DO tab of the GEF PIR	<i>Project Manager</i>	<i>M&E report</i>	All infrastructures identified as relevant can be built according to the proposed timeline (no lack of human capital or other resources) Target population including women are willing and able to participate in managing the financed water infrastructures

patterns	Indicator 6:	Number of people who master and use climate resilient techniques promoted by the project (e.g, drip irrigation, short cycle seeds ...) <i>Data disaggregated by sex (and if possible age, wealth and handicap)</i>	Field visits, survey in target villages	Annually Reported in DO tab of the GEF PIR	<i>Project Manager</i>	<i>M&E report</i>	All households in the area of intervention are committed to participating in the project activities and are adopting climate resilient technologies and practices.
Component 3: Livelihoods diversification Outcome 3: communities' resilience is improved by more diversified income generating activities and enabling environment for better access to finance	Indicator 7:	Number of women engaged in subsistence agriculture trained / strengthened on alternative livelihoods to agriculture <i>Sex specific data</i>	Survey in target villages, survey within women groups	Annually Reported in DO tab of the GEF PIR	<i>Project Manager</i>	<i>M&E report</i>	Women will be willing and able to engage in training
	Indicator 8:	number of farmers who have better access to finance as a result of training and more diversified activities <i>Data disaggregated by</i>	Survey in target villages, survey within MFIs	Annually Reported in DO tab of the GEF PIR	<i>Project Manager</i>	<i>M&E report</i>	Micro finance institutes are sensitive to better finance literacy and willing and able to lend to the trained farmers

		<i>sex (and if possible age, wealth and handicap)</i>					
Mid-term GEF Tracking Tool (if FSP project only)	N/A	N/A	Standard GEF Tracking Tool available at www.thegef.org Baseline GEF Tracking Tool included in Annex.	After 2 nd PIR submitted to GEF		Completed GEF Tracking Tool	
Terminal GEF Tracking Tool	N/A	N/A	Standard GEF Tracking Tool available at www.thegef.org Baseline GEF Tracking Tool included in Annex.	After final PIR submitted to GEF		Completed GEF Tracking Tool	
Mid-term Review (if FSP project only)	N/A	N/A	To be outlined in MTE inception report	Submitted to GEF same year as 3 rd PIR	<i>Independent evaluator</i>	Completed MTE	
Environmental and Social risks and management plans, as relevant.	N/A	N/A	Updated SESP and management plans	Annually	Project Manager UNDP CO	Updated SESP	

Evaluation Plan:

Evaluation Title	Planned start date Month/year	Planned end date Month/year	Included in the Country Office Evaluation Plan	Budget for consultants	Other budget (i.e. travel, site visits etc...)	Budget for translation
Independent Mid-term Review (MTE) and management response	June 2018	September 2018	Yes	USD 20,000 - 30,000		USD 2,000 – 5,000
Terminal Evaluation	March 2022	May 2022	Yes	USD 30,000 - 60,000		USD 2,000 – 10,000
Total evaluation budget				USD 105,000		

iii) ANNEX C: UNDP Social and Environmental and Social Screening

Project information

Project information	
1. Project title	Strengthening the resilience of rural livelihoods and sub-national government system to climate risks and variability in Benin
2. Project Number	PIMS 5433
3. Location (Global/Region/Country)	Bénin, diverse Regions

Part A. Integrating Overarching Principles to Strengthen Social and Environmental Sustainability

QUESTION 1: How Does the Project Integrate the Overarching Principles in order to Strengthen Social and Environmental Sustainability?

Briefly describe in the space below how the Project mainstreams the human-rights based approach

The project strengthens the availability, accessibility, quality and above all the resilience to climate change of rural populations' means of subsistence. The portion of the project's assistance to national and regional authorities strengthens the capacity of these to meet their obligations regarding human rights, particularly in terms of meeting the economic and social rights indispensable for the dignity and the free development of persons. More specifically, the project targets vulnerable and marginalized populations, both in absolute terms and relative to the current and potential impacts of climate change on livelihoods and subsistence. The selection criteria of municipalities and villages incorporated such variables, as is documented in the Project Document's "Introduction to project sites" section (p.14). Since vulnerable and marginalized groups are targeted by several interventions, they will intervene in most steps of the project as key stakeholders, starting with recommendations on the conception/design of measures, all the way through governance of the project's interventions.

Finally, local governance mechanisms for the resilient means of subsistence infrastructures implemented through the project will provide the opportunity for target groups, key stakeholders as well as to surrounding and/or nomadic communities to assert their interests and perspectives in an institutionalized manner, including through the establishment of a grievance mechanism. The latter is documented in the ESMP.

Briefly describe in the space below how the Project is likely to improve gender equality and women's empowerment

The design of the project (a) receives contributions from specialists in gender issues and in the analysis of the gender gap, (b) applies , from preliminary site visits , a significant participation process to encourage women to speak out, (c) ensures that the results framework includes measures / special products for addressing the problems of inequality between genders, (d) Identifies cultural, social, religious or other potential constraints for the participation of women and finds strategies to overcome them and (e) Guarantees that the project is classified as a 3 or a 2 in the tracking system of activities, contributing to gender equality (gender Marker)

ATLAS . "

Briefly describe in the space below how the Project mainstreams environmental sustainability

The project supports the implementation of national policies on adaptation to climate change, strengthens national and regional capacities to address localized impacts of climate change and creates win-win synergies between adaptation to climate change goals and development. The project, in its design, reduces the socio-economic vulnerability to climate change by increasing the natural capital resilience to climate change (reducing erosion and leaching of land, more resilient crops, etc.) which subsequently allows for more resilient livelihoods. In addition, the proposed management measures require from contractors, targeted communities and authorities that the unintended negative impacts on the environment are minimized in the preparation phase, as well as in the construction and in the operation phase of the project. Finally, communities affected by the project actions will have to establish governance mechanisms aimed at providing proper management and monitoring of the project components in a participatory manner.

Part B. Identifying and Managing Social and Environmental Risks

<p>QUESTION 2: What are the Potential Social and Environmental Risks? <i>Note: Describe briefly potential social and environmental risks identified in Attachment 1 – Risk Screening Checklist (based on any “Yes” responses). If no risks have been identified in Attachment 1 then note “No Risks Identified” and skip to Question 4 and Select “Low Risk”. Questions 5 and 6 not required for Low Risk Projects.</i></p>	<p>QUESTION 3: What is the level of significance of the potential social and environmental risks? <i>Note: Respond to Questions 4 and 5 below before proceeding to Question 6</i></p>			<p>QUESTION 6: What social and environmental assessment and management measures have been conducted and/or are required to address potential risks (for Risks with Moderate and High Significance)?</p>
<p>Risk Description</p>	<p>Impact and Probability (1-5)</p>	<p>Significance (Low, Moderate, High)</p>	<p>Comments</p>	<p>Description of assessment and management measures as reflected in the Project design. If ESIA or SESA is required note that the assessment should consider all potential impacts and risks.</p>
<p>Pressure on local ecosystems and biodiversity through the insertion of climate change resilient and possibly invasive species <i>Ref. in the control list:</i></p> <ul style="list-style-type: none"> • Item 1.1 • Item 1.5 	<p>I = 3 P = 2</p>	<p>Moderate</p>	<p>Some species of plants, which are more resilient to climate change may also exhibit invasive characteristics, given their ability to adapt to various types of soil, water and light</p>	<p>(i) Recommended social and environmental assessments i-a. Assessing, in a participatory manner, the level of ecosystem value of the host environment (presence / absence of endangered species or special status species, species providing essential ecosystem services, etc.) and</p>

<ul style="list-style-type: none"> Item 1.6 			<p>conditions, for example.</p> <p>Invasive plants can threaten native species by their adaptability and possibly stifle these if no action is led to manage them.</p> <p>This risk is exacerbated if the receiving environment is also rich in biodiversity and / or if threatened or endangered species are listed. However, the relative risk is reduced to a low level when the receiving environment is either (a) able no more to accommodate other flora, (b) sufficiently isolated as to involve no risk of spreading, or (c) the subject of constant attention concerning its maintenance.</p>	<p>excluding the establishment of resilient species that would threaten the biodiversity by replacing or threatening already present species with high ecosystem value;</p> <p>i-b. Obtaining from stakeholders (including national and local authorities) information on (1) resilient species which could be suitable for the targeted locality, (2) their establishment in similar ecosystem zones and (3) lessons learned and best practices in environmental management measures of concerned species;</p> <p>i-c. Assessing the institutional and local capacities to implement the relevant mitigation measures and provide capacity building measures if necessary.</p> <p>(ii) Impact avoidance, mitigation or management measures</p> <p>ii-a. Before species' insertion, determine in a participatory fashion the roles and responsibilities (governance) of the small scale cultures and/or plantation and its short, medium and long term characteristics. Known invasive species will not be utilized.</p> <p>ii-b. Train officials on (1) appropriate management measures for the species inserted to maximize the utility of the species and to limit the impacts on biodiversity (as applicable) and (2) the monitoring of the plantation / cultivation</p> <p>ii-c. Establish a simple framework for monitoring culture (eg annual photograph of the site to be provided to the local authorities, not inserted specie, etc.)</p>
<p>Disturbance of land, crops and human environment related to the development, construction and operation of stormwater retention</p>	<p>I = 2 P = 3</p>	<p>Moderate</p>	<p>Stormwater retention infrastructures' main objective is to reduce the negative impacts of climate change on</p>	<p>(i) Recommended social and environmental assessments:</p>

<p>infrastructures</p> <p><i>Ref. in the control list:</i></p> <ul style="list-style-type: none"> • Item 1.1 • Item 1.8 • Item 3.6 • Item 5.2 • Item 7.2 			<p>the physical environment (soils), the biological environment (plants and crops) and the human environment (food safety) by decreasing damage caused by torrential rains.</p> <p>Still, some marginal effects on the environment must be taken into account in the preparation, construction and operation phase.</p> <p><u>Risks by phases</u></p> <p>During the preparation phase:</p> <ul style="list-style-type: none"> • The land mobilized to build the infrastructures could change its function and thus alter the sources of income and livelihood of some land owners or operators in the area, as the land will be temporarily inaccessible. There might be temporary economic displacement as a result. <p>During the construction phase:</p> <ul style="list-style-type: none"> • The work, especially if done with machinery, could disrupt the physical environment (erosion exacerbated by the tracks made by heavy machinery), biological environment (perturbation of cultures on the site and nearby) and human 	<p>i-d. Realizing, in a participatory manner, a multi-criteria analysis (MCA) on the various options for the insertion of storm water retention works in villages, which will notably take into account the following factors for each site:</p> <ul style="list-style-type: none"> o Reduction Potential in terms of risks associated with heavy rains (erosion, human health and safety); o Impact of the work (construction and operation) on the free movement of persons and / or livestock; o Impact of the work on physical and biological environments o Impact of the work on land issues; o Temporary impact of the construction work on private or communal economic activity; o Extent of monetary and non-monetary benefits related to the infrastructure in the various places (excluding risk reduction, covered previously). <p>i-e. Determine together with the population and its authorities the priority insertion sites of infrastructure(s) based on the results of the multicriteria analysis;</p> <p>i-f. Establish a simple framework for monitoring the infrastructure (i.e. annual photograph of the site to provide to the authorities, noting any undue modification, wear, etc.)</p> <p>(ii) Impact avoidance, mitigation or management measures</p> <p><i>During the preparation phase :</i></p> <p>ii-d. Determining in a participatory manner whether compensation must be offered by the community to individuals / groups that could suffer from losses related to the construction and operation of the work without drawing profits from it and establish (if applicable) a compensation and grievances mechanism.</p> <p>ii-e. Determining in a participatory manner the roles and responsibilities (governance) regarding the infrastructure;</p>
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			<p>environment (noise, air quality, impacts on human security).</p> <ul style="list-style-type: none"> • If the construction work requires an important workforce, a number of workers coming from outside the village could be attracted, presenting a risk to social cohesion and health. <p>During the operation phase:</p> <ul style="list-style-type: none"> • Maintenance works (mainly the removal of sand and silt accumulating between the ponds) will generate a certain amount of non-dangerous waste 	<p>ii-f. Training officials on (1) the maintenance of the structure, (2) good health / safety -related practices concerning construction work, (3) Infrastructure monitoring.</p> <p><i>During the construction phase:</i></p> <p>ii-g. Require from the contractor a site-specific environmental and social management plan minimizing, in the case where machinery would be used:</p> <ul style="list-style-type: none"> o The construction impacts on the physical environment (limit the impact of machinery on soils and waterways in terms of erosion, spills, etc.); o The construction impacts on the biological environment (limit risks of pollution with a tight maintenance of machinery, prohibit poaching, restrict the work during dry periods, etc.); o The construction impacts on the human environment (through a health and safety plan or workers and for the populations); <p>ii-h. Designate, within the community, individuals to carry out monitoring work during construction</p> <p><i>During the operation phase:</i></p> <p>ii-i. Perform the monitoring of the structures as recommended by the contractor (frequency, points to be documented, etc.)</p> <p>ii-j. Perform the maintenance of the structures (removal of accumulated silts and sands) according to the contractor's recommendations and according to a health and safety plan;</p> <p>ii-k. Management of residual waste materials (silt, sands, etc. etc.) in order to minimize their impact on the ecosystem.</p>
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<p>Perturbation of lands, crops, human environment and/or hydrology because of the elaboration, construction and work operation of simple irrigation structures.</p> <p><i>Ref. in control list :</i></p> <ul style="list-style-type: none"> • Item 1.1 • Item 3.6 • Item 7.2 • Item 2.2 	<p>I = 3 P = 2</p>	<p>Moderate</p>	<p>Irrigation structures, because they are adapted to the needs, characteristics and circumstances of the targeted villages are, at this point in the project design, not of similar nature, size and applications. No major structure (large dam, dam complex or high water volume ⁶⁷) will be considered.</p> <p>Typically, the construction of irrigation structures (beyond a certain significant size) involves risks similar to those identified in previous section concerning storm water infrastructures.</p> <p>Assuming that some irrigation structures (small scale) will be supplied by the usual flow of streams near the villages, the operation may disturb these streams. Beyond the disturbance to the physical environment (water flow), an effect on the biological environment through ecological flows could happen if water withdrawal amounts are significant. Ultimately, these withdrawals could generate conflicts of use with villagers or local populations living downstream.</p>	<p>(i) Recommended social and environmental assessments:</p> <ul style="list-style-type: none"> i-g. Characterization of the hydrology of the implantation site and of targeted watercourse (if applicable); and consideration for climate change scenario in the design of infrastructure; i-h. Multicriteria analysis on various integration options for the structure (see the previous risk on suggested criteria); i-i. Establish the ecological flow to be preserved to ensure the survival of species dependent on the river or waterway targeted by the intervention; i-j. Proceed to the inventory of uses of rivers by communities downstream of implementation sites and assess the impact of the structure on these; <p>(ii) Impact avoidance, mitigation or management measures</p> <p><i>During the preparation phase:</i></p> <ul style="list-style-type: none"> ii-l. Determine in a participatory manner whether compensation must be offered by the community to individuals / groups that could suffer from losses related to the construction and operation of the work without drawing profits from it and establish (if applicable) a compensation and grievances mechanism. ii-m. Determine in a participatory manner the roles and responsibilities (governance) over the structure; ii-n. Establish (if the structure has a significant impact on the river), a communication and governance mechanism with downstream communities (if possible within the framework of an integrated approach for managing water resources); ii-o. Train officials on (1) the maintenance of the structure, (2) good health / safety -related practices concerning construction work, (3) Infrastructure monitoring.
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⁶⁷ In the sense of the PNUD document *Procédure d'examen préalable social et environnemental*, p. 43.

