



ADAPTATION FUND

REQUEST FOR PROJECT/PROGRAMME FUNDING FROM THE ADAPTATION FUND

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project/programme must be fully prepared (i.e., fully appraised for feasibility) when the request is submitted. The final project/programme document resulting from the appraisal process should be attached to this request for funding.

Complete documentation should be sent to:

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CONCEPT NOTE FOR A NATIONAL PROJECT

PART I: INFORMATION ON THE PROJECT

Project/Programme Category:	Ordinary project
Country:	Benin
Title of Project/Programme:	Building resilience to climate change of the neighbouring populations of the classified forests of Bassila and Penessoulou in the Central region of Benin
Type of Implementing Entity:	National Implementing Entity (NIE)
Implementing Entity:	National Fund for Environment and Climate (FNEC)
Executing Entities:	National Timber Office, Bassila Town Hall, Communal Unit of the Territorial Agency for Agricultural Development 4
Amount Requested:	2.889.900 (in U.S Dollars)

Background and context of the Project/Programme:

Project Overview

Among the challenges of the 21st century, climate change (CC) is among the most pressing and alarming ones. West Africa, to which Benin belongs, is one of the most vulnerable regions to the effects of CC, which constitutes an additional constraint in the fight against poverty.

Indeed, Benin population suffers from the effects of climatic hazards as evidenced by (i) the exceptional floods of 2010 which cost the lives of 46 people and caused damages estimated about 80,778,431 US dollars, (ii) the widespread floods of 1985, 2006, 2011 and 2019 that left thousands homeless, and (iii) the severe meteorological and agricultural droughts of the years 1958, 1977, 1983, 1984, 2000, 2001, 2013-2015, responsible for severe food shortages, catastrophic water and fodder deficits, and significant losses in agricultural export earnings (Benin, 2011; MCVDD, 2019). In order to ensure the country's socio-economic development

and the food and nutritional security of the poorest communities, adaptive measures are urgently needed.

The central region of Benin, in this case the commune of Bassila, which is the most forested in the region, is not spared by climate variability. In addition to the flooding episodes, there is the persistent late start of rainfall, the early onset and cessation of rainfall, their poor distribution and the recurrent pockets of drought which, combined with the increased frequency and severity of excessive heat and strong winds, have a negative impact on the livelihoods of the populations (agriculture, market gardening, livestock, local processing units for agricultural products, etc.). In order to cope with the degradation of their livelihoods, certain bangs of the populations living near the forests, who benefit from the ecosystem services provided by these forests (medicinal plants, fruit picking, collection of dead wood for energy, etc.), tend to take more resources from the forests, at the risk of breaking, in the context of CC, the fragile balance between the sustainable satisfaction of their essential needs and the services provided by the ecosystem. This is the case of the communities living in the classified forests of Bassila and Penessoulou.

Benin's commitment to contribute to the mitigation of CC and the adaptation of vulnerable communities to its adverse effects was made with the ratification of the United Nations Framework Convention on Climate Change (UNFCCC) on June 30, 1994, and that of the Kyoto Protocol and the Paris Agreement respectively on February 25, 2002 and October 31, 2016. Three national communications on climate change (MEHU, 2001; MEHU, 2011; MCVDD, 2019), a national adaptation programme of action (MEPN, 2008) and a national adaptation plan (MCVDD, 2021) have been developed. Benin even adopted a law on climate change in 2018 and a National Climate Change Management Policy (NCCMP) in February 2021. The fourth national communication on climate change is currently being prepared.

Recently, a vulnerability study on flood risks in the Ouémé basin identified, among others, the arrondissement of Penessoulou as vulnerable (Sintondji et al., 2019). The exploitation of the results of this type of study, which respond to the concerns of vulnerable populations, should facilitate the implementation of initiatives on the ground. Ultimately, this project will make it possible to map the most vulnerable groups of farmers, market gardeners, beekeepers, livestock breeders and local processing units for agricultural products in the two arrondissements of Bassila Centre and Pénessoulou, to establish priorities for intervention with village communities and to develop a portfolio of urgent measures (integration of climate information, mechanism for revolving seeds and plants adapted to climate change, water and soil conservation techniques, monitoring of technical itineraries and adoption of resilient technologies, training of local communities on modern beekeeping techniques, etc.). The project also plans to reinforce the local governance framework in relation to CC by building the capacities of communal actors.

Geographical framework of the project

Located in the central region of Benin in the department of Donga (Figure 1), Bassila, the third largest commune in Benin, covers an area of 5661 km² and is subdivided into four (4) arrondissements whose demographic characteristics are given in Table 1.

The Bassila Forest (classified by Order No. 2843 SE of August 5, 1943) and the Penessoulou Forest (classified by Order No. 2394/S/E/F of July 7, 1946) are located in the arrondissements of Bassila Centre and Penessoulou, respectively (Figures 1, 2 and 3). These two classified areas located in Benin's Agro-ecological Zone 5 (Cotton Zone of Benin Central region) provide important ecosystem services to the neighbouring populations.

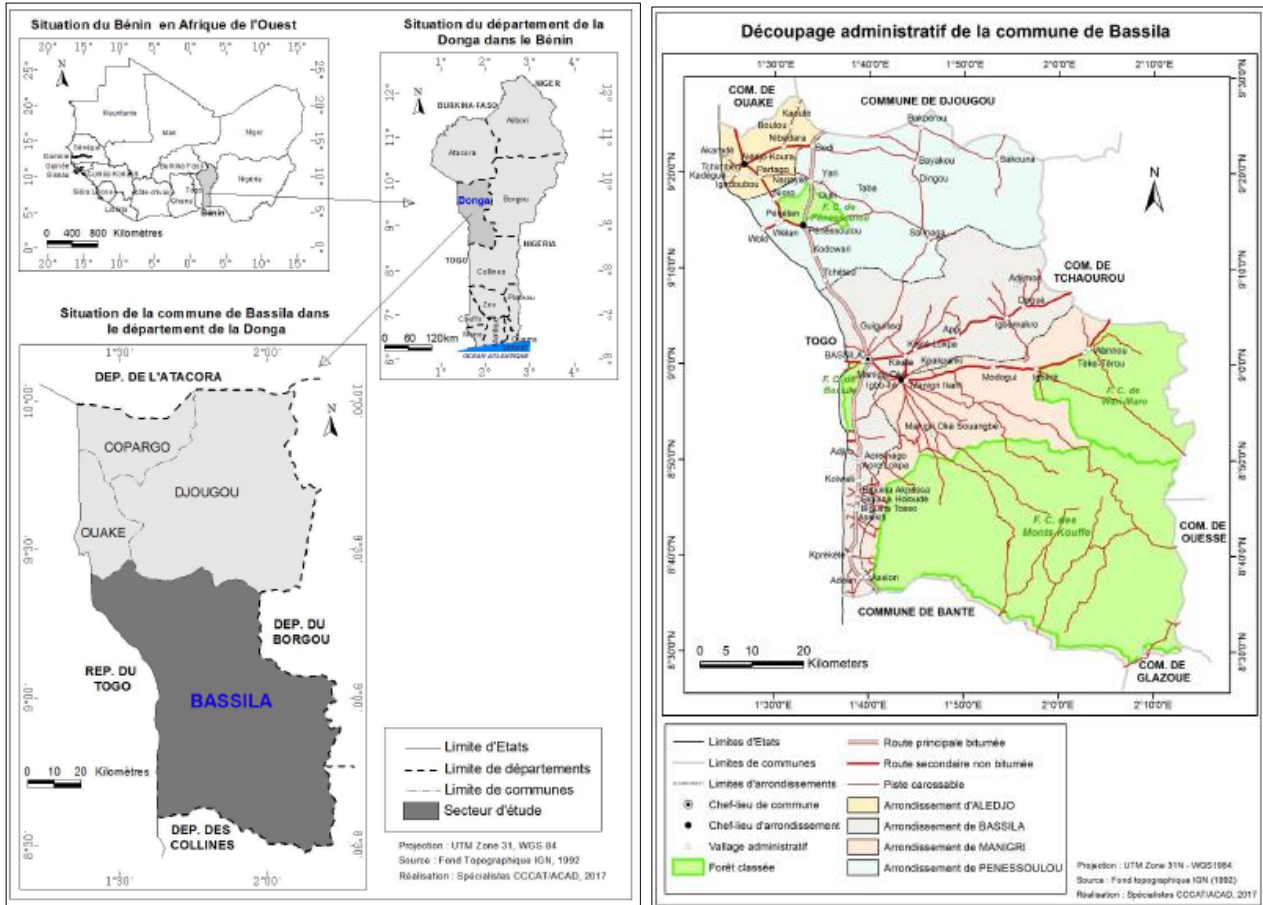


Figure 1 : Location of the commune of Bassila
Source : PDC3 Bassila (2017).

Table 1 : Arrondissements of the commune of Bassila

	Pop. in 2013	Growth rate	Pop. in 2020
Aledjo	23 238	3,96	23 924
Bassila	46 569	3,96	47 943
Manigri	26 409	3,96	27 188
Penessoulou	33 875	3,96	34 875

Source: PDC3 Bassila (2017).

The classified forest of Bassila (3,320 ha) borders Togo and extends between parallels 8° 52' and 9° North latitude on the one hand, and meridians 1° 37' and 1°39' East longitude on the other hand (Figure 2). As for the Pénessoulou Classified Forest (5,470 ha), it extends between parallels 9°14' and 9°18' North latitude on the one hand, and meridians 1°30' and 1°37' East longitude on the other hand (Figure 3).

The dominant plant species in these two forests are *Khaya grandifoliola* (Welw), *Aubrevillea kerstingii* (Harms) pelleg et *Erythrophleum suaveolens* (Guill. & Perr.) (Adomou, 2005). In addition, some animal species that were still present until recently have practically disappeared (buffalo, buffon cob, hyena, panther, lion, bushpig, sitatunga).

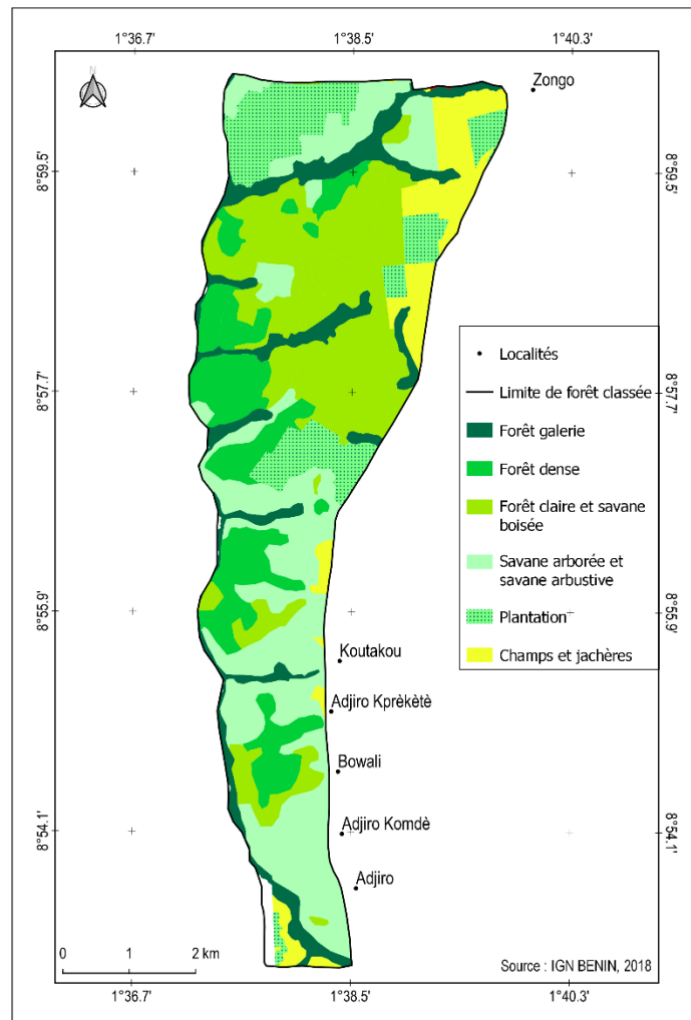


Figure 2: Classified forest of the Central of region of Bassila in 2018
Source: IGN-Benin (2018)

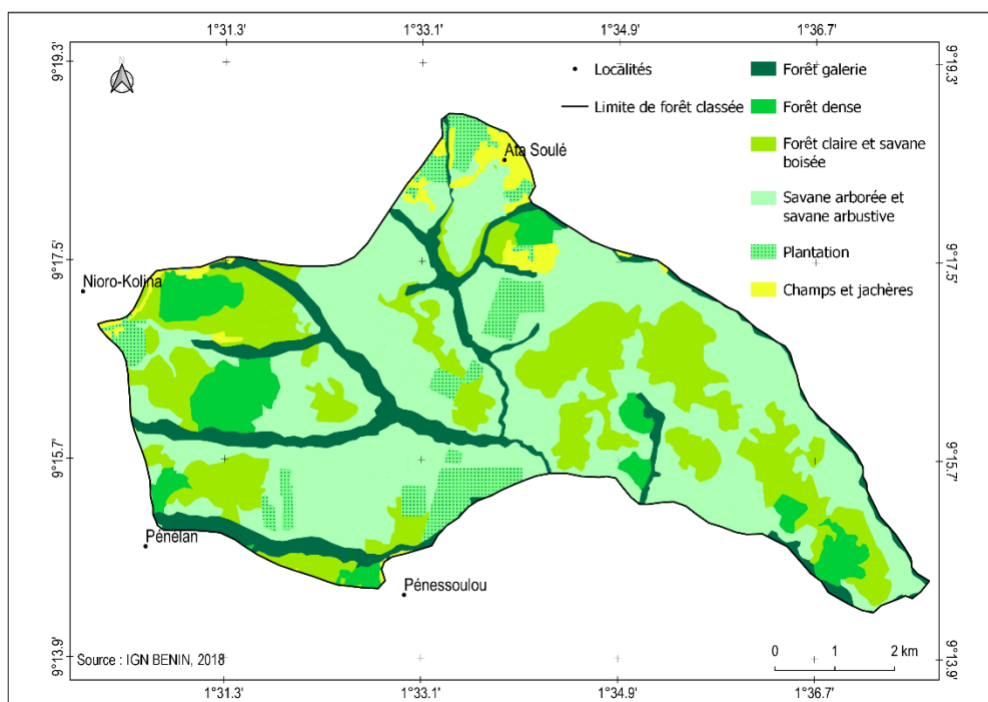


Figure 3: Pénessoulou classified forest in 2018
Source: IGN-Benin (2018)

Socio-economic context

In Benin, a recent survey conducted by INSAE (National Institute of Statistics and Economic Analysis) revealed that the department of Donga, to which the Commune of Bassila belongs, was, between 2015 and 2019, the most affected by the worsening of the monetary poverty index¹ which rose from 36.4% in 2015 to 43.3% in 2019 (INSAE, 2020). During the same period, the non-monetary poverty index² increased from 18.6% to 22.9% (INSAE, 2020). As the majority of the department's population is rural, these INSAE figures corroborate the deterioration of the livelihoods of rural populations, which are mainly based on agriculture, livestock, and the exploitation of non-timber forest products.

In Bassila, more than 80% of the active population works in agriculture, fishing and hunting; trade, catering and accommodation, manufacturing, transport and communication and, building and public works occupy the rest of the population (INSAE, 2013).

¹“To measure income poverty, the standard of living of individuals (annual consumption per capita) is assessed and a poverty line is defined by which each individual is categorized according to his or her position (below or above the line). This approach is analyzed according to the usual indicators that are the incidence, depth and severity of poverty. According to the EHCVM 2019, the overall annual poverty line is estimated at 246,542 FCFA. This threshold is composed of a food component (146,793 FCFA) and a non-food component (99,749 FCFA)” (INSAE, 2020).

²“From a non-monetary point of view, poverty is apprehended through a composite index of living standards. This indicator reflects the general comfort in which households live (housing, possession of durable goods and hygiene).” (INSAE, 2020).

In the neighbouring zones of the classified forests of Bassila and Pénessoulou, crop production activities mobilize 95.7% of households; they are followed by animal production (4.0%) and the other sub-sectors share less than 1% of jobs. Crop and livestock production activities are essentially dependent on the spatial and temporal distribution of rainfall and are therefore exposed to hydro-climatic variations and other extreme weather phenomena. In general, the farms are of the family type with 60% of the cultivated area not exceeding 3 ha (Table 2). These farms fall into two categories: (i) farms without livestock (neither small ruminants nor cattle), and (ii) agro-pastoral farms.

Table 2: **Area of land cultivated during the 2016/2017 season in Bassila**

	<1 ha	1 to 2 ha	2 to 3 ha	3 to 4 ha	4 to 5 ha	5 and more
Bassila	12,0	28,7	19,3	17,3	7,3	15,3

Source : INSAE & PAM, 2017

The main annual crops are maize, yam and cassava, followed by small millet, rice, sweet potatoes, taro, cowpeas, soybeans, voandzou, goussi, sesame, tomatoes, chili pepper, okra, cotton, and tobacco. The exploitation of cashew trees has taken on a particular importance since the 1990s with the boosting of the cashew nut export trade.

Poultry and small ruminants are raised by the majority of the population, while cattle are raised by a minority of Fulani. Cattle breeding by indigenous people is marginal compared to transhumant breeders from the northern region of Benin and neighboring countries who have the largest herds.

The exploitation of wood products from forests (timber, firewood and charcoal) is governed by current national regulations (national forest policy of June 2012; Law No. 98-030 of February 12, 1999 on the framework law on the environment in the Republic of Benin, etc.). The number of loggers in the classified forests of Bassila and Penessoulou is limited because of the investment required for this activity.

Timber is produced in the form of planks, bastings, rafters and boards. The species generally sawn are *Khaya senegalensis*, *Khaya grandifoliola*, *Milicia excelsa*. The exploitation and commercialization of the timber drained to the south of the country constituted a very important source of income for the minority who were in charge of it. These species are practically extinct in the area and now species such as *Isoberlinia sp Diospyros mespiliformis*, and *Anogeissus leiocarpa* are exploited. *Azelia africana* and *Pterocarpus erinaceus* are prohibited from exploitation.

Firewood comes from cleared fields and sometimes from tree and shrub cuts in the savannahs around the villages. The sale of firewood in piles (sometimes in steres) - bound for the South (Bohicon, Cotonou), the North (Djougou, Natitingou) and even Burkina Faso - along the main roads is the activity of the women.