			<p>If the construction work requires an important workforce, a number of workers coming from outside the village could be attracted, presenting a risk to social cohesion and health.</p> <p>Finally, some impacts of climate change could make the infrastructures vulnerable once in operation, highlighting the need for design studies considering strong climate change scenarios.</p>	<p><i>During the construction phase:</i></p> <ul style="list-style-type: none"> ii-p. Require from the contractor a site-specific environmental and social management plans which will minimize, in the case where machinery would be used: <ul style="list-style-type: none"> o The construction impacts on the physical environment (limit the impact of machinery on soils, waterways in terms of erosion, spills, etc.); o The construction impacts on the biological environment (limit risks of pollution with a tight maintenance of machinery, prohibit poaching, restrict the work during dry periods, etc.); o The construction impacts on the human environment (through a health and safety plan or workers and for populations); ii-q. Designate, within the community, individuals to carry out construction monitoring work <p><i>During the operation phase:</i></p> <ul style="list-style-type: none"> ii-r. Perform the monitoring of the structures as recommended by the contractor (frequency, points to be documented, etc.) ii-s. Perform the maintenance of the structures (removal of accumulated silts and sands) according to the contractor's recommendations and a health and safety plan; ii-t. Manage residual waste materials (silt, sands, etc.) in order to minimize their impact on the ecosystem.
<p>Risk of drowning and mosquito proliferation</p> <p><i>Ref. in control list :</i></p> <ul style="list-style-type: none"> • Item 3.1 	<p>I = 3 P = 3</p>	<p>Moderate</p>	<p>These two risks were identified through consultations with some villagers (mostly women).</p> <p>The risk of drowning especially affects young children adopting dangerous behaviors who would venture</p>	<p>(i) Recommended social and environmental assessments :</p> <ul style="list-style-type: none"> i-k. Include, in the multi-criteria analysis aiming to establish the precise location of stormwater ponds or irrigation structures, the safety criteria (is the place easily accessible by children, is it securable with natural or artificial barriers, what is the risk that the work contributes to the proliferation of vector-borne

			<p>into water infrastructures after heavy rains.</p> <p>Mosquito proliferation risks have some women worried about negative impacts on human health through vector-borne diseases.</p>	<p>diseases , etc.)</p> <p>(ii) Impact avoidance, mitigation or management measures</p> <p>ii-u. Secure, where children might want to venture, the structure site with natural or artificial barriers;</p> <p>ii-v. Include anti bathing pictograms on posters near the location;</p> <p>ii-w. Perform special sessions with women in meetings to inform and train the villagers in the management of the structure and;</p> <p>ii-x. Confirm the presence of a control strategy for disease vectors (eg mosquitoes) in the targeted Municipality, and include appropriate authorities in the supervision and monitoring of the installation, so that the usual control measures are applied.</p>
<p>Various risks related to the attractiveness of new productive lowlands bringing a more important volume of users to the site.</p> <p><i>Ref. in control list :</i></p> <ul style="list-style-type: none"> • <i>Item 8,</i> • <i>Item 5,</i> • <i>Item 1.11,</i> 	<p>I = 3 P = 2</p>	<p>Moderate</p>	<p>The development of lowlands is usually done for the benefit of both the physical (erosion control and water retention), biological (by providing support to useful crops) and human environment (by bringing new sources of income).</p> <p>However, the attractiveness of developed lowlands can also cause certain additional environmental and social pressures, as well as conflicts, since the resource is communal and subjected to an agreed governance.</p> <p>In addition, this attractiveness may spread to neighboring villages or pastors, creating an issue of exclusivity of</p>	<p>(i) Recommended social and environmental assessments :</p> <p>i-l. Organise a specific field visit with the experts to analyze and document, with project stakeholders, the following points:</p> <ul style="list-style-type: none"> o Types of possible lowland developments according to scientific criteria, their limits and the associated benefits (as MCA - refer to previous risks); o The ability of villagers to contribute to the infrastructure's development and monitoring, and to draw benefits from it. This should include a socio-economic analysis indicating their knowledge of land issues involved, their experience in the management of Community agricultural programs, the treatment of vulnerable groups (including women) and their access to the benefits of the structure, etc. o Capacity-building needs of populations; <p>(ii) Impact avoidance, mitigation or management measures</p> <p>All management measures applicable to the risk mentioned above also apply to this risk, plus the</p>

			<p>access to the resource that could generate tensions between villages.</p> <p>We assume that the lowland developments covered by the project are those for which the impacts on downstream water resources are more positive than negative (reduction of hazardous floods and erosion downstream during heavy rains, for example).</p> <p>The attractiveness of lowlands for nomadic populations could exacerbate some conflicts of usage. Historical examples of such conflicts between settled communities and nomadic groups were brought up during field visits.</p>	<p>following measures:</p> <p><i>During the preparation/conception phase:</i></p> <p>ii-y. Design appropriate governance mechanisms to manage increased lowlands productivity, both for internal (between villagers) and external purposes (with neighboring communities and nomadic communities).</p> <p><i>During the operation phase :</i></p> <p>ii-z. Under the responsibility of the lowland Governance Committee, train beneficiaries in the most effective and sustainable agro-practices, thus ensuring continuity in terms of managerial, operational, environmental and social benefits;</p> <p>ii-aa. Involve a body with authority over all the groups likely to become stakeholders (permanent or occasional) to the lowland Governance Committee.</p>
<p>Risk of reproducing gender-based discrimination regarding the participation of women in the conception, implementation and access to the opportunities and benefits.</p> <p><i>Ref. in control list:</i></p> <ul style="list-style-type: none"> • Item 2 	<p>I = 2 P = 3</p>	<p>Moderate</p>	<p>Without proper impact avoidance, mitigation or management measures, improvements related to the resilience of subsistence means and socio-economic benefits could be unequally distributed and favor men at the expense of women.</p>	<p>(i) Recommended social and environmental assessments :</p> <p>i-m. Assess the beneficiary community 's capacity to integrate women and other marginalized groups in decision making regarding community assets and propose appropriate integration (empowerment) measures;</p> <p>(ii) Impact avoidance, mitigation or management measures</p> <p>ii-bb. Include representatives of women's groups and other marginalized groups in the various governance committees of irrigation/stormwater</p>

				retention/ lowlands and resilient cultures' structures;
<p>Utilization of pesticides as a contributor to new resilient agricultural practices could have an environmental impact.</p> <p><i>Ref. in control list: Item 7.2</i></p>	I = 2 P = 2	Moderate	Without the adoption of an Integrated Pest Management approach, the use of pesticide could lead to abuses with potentially detrimental effects on the human and biological environments	<p>(i) Recommended social and environmental assessments :</p> <p>i-n. Assess the need for pesticides (if any) taking an Integrated Pest Management perspective, in close collaboration with sanitary and agricultural authorities;</p> <p>(ii) Impact avoidance, mitigation or management measures</p> <p>ii-cc. Adopt approaches that seek to keep pesticides and other interventions to levels that are economically justified, therefore reducing or minimizing risks to human health and the environment;</p> <p>ii-dd. Monitor the purchase, storing and use of pesticides (if any);</p> <p>ii-ee. Train the local governance bodies in Integrated Pest Management, or at the very least in the safe handling and usage of pesticides in cases where it has been determined they are necessary (as per the recommendations of social and environmental assessments and Integrated Pest Management studies).</p>
QUESTION 4: What is the overall Project risk categorization?				
Select one (see <u>SESP</u> for guidance)		Select one (see <u>SESP</u> for guidance)		
<i>Low risk</i>		<input type="checkbox"/>		
<i>Moderate risk</i>		<input checked="" type="checkbox"/>		
		As the project's activities aim at reducing both human capital <i>and</i> natural capital's vulnerabilities, there are no activity forcing a choice between those two objectives. The potential adverse environmental and social effects of the project are rather of the nature of <i>unintended consequences</i> , which are generally preventable with the		

			implementation of appropriate mitigation, supervision and monitoring measures. Also, the extent of potential adverse impacts, even without mitigation, are limited in time and space. Finally, given the range of possible measures within the framework of the project, social and environmental assessments will very quickly identify (1) the best technical measures to implement for each intervention site, (2) the best locations for each chosen measure within a village and (3) measures to exclude, if any, for sites with social and environmental peculiarities.
		High risk	<input type="checkbox"/>
	QUESTION 5: Based on the identified risks and risk categorization, what requirements of the SES are relevant?		
	Check all that apply		Comments
	Principle 1: Human Rights	X	The improvements of livelihoods must be realized through good governance practices, or some conflicts of use may arise.
	Principle 2: Gender Equality and Women's Empowerment	X	Improving livelihoods will free women from certain household management-related constraints, which are currently very heavy for them. However, the benefits related to the project outcomes must be accessible for them.
	1. Biodiversity Conservation and Natural Resource Management	X	Every resilient crop must be inserted by adopting the precautionary principle to prevent resilient species (which can also be invasive) from posing a risk to local flora.
	2. Climate Change Mitigation and Adaptation	<input type="checkbox"/>	
	3. Community Health, Safety and Working Conditions	X	Like in any project involving physical work, it is necessary to require from those responsible for work <i>in situ</i> to develop and respect site-specific environmental and social management plans (ESMP) in order to protect the health, safety and working conditions of collectivities and workers involved in the work.
	4. Cultural Heritage	<input type="checkbox"/>	

	5. Displacement and Resettlement	X	There may be a temporary loss of access to resources during the preparation and construction of certain infrastructures (temporary economic displacement).
	6. Indigenous Peoples	<input type="checkbox"/>	
	7. Pollution Prevention and Resource Efficiency	X	A very small amount of waste in the form of accumulated silt and sand will have to be properly managed.

Final Sign Off

<i>Signature</i>	<i>Date</i>	<i>Description</i>
QA Assessor		UNDP staff member responsible for the Project, typically a UNDP Programme Officer. Final signature confirms they have “checked” to ensure that the SESP is adequately conducted.
QA Approver		UNDP senior manager, typically the UNDP Deputy Country Director (DCD), Country Director (CD), Deputy Resident Representative (DRR), or Resident Representative (RR). The QA Approver cannot also be the QA Assessor. Final signature confirms they have “cleared” the SESP prior to submittal to the PAC.
PAC Chair		UNDP chair of the PAC. In some cases PAC Chair may also be the QA Approver. Final signature confirms that the SESP was considered as part of the project appraisal and considered in recommendations of the PAC.

SESP Attachment 1. Social and Environmental Risk Screening Checklist

Checklist Potential Social and Environmental Risks		
Principles 1: Human Rights		Answer (Yes/No)
1.	Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups?	No
2.	Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups? ⁶⁸	No
3.	Could the Project potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups?	No
4.	Is there a likelihood that the Project would exclude any potentially affected stakeholders, in particular marginalized groups, from fully participating in decisions that may affect them?D	No
5.	Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project?	No
6.	Is there a risk that rights-holders do not have the capacity to claim their rights?	No
7.	Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process?	No
8.	Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to project-affected communities and individuals?	Yes

⁶⁸ Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority. References to “women and men” or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.

Principle 2: Gender Equality and Women's Empowerment	
1. Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls?	No
2. Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	Yes
3. Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment?	Yes
4. Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services? <i>For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well being</i>	No
Principle 3: Environmental Sustainability: Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below	
Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management	
1.1 Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services? <i>For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes</i>	Yes
1.2 Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?	No
1.3 Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5)	No
1.4 Would Project activities pose risks to endangered species?	No
1.5 Would the Project pose a risk of introducing invasive alien species?	Yes
1.6 Does the Project involve harvesting of natural forests, plantation development, or reforestation?	Yes
1.7 Does the Project involve the production and/or harvesting of fish populations or other aquatic species?	No
1.8 Does the Project involve significant extraction, diversion or containment of surface or ground water? <i>For example, construction of dams, reservoirs, river basin developments, groundwater extraction</i>	Yes
1.9 Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)	No

1.10	Would the Project generate potential adverse transboundary or global environmental concerns?	No
1.11	<p>Would the Project result in secondary or consequential development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area?</p> <p><i>For example, a new road through forested lands will generate direct environmental and social impacts (e.g. felling of trees, earthworks, potential relocation of inhabitants). The new road may also facilitate encroachment on lands by illegal settlers or generate unplanned commercial development along the route, potentially in sensitive areas. These are indirect, secondary, or induced impacts that need to be considered. Also, if similar developments in the same forested area are planned, then cumulative impacts of multiple activities (even if not part of the same Project) need to be considered.</i></p>	Yes
Standard 2: Climate Change Mitigation and Adaptation		
2.1	Will the proposed Project result in significant ⁶⁹ greenhouse gas emissions or may exacerbate climate change?	No
2.2	Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?	No
2.3	<p>Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future (also known as maladaptive practices)?</p> <p><i>For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding</i></p>	No
Standard 3: Community Health, Safety and Working Conditions		
3.1	Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities?	Yes
3.2	Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	No
3.3	Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)?	No
3.4	Would failure of structural elements of the Project pose risks to communities? (e.g. collapse of buildings or infrastructure)	No
3.5	Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions?	No
3.6	Would the Project result in potential increased health risks (e.g. from water-borne or other vector-borne diseases or communicable infections such as HIV/AIDS)?	Yes
3.7	Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning?	No

⁶⁹ In regards to CO₂, 'significant emissions' corresponds generally to more than 25,000 tons per year (from both direct and indirect sources). [The Guidance Note on Climate Change Mitigation and Adaptation provides additional information on GHG emissions.]

3.8	Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)?	No
3.9	Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)?	No
Standard 4: Cultural Heritage		
4.1	Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g. knowledge, innovations, practices)? (Note: Projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts)	No
4.2	Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes?	No
Standard 5: Displacement and Resettlement		
5.1	Would the Project potentially involve temporary or permanent and full or partial physical displacement?	No
5.2	Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?	Yes
5.3	Is there a risk that the Project would lead to forced evictions? ⁷⁰	No
5.4	Would the proposed Project possibly affect land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources?	No
Standard 6: Indigenous Peoples		
6.1	Are indigenous peoples present in the Project area (including Project area of influence)?	No
6.2	Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples?	No
6.3	Would the proposed Project potentially affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples (regardless of whether indigenous peoples possess the legal titles to such areas, whether the Project is located within or outside of the lands and territories inhabited by the affected peoples, or whether the indigenous peoples are recognized as indigenous peoples by the country in question)? <i>If the answer to the screening question 6.3 is “yes” the potential risk impacts are considered potentially severe and/or critical and the Project would be categorized as either Moderate or High Risk.</i>	No
6.4	Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned?	No
6.5	Does the proposed Project involve the utilization and/or commercial	No

⁷⁰ Forced evictions include acts and/or omissions involving the coerced or involuntary displacement of individuals, groups, or communities from homes and/or lands and common property resources that were occupied or depended upon, thus eliminating the ability of an individual, group, or community to reside or work in a particular dwelling, residence, or location without the provision of, and access to, appropriate forms of legal or other protections.

	development of natural resources on lands and territories claimed by indigenous peoples?	
6.6	Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources?	No
6.7	Would the Project adversely affect the development priorities of indigenous peoples as defined by them?	No
6.8	Would the Project potentially affect the physical and cultural survival of indigenous peoples?	No
6.9	Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	No
Standard 7: Pollution Prevention and Resource Efficiency		
7.1	Would the Project potentially result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts?	No
7.2	Would the proposed Project potentially result in the generation of waste (both hazardous and non-hazardous)?	Yes
7.3	Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs? <i>For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol</i>	No
7.4	Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health?	No
7.5	Does the Project include activities that require significant consumption of raw materials, energy, and/or water?	No



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iv) ANNEX D: Environmental and Social Management Plan (ESMP)

PROJECT: Strengthening the resilience of rural livelihoods and sub-national government system to climate risks and variability in Benin

GENERAL DISPOSITIONS

A. Objective

This Environmental and Social Management Plan (ESMP) has been prepared for the submission of the Project Document for the project quoted in title according to the guidelines set for UNDP's nationally implemented projects financed by the GEF/LDCF/SCCF Trust Funds. This ESMP is based on the potential environmental and social effects of the project as identified at the Project Preparation phase, and prior to the undertaking of any formal, activity-related and/or site-specific Environmental and Social Impact Assessments (ESIAs) ⁷¹.

This Environmental and Social Management Plan has been prepared based on the author's expertise and in consideration of international good practice for these types of projects. Following what precedes, the Environmental and Social Management Plan could be subject to changes following the realisation of individual Environmental and Social studies for specific activities in specific locations.

B. Assumptions

The following assumptions have been made in the preparation of this Environmental and Social Management Plan:

1. Environmental and Social Impact studies will be conducted for specifically identified activities (as listed in the Social and Environmental Screening document, or

⁷¹ Normally, an Environmental and Social Management Plan would be prepared following baseline studies and then the subsequent impact assessment contained within the Environmental and Social Impact Assessment (or commonly known as an Environmental Impact Assessment (EIA)) and would form the basis for the construction and operational environmental and social management plans. Since the project is of moderate risk rating, no full-scale ESIA is required for the project, but some individual activities within the project will be conducted only after careful analysis of potential environmental and social impacts.

- Appendix F of the Project Document) and prepared prior to the construction and operation of the project components;
2. None of the activities will require the displacement of people;
 3. None of the physical (infrastructure) activities will be conducted in sensitive or protected ecosystems;
 4. Gender issues and strategies to encourage the full participation of marginalised groups are covered in the Project Document as well as in its supporting documentation. However, they are not directly addressed in this ESMP;
 5. Appropriate modelling will be conducted by contractors and authorities prior to the final design of any significant water infrastructure;
 6. Activities to be conducted for the project are limited to those identified in the Project Document. Any modification or adjustment to the list of activities will warrant an update of this ESMP.

C. Project Description and Key Components

The project “Strengthening the resilience of rural livelihoods and sub-national government system to climate risks and variability in Benin” (Adaptation Project) – aims to support the national and local authorities, as well as vulnerable populations, in order to strengthen their resilience to climate risks and vulnerability.

The objective of the proposed LDCF project is to mainstream climate risk considerations into national and sub-national planning processes so that local communities are more resilient to climate change. To achieve this objective, the project will support improved land use planning and decision-making to respond to flood and drought risks. The project will also reduce the vulnerability of local communities to climate change through the implementation of climate-smart watershed restoration and management measures. The abovementioned objective will be achieved through three integrated and complementary outcomes:

- **Outcome 1:** Climate sensitive planning, budgeting and execution at the national and sub-national level strengthened in at least 7 regions. When this result is achieved national and sub-national Ministries of Agriculture, Economic Development and Analysis and Environment will have the capacity to integrate climate change risks and opportunities in their annual/medium/long-term development plans and budgets.
- **Outcome 2:** Resilience of livelihoods for the most vulnerable improved against erratic rainfalls, floods and droughts. When this result is achieved, communities in municipalities Avrankou, Bohicon, Bopa, Ouaké and Savalou will have improved resilience to climate shocks from the diversified income generating activities that they will engaged in.
- **Outcome 3:** Productive agricultural infrastructure and human skills improved for sustainable resilient agriculture by diversifying sources of income and introducing microinsurance schemes to prevent extreme climatic events. This outcome, when realized, will expand the use of irrigation channels, drainage systems for flood

prevention, check dams and water harvesting systems for ground water recharge and drought resilience.

Of all the outputs of the project, only the following four have been identified as having possible material environmental and/or social effects:

- **Output 2.1:** Design and implementation of small scale climate resilient water harvesting infrastructures in at least 5 municipalities (farmers, breeders, fishermen...);
- **Output 2.2:** Introduction of resilient practices, such as drip irrigation techniques, improved short-term cycle seeds and provision of access to agricultural inputs in five municipalities;
- **Output 2.3:** Introduction of alternative livelihoods to reduce local population's dependency and vulnerability to climate change effects;
- **Output 2.4:** Reduction of risks of floods and riverbanks erosion through the stabilization of slopes of critical riverbanks using bamboo plantation.

The remainders of outcomes foster capacity-building and trainings and are therefore not subject to further coverage in this ESMP.

Regulatory and Institutional Context

Broad policies regarding the management of physical, biological and human environments as well as development are covered in the Project Document and its supporting documentation. This ESMP focuses on the regulations that are of relevance to the specific activities conducted in the context of the project.

D. Regulations

The following lists some of the important regulations regarding environmental management in Benin, with a specific attention on the management of biological resources (forests, biodiversity, etc.) and of water resources (organized by main themes and with names in French):

- Environment (General)
 - *Loi cadre sur l'environnement (2014)*
- Forests
 - *Loi n°93 - 009 du 2 juillet 1993 portant régime des forêts au Bénin*
- Biodiversity, Fauna and Flora
 - *Loi N° 87-013 du 21 septembre 1987 portant réglementation de la vaine pâture, de la garde des animaux domestiques et la transhumance*
 - *Loi n°91-004 du 11 Février 1991 portant réglementation phytosanitaire en République du Bénin*

- *Loi 87-014 du 21 septembre 1987 Portant réglementation de la protection de la nature et de l'exercice de la chasse en République Populaire du Bénin (Abrogée par la Loi 2002-16 du 18 Octobre 2004)*
- *Loi n° 2002-16 du 18 octobre 2004 portant régime de la faune en République du Bénin*
- Water resources
 - *Loi N° 2010-44 portant Gestion de l'eau en République du Bénin*

Human environment

- *Loi 2013-01 du 14 août 2013 portant code foncier et domanial*
- *Loi 97 029 du 15 janvier 1999 portant organisation des municipalités en République du Bénin*
- *Loi n° 2002 – 07 du 24 Août 2004 Portant Code des personnes et de la famille*
- *Loi n°87-15 du 21 Septembre 1987 portant Code de l'Hygiène Publique*

Regarding the process of environmental and social studies, they are covered mainly by the Decree No. 2001 - 235 of 12 July 2001 on the organization of the environmental impact assessment procedure, as amended by the new Decree No. 2015-382 of 9 July 2015 on the organization of procedures of the EA .

E. Institutional actors

For the purposes of this ESMP, the following are some of the major institutions involved in the management of environmental and social issues:

- *Ministère de l'Agriculture, de l'Elevage et de la Pêche (MAEP)*
- *Ministère du cadre de vie et du Développement durable*
- *Ministère d'Etat chargé du Plan et du Développement*
- *Ministère de l'Energie, l'eau et des Mines*

F. Specific ESMP requirements

As the project will be funded by the GEF through the UNDP, all works must comply with the due environmental and social assessment process, when required either by regulation or UNDP screening document, as well as with the recommendations of the ESMP in its current or modified form (in case further environmental and social studies are performed), including compliance with the appropriate avoidance, management and mitigation measures.

The extent of activity- and site-specific ESAs will be assessed by the UNDP and key national institutions/institutional partners when site location as well as activity parameters (size of infrastructures, characteristics of each resilient culture, etc.) are formalised. The ESMP identifies potential risks to environment and social issues (referred to as “effects”) from activities in their general form and outlines strategies for managing those risks and minimising undesired environmental and social impacts.

National institutions will be ultimately responsible for the supervision of the ESMP, with the UNDP providing updates on the adequacy and respect of measures. The supervising entities and/or experts will ensure timely remedial actions are taken by the contractor where necessary.