Charcoal is exploited in wood processing units installed in the region since the 1990s. In addition to dead wood, which was exclusively transformed, green wood is currently used more and more because the market is flourishing. The price of a 75 kg to 100 kg bag of charcoal has risen from 400 - 500 CFA francs in 1993 to 2000 CFA francs in 2010 and 3000 CFA francs in 2017. Increasingly perceived as a profitable activity, the manufacture of charcoal induces a strong deforestation that has adverse effects on private forests.

The non-timber products exploited by the local populations of the classified forests of Bassila and Penessoulou are essentially leaves, flowers, fruits, medicinal products, lianas, honey and game.

The roots of *Zanthoxylum zanthoxyloides* have medicinal properties, especially for the mother in labor. They are sought after in the forests and their exploitation would hardly harm the life of the tree. They are exported to urban centers (Cotonou, Djougou).

Saba senegalensis vines are regularly harvested and transformed by women into sponge and sold on local markets and elsewhere (Cotonou in Benin, Sokode and Afem in Togo). The honey, obtained in a traditional way, by treating the bees with smoke in the cavities of tree trunks or in the hives installed in the forest, is sold on the local market and in the South of the country.

Game hunting is part of the habits of the neighbouring populations. It is practiced in all seasons, particularly during the dry season, because the conditions for movement and observation are more favorable during this period. The means used vary from metal jawed traps to rifles. In addition to self-consumption, game constitutes a significant source of income in the household economy.

Processing activities are carried out by women. They involve the fruits of the néré, shea and *Pentadesma* trees, from which néré mustard, black soap, cosmetics, shea butter and *Pentadesma* butter are respectively produced and sold on the local and international markets. Shea, tamarind and oil palm fruits are also sold without processing on the local market and even on the international market for shea.

Women interviewed during the stakeholder consultation (**Annex 1**) for the preparation of this concept note emphasized the difficulties of néré and shea fruits. Indeed, compared to the last thirty years, it is necessary to travel longer distances for a less abundant harvest.

Environmental context

With a natural vegetation cover of 5643.89 km² in 1979 (open forests, islands of dense dry forests, forest galleries, sacred forests, wooded savannahs, tree savannahs, shrub savannahs, and grassy savannahs), i.e., 499.7% afforestation, the Commune of Bassila was found in 1986, 2006, and 2017 with afforestation rates of 90.7%, 86.3%, and 73.2%, respectively (Akondé, 2015;

Commune of Bassila, 2017; Gbedahi *et al.* 2019, DGEFC, 2019 and Figure 4). This strong regression of natural formations (26.5%) in about forty years is justified by the establishment of human settlements (villages and hamlets), the extension of anthropogenic plant formations (plantations, mosaics of crops and fallows), and the adverse effects of climate variability and extreme weather events to which many plant species have not been able to adapt.

According to the same sources, the population of the Commune of Bassila doubled between 2002 and 2017, while the national population increased by barely half. The area of villages and other settlements, and that of fields and fallow land and plantations have increased by 150%, 342% and 528% respectively. As for climate variability, it has manifested itself in the rarefaction, or even disappearance in some places, of species such as *Azelia africana* and *Khaya senegalensis*, which are already on the Red List of the International Union for Conservation of Nature (IUCN) and are critically endangered in Benin.

The regression of natural formations is accompanied by a reduction in the ecosystem services provided by the forests to the local populations.

In order to limit the loss of ecosystem services, the Forest classification bylaws, issued by the colonial administration, limited the use rights of the local populations essentially to the collection of dead wood and the harvesting of fruits and food and medicinal plants. The access of the populations to the forests for other uses was prohibited. It was therefore difficult for these populations to respect the law outside of their vital interests. Thus, the consequences of the anarchic incursions of certain individuals into classified areas were damaging to both the forestry administration and local communities.

This is why Law No. 93-009 of 2 July 1993 on the forest regime in the Republic of Benin instituted the principle of participatory management of classified forests. The implementing decree³ outlines the purpose of it. According to Article 26 of the decree, "sustainable and participatory forest management must, in an integrated manner, make it possible to (i) meet the country's current and future socio-economic, cultural and ecological needs, in the interest and with the assistance of the population, and (ii) ensure the preservation of the environment and the conservation of biological diversity in the long term. Local communities are thus empowered to situate the satisfaction of their current and future needs within a framework that integrates their own interests, the interests of the environment and the interests of the nation as a whole, regardless of the sectors of activity considered: food or cash crops, market gardening, livestock, fishing, beekeeping, processing, etc. In addition to the ecosystem services provided by the classified forests of Bassila and Penessoulou, these communities have access, among other things, to the products of thinning of forest stands. These are the poles from the first two thinnings and the slash from the third thinning, the thinning of trees, and the regeneration cuts. However, in classified forests, practices such as the harvesting of teak leaves in young plantations, the traditional harvesting of honey using fire, and phytosanitary control using pesticides are still subject to safety precautions for plantations, plant stands and animal biodiversity.

³Implementing decree of the law on the forestry regime in the Republic of Benin: Decree n°96-271 of July 2, 1996

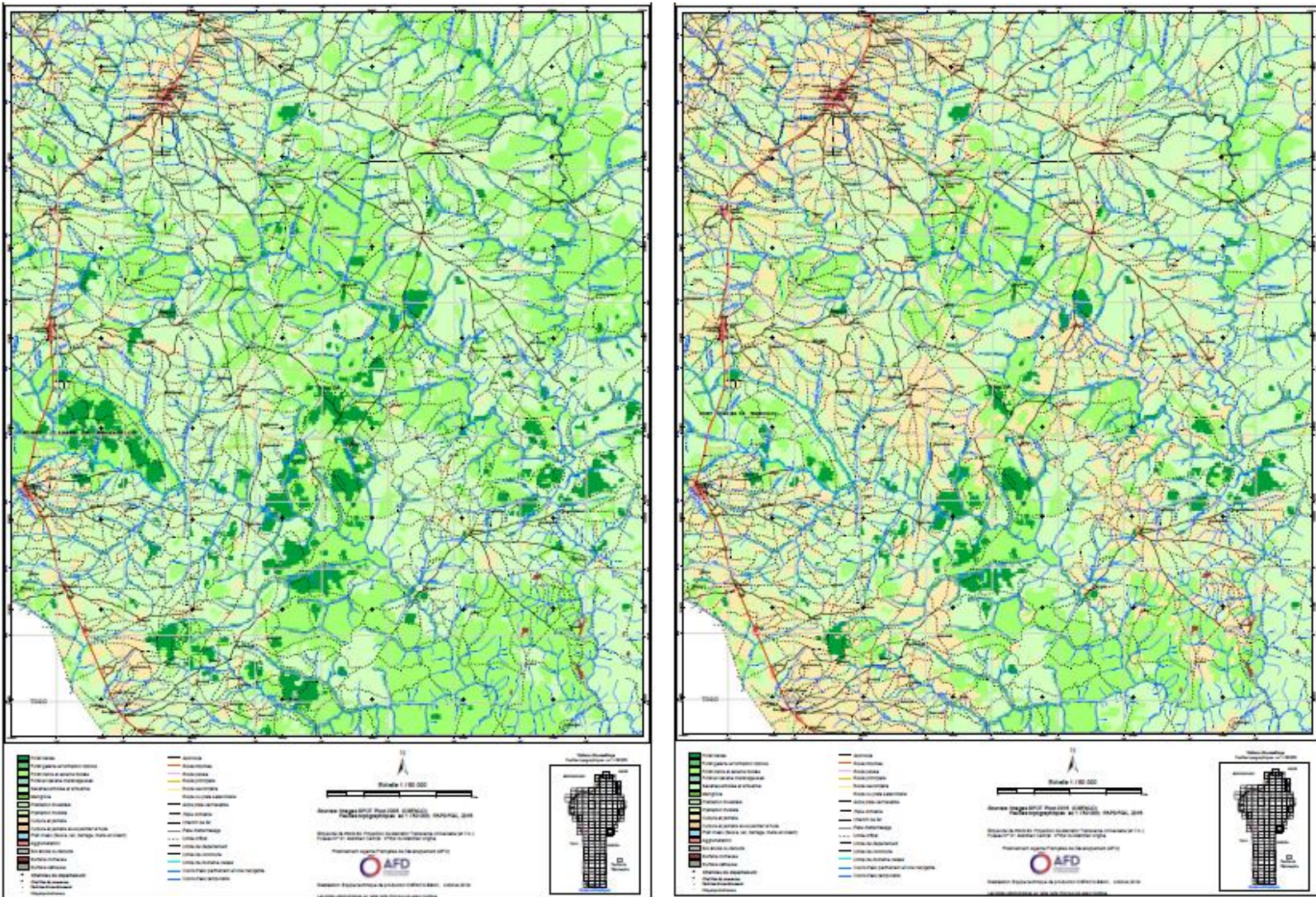


Figure 4 : Land use of the Pénessoulou classified forest between 2005 (left) and 2015 (right).

Source: DGEFC (2019)

Climate change context

Past and current climate variability

As outlined in the **Project Overview** section, Benin-wide efforts have been undertaken to document climate change occurrence, impacts, and adaptation and mitigation efforts.

Benin's climatology over the last 100 years shows a succession of wet (1921-1960), dry (1970-1980), transitional (1990), and a tentative trend towards the rainfall of the wet decades (2000-2010) (Badou et al. 2021). A reduction in the number of rainy days correlated with an increase in the length of pockets of drought and the severity of extreme rainfall has been reported in the literature (TCN, 2019, Agbossou et al. 2012; Obada et al. 2017). Concomitantly, an increase in average temperature of about 1.3°C compared to the 1981-2010 normal is observed (TCN, 2019). In northern Benin, over the period 1970-2010, minimum and maximum temperatures increased by 2.4°C and 1.2°C respectively suggesting a twice as rapid increase in minimum temperatures (Badou et al. 2016) and presaging warmer night temperatures.

The interannual variability of rainfall in the commune of Bassila is similar to that observed at the national level. As shown in the figure below, for the rainfall stations of Bassila and Pénessoulou, with a few exceptions, the wet decades of the 1950s and 1960s were followed by less wet to dry decades.

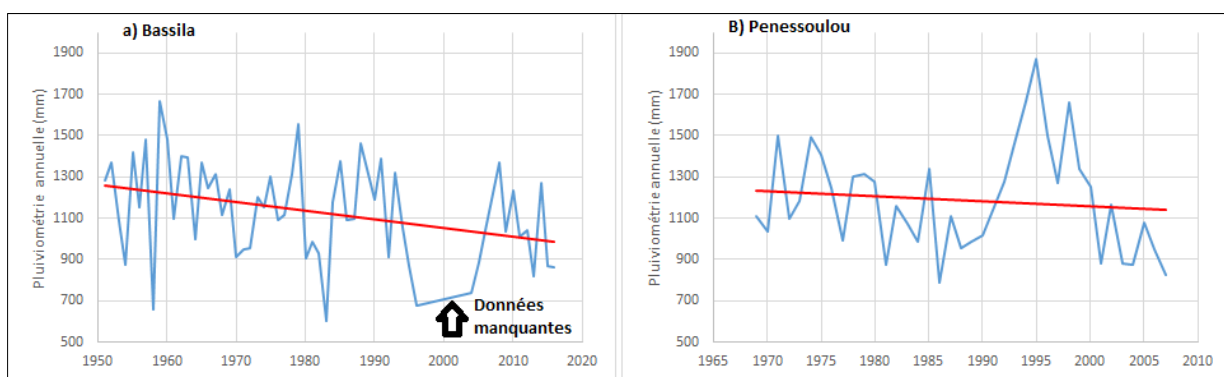


Figure 5: Interannual variability of rainfall at Bassila (a) and Pénoussoulou (b) according to available data. In red, the trend curve.

Source: Agence Méto-Bénin

At the Bassila station (see Table 3), there is a frequent decrease in annual rainfall compared to the 1981-2010 climate normal of up to 250 mm and a less frequent increase in annual rainfall of around 205 mm compared to the climate normal. This suggests frequent droughts in the case of a decrease in rainfall and a few floods in the case of an increase in rainfall.

Table 3 : Annual rainfall deviation from the climatic normal (1981-2010) at Bassila station

Period/Year	1981-2010	2011	2012	2013	2014	2015	2016
Annual rainfall (mm)	1069	1009.1	1040.9	822.2	1273.7	871.5	863.1
Deviation from normal (mm)	-	-59.9	-28.1	-246.8	204.7	-197.5	-205.9

As for temperatures, the synoptic station at Savè (the closest to Bassila, which has only rainfall stations) shows that minimum and maximum temperatures have increased with average amplitude of about 2.5°C.

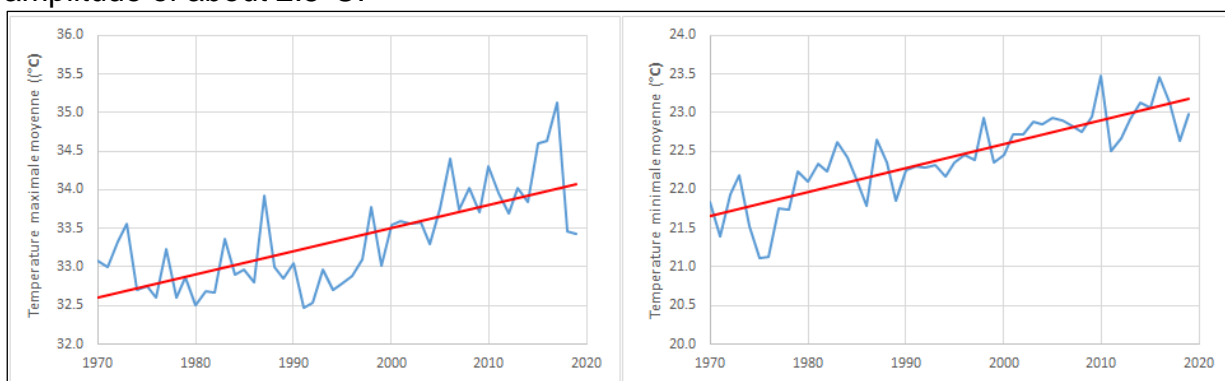


Figure 6 : Interannual variability of maximum (left) and minimum (right) temperatures at the synoptic station of Savè.

Source : Agence Méto-Bénin

Over the last decade, the minimum and maximum temperature departures from the climatic normal (1981-2010) have reached peaks of 0.9 °C and 1.9 °C respectively.

Table 4 : Over the last decade, the minimum and maximum temperature departures from the climatic normal (1981-2010) have reached peaks of 0.9 °C and 1.9 °C respectively.

Period/Year	1981-2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Minimum temperature										
Average min. temperature (°C)	22.5	22.5	22.7	22.9	23.1	23.1	23.5	23.1	22.6	23
Deviation from normal (°C)	-	0	0.1	0.4	0.6	0.5	0.9	0.6	0.1	0.5
Maximum temperature										
Average max. temperature (°C)	33.3	34.0	33.7	34.0	33.8	34.6	34.6	35.1	33.5	33.4
Deviation from normal (°C)	-	0.7	0.4	0.8	0.6	1.3	1.4	1.9	0.2	0.2

Statistical analysis shows that compared to the climate normal, the last decade has seen a frequent decrease in annual rainfall and an increase in average minimum and maximum temperatures.

The perception of climate variability by the populations consulted for this concept note (Annex 1) corroborates the statistical analysis of climate data. Indeed, compared to the last thirty years, for the said populations the last ten years have been marked by the scarcity of rainfall, late rains⁴, increased frequency and severity of heat waves and strong winds.

Effects of past and current climate variability

⁴ «Climate change is the mess of rain» (words of the former Chief of arrondissements of Pénésoulou during the consultation session of stakeholders in Pénésoulou on March 26, 2021)

The vulnerability matrix below (Table 5) summarizes the effects of past and current climate variability as perceived by the neighbouring populations of the Bassila and Penessoulou classified forests. Three hazards are mentioned by the populations: (i) the random onset and cessation of the rainy season associated with an increase in the length of pockets of drought that can reach 3 to 4 weeks even during the wettest months of July and August, (ii) the increase in the frequency and severity of excessive heat, and (iii) the increase in the frequency and severity of violent winds. The effects of these hazards are amplified by the sensitivities of deforestation induced by extensive agriculture, charcoal manufacturing and excessive pesticide use.

Table 5 : Vulnerability Matrix

Climatic variable	Hazards / Population perception	Elements of sensitivity	Direct and indirect impacts
<p>Rarity of rainfall</p> <p>Late rains</p>	<p>Changes in the timing of the rainy season that have become so random that people are confused about planting and harvesting</p> <p>Thirty years ago, people made a clear distinction between the rainy season (June to September or even October and November), the dry season (February to May) and the harmattan period (mid-November to January). Over the past ten years, this calendar has been disrupted, with the rains starting early (now in March or April) and ending early (now in September).</p> <p>Increase in the length of dry pockets (3-4 weeks during the rainiest months of July and August)</p>	<p>Leasing of rural land to individuals or groups of individuals called "agricultural settlers" who clear forests and practice extensive agriculture.</p>	<p>On crop production (soybeans, corn, shea, yams, sorghum, market garden produce, cashew nuts)</p> <ul style="list-style-type: none"> • Disruption of planting and harvesting activities resulting in reduced yields of priority crops • Sorghum: abandonment of sorghum cultivation (high sensitivity to water stress), which was previously sufficiently produced in the commune • Maize: 30-37% decrease in maize production (18 bags/ha previously vs. 11-12 bags/ha today for some producers; 33 bags/ha previously vs. 20-26 bags/ha today for other producers) • Cassava: 60% decrease in the production of cassava used by women who transform cassava into gari (before, 3 feet of cassava allowed them to obtain 2 to 3 bags of gari, whereas today, 3 feet only allow them to obtain 1 bag of gari) Nowadays, 3 feet of cassava only allow to obtain 1 bag of gari) • Cashew: Early rains in March (like the one on March 10, 2021) disrupted the ripening process and were therefore harmful to cashew nuts • Vegetable growing: now only possible on the banks of waterways • Shea: a decrease in harvesting of about 80% (it is now necessary to travel about 10 km to fill 2 bags, whereas previously it was necessary to travel just 1 km to fill 10 bags) • Honey: drop in honey production of about 57% (nowadays a hive produces 5-10 L against 15-20 L before) • This drop in yield forces the population to storm the surrounding forests.
<p>Temperature</p>	<p>Increased frequency and severity of excessive heat (heat wave)</p> <p>Thirty years ago, the heat peak covered the period of March-May, but, for the last ten years, already in February the heat peaks are reached)</p> <p>It is felt 12 months out of 12 even during the harmattan (cool but dry wind) which was previously associated with high minimum temperatures</p> <p>Only March was the month of excessive heat</p> <p>Previously, the months of December to February were the harmattan period with intensive cold. This is no longer the case today</p>		<p>On crop production and forest resources</p> <ul style="list-style-type: none"> • Increased evapotranspiration and water needs of crops which are not met leading to a continuous decrease in yields forcing populations to storm the surrounding forests • Exacerbation of vegetation fires (in terms of damage and area) • Greater difficulty in controlling the spread of wildfires <p>On animal production</p> <ul style="list-style-type: none"> • Increased evapotranspiration and water needs of animals forcing pastoralists to drive their herds to the forests • Decreased laying capacity of guinea fowl due to excessive heat and poor watering
<p>Strong winds</p>	<p>Strong winds/ Increased frequency and severity of strong winds)</p> <p>In the past, strong winds were cyclical (3 to 5 years and at the beginning of the season); today they are more regular and violent due to the regression of the vegetation cover which plays a role of windbreak.</p>	<p>Pesticide Use; deforestation</p>	<ul style="list-style-type: none"> • Fall of mahogany flowers and unripe nuts leading to a decrease in cashew harvesting. Despite plant improvement, the yield today is only 500-600 kg/ha compared to 390 kg/ha before. As a comparison, (before) and today. () in Ivory Coast, nowadays, the yield is about 1200 kg/ha. • Negatively impacts the flowering process and, in turn, the possibility for bees to produce honey • More pronounced uprooting and destruction of crops