Objectives, Governance and Dispositions of the ESMP

An ESMP is a management tool used to minimise impacts to the physical, biological and human environments as well as maximise the environmental benefits associated with a given project. To ensure the environmental objectives of the projects are met, this ESMP should and will be used by all actors involved in the delivering of project outputs, including contractors, villagers and authorities, in order to structure and control the attainment of environmental and social safeguards. It does so by:

1. Encouraging good management practices, mainly through a need to plan appropriately for each activity;
2. Demanding compliance with regulations and applicable standards at an early stage;
3. Listing the best practicable measures to avoid or mitigate impacts;
4. Describing what “success looks like” with regards to key environmental and social indicators;
5. Suggesting monitoring measures to assess progress
6. Establishing roles and responsibilities of key stakeholders and project proponents.

Finally, the ESMP seeks to maintain its relevance through all circumstances and is therefore a living document that benefits from updates and modifications according to local specificities. Suggestions should be debated at the project management level and involve key stakeholders and project-affected people (PAPs) in discussions on avoidance and mitigation measures.

G. ESMP Responsibilities and Administration

The UNDP and key Ministries are accountable for the provision of specialist advice on environmental issues to the contractor and for environmental monitoring and reporting. The national authorities will assess the environmental performance of the contractors and/or committees in charge of the implementation of activities throughout the project and ensure compliance with the ESMP.

National institutions will be responsible for monitoring the implementation of the ESMP by relevant supervisory staff during construction/implementation. During operations, management and/or governance committees at the local level will be accountable for implementation of the ESMP. Contractors working on the projects have accountability for preventing or minimising environmental and social impacts and this should clearly be included in their Terms of Reference.

As Implementing Partner, the *Ministère du Plan et du Développement* would be in charge of revisions and updates of the ESMP, validating and cross-checking surveillance/monitoring reports and ultimately be responsible, through its authority, to command the implementation of – and compliance with – the ESMP’s measures.

At the local level, institutional arrangement should be taken for site supervision and monitoring (during preparation, construction and operation phases) to be performed by key stakeholders of the project and supported by UNDP and national authorities. Stakeholders tasked with surveillance/supervision and monitoring should receive proper training to complete their mandate.

H. Stakeholder Engagement and Public Participation

While site visits have already been undertaken in all targeted locations (village level) in August of 2016 in order to gather initial feedback and comments on the projected array of activities and investments available through the project, all significant physical investments in communities will be decided in a participatory fashion through multi-criteria analyses.

These multi-criteria analyses (MCAs), of which the criteria are proposed in the mitigation measures in following sections, will factor in the opinion of PAPs and stakeholders with a view to determine the most relevant location, characteristics and scope of all interventions susceptible to have an impact on either physical, biological and human environments. Notwithstanding this participatory approach, no amount of stakeholders' preferences should lead to decisions that are against national regulations and/or environmental and social safeguards.

Once courses of actions for each activity is thus determined, the project management will ensure regular and accessible communication with villages on the progress of activities involving physical/structural investments and provide the community with a contact for enquiries, concerns and complaints.

As is best practice in other projects, where there is a community issue raised, the following information will be recorded:

- a) time, date and nature of enquiry, complaint or concern;
- b) type of communication (i.e. telephone, letter, personal contact);
- c) name, contact address and contact number;
- d) response and investigation undertaken as a result of the enquiry, complaint or concern;
and
- e) actions taken and name of the person taking action.

I. Site Supervision for Activities Involving Physical Investments and Non-Conformity

It is not deemed practical, given the sheer number of project activities that will involve physical investments across the country, to appeal professional (i.e. consultants, experts) site supervision. Given the simplicity of most activities, it appears more reasonable to determine, in each targeted location, a small group of individuals to be trained in environmental and social supervision and monitoring and tasked with reporting progress to authorities, first and foremost to the governance/management committee of the infrastructure, culture or other investment enabled by the project.

For specific activities that would require some level of technical knowledge, professional auditors and experts could support local efforts by accompanying them at crucial junctures of the project as well as perform random checks.

With regards to accountability of site supervision during the implementation of measures, weekly reports should be provided to project management. Quarterly reports should then be produced during the first year of operation of the culture or infrastructure as to address any mishaps with regards to environmental or social management. Finally, yearly reports on the status of the physical investment should be provided to authorities henceforth, with the ownership of the environmental and social issues matching that of the ownership of the project.

Nevertheless, any environmental and/or social incident at any phase of the project should be reported immediately for corrective actions to be considered. These would also be communicated to (or by) UNDP to relevant partners, as well as to the GEF in the annual Project Implementation Report.

Regarding non-compliance with the disposition of this (or a modified) ESMP, they shall be duly noted and logged into the project register. Depending on the severity of the non-conformity, the site supervisor, management committee or project manager may specify a corrective action. The progress of all corrective actions will be tracked using the project register and any non-conformances and the issue of corrective actions are to be advised to national authorities.

J. Training of Contractors

An output of the project targets contractors in order to develop their capacity to deliver climate change resilient physical investments (water infrastructures, agriculture infrastructures, insertion of new resilient crops, etc.).

This training will also build their capacity to more effectively plan, develop and deliver on environmental and social mitigation measures, including (but not limited to):

1. Adopt safe practices with regards to the health and safety of workers and surrounding populations;
2. Maintain machinery in specific areas (ie. Garages) on a regular basis as to minimize risk of incidents and spills attributable to poor maintenance;
3. Provide opportunities for villagers to foster their ownership and understanding of physical investments by taking part in the implementation work;

Key Environmental and Social Indicators with Management Objectives and Measures

The following indicators have been developed for the project:

- INDICATOR A: Hydrology
- INDICATOR B: Environmental Integrity
- INDICATOR C: Biodiversity
- INDICATOR D: Waste Management
- INDICATOR E: Health and Safety of Populations and Workers
- INDICATOR F: Social Cohesion (within and between communities)

With regards to the risks identified in the Social and Environmental Screening document, the following table provides the intersection points of the indicators and risks of the project:

Table 13: Indicators and Risks

	A: Hydrology	B: Environmental Integrity	C: Biodiversity	D: Waste Management	E: Health and Safety of Populations and Workers	F: Social Cohesion (within and between communities)
Pressure on biodiversity through the insertion of species that are more resilient to climate change and potentially invasive			Moderate impact			
Disturbance of land, crops and human environment related to the development, construction and operation of storm/rain water retaining structures	Moderate impact	Moderate impact		Low impact		
Disturbance of land, cultures, human environment and/or hydrology due to the development, construction and operation of simple irrigation works	Moderate impact	Moderate impact		Moderate impact		Low impact
Drowning hazard and risk of proliferation of mosquitoes					Low impact	
Various risks related to the attractiveness of new productive lowlands causing an increase in users		Moderate impact				Moderate impact

However, and to relativize the above, it should also be noted that significant parts of the project are aimed at increasing the resiliency and strength of these very same indicators. We here replace the risks by project outputs which include physical investments (Outputs 2.1 to 2.4).

Table 24 Indicators and Benefits

	A: Hydrology	B: Environmental Integrity	C: Biodiversity	D: Waste Management	E: Health and Safety of Populations and Workers	F: Social Cohesion (within and between communities)
Output 2.1: Design and implementation of small scale climate resilient water harvesting infrastructures in at least 5 municipalities (farmers, breeders, fishermen...)		Strong contribution	Significant contribution		Strong contribution	Significant contribution
Output 2.2: Introduction of resilient practices, such as drip irrigation techniques, improved short-term cycle seeds and provision of access to agricultural inputs in five municipalities	Significant contribution	Significant contribution	Strong contribution		Significant contribution	Strong contribution
Output 2.3: Introduction of alternative livelihoods to reduce local population's dependency and vulnerability to climate change effects		Significant contribution	Strong contribution	Significant contribution	Strong contribution	
Output 2.4: Reduction of risks of floods and riverbanks erosion through the stabilization of slopes of critical riverbanks using bamboo plantation	Strong contribution	Significant contribution			Strong contribution	Significant contribution

INDICATOR A: Hydrology

In the context of this ESMP, we refer to Hydrology as the quantity and quality of water available for productive uses (i.e. agriculture, drinking water, etc.) in an equitable fashion for all users as well as the non-destructive nature of normal hydrological cycles.

Benefits of project on indicator

Output 2.4 of the project seeks to introduce bamboos to prevent flooding and to stabilize the riverbanks..These will have positive impacts on hydrology at the local and regional levels. Other benefits of the project on hydrology includes the radical reduction of topsoil erosion, which affects the turbidity and therefore quality of water.

Risks of project on indicator

Both small scale climate resilient mobilizing water infrastructures and trickle flow irrigation techniques include the risk of water withdrawal to be too significant and thus affect the hydrology of other (mainly downstream) locations. This risk is present to the extent to which the aforementioned infrastructures withdraw water from permanent rivers and sources and are not simply catching rain/flood water. Also, the construction of works could temporarily block or otherwise disturb the natural flow of water.

Key Performance Indicators

The following performance indicators are proposed with regards to hydrology:

- No significant decrease in water quantity and quality downstream if source is a permanent one;
- No significant obstruction of source of water during site preparation;
- No significant obstruction of source of water during construction;
- Infrastructures are resilient to extreme rain events (i.e. do not lose integrity) and maintain their function;
- No unauthorised additional deviation of water.

Monitoring and Reporting

Water quantity available downstream, as measured using recognised techniques. For preparation and construction work, techniques for the measurement of debit should be included in contractors' proposals.

During operation of the irrigation infrastructures, downstream water availability should be measured seasonally.

Management Measures

Issue	Required Studies and/or Management measure	Timing	Responsible	Monitoring and reporting
Site selection should maximise benefits to local hydrology while reducing negative impacts	<p>Characterize the hydrology of the implementation village and of targeted watercourse (if applicable);</p> <p>Build, in a participatory manner, a multi-criteria analysis (MCA) on the various options for the insertion of infrastructures in villages. This MCA shall take into account, for this specific E&S indicator, the following factors:</p> <ul style="list-style-type: none"> • Reduction Potential in terms of risks associated with heavy rains (erosion, human health and safety); • Impact of the infrastructure on physical and biological environments 	Prior to the creation of Terms of Reference (TORs) for works	<p>Project Management</p> <p>Environmental and hydrological Experts</p>	<p>Study Report produced</p> <p>MCA produced</p>
Operation of the infrastructure should not be	Establish the ecological flow to be preserved to ensure the survival of species dependent on the river or waterway targeted by the intervention;	After final site selection and before award of construction	<p>Project Management</p> <p>Environmental,</p>	Study Report produced

<p>detrimental, in hydrological terms, to other usages of the water resource.</p>	<p>Proceed to the inventory of uses of rivers by communities downstream of implementation sites and assess the impact of the structure on these;</p>	<p>contract</p>	<p>social and hydrological Experts</p>	
<p>Irrigation works must be properly governed as to ensure they remain true to their initial (and agreed upon) parameters with regards to water withdrawal</p>	<p>Determining in a participatory manner the roles and responsibilities (governance) regarding the infrastructure;</p> <p>Establish a simple framework for monitoring the infrastructure (i.e. annual photograph of the site to provide to the authorities, noting any undue modification, wear, etc.)</p> <p>Train officials on (1) the maintenance of the structure, (2) good health / safety - related practices concerning construction work, (3) Infrastructure monitoring.</p>	<p>Prior to commencement of work</p>	<p>Project Management</p>	<p>Produce terms of reference of governance body with members;</p> <p>Training reports.</p>
<p>Preparation and construction work could temporarily disrupt the flow of source of water, especially if machinery is used</p>	<p>Require from the contractor a site-specific environmental and social management plan minimizing, in the case where machinery would be used:</p> <ul style="list-style-type: none"> • The construction impacts on the physical environment (limit the impact of machinery on soils and waterways in terms of erosion, spills, etc.); • The construction impacts on the biological environment (limit risks of pollution with a tight maintenance of machinery, prohibit poaching, restrict the work during dry periods, etc.); • The construction impacts on the human environment (through a health and safety plan or workers and for the populations) 	<p>Prior to commencement of work</p>	<p>Project Management Contractor</p>	<p>Site-specific ESMP is included in project register and referenced in this overall ESMP</p>
	<p>Designate, within the community, individuals to carry out monitoring work during construction</p>	<p>Prior to commencement of work</p>	<p>Project Management</p>	<p>Contact information of individuals responsible for surveillance of work</p>

INDICATOR B: Environmental Integrity

Environmental integrity is understood as the preservation of natural conditions as they existed before any project activity was implemented, however poor and minimal they could be (for instance in a rural setting). In this sense, any activity generating a temporary or definitive loss of beneficial characteristics of the physical or biological environment is taken to impact environmental integrity.

Benefits of project on indicator

As mentioned in accompanying document, a key objective of the project is to maintain the integrity of natural capital (physical and biological) in a context of climate change in order to better sustain the means of subsistence depending on it.