As indicated in the last column of Table 5, people's livelihoods (crop and livestock production, processing activities) are severely impacted. These results of the stakeholder consultation are in line with those of the 3rd generation Commune Development Plan of Bassila according to which the agricultural sector is the most vulnerable to the effects of climate change followed by wetlands (rivers, water bodies and lowlands), forests and finally human settlements and health (Commune of Bassila, 2017). Also, agricultural statistics from the Departmental Directorate of Agriculture and Livestock (DDAEP) corroborate the decline in food crop yields noted by the populations consulted (Figure 7 and Annex 2). Indeed, as shown in Figure 7, the increase in plantings (Fig. 7.a) has not been translated into an equivalent increase in production (Fig. 7.b), which translates into a decrease in yield or, in some cases, a stagnation of yield (Fig. 7.c).

Since the agricultural sector occupies the vast majority of the populations surrounding the classified forests of Bassila and Pénessoulou, climate change, by negatively impacting the livelihoods of the populations, is therefore a major factor in the disruption of the balance between the satisfaction of the essential needs of the surrounding communities and the standards of sustainability of forest resources. This disruption could worsen in the coming decades depending on future climate variability.

Future climate variability

In general, compared to the normal period 1981-2010, climate models project a delay in the onset of the rainy season and an early end to the season, as well as an increase in monthly rainfall during the rainy season, under the RCP2.6, RCP4.5 and RCP8.5 scenarios by 2030, 2050, 2070 and 2080 (Figure 8). Under the same conditions, the projected monthly temperatures show an almost continuous increase in maximum temperatures at the same horizons and a smaller decrease in minimum temperatures, except for the pessimistic scenario RCP8.5 where an increase in minimum temperatures is also projected (Figures 9 and 10).

With regard to precipitation, the outputs of the CCCMA-CANESM2 and CSIRO-mk3.6.0 models⁵, used in the framework of Benin's Third National Communication on Climate Change, give a good qualitative indication in the Bassila and Penessoulou arrondissements (Figure 8). Due to the still weak capacities of the CMIP5 and CMIP6 models to reproduce the characteristics of the West African monsoon, the uncertainties on the projected precipitation in West Africa are still too high to draw quantitative conclusions, as the actual values can be between -40% and +80% of the values produced by the models (Flato *et al.*, 2013 ; Deme *et al.*, 2015 ; WMO, 2018). The same is true at the national level.

⁵ Projections are the average of the cccma-canesm2 and CSIRO-mk3.6.0 model outputs.

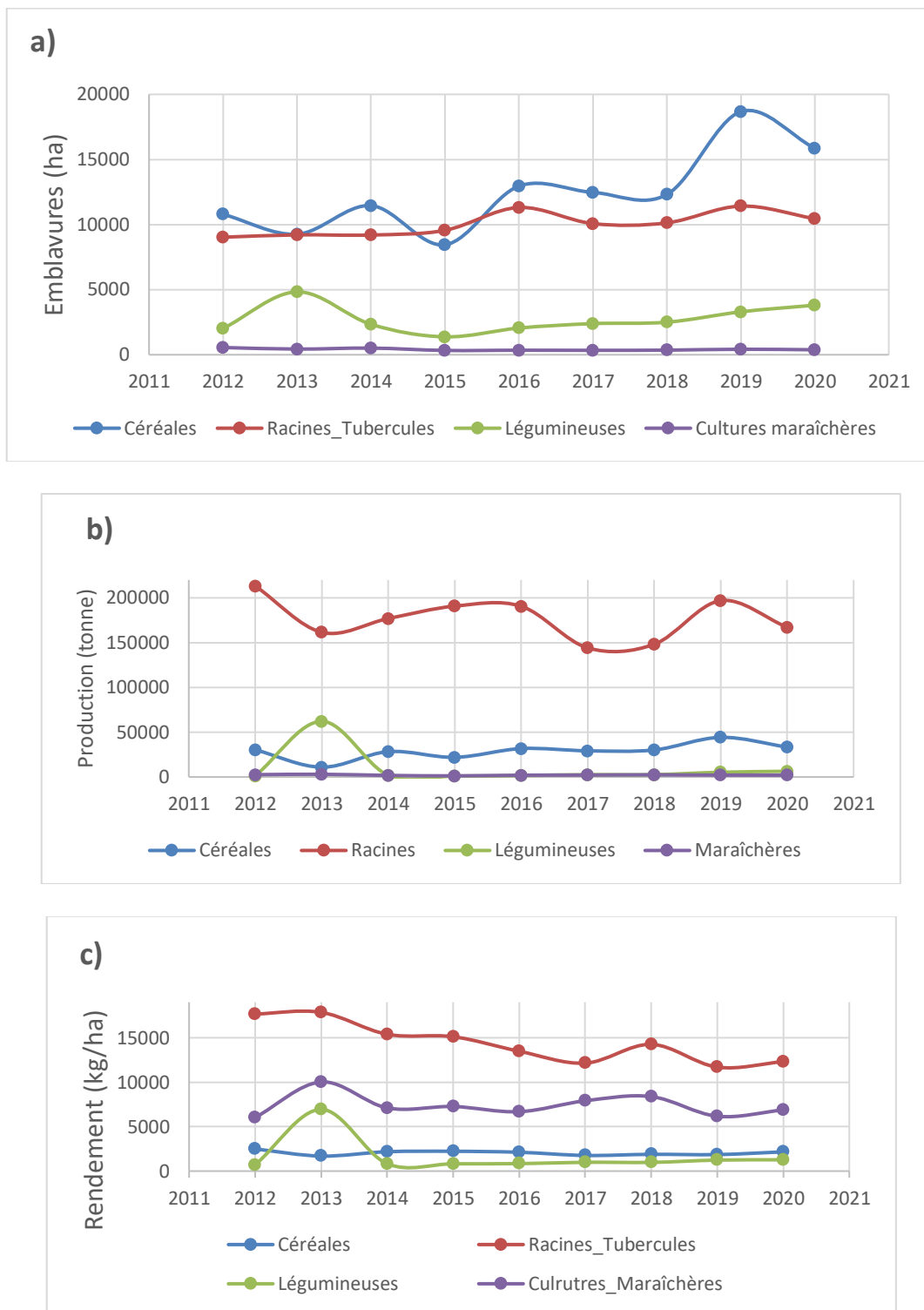


Figure 7 : Changes in areas planted (a), production (b) and yield (c) of food crops in the commune of Bassila between 2011 and 2020

Source: Commune of Bassila (2017)
DDAEP/Atacora, Natitingou data (2021)

Indeed, under the reference climate scenarios RCP2.6, RCP4.5, RCP8.5 and the socio-economic scenarios SSP1 and SSP2, the climate projections carried out in Benin by means of the CSIRO and CCCMA climate models reveal, for the different exposure units considered (agro-ecological zones, watersheds, tourist zones, health zones, etc.), annual rainfall amounts that show an overall downward trend by 2050 and an upward trend in the more distant future, except under the RCP4.5 scenario, where the two (2) scenarios show an upward trend.), annual rainfall heights show an overall downward trend by 2050 and an upward trend in the more distant future, except under the RCP4.5 scenario, where the two (2) models show the opposite situation and in some cases where CCCMA shows a trend that is the opposite of that of CSIRO (MCVDD, 2019, 2021; MAEP and GIZ, 2020). The singularity of the RCP4.5 scenario is further demonstrated in the framework of the GIZ PAS-PNA project where Akponikpè et al. (2019) established that, globally in Bassila, annual rainfall would experience an upward trend of around 1 to 20%, while a downward trend of around 1 to 5% is possible⁶.

Regarding the future changes in annual precipitation in the project area, the national consensus based on the three climate scenarios RCP2.6, RCP4.5 and RCP8.5 and the two socio-economic scenarios SSP1 and SSP2 is the continuation of the current downward trend until the 2050s followed by an increase that could continue until 2100 (MCVDD, 2019, 2021).

⁶ Among the four regional climate models that were used in the study, three (REMO/MPIESM, RCA4/IPSL, and RACMO22 T/ECEARTH) indicate an increasing trend while only one (CCLM4.8/HADGEM2) indicates a decreasing trend of 1 to 5% in annual rainfall.

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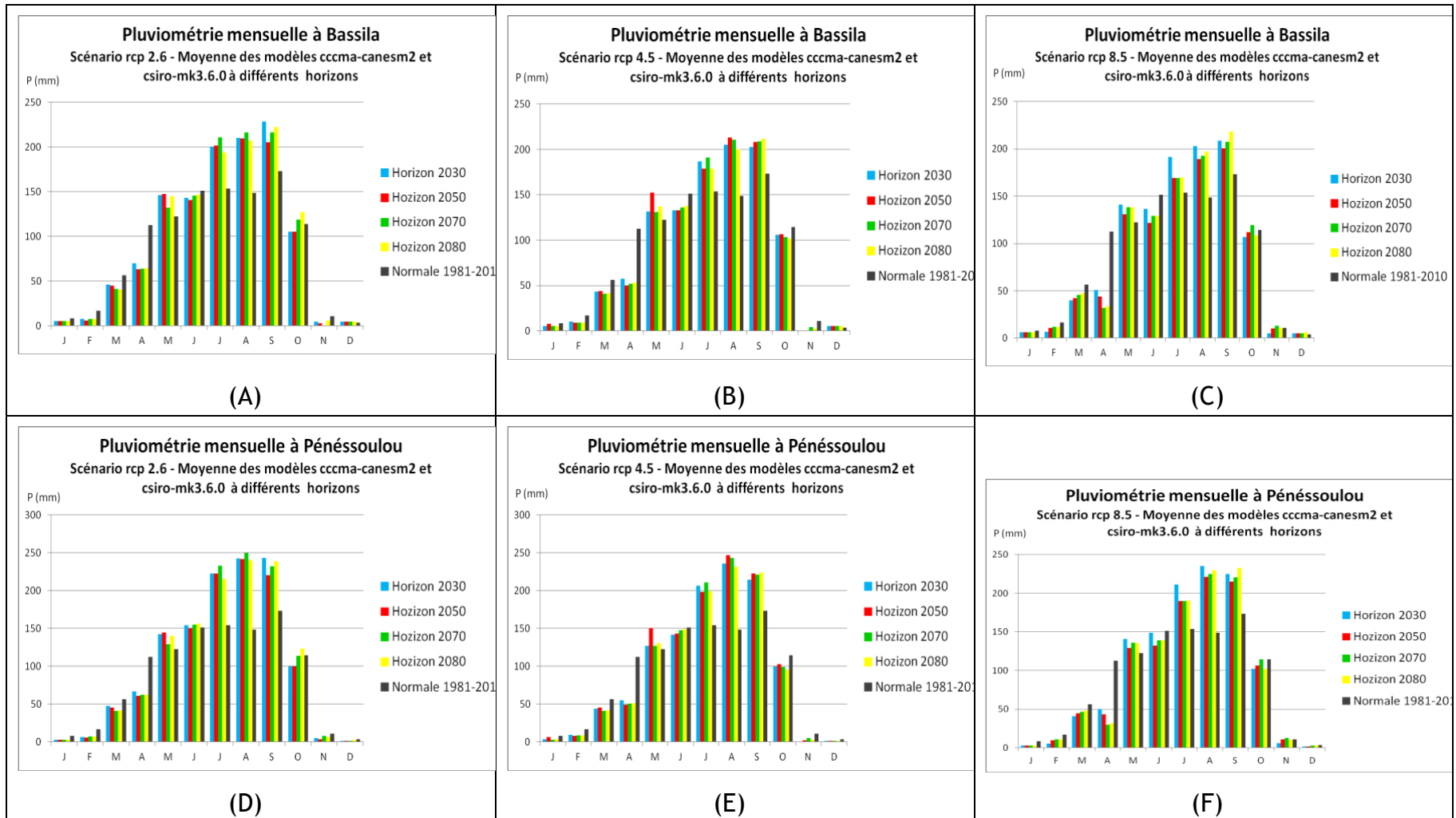


Figure 8 : Monthly rainfall of the climate normal (1981-2010) and average rainfall projections from the CCCma-canESM2 and CSIRO Mk3 6.0 climate models under the *RCP.2.6*, *RCP.4.5* and *RCP.8.5* scenarios at Bassila and Pénésoulou.

As for temperatures, the upward trend observed over the past decades could continue in the future, in this case for maximum temperatures as shown in Figures 9 and 10. Departures from normal could reach a minimum of 1°C and 2.5°C respectively for the months of August and January.

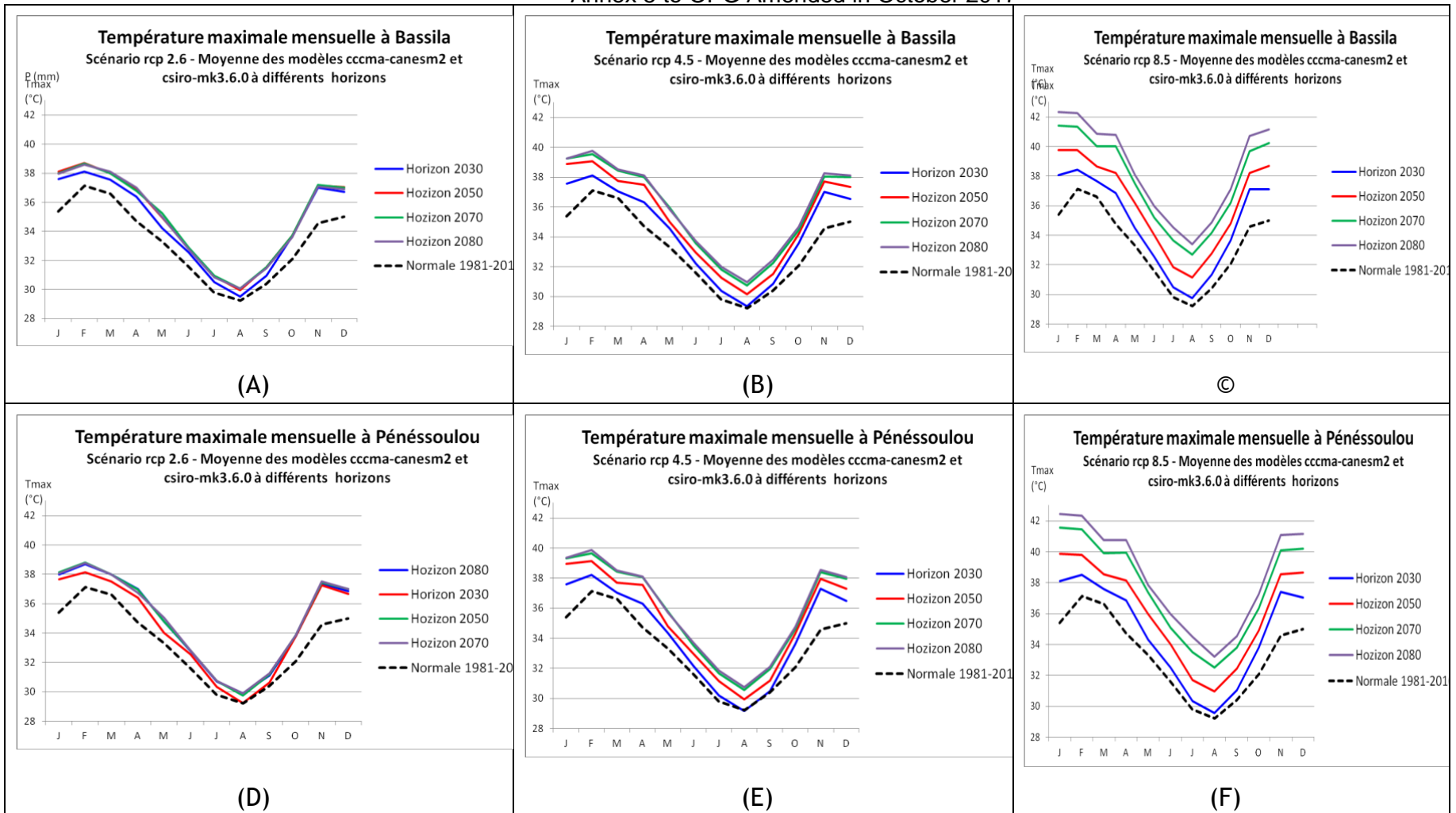


Figure 9 : Monthly maximum temperature of the climate normal (1981-2010) and average monthly maximum temperature according to the CCCma-canESM2 and CSIRO Mk3 6.0 climate models under the RCP.2.6, RCP.4.5 and RCP.8.5 scenarios at Bassila and Pénésoulou

The analysis of future climate variability therefore indicates a future trend of increasing precipitation and minimum and maximum temperatures.