Risks of project on indicator

However, the project has some marginal and mostly unintended impacts on the integrity of the environment in the construction phase of the infrastructures, which is common to almost any project involving physical work.

Key Performance Indicators

The following performance indicators are proposed with regards to environmental integrity:

- Level of ecosystemic services rendered by the environment throughout all phases of project;
- Level of availability of key environmental services to local populations;
- Recordable spills and other environmental incidents during construction
- Amount of waste safely disposed

Monitoring and Reporting

Monitoring and reporting on environmental integrity should preferably be based on the comparison between the impacts (both positive and negative) of project against the baseline scenario. In the absence of formal baseline studies being conducted for each location, infrastructure governance committees are encouraged to report on the evolution of the availability of environmental resources. If, for instance, construction work renders water sources muddy and improper for human consumption, this should be reported by populations and noted as a negative impact on environmental integrity. Alternatively, as infrastructures make ecosystem services more resilient and stable across climatic variability, this should also be noted by the local governance body of the project.

Management Measures

Issue	Required Studies and/or Management measure	Timing	Responsible	Monitoring and reporting
Selection of site to avoid modifying sensitive ecosystems	<p>Confirm that infrastructures (stormwater retention, irrigation works, low-lands work) can be built in each specific location, and demonstrate strict observance of environmentally protected sites (no work with impacts on natural parks, reserves, etc.) and protection of sensitive ecosystems (i.e. wetlands).</p> <p>Confirm that infrastructures are within the size, height and reservoir limits established in the Social and Environment Screening document.</p>	Prior to site selection within villages	Project management	Site selection options and confirmation of legal suitability of each site within a selected village
Selection of site of infrastructure within the suitable options (covered previously) as to reduce impact on ecosystems	<p>Build, in a participatory manner, a multi-criteria analysis (MCA) on the various options for the insertion of infrastructures in villages. This MCA shall take into account, for this specific E&S indicator, the following factors:</p> <ul style="list-style-type: none"> o <i>Impact of the work on physical and biological environments</i> 	During site selection within village	Project management	MCA results
Ensure infrastructure will be properly managed <u>before</u> it is actually prepared, built and put in operation as to prevent its degradation and negative impact on environmental integrity	<p>Determine, in a participatory manner, the roles and responsibilities (governance) over the infrastructure;</p> <p>Design appropriate governance mechanisms to manage increased lowlands productivity, both for internal (between villagers) and external purposes (with neighboring communities and nomadic communities).</p>	To be determined, but no later than selection of contractor to perform work	Project management	Produce terms of reference of governance body with members;
	Training officials on (1) the maintenance of the structure, (2) good health / safety - related practices concerning construction work, (3) Infrastructure monitoring.	Prior to commencement of work	Project Management	Training completion reports
Ensure sound environmental practices during construction and operation of physical infrastructures	Monitor work performed by contractor and assess against site-specific ESMP produced by contractors.	During construction	Local governance bodies and designated personnel responsible for work supervision	Weekly report to Project Management during construction

(rainwater retention, irrigation, lowlands development, etc.)	Perform the monitoring of the structures as recommended by the contractor (frequency, points to be documented, etc.)	During operation	Local governance bodies and designated personnel responsible for work supervision Technical expertise if required	
	Perform the maintenance of the structures (removal of accumulated silts and sands) according to the contractor's recommendations and according to a health and safety plan; Management of residual waste materials (silt, sands, ect.) in order to minimize their impact on the ecosystem.	During operation	Local governance bodies and designated personnel responsible for work supervision	

INDICATOR C: Biodiversity

In the context of this ESMP, biodiversity simply means the variety of flora species already present on the territory targeted by the project intervention. These species may or may not have special status (i.e. IUCN list properties).

Benefits of project on indicator

By sustaining the resilience of the physical environment (flattening wild hydrological variations made more frequent by climate change, regulating the debit of some water sources, etc.), the project will also have a positive impact on flora that struggles to survive the increasingly harsh climatic conditions in several regions of Benin.

Risks of project on indicator

The project will consider the insertion of resilient species of plants and productive flora. Some of these species of plants that are more resilient to climate change may also exhibit invasive characteristics, given their ability to adapt to various types of soil, water and light conditions, for example. Invasive plants can threaten native species by their adaptability and possibly stifle these if no action is led to manage them.

Key Performance Indicators

- Containment of resilient species to the destined areas
- Critical distance maintained between inserted species and local species with special status (if any) or of particular interest for populations
- Effective transmission of management strategies between users of plantation/culture and in time

Monitoring and Reporting

Yearly report on size, yields and health of inserted species and list of actions taken to manage the spread of species with invasive characteristics.

Management Measures

Issue	Required Studies and/or Management measure	Timing	Responsible	Monitoring and reporting
<p>Selection of the most suitable site(s) to develop cultures that are resilient to climate change without applying undue pressure on local ecosystem</p>	<p>Assess, in a participatory manner, the level of ecosystem value of the host environment (presence / absence of endangered species or special status species, species providing essential ecosystem services, etc.) and exclude the establishment of resilient species that would threaten the biodiversity by replacing or threatening already present species with high ecosystem value;</p> <p>Obtaining from stakeholders (including national and local authorities) information on (1) resilient species which could be suitable for the targeted locality, (2) their establishment in similar ecosystem zones and (3) lessons learned and best practices in environmental management measures of concerned species;</p>	<p>Prior to development of TOR for contractors</p>	<p>Project Management</p>	<p>Study Reports</p>
<p>Making sure that the beneficiaries are capable of implementing simple management measures</p>	<p>Assessing the institutional and local capacities to implement the relevant mitigation measures and propose additional trainings if required</p>	<p>During preparation of TOR</p>	<p>Project Management</p>	<p>Study Report and training reports</p>
<p>Create an enabling environment for the sustainable management of resilient species</p>	<p>Determine in a participatory fashion the roles and responsibilities (governance) of the small scale cultures and/or plantation and its short, medium and long term characteristics.</p> <p>Train officials on (1) appropriate management measures for the species inserted to maximize the utility of the species and to limit the impacts on biodiversity (as applicable) and (2) the monitoring of the plantation / cultivation</p>	<p>During preparation of TOR</p>	<p>Project Management and local authorities</p>	<p>Terms of governance arrangements</p> <p>Training reports</p>
	<p>Establish a simple framework for monitoring culture (eg annual photograph of the site to be provided to the local authorities, noting any unexpected expansion of inserted specie, etc.)</p>	<p>Before commencement of work</p>	<p>Project Management and local authorities</p>	<p>Yearly reports</p>

INDICATOR D: Waste Management

Waste needs not to be detrimental as long as it is properly disposed of. In the case of this project, the only significant waste will be that of silts and sands accumulating in water retention and irrigation schemes. These are non-dangerous waste, but they nonetheless require proper management to avoid constituting an added pressure on ecosystems.

Benefits of project on indicator

Project components will radically reduce erosion, thus the need to remove silts and sands downstream.

Risks of project on indicator

By locally retaining some water flow, the silts and sands will accumulate in project locations, creating waste.

Key Performance Indicators

- Quantity of waste (in approximate volume) extracted from infrastructures per year
- Records of quantity of materials disposed and disposal method are available.

Monitoring and Reporting

Records of disposal method and place for extracted silts and sands are made available to local infrastructure governance body as well as to Project Management

Management Measures

Issue	Required Studies and/or Management measure	Timing	Responsible	Monitoring and reporting
Dispose of natural waste created by man-made irrigation, rainwater retention or lowlands development operations	Manage residual waste materials (silt, sands, etc.) in order to minimize their impact on the ecosystems. Waste, in the form of silts and sands should be removed from the infrastructures at the frequency and along the methods advised by contractors and by best practices as to guarantee the safety of populations, workers and ecosystems	During operations	Local authorities	Provide approximate quantities of waste materials withdrawn from site each year and provide details of its disposal

INDICATOR E: Health and Safety of Populations and Workers

As prior mentioned, the objective of this project is to enable targeted populations to benefit from more resilient means of subsistence. It is evident that no such objective could be reached if the means to bring it about threaten the already precarious health and safety of targeted populations. This warrant the singling out of health and safety as key indicators of this project.

Benefits of project on indicator

The project will reduce environmental pressures on health and safety of populations by reducing risks associated with floods, droughts and other climatic extremes.

Risks of project on indicator

Construction work will be the main driver of detrimental effects of the project on health and safety. A sudden influx of workers is often associated with a higher risk of transmission of STDs such HIV/AIDS. Some specific type of work can also weaken air quality by projecting dust in the air. Also, but perhaps less relevant in this case, the presence of heavy machinery can cause additional risk if no proper signalling and cautionary measures are taken. Finally, the sometime harsh work conditions for human physical work can be associated with conditions such as heat strokes, dehydration, etc.

Key Performance Indicators

In the absence of formal baseline studies, the local infrastructure governance committee should take note of any impact on health and safety caused by construction work, such as:

- Recordable incidents implicating villagers
- “Near-misses” implicating villagers
- Any significant decrease in air quality associated with work (i.e. dust loads)
- Any decrease in public health possibly occasioned by transmission of STDs.

The contractor should also keep a record of the health and safety parameters of its work, as is usually specified in any good Health and Safety plan

Monitoring and Reporting

Monitoring and reporting on health and safety will happen through the usual reports of governance bodies and contractors to the Project Management. Any serious incident should however be reported within 24 hours to Project Management.

Management measures

Issue	Required Studies and/or Management measure	Timing	Responsible	Monitoring and reporting
<p>Construction of infrastructures could pose risks to the health and safety of populations and workers through various vectors, such as:</p> <ul style="list-style-type: none"> • Air pollution caused by machinery • Heightened risks of transmission of sexually transmitted diseases (STDs) such as HIV/AIDS • High temperatures causing heat strokes and dehydration for workers 	<p>Require from the contractor a site-specific environmental and social management plans which will minimize, in the case where machinery would be used:</p> <ul style="list-style-type: none"> • The construction impacts on the physical environment (limit the impact of machinery on soils, waterways in terms of erosion, spills, etc.); • The construction impacts on the biological environment (limit risks of pollution with a tight maintenance of machinery, prohibit poaching, restrict the work during dry periods, etc.); • The construction impacts on the human environment (through a health and safety plan or workers and for populations) 	<p>In the RFPs and TORs of Contractors</p>	<p>Contractors and Project Management</p>	<p>Site-specific ESMP produced by contractor</p>
	<p>Designate, within the community, individuals to carry out construction monitoring work</p>	<p>After selection of contractors</p>	<p>Local authorities and Project Management</p>	<p>Report to Project Management with contact details of individuals</p>
<p>Risks of drowning and mosquito proliferation during the operation of the infrastructures</p>	<p>Include, in the multi-criteria analysis aiming to establish the precise location of retention or irrigation structures, the safety criteria (is the place easily accessible by children, is it securable with natural or artificial barriers, what is the risk that the work contributes to the proliferation of vector-borne diseases?, etc.)</p>	<p>Before final selection of site</p>	<p>Local authorities and Project Management</p>	<p>Completed MCA</p>
	<p>Secure, where children might want to venture, the structure site with natural or artificial barriers;</p> <p>Include anti bathing pictograms on posters near the location;</p> <p>Perform special sessions with women in meetings to inform and train the villagers in the management of the structure and;</p> <p>Confirm the presence of a control strategy for disease vectors (e.g. mosquitoes) in the targeted Municipality, and include appropriate authorities in the supervision and monitoring of the installation, so that</p>	<p>Before completion of infrastructure</p>	<p>Local authorities and Project Management. Sanitary authorities</p>	<p>Pictures of installed pictograms Training Reports Reference to disease control policies and plans</p>

the usual control measures are applied			
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INDICATOR F: Social Cohesion (within and between communities)

As much as communities rely on their physical and biological environments, they also rely on the human environment surrounding them to develop their potential, foster feeling of belonging and more generally collaborate to increase their socio-economic wellbeing. By “social cohesion”, we thus mean the availability of a resilient human environment to and for individuals, regardless of their provenance, community, gender or other characteristics, that provides them with resources to face hardships. The antithesis of social cohesion could thus be viewed as a “everyone for themselves” situation, or worse, one of conflict.

Benefits of project on indicator

By reducing the pressures on physical and biological environments, the project will mechanically reduce the amount of issues that communities face and need to deal with. This should enable communities to focus on bettering their living conditions rather than manage through difficult situations.

Risks of project on indicator

Economic opportunities will be created by the project. This ESMP concerns itself with communal infrastructure investments that by definition will benefit a great number of individuals. However, communal infrastructures that are highly productive are vulnerable to greed and therefore need to be managed in an equitable yet robust fashion, else they are rapidly degraded and unsustainable (hence the expression of the “tragedy of the commons”). Even under the best of circumstances and sound governance, there are risks that the new infrastructures will create temporary tensions between villagers, and also between communities in the case of irrigation work and lowland development.