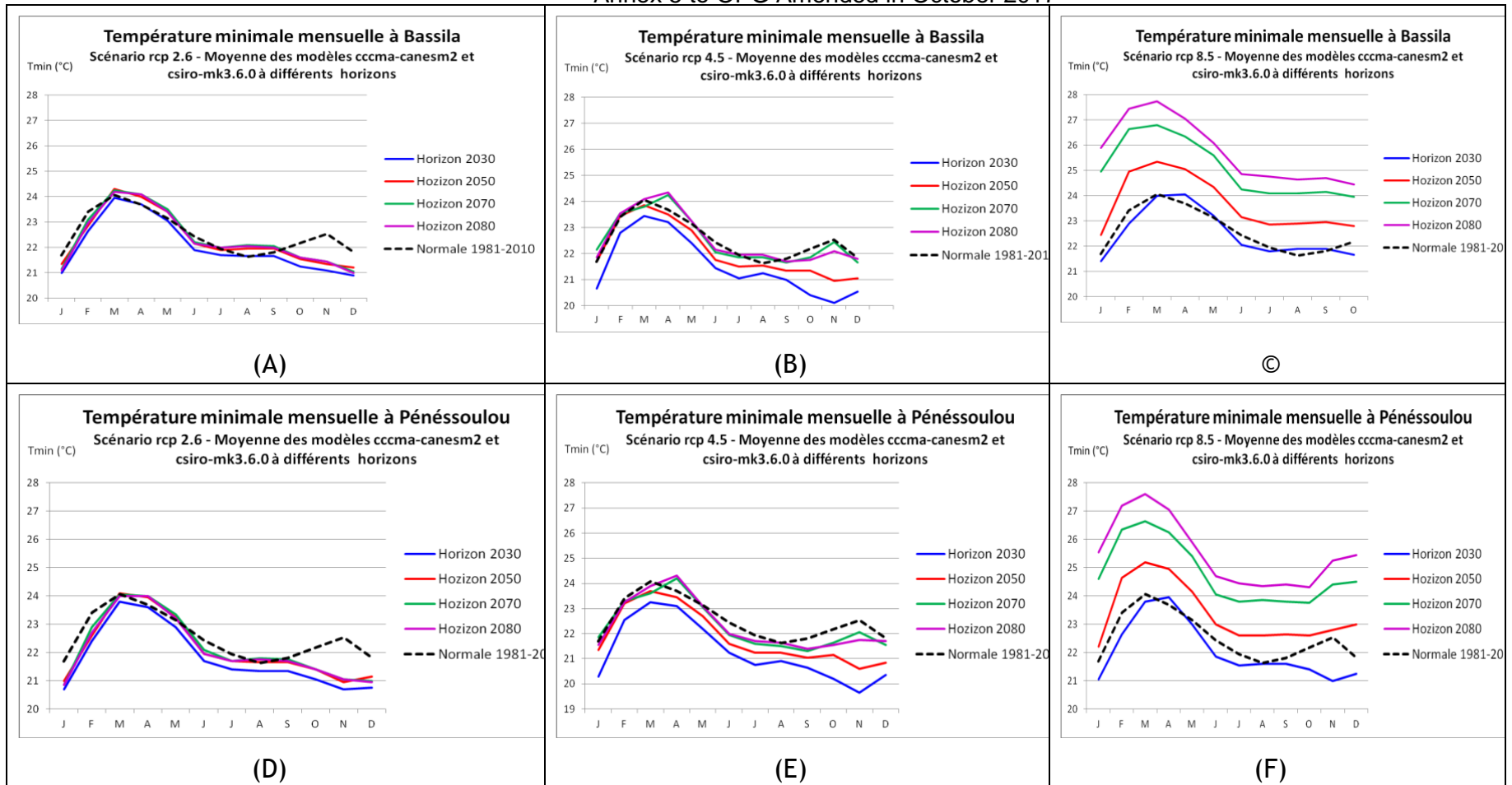


Figure 10 : Monthly minimum temperature of the climate normal (1981-2010) and average monthly minimum temperatures according to the CCCma-canESM2 and CSIRO Mk3 6.0 climate models under the RCP.2.6, RCP.4.5 and RCP.8.5 scenarios at Bassila and Pénessoulou

Effects of future climate variability

While the general trend in annual rainfall has been downward in Bassila Centre and Pénessoulou arrondissements since the 1960s (Figure 5), the monthly rainfall projections show a systematic upward trend by 2030, 2050, 2070 and 2080 during the main months of the rainy season (May to September). Although projected rainfall is lower in March-April and October-November, reflecting the delayed rainy season, its early ending and the shortening of the

rainy season, a phenomenon already observed by the populations (Table 5), we are led to note the break in the trends of observed and projected rainfall. According to Roehrig et al. 2013 and Deme et al. 2015, this could only be due to the biases caused by the uncertainties common to all CMIP5 models that guided the 5th IPCC report in modeling the West African monsoon and that limit the quality of projected rainfall. It is therefore difficult to rely directly on these projections to anticipate climate change and its impacts on rainfall in West Africa.

A recent study of the vulnerability of the agricultural sector to CC in Development Pole 4 (PDA4)⁷ which includes the commune of Bassila, showed that production of most crops would increase in the future, with the exception of groundnuts, soybeans, and cowpeas, for which production could decline (Table 6).

Table 6 : Effects of climate change on the production trend of selected crops in the future (2050 time horizon) compared to the 2011-2015 period. The signs +, - and ± mean an increasing, decreasing and mixed trend respectively.

Crop	maize	sorghum	millet	rice	groundnut
Projected production trend	+	+	+	±	-
Crop	Soybeans	cowpeas	yams	cassava	sweet potatoes
Projected production trend	-	-	±	+	+

Source : Akponikpè *et al.* 2019

Apart from the outputs of climate models dealing with slow weather phenomena, with high uncertainties on projected precipitation and its effects, natural systems and human activities such as agriculture are essentially vulnerable to extreme climatological phenomena and variations in precipitation and temperature during the active vegetation period (MEPN, 2008; IPCC, 2014).

The projected increase in temperature, in this case maximum temperatures (of the order of 2.5°C), combined with an increase in the frequency of strong winds (see Table 5 of the vulnerability matrix) will induce an increase in evapotranspiration and, in turn, an increase in the water requirements of crops and livestock that could cancel out the effects that would be expected from the increase in rainfall. In other words, the increase in water needs of crops and livestock (induced by the increase in temperature) may not be compensated for by the increase in rainfall, especially in the case of poor distribution as indicated by the populations (see Table 5 of the vulnerability matrix).

On the scale of the commune of Bassila, future climate variability will affect approximately 512,162⁸ people, essentially consisting of farmers, herders, beekeepers, nurserymen and women who process agricultural products (shea butter, cassava, soybeans, etc.) by 2050. Indeed, the activities of more than 90% of the population are dependent on the climate (rain in particular). In spite of the forecast increase in rainfall, increase in temperature could exacerbate the already difficult situation of people living near the classified forests of Bassila and Penessoulou and lead to food insecurity, provided that measures are taken to build their resilience.

⁷ PDA4 includes the departments of South Borgou, Donga and Collines

⁸ Figure determined by projecting the 2013 population (latest census in Benin) to 2050. In 2013, Bassila had 130,091 inhabitants with a growth rate of 3.96 (RGPH4). It is assumed that 90% of this population is engaged in a climate-sensitive activity.

Project targets and beneficiaries

The populations of Bassila are already experiencing the consequences of CC. Climate projections indicate that in a context of population growth⁹, the situation could worsen in the future. This project aiming at building the resilience of the populations living in the classified forests of Bassila and Penessoulou will have direct and indirect positive impacts. By making people's livelihoods resilient to CC, the entire local and regional economy will be positively impacted. The same is true for the pressure on the forest massifs, which will be significantly reduced thanks to the National Environment and Climate Fund (FNEC), which supports initiatives related to environmental protection and CC in Benin; for the benefit of the National Timber Office (ONAB), which is in charge of the management of the classified forests of Bassila and Penessoulou, and the General Directorate of Water, Forests and Hunting (DGEFC). Similarly, non-governmental organizations (NGOs)¹⁰ operating in the two arrondissements in the area of environmental protection and sustainable management of natural resources and involved in adaptation to CC will be indirect beneficiaries. Direct beneficiaries will be community-based organizations such as:

- the Participatory Forest Management Committees (COGEPAF) of the Bassila and Pénessoulou arrondissements,
- Food crop producers, including market gardeners in the two arrondissements;
- the Village Cashew Nut Producers' Cooperative (CVPA) of Pénessoulou
- Groups processing cassava into gari and derivatives;
- Groups of shea nut collectors;
- Groups processing shea nuts into butter;
- Groups of producers of plants and seeds (nurserymen);
- the Association of Beekeepers of the two arrondissements;
- the collectors of medicinal plants in the two arrondissements;
- the association of breeders including hut breeders¹¹
- the association of hunters of the two arrondissements.

It should be noted that the beneficiary community organizations will be able to share the lessons learned from this project with community organizations in the other two arrondissements of Bassila (Manigri and Alédjo) and beyond.

Specifically, the project actions that will impact the beneficiaries include:

- 1) capacity building of the most vulnerable small-scale farmers (farmer, breeder, fish farmer, beekeeper) on good practices of adaptation to CC;
- 2) development of value-added chains of the sectors to improve and diversify the sources of income of the most vulnerable communities;
- 3) reinforcing the local governance and management framework for adaptation to CC.

The project is therefore structured around three components or three major phases.

⁹ With a natural growth rate of 3.96% in 2013 (RGPH4), the population of Bassila will quadruple by 2050.

¹⁰ This is the case of Alpha et Omega Environnement, Centre International d'Ecodéveloppement Intégré (CECODI), Association de Gestion Durable des Ressources Naturelles (AGEDREN), Association pour la Protection des Forêts Naturelles du Bénin (APROFONB - BENIN).