Key Performance Indicators

- Number of conflicts, disputes with regards to intra or inter communal management of infrastructures
- Percentage of peaceful and mutually beneficial resolution of conflicts
- Feeling of inclusiveness of key groups (women, marginalised populations) in the management, operation and benefits associated with the productive infrastructure (as measured through field surveys at key junctures of the project and formal evaluations of the project).

Monitoring and Reporting

Reports by infrastructure management/governance bodies to Project Management should include estimates of KPIs mentioned above. Any significant conflict or risk of conflict following should be immediately reported to Project Management for immediate corrective actions or mediation between concerned groups.

Management Measures

Issue	Required Studies and/or Management measure	Timing	Responsible	Monitoring and reporting
Preserve social cohesion <i>within</i> communities by clarifying the governance of the infrastructures and related natural resources, as well as	Before climate change resilient species' insertion, determine in a participatory fashion the roles and responsibilities (governance) of the small scale cultures and/or plantation and its short, medium and long term characteristics.	Before commencement of work	Project management and local authorities	Governance structures and means of communications between/within groups

<p>minimise conflicts of usage</p>	<p>Determining in a participatory manner the roles and responsibilities (governance) regarding the water retention and irrigation infrastructures;</p> <p>Design appropriate governance mechanisms to manage increased lowlands productivity, with a special consideration for its attractiveness to new users</p> <p>Determining in a participatory manner whether compensation must be offered by the community to individuals / groups that could suffer from losses related to the construction and operation of some communal infrastructures or cultures without drawing profits from it and establish (if applicable) a compensation and grievances mechanism.</p>			
<p>Preserve social cohesion by empowering women and ensuring equal access to project's benefits</p>	<p>Design appropriate governance mechanisms to manage increased lowlands productivity, with a special consideration for its attractiveness to new users</p> <p>Include representatives of women's groups and other marginalized groups in the various governance committees of irrigation/stormwater retention/ lowlands and resilient cultures' structures;</p>	<p>Before commencement of work</p>	<p>Project management and local authorities</p>	<p>Governance structures and means of communications between/within groups</p>
<p>Preserve social cohesion <u>between</u> communities by clarifying the governance of the infrastructures and related natural resources, as well as minimise conflicts of usage</p>	<p>Establish (if the structure has a significant impact on the river), a communication and governance mechanism with downstream communities (if possible within the framework of an integrated approach for managing water resources);</p> <p>Design appropriate governance mechanisms to manage increased lowlands productivity, with a special consideration for its attractiveness to new users</p> <p>Involve a body with authority over all the groups likely to become stakeholders (permanent or occasional) to the lowland Governance Committee with a view on arbitrating possible disputes</p>	<p>Before commencement of work</p>	<p>Project management and regional and/or National authorities</p>	<p>Governance structures and means of communications between/within groups</p>

v) **ANNEX E: Detailed profile of concerned municipalities and villages⁷²**

Table 1 : Integration of climate change related issues in the Communal Development Plan of concerned Municipalities⁷³

Municipalities	Local Planning Document	Validity timeframe of the document	Integration of climate change related issues in the document
Avrankou	PDC	2011-2015	The PDC of Avrankou the issue of climate change in a perfunctory manner, but has implemented a contingency plan in order to control the adverse effects of climate change. The manner to control these effects must still be specified
Bohicon	PDC	2012-2016	The PDC of Bohicon includes some adaptation ideas to attenuate phenomena of water influxes from neighboring territories, but the methodology to counter the phenomenon is still to define
Bopa	PDC	2011-2015	The PDC of de Bopa includes adaptation opportunities to climate related risks in the agricultural sector.
Savalou	PDC	2012- 2016	The PDC of Savalou includes some adaptation opportunities to floods and drought for the agricultural sector.
Ouaké	PDC	2011-2015	In the PDC of Ouaké, the agricultural sector development objectives include actions which promote the adaption to climate change related risks (drought in particular)

Villages	Hazards / Shocks/ Risks/threats	Impacts in terms of consequence	Vulnerability factors		Note on answer's capacities
			Exposure (%)	Sensibility (%)	
Municipality of Ouaké					
Kadolassi	Drought	Lower agricultural production	100% Of village's inhabitants are exposed to drought's effects	80% Are more sensible to the phenomenon , which affects their subsistence means.	- Use of short cycle seeds (rice et corn). Rice: IR841. Corn, three months' cycle variety. - But these seeds are not available every season and imply technical obstacles for production - Applied cultivation technique: Perpendicular to the slope ridging
	Rainfall irregularity (Delay, discontinuity, early end)	Lower agricultural production	100%	80%	
	Strong winds followed by strong	Lower agricultural	100%	100%	

⁷² Rapport de mission, « contribution à la mission à travers une étude sur la dégradation des terres et les conflits fonciers et domaniaux dans les zones d'intervention du projet », présenté par Félix Zinsou, version du 07/09/2016.

⁷³ Analysis from data collected from the « Plans de Développement Communaux (PDC) », August 2016

	rainfalls (flooding)	production			- Layout of a lowland, but there are difficulties to make the pumping water equipment work.
Alitokoun	Drought	Lower agricultural production	100%	100%	- Use of short cycle seeds (rice et corn) in order to adapt to rainfall delay. Seeds furnished by the ISOP. These supports were given by the NAPA - Applied cultivation technique: Perpendicular to the slope ridging
	Rainfall irregularity (Delay, discontinuity, early end)	Lower agricultural production	100%	100%	
	Strong winds followed by strong rainfalls (flooding)	Lower agricultural production	100%	100%	
Municipality of Savalou					
Damè	Drought	Lower agricultural production	100%	100%	A dam (from which the exploitation began in 2016) was realized in one of the lowlands (Logodohou) through the NAPA. Perpendicular to the slope plow.
	Rainfall irregularity (Delay, discontinuity, early end)	Lower agricultural production	100%	70%	
Awiankanmin	Drought	Lower agricultural production	100%	90%	Recent planting of species like Mucuna, pigeon pea, with the support of the PROSOL project from the GIZ. Perpendicularly to the slope plow.
	Rainfall irregularity (Delay, discontinuity, early end)	Lower agricultural production	100%	90%	
Municipality of Avrankou					
Kotan	Drought	Lower agricultural production	50%	20%	Applied cultivation technique: Perpendicular to the slope ridging
	Rainfall irregularity (Delay, discontinuity, early end)	Lower agricultural production	50%	20%	
Danmèpkossou	Drought	Lower agricultural production which can lead to the food insecurity if measures are not taken	60% of the village members are more exposed	30% of exposed people are drought sensitive (so 18%)	Applied cultivation technique: Perpendicular to the slope ridging Use of short cycle seeds

	Rainfall irregularity (Delay, discontinuity, early end)	Lower agricultural production	60%	30% of exposed producers	
Municipality de Bohicon					
Zakamè	Flooding (invasion of runoff water of neighboring municipality)	Lower agricultural production Destruction of habitats	100% of homes are exposed to destruction through water invasion	80% of exposed are sensitive to floods	Realization of a water tank going from Nnganzou to Zakamè. But because of insufficient resources mobilization, the water tank will stop at Zakamè, where the risk of collected water release is high
Municipality of Bopa					
Sèhomi	Drought	Lower agricultural production	90% of producers are threatened	80% of producers are sensitive to the threat, this can affect the financial safety of family	No explicit capacity, but short-cycle seeds are considered, and the support of the project/of the state is requested to get these. Land tenure problems are also a limit to the development of resilience to climate change strategies
	Strong winds	Lower productivity of fishery resources from the Ahémé lake	80%	60%	Reinforcing the capacities of fisher men and territorialize fry production in order to reduce fry exportation in Ghana, like it was the case during the NAPA-1 project
		Disease and epizooty leading to the death of wild animals	75% of producers are threatened	40%	Of producers are sensitive to these diverse threats
	Rainfall irregularity	Lower agricultural production	80 to 90% of farmers are exposed, because the rain is localised and	25 à 30% are sensitive to these diverse threat and could experience	No explicit capacity in this field, but request state services and local medias support in order to get

			doesn't affect everyone in the same manner	food insecurity	information on climate change and to protect themselves from shocks which could happen.
Agbodji	Drought	Lower productivity and lower fertility of agricultural soils	80% of villages members are exposed	60%	No specific strategy, but wish to benefit from opportunities of early short-cycle variety.
	Strong winds	Decrease or absence of catches, in the Couffo river, especially in the locality of Tohonou	60% of inhabitants are exposed and endure the scarcity of fishery resources.	30% are sensible to these threats and don't have access to the economic opportunities provided by the river	The use of small mesh size for fishing nets enable to some family to make it through, to the detriment of the poorest. The community estimates that the bamboo (reeds) cultivation on the river banks could be useful for increasing the resilience of spawning ground for fishes and to preserve the river from disasters.
	Irregularity and scarcity of rainfall	Decrease of production and dryness and sudden deaths of growing plants during the maturation step in the fields.	80% of villages members are exposed	60% of member are sensible, notably young people and women	Agriculture development on the river surroundings as a prevention method against famine.

vi) ANNEX F: Synthesis of the reports of national consultants

Annex F-1: Executive summary of the report “integration of gender in the project” of Zariatou Brisso, gender expert. October 2016

As part of the formulation of the project "**Strengthening the resilience of rural livelihoods and sub-national government system to climate risks and variability in Benin**", whose main objective is to provide support to national and local authorities as well as to vulnerable populations in order to strengthen their resilience to climate hazards and variability, the gender dimension has been transversally and systematically integrated through a gender analysis of results and resources; a gender analysis with stakeholders, an identification of gender data and the development of a gender action plan for the project.

The methodology includes: a methodological framework, a literature review, the development of questionnaires and of an interview guide, the collection of data through the interview of local population, the processing and analysis of collected data and the reporting.

1. Results related to livelihoods:

Adults men, young men, adult women and young women live mainly from subsistence farming:

- growing food crops (maize, beans, sorghum, soy, ...)
- tuber cultivation (cassava, yam);
- gardening (fiddle, gboma, ...);
- fishing and fish farming;
- the breeding of small animals (poultry, pork, ...);
- processing cassava into gari, néré into mustard, soy into cheese, ...;
- crafts (bamboo beds, stools, mats, straw);
- Trade (smoked or fresh fish, mustard, local drink)

2. Results related to practical needs and strategic interests

Practical needs		Strategic interests	
Women (adults et young)	Men (adults and young)	Women (adults and young)	Men (adults and young)
land, water, lowlands, agricultural credit, dam, processing equipment	Land, lowlands, labor force, credit and more efficient farming equipment	- inequitable access to resources - No power of control	Access to resources
Training in agricultural and cultivation techniques ...	Training/technical support	Provision of support to husbands during field work (Ouaké)	Power of control
		No women possess personally land (Avrankou, Bopa, Ouaké)	Decision power
Vulnerability to climate shocks : → women are the most vulnerable and become overloaded → children, the elderly and disabled people			

3. Number of women to impact through the project:

Department	Municipality	Arrondissement	Administrative village	Number of households	Total	Men	Women	Household size
MONO	BOPA	POSSOTOME	SEHOMI-DATO	141	611	288	323	4,3
		POSSOTOME	SEHOMI KOGBOME	181	956	477	479	5,3
		AGBODJI	AGBODJI	561	2,880	1,431	1,449	5,1
OUEME	AVRANKOU	SADO	KOTAN	298	1,355	621	734	4,5
		DJOMON	DANME-KPOSSOU	264	1,325	633	692	5,0
DONGA	OUAKE	BADJOUDE	ALITOKOUM	60	602	301	301	10,0
		BADJOUDE	KADOLASSI	93	896	480	416	9,6
COLLINES	SAVALOU	LAHOTAN	AOUANKANME	483	2517	1,218	1,299	5,2
		LAHOTAN	DAME	181	1,192	544	648	6,6
ZOU	BOHICON	AGONGOINTO	ZAKANME	153	602	259	343	3,9
TOTAL				2,415	12,936	6,252	6,684	

Source : RGPH 4, 2013

- The fourth General Census of Population and Housing (RGPH) held in May 2013, allowed to find, within nine (9) villages (05) of the five selected municipalities, a population of 12,936 residents of both gender, from which 6684 women (51.66% women of the total population of the nine (9) villages selected for the project). Taking into account the structure of the population by gender and area of residence, the proportion of women aged 15 to 54 is equal to 49.1% and the number of women of the 09 selected villages between 15 and 54 is 3281. Therefore, the project plans to impact 3281 women.

DIFFICULTIES ENCOUNTERED

The main difficulty encountered during the formulation of the report was about mobilizing communities. Indeed, the team had anticipated, in its questionnaire, to exchange with all different social and gender categories of communities (adult women, young women, adult men, young men, disabled people (men and women), indigent people (men and women)) in order to collect their perception, their strategic needs and interests on the issue of livelihoods and climate change issues. Unfortunately, local authorities were unable to honor this commitment despite a consensual planning refined with them. Thus, in different covered localities, interviews were conducted only in two separate focus groups: adult and youth men and young and adult women.

In addition to this, was the non-categorization of the data RGPH_4 which does not appear as disaggregated data, that is to say the data from this census does not present information on the different sections of the population such as for example the number of adult women, young women, disabled, indigent people... which did not facilitate the consideration of the recommendations of the workshop held in Bohicon, which proposed that the gender dimension should be expanded beyond the "man and woman" categories.

CONCLUSION

In many countries, life of population in urban, peri-urban and rural area depends mostly on the availability of natural resources. But it is clear that nowadays, environmental degradation affects everybody, but especially the most vulnerable and those living in close dependence with the products of environment. Today, with the effects of climate change, men and women generally; and the disabled, the young, the elderly have differentiated needs that need to be taken into account for an effective and sustainable resolution of the problems of livelihood and of adverse impacts due to climate shocks. Moreover, even if there are common general needs of rural populations, we must recognize that specific characteristics are still relevant in each Municipality, each arrondissement or each village and even within the various categories of target beneficiaries of the project. For example, the needs of young women are not necessarily those of adult women, those of young men are not those of adult men ... Thus, project managers must take the gender mainstreaming into account in the whole process project implementation, to significantly reduce inequalities relating

thereto; because no development is sustainable without the active and effective participation of different categories of target beneficiaries.

Annex F-2: Executive summary of the report "Formulation of the project" of Cosme Zounon, socio-economic expert. October 2016

As part of the formulation of the project "**Strengthening the resilience of rural livelihoods and sub-national government system to climate risks and variability in Benin**", an assessment of economic vulnerabilities related to climate risks was realized, at national level as well as in each targeted village, through consultation with the local population. The assessment of the capacity situation of the various stakeholders at national level and the integration of climate risks and impacts in the planning and development work is a major concern at all levels.

INSTITUTIONAL CAPACITY

From an institutional perspective, Benin has encouraged the development and the adoption of several development instruments (plans and strategies) in various sectors of economic activity. It has also set up an institutional framework marked by the establishment of various structures and committees including (i) - the National Committee on Climate Change (CNCC) by Decree No. 2003-142 of 30 April 2003, which is a multidisciplinary body comprising representatives of all ministries, of private operators and of civil society; (ii) - the General Directorate for the Environment and Climate, coordinating the activities implemented in the field of climate change in Benin, (iii) – the Commission Modelling the Economic Impacts of Climate and Integration of climate change in the General State Budget (CMEICB) by Decree No. 2014-359 of 16 June 2014, whose role is to develop tools and methods for modeling and forecasting economic impacts of climate change, in order to optimize strategies for adaptation, low carbon development and resilience to climate change, (iv) - the Centre for Partnership and Expertise for Sustainable Development (CEPED) to ensure the functions of Permanent Secretariat, and which should coordinate studies modeling climate impacts on different economic sectors (including agriculture, water resources and health) while integrating gender; (v) - National Platform for Reducing Disaster Risks and Climate Change Adaptation (CCA-PNRRC) by Decree No. 2011-834 of 30 December 2011. This platform's role is to promote the integration of prevention risk and disaster management, in policies, plans, and sustainable development and poverty reduction programs. The Permanent Secretariat of the platform is provided by (vi) - the National Civil Protection Agency (ANPC) to coordinate the activities of the platform.

At present, all these structures are not truly operational and have weaknesses, in particular in the coordination and management of human resources and concerning the functional firewall that could weaken the coordination of climate-related initiatives.

Despite all the efforts made, the inclusion of climate change into development plans and programs at the national level remains embryonic. Furthermore, there is a lack of coordination of activities concerning different economic sectors.

The sectors of agriculture and water resources, for example, suffer from the lack of synergy and collaboration in the development and implementation of the NAPA-1, the PAGIRE (Action Plan for Integrated Water Resource Management) and the NAIP (National Agricultural Investment Plan). These three documents were developed in very distinct ways, and uncoordinated with priorities, orientations and stakeholders.

Similar issues are observed in the implementation of these instruments, most notably:

- The low involvement of the Directorate General for the Environment and Climate in the integration process of Climate change in sectoral planning.
- The limited capacity of the CNCC to fulfill its mission,
- Overlapping responsibilities of different institutions,
- Insufficient human, material and financial resources
- The low level of cooperation of institutions on the issue
- Insufficient communication on climate.

It should finally be noted that the government has just adopted, during the Council of Ministers of 28 September 2016, the strategy paper concerning low-carbon and resilient to climate change development to meet growing environmental concerns.

At the level of communal councils (local governments), the examination of Communal Development Plans (PDC) shows a willingness to integrate climate risk in PDCs, but not in an exhaustive manner.

The analysis of the inter-annual variability of rainfall observed during the period 1951-2010, reveals that short periods of deficit alternate with some surplus years.

Concerning temperature, a net increase of about 1°C of the average air temperature is observed from 1995. Moreover, the average minimum temperature also showed a significant increase (+0.5 to about 1°C) during the last decade, especially from 2003 in Benin.

The seasonal analysis of precipitations shows large differences with the period prior to 1971. It was observed in the north of the country as well as in the south, delays beyond two months for the start of usual rains; this has consequences on the calendar of agricultural activities.

At the local level, the situation of observable climate risks and hazards, within the nine (9) targeted intervention villages in five (5) municipalities (Ouaké, Savalou Avrankou, Bohicon and Bopa), differ according to the agro-ecological zone in which the village is set.

The overall analysis of field data within nine (9) villages of five (5) Municipalities, shows that men and women, as well as the elderly and the youth are all exposed to climatic hazards and risks. But each social category has to adopt appropriate strategies with regard to the means available to them.

Overall, a critical analysis of climate risks and hazards within the five (5) targeted municipalities, shows:

- An irregular rainfall and a poor allocation of rainfalls, drought and high winds in Bopa;
- An irregular rainfall and a poor allocation of rainfalls, drought and high temperatures, high winds followed by heavy rains in Ouaké;
- Drought and erratic rainfall (delay, interruption, early termination) in Savalou and Avrankou;
- Invasive flooding in Bohicon, creating physical and economic damage.

Generally, in the case of extreme shocks that may affect their livelihoods, the poorest households use various survival strategies, which often involve small contract debts or sharecropping (zoundanou) with some farmers hit by crises moderately, in exchange of a symbolic amount of money or goods; these households sometimes also proceed to the destocking of their agricultural assets, including small livestock or other assets, making them more vulnerable to future shocks.

The livelihoods of these people depend on natural resources which are increasingly degraded (land, lake, lowlands, etc.) and market conditions are often unstable.

OVERALL ANALYSIS OF VULNERABILITY IN TARGETED VILLAGES

As well, the analysis of vulnerabilities in terms of exposure and sensitivity to resources and livelihoods, and the impacts of it vary from one locality to another.

In the municipality of Bopa and especially in the villages of Sèhomi and Agbodji, it has been observed that households living on the sides and bottom of slope and located near the river edge at the lake Ahémé, Couffo and Toho river, suffer more from the effects of flooding than upstream on the trays.

Fish spawning areas are almost not existing anymore in rivers because of population pressure. The phenomenon of acadja and the use of prohibited fishing gear deprive the poorest populations of accessing to fishery resources. This exacerbates the impoverishment and vulnerability of modest households.

Strong winds are also responsible for the destruction of homes and habitats and of periodic disease outbreak.

Agricultural land is degraded because 70% are located on the slopes of the village and 20% in the lowlands, which does not allow a flourishing agriculture because of water overflow during floods and of the salinization of water, contributing to death of seedlings. Crop yields are low and do not ensure the food security of all households in the village.

In the Agbodji village, women, through groupings, use sharecropping (zoundanou in local language) to ensure vegetable production at the edge of streams during low flow periods.

The overall vulnerability analysis reveals that:

In the Sèhomi village, 80% of producers feel exposed to drought among which 60% say they are sensitive to winds; 54% of these producers are affected by winds and 30% are sensitive to rainfall irregularities. It should be noted that this village has benefited from NAPA-1 interventions.

In Agbodji village, village which did not benefit from NAPA-1 interventions, 60% of the population of the locality say they are exposed to drought and 54% of them are feeling sensitive to the effects of drought. Strong winds are affecting 80% of producers and 54% are feeling sensitive to the poor distribution of rainfall.

In the municipality of Ouaké, in the village of Kadolassi, main climate risks include: drought, rainfall irregularity, poor distribution of rainfalls (delay, interruption, early end) and strong winds followed by heavy rains (floods) are recurrent climate risks. 100% of the villagers are exposed to the effects of climate change and 80% are susceptible to endure a loss of agricultural productivity. In Alitokoum village, 100% of exposed individuals are sensitive to drought, to rainfall irregularity and to strong winds followed by heavy rains causing floods, with serious consequences for agricultural production.

In the municipality of Savalou in the village Damé, main climate risks include: drought, an irregular rainfall pattern (delay, interruption, early end) and in the village Awiankanmè, main risks include, intense drought and irregular rainfall (delay, interruption, early end). In both villages, all respondents said they were all exposed and sensitive to climatic hazards and risks.

In the municipality of Avrankou, in the village Kotan, main climate risks include: Drought, irregularity of rainfall (delay, interruption, early end) winds followed by heavy rains (floods) and in the village Danmèkpossou main climate risks include: Drought, irregularity of rainfall (delay, discontinuity, early end) and winds followed by heavy rains (floods)

In the village Kotan, 50% of the community are exposed to drought, to erratic rainfall (delay, interruption, early end of rains) and strong winds followed by heavy rains which are causing floods. 20% of community members declared themselves sensitive to drought, to erratic rainfall and to strong winds followed by heavy rain and think that these climate hazards affect their essential means of subsistence. In Danmèkpossou, 60% of the community are feeling exposed to drought, to erratic rainfall and to strong winds followed by heavy rains (floods).

In Bohicon, in the village of Zakamè, main climate risks include abundant water flow that create flooding. The analysis of the situation in Zakamè shows that 100% of residents are exposed to the threat of destruction of their habitats, through the invasion of water. In Bohicon, the municipal authorities implemented measures to counter flooding threats, but those answers are still below the expectations of the people.

The analysis of livelihood and economic sectors in the different Municipalities revealed that several activities are vulnerable to climate variability and risks. Natural resources and livelihoods most affected by climate change are the following:

- Bopa: agriculture, vegetable cultivation, agricultural processing, livestock, fisheries and fish farming
- Ouaké: agriculture, vegetable cultivation, transformation of rice by women's groups, animal husbandry, transport
- Savalou: agriculture, vegetable cultivation, agricultural processing, livestock, fisheries, fish farming, small businesses, crafts;
- Avrankou: agriculture, vegetable cultivation, agricultural processing, livestock, fisheries and fish farming.
- Bohicon: agriculture, vegetable cultivation, agricultural processing, livestock, fish farming, small businesses.

The natural resources of the targeted villages are seriously affected by climate hazards, with various degree of severity depending on whether the village has subsequently benefited, or not, from NAPA-1 interventions.

The analysis of the current state of resources and livelihoods in the nine intervention villages of the five targeted municipalities suggests different approaches to deal with climate risks.

In order to totally eliminate poverty, we must focus on strengthening the resilience of household and livelihoods to climate risks. This is essential to ensure food security and the sustainable management of natural resources. It is necessary to strengthen the rural poor households' capacity to manage the risks they face and to reduce their exposure and vulnerability. Given the predominance of rain fed agriculture in rural areas, the project in question strongly focuses its interventions on agriculture, fishing / fish farming and on some processing activities and will seek to improve the sustainability and resilience of agricultural practices.

Furthermore, one of the major risks related to environmental factors is the degradation of natural resources. Almost everywhere in the targeted villages, natural resources are either degraded or scarce. At the same time, population growth puts additional pressure on environmental resources. These behaviors worsen deforestation, erosion of soils, water scarcity, reduction or depletion of fishery resources (especially in the villages of Sèhomi and Agbodji). The degradation of natural resources has a negative impact on agricultural productivity and also reinforces the vulnerability of land and populations to extreme weather conditions. Climate change has a multiplier effect that accelerates the degradation of ecosystems and makes agricultural production increasingly risky.

Measures must therefore be implemented:

- Aiming to reduce rural households' vulnerability and to increase capacity of the resilience of individuals and the community in the absence of climate risks;
- Targeting the capacity building of vulnerable communities and systems to address climate threats and shocks. This concerns the management of natural resources including water and the conservation of biological diversity
- Aiming at increasing the resilience using strategic information and by increasing adaptation capacity
- And finally measures directly responding to climate threats.

Annex F-3: Executive summary of the report entitled « Analyse et Evaluation de la Vulnérabilité et Variabilité Climatiques dans le Cadre de la Formulation du Projet de Renforcement de la Résilience des Moyens de Subsistance Ruraux et du Système de Gouvernement Local aux Risques et à la Variabilité Climatiques au Bénin » of Bertin K. ASSOGBA NONGNIDE. October 2016

This vulnerability and climate variability study is part of the formulation of the project "Strengthening the resilience of rural livelihoods and the local government system to risks and climate variability in Benin". The project aims at supporting to national and local authorities, as well as the most vulnerable populations in order to strengthen their resilience to hazards and climate variability. It covers five (05) municipalities: Bopa, Avrankou, Bohicon, Ouaké and Savalou. The implementation of the project will impact nine (09) villages.

The climate variability study in the municipalities is based on the analysis of the variability of annual rainfall, the variability of daily precipitation and temperatures. Data were collected at the National Directorate for Meteorology over a period of 60 years (1955 to 2015). The results demonstrate a downward trend in rainfall. Similarly, a strong decrease in the number of days of rainfall was observed between 1984 and 2015, more specifically in the last 30 years compared to the first 30 years. An upward trend in temperature anomalies from 1985 to 2015 is also observed. This trend of rising temperatures has been remarkable over the past 30 years in all 5 municipalities. The decrease in rainfall potential associated with fluctuations in average temperatures and increased evapotranspiration affects agriculture. The impacts are numerous such as lower crop yields, concerns about the access to agricultural products, poor soils, disruption of fishing activities and the attack of pests.

The study identifies key current climate risks that threaten the livelihoods of vulnerable systems. These risks are well known: flooding, drought, the late start of the rains, the early end of rainy season, strong winds, extreme flooding; seawater intrusion; poor distribution of rainfall; overlapping seasons, heat waves; extreme rainfall and desertification.

After the identification of the risks, the impacts on natural capital and livelihoods in the villages have been assessed using a sensitivity matrix. The sensitivity matrix integrates gender and socio-economic vulnerability (through the analysis of sustainable livelihoods).

Adaptation strategies developed by the populations have been identified and the analysis of their rural livelihoods has been made for each village. People have expressed various adaptation needs. The analysis of sustainable livelihoods enables to list all rural livelihoods in each locality. The vulnerability analysis took into account the formulation of the different options in each village. These options have been ranked according to specific criteria and validated at national level by a multidisciplinary team. The criteria for selection and prioritization of climate change adaptive options were determined on the basis of observed data.

The evaluation criteria of the priority options and the adaptation measures were adopted for this purpose. It includes a contribution to solving the urgent and immediate problems of adaptation to climate change; a contribution to poverty reduction of the most vulnerable populations; project sustainability; cost effectiveness and the number of beneficiaries. At the end, five (05) priority adaptive options have been identified in each of the targeted villages.

The process resulted in the development of a production system adapted to climate change, the support in the implementation of irrigation schemes in the lowlands, the supply of improved seed variety (short cycle and high yield), the better access to adequate agricultural credit and the promotion of aquaculture), the optimal management of transhumance via the delimitation of corridors and the establishment of monitoring committees to prevent conflicts between farmers and pastoralists, etc. These options relate to activities such as agro-pastoral water reservoirs, delineation of corridors for cattle by setting up a village co-management structure, training of cocoa farmers in drip irrigation technology, simplified technology and administrative management, the development of bamboo plantations, etc.

The costs for implementing adaptation strategies (resilient activities) were evaluated on the basis of various elements. The monitoring indicators of the implementation of the adaptive strategies in the municipalities have been identified and detailed in the logical framework. The estimated costs for each activity / strategy are indicated and the total is assessed at twenty-three billion six hundred sixty-five million eight hundred thousand (23 665 800 000) CFA francs.

Annex F-4: Executive summary of the report entitled "ETUDE SUR LA DEGRADATION DES TERRES ET LES CONFLITS FONCIERS ET DOMANIAUX DANS LES ZONES D'INTERVENTION DU PROJET » of Félix Zinsou. October 2016

The study on land degradation and land conflict shows that land degradation has spared none of the villages targeted by the project. All the project sites are threatened by land degradation. It is therefore urgent to slow this phenomenon, if not eradicate it. Most of the actions concern the implementation of the works of mobilization of water for agricultural,

forestry and pastoral purposes. These are intended to add value to the affected land. The competition for the control and the exploitation of land is becoming strategic and increases pressure leading to land disputes. This could jeopardize the development of the country. To prevent these conflicts, it is essential to put in place appropriate tools to secure areas. In all the municipalities, the study found little knowledge of CC.

Most of the municipalities do not yet have local structures of land and land management. All these weaknesses need to be corrected to improve governance.

- vii) ANNEX G: List of consulted people (national and village level), provided in a separate PDF file.**
- viii) ANNEX H: GEF Tracking Tool(s) at baseline, provided in a separate file**

ix) ANNEX I: Diverse uses of bamboo in adapting to climate change

Bamboo offers a practical and cost-effective 'ecological infrastructure' that helps to reverse land degradation and strengthen adaptation to the many risks posed by climate change while boosting local economies. It should be a key input to the UN's new Sustainable Development Goals (SDGs) – specifically SDG 15⁷⁴.

Bamboo regulates water flows and prevents erosion on slopes and along riverbanks, as well as removing pollutants from wastewater dumped into streams. Stands of bamboo make good windbreaks, sheltering natural vegetation and crops. In short, bamboo is an asset to just about any landscape in which it appears.

When strategically placed, bamboo can provide an 'ecological infrastructure' that is increasingly acknowledged as a cost-effective way to adapt to risks from climate change.

Mangrove forests are the best-known example of ecological infrastructure, as they protect shorelines from storm surges at least as effectively as built infrastructure but at a lower cost, while providing other ecosystem services as a bonus. Similarly, bamboo forests are useful and cost-effective when deployed as part of a comprehensive approach to rehabilitating degraded hillsides, catchments and riverbanks.

Improving soil health to increase climate risk resilience of the farmers

Most bamboo species form an 'evergreen canopy', dropping leaves year-round, providing a perennial source of nutrients. It is estimated that, on average, one hectare of bamboo produces some 5-7 tons of leaf litter per year – an effective mulch to improve soil properties.

Soils under bamboo show relatively high pH, helping to neutralize acidity, and the plant provides high levels of organic matter and nutrients, including Calcium, Magnesium, and Zinc. In the Allahabad restoration scheme in India⁷⁵, bamboo added 6-8 inches of humus to the soil, and increased the soil's carbon content – from 0 to 0.7 – 0.9 t/ha.

Its rapid growth and strong root systems make bamboo a powerful soil protection tool. Estimates show that a single bamboo plant can bind up to 6m³ of soil. The Government of Rwanda has acted on this evidence by drafting a national bamboo policy that calls for the planting of bamboo along rivers and lake shores.

A ministerial order on buffer zone management has resulted in bamboo being planted along corridors beside the country's rivers and water bodies. Similar actions are in place in other countries, including Sri Lanka, Brazil, China, Kenya, and the Philippines, thus contributing to their efforts on climate change adaptation.

Reversing land degradation and providing watershed services to the communities

There are many advantages to planting bamboo on degraded land to restore its fertility which plays a crucial role in decreasing the vulnerability of the farmers against climate risks. Bamboo establishes systems of underground rhizomes and roots that can measure up to 100 kilometers per hectare and survive for a century.

These systems allow bamboo stands to survive and regenerate even if the biomass above ground is largely destroyed in a fire or storm. As harvesters take culms from a managed stand little by little, amounting each year to between a sixth and a third of the biomass above ground, they actually encourage thicker growth in coming years.

Bamboo grows well on problem soils and steep slopes that can sustainably support few other food, fodder, cash or groundcover crops. It also grows quickly – up to a meter per day in some circumstances – to produce a dense

⁷⁴ <https://sustainabledevelopment.un.org/sdg15>

⁷⁵ See further description in the section 'Examples of bamboo-led restoration'

evergreen canopy from which leaves fall to the ground throughout the year, preventing splash erosion, mulching the soil and enhancing infiltration.

Extensive 60 centimeters deep root systems help bind topsoil, slowing water run-off and reducing soil erosion. Because it is so versatile – growing in pure stands or together with other species, at the edges of fields, along streams and at homesteads – bamboo integrates well into almost any production system that mixes agriculture, agro-forestry and aquaculture while also acting as a watershed protector with its extensive root system that aids water absorption in the context of growing risks of hydrological disasters due to the climate change, and as a stabilizer of microclimates.

Reducing pressures on existing forest resources for more sustainable development

Healthy stands of bamboo can conserve nearby forest lands from deforestation and degradation. They do so by providing to rural and per-urban communities an attractive substitute for less renewable timber.

Farmers and foresters who can regularly harvest raw materials and fuel from bamboo stands are under less economic pressure to unsustainably exploit less renewable forests, especially if the bamboo is closer to home.

Strong, flexible and versatile, the plant lends itself to the production of over 10,000 different products, providing an opportunity for rural communities to participate in a growing global sector worth some 60 Billion USD every year thus improving their livelihoods against heavy rainfalls, floods and droughts due to the climate change

Examples of bamboo-led restoration

1. India

A recently documented case in Allahabad⁷⁶, India, tells of the rebuilding of rural livelihoods where 80,000 hectares of degraded land were brought back into productivity using bamboo as a pioneer species. INBAR provided technical assistance and financial support to restore a pilot area of 106 hectares. Farmers planted bamboo primarily on bunds between crop fields, where it could bind the soil and prevent wind and water erosion.

The research study on evaluation the behavioral patterns related to growth and biomass, hydrological behavior, and soil health and intangible benefits of the bamboo performed by INBAR⁷⁷ along with Indian Institute of Soil and Water Conservation (ICAR-IISWC) and Uttarakhand Forest Department (UFD) yielded extraordinary results. IISWC has extensively used bamboo in reclaiming ravine and degraded lands in the Indian states of Gujarat, Madhya Pradesh and Uttar Pradesh. It is during this exercise that the researchers recognized the potential of bamboo particularly in soil and water conservation. They have delineated over 1 million hectares of ravine and degraded areas where bamboo has enormous potential towards re-greening and to improve productivity, thereby contribute to livelihoods and environment.

2. Ethiopia⁷⁸⁷⁹

Ethiopia is on track to achieve further success in land restoration as part of the 95 million USD second phase of the Sustainable Land Management Project, funded by the World Bank and managed by the country's Ministry of Agriculture as part of the NEPAD-supported Terra Africa programme. The programme is promoting bamboo as a strategic resource to control erosion and restore degraded upper catchments – an approach directly promoted by the country's President, Mulatu Teshome.

3. China⁸⁰

⁷⁶ <https://www.cbd.int/cepa/cepa-fair/2014/presentations/cepa-fair-2014-16oct-inbar-utthan.pdf>

⁷⁷ <http://www.inbar.int/scientific-efforts-to-understand-bamboo-better-underway/>

⁷⁸ <http://projects.worldbank.org/P133133/?lang=en&tab=documents&subTab=projectDocuments>

⁷⁹ <http://www.inbar.int/bamboo-a-solution-to-ethiopia-land-degradation/>

⁸⁰ <https://www.idrc.ca/en/article/resilient-bamboo-and-rattan-anchor-environmental-revival>

The effectiveness of the plant as a tool to control erosion and slope stability was demonstrated in Guizhou Province, China, where research documented a reduced soil erosion in a mountainous area by 75 percent, while making degraded farmland and forests viable again.

4. Bonn Challenge⁸¹

The plant is being used as an input to the Bonn Challenge – a global movement launched in 2011 to restore 150 million hectares of degraded and deforested land by 2020 – a first step towards restoring the estimated 2 billion hectares of degraded land worldwide that has potential for restoration, creating significant environmental and climate benefits.

Adaptation benefits of bamboo in Benin

Bamboo is a vast untapped strategic resource that countries in the world's tropical and sub-tropical regions can use to better manage climate change, and provide beneficial 'ecosystem services' and new income sources for their rural populations.

Bamboo can make rural communities of Benin, which are in general highly dependent on the water-sensitive cotton production become less vulnerable to climate change when they include it in sustainable forestry and agroforestry systems. The plant's rapid establishment and growth allow frequent harvesting, which limits exposure to disaster, and let farmers flexibly adapt their management and harvesting practices to new growing conditions as they emerge under climate change. Climate-smart bamboo housing and various forms of bamboo bioenergy will help government and communities build sustainability.

Including bamboo in climate change policies and rural development investments in Benin would make achieving country's sustainable development goals faster and more effective as it had already done in many other developing countries highly exposed to climate risks.

In the Municipalities targeted by the proposed project, bamboos appear to be a relevant and cost effective way of both reducing vulnerability to the adverse impact of climate change, by stabilizing riverbanks and thereby protect populations and crops from flooding and soil erosion, and strengthening adaptive capacity, by providing income generating activities opportunities such as the production of sodabi, a local bamboo spirit. Indeed, in the Municipality of Avrankou, inhabitants have already identified sodabi production and other small crafts based on bamboos as an adaptation strategy and have asked for support both to plant more bamboos and to strengthen their businesses by setting up transformation units for sodabi production and reinforcing their human capital through capacity building. In Ouake and Bopa, populations have identified the stabilization of riverbanks by bamboo plantation as a priority that could also lead to new income generating opportunities.

⁸¹ <http://www.wri.org/blog/2014/12/rebranding-bamboo-bonn-5-million-hectare-restoration-pledge>

x) ***ANNEX J: Letters of co-financing (separate file)***