¹¹ « Hut breeders are categories of breeders who buy young ruminants (cattle, sheep, goats), fatten them for a time in pens to resell them » (PDC, 2017).

Phase 1: By negatively impacting the livelihoods of small farmers, CC is an additional constraint in the fight against poverty and calls for urgent actions to reverse the situation. The planned activities will impact approximately 1000 people at a rate of 500 per arrondissement:

- Producer groups: training/retraining on measures to adapt the agricultural sector to CC, in particular Climate Smart Agriculture (staggered and repeated sowing, use of short-cycle varieties; modification of the order of sowing), water and soil conservation techniques (stone barriers, half-moons, dikes, zai) and integrated water resource management to limit conflicts of use of the reservoir (see above) and limit pollution;
- Producer groups (including market gardeners): Provision/support of equipment and materials (irrigation kits, small tools, bags of compost, etc.) for the implementation of good practices for adaptation to CC ;
- Producer groups: reinforcing their supervision for the monitoring of technical itineraries and the adoption of SAP (Improved Production System) practices,
- Vegetable farmers, livestock breeders, women's groups that process agricultural products: construction of a water reservoir with market garden development to take advantage of the projected increase in rainfall, to buffer flooding, and to build up the storage necessary to compensate for irregular rainfall. On the basis of criteria defined during the consultation of the populations (proximity of the forest, presence of a stream or river to ensure the filling of the reservoir, and existence of a group of market gardeners), several sites are eligible. The final choice will be made during the project document development phase;
- Nurseries, seed growers and producers of food products: the establishment of a mechanism for revolving seeds and plants adapted to CC (corn, cassava, soybeans and market gardening). The two arrondissements have associations and individuals in the field of seedling and seed multiplication.

Phase 2 : The development of value-added chains of the sectors aims at improving and diversifying the sources of income of two thousand people from the most vulnerable communities through:

- Supporting producers in the creation of innovation platforms for the maize, cassava, soybean, market gardening and cashew nut sectors in collaboration with the Bassila Town Hall;
- training members of beekeeping groups and independent beekeepers in the two arrondissements on modern beekeeping techniques that respect the environment;
- providing beekeeping groups with kits (Kenyan hives, protective suits, etc.) to boost honey production in the two arrondissements
- Support for the promotion of the shea butter sector for the benefit of women's processing groups (structuring of groups, increase in the capacity to collect shea nuts, and provision of tricycles and semi-industrial units to increase collection and processing capacity).

Phase 3: Reinforcing the local governance and management framework for adaptation to CC has a dual purpose. First, it allows the sustainability of the achievements of this project. Second, the project's achievements can be capitalized on for other projects and with other actors and stakeholders on other themes and for other localities in the commune. This phase, which will have an impact on approximately 100 people, will include:

- training communal actors on CC-agriculture-forestry issues. In order not to repeat what is already known, such training will be tailored and based on the training needs expressed by the beneficiaries themselves;
- integrating gender approach into CC adaptation at the local level;
- developing a guide for the implementation of adaptation to CC for the benefit of actors and rural populations living near classified forests;
- raising awareness among teachers, schoolchildren, opinion leaders and community radio hosts on good practices for adaptation to CC;
- setting up or improving the community early warning system with the aim of periodically disseminating climate information and preparing for action in the event of floods or prolonged droughts;
- promoting communal, community and private forests as an adaptation measure to the projected increase in rainfall to limit flooding.

Project/programme Objectives:

This project is in line with the objective of the Adaptation Fund «to reduce vulnerability and increase adaptive capacity to respond to the impacts of CC, including variability at the local and national levels». It is also part of the achievement of the vision of the Bassila Town Hall, one of whose major axes for period 2018-2022 and beyond is the «Reduction of the effects of CC and the strong pressure on natural resources».

Indeed, the project aims to build resilience of the local populations of the classified forests of Bassila and Penessoulou whose livelihoods continue to deteriorate significantly due to CC and despite existing endogenous methods of adaptation.

By directing solutions to both producer groups directly impacted by CC and communal agents, integrating both CC adaptation techniques at the farm level and CC adaptation governance at the communal level, the project aims to contribute to solving the problem in its entirety.

The project proposes concrete solutions tailored to the various actors and groups concerned (producers, beekeepers, processors, etc.).

For example, in response to the projected increase in rainfall combined with the irregularity of rainfall and the increase in temperature, it is proposed that rainwater be stored and that water and soil conservation techniques be used to cope with pockets of drought. In doing so, the specific objectives of the project are worded as follows:

- 1) building the capacity of the most vulnerable small farmers on good practices for adaptation to CC;
- 2) reinforcing the local governance and management framework for adaptation to CC.

Project components and financing:

The project for building the resilience of the local populations of the sacred forests of Bassila and Pénessoulou is organized around three components, namely:

- capacity building of the most vulnerable farmers on good practices of adaptation to CC (Component 1),

- development of value-added chains (VACs) in promising sectors in order to diversify the sources of income of the most vulnerable communities
- reinforcement of local governance and management frameworks for adaptation to CC (Component 3).

Table 7 below presents these components, the related results, outputs and budget.

Table 7 : Project components

Project components	Expected results	Expected outputs	Activities	Amount (in Us dollars)
1. Component 1 : Capacity building of the most vulnerable small farmers on good CC adaptation practices	Result 1.1: On-Farm Resilience is built through the adoption of water and soil conservation and land restoration techniques	Output 1.1.1: Farmers are trained on water and soil conservation and land restoration techniques	Activity 1.1.1.1: Identify among the small farms along the Bassila and Pénessoulou classified forests those whose state of degradation of water, soil and land justifies the training of farmers on techniques for the conservation, improvement and restoration of these resources. Some farms could be used as training fields	1,300,000
			Activity 1.1.1.2: Provide tailored training modules on water, soil and land conservation and restoration techniques and other relevant techniques. These trainings will be mostly practical and will be conducted on selected training fields in the two arrondissements.	
			Activity 1.1.1.3: Follow up on the application of good practices by the beneficiaries during the implementation of the project	
		Output 1.1.2 The technical itineraries and practices of the improved production system (SAP) are adopted by the farmers.	Activity 1.1.2.1: Identify with the neighbouring farmers of the classified forests of Bassila and Pénessoulou the technical itineraries and practices of the improved production system (SAP) that are technically feasible, economically profitable and socially acceptable on their farms. Identify the farms that can serve as training fields for specific technical itineraries.	
			Activity 1.1.2.2: Provide tailored training modules on technical itineraries and improved production system practices. The training will take place on selected fields in the two arrondissements	
			Activity 1.1.2.3: Monitor the application of good SAP practices by the most vulnerable farmers.	

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Project components	Expected results	Expected outputs	Activities	Amount (in Us dollars)
		Output 1.1.3 : The material capacities of producers are built through support for various equipment (small tools, personal protective equipment, composting bags, sprayers, etc.)	Activity 1.1.3.1: Identify with stakeholders (selected from the two arrondissements) the specific material needs of the organized groups.	
			Activity 1.1.3.2: Provide equipment to groups of farmers and train them in its use when necessary.	
	Result 1.2 : Water resources are managed in an integrated manner for the benefit of farmers	Output 1.2.1: Improved stormwater storage capacity through the construction of a water reservoir for the benefit of farmers in each arrondissement.	Activity 1.2.1.1: Organize consultations with water users (market gardeners, livestock breeders, fish farmers, households, etc.) to specify the modalities for joint use of the water reservoirs.	
			Activity 1.2.1.2: Construct water reservoirs	
		Output 1.2.2: Market gardening developments are carried out in the vicinity of the water reservoirs for the areas allocated to market gardening.	Activity 1.2.2.1: Organize a consultation with market gardeners to specify the locations suitable for their specific activities on sites shared with other users	
			Activity 1.2.1.2: Develop the areas allocated to market gardening for market gardeners	
		Output 1.2.3: Farmers are trained on good integrated water resources management (IWRM) practices and on how to manage water use conflicts	Activity 1.2.3.1: Organize consultations (focus groups, interviews) with stakeholders (selected at the level of the two arrondissements) on local water resource management practices, water use conflicts and ways to improve practices or reduce conflicts.	
			Activity 1.2.3.2: Provide tailored training modules on integrated water resources management (IWRM) best practices and water use conflicts.	
			Activity 1.2.3.3: Monitor farmers' adoption of integrated water resources management (IWRM) best practices and water use conflict management.	

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Project components	Expected results	Expected outputs	Activities	Amount (in Us dollars)
	Result 1.3: Climate-resilient seeds and plants are available on time	Output 1.3.1: Setting up a mechanism for the revolving of seeds and plants adapted to climate change (maize, cassava, soya and market gardening).	Activity 1.3.1.1: Organize nurseries into seed and seedling chains corresponding to the needs of the farms bordering the forest areas. Activity 1.3.1.2: Organize the production of seeds and plants adapted to climate change according to the campaign plans of the neighbouring communities (corn, cassava, soybeans and market gardening).	
		Output 1.3.2: The mechanism for supplying seeds and plants to producers is operational.	Activity 1.3.2.1: Define with stakeholders (Town Hall, ATDA, and farmers) the mechanisms for making seeds available to farmers Activity 1.3.2.2: Organize the supply of seeds and plants to farmers on time.	
2. Component 2 : Development of value-added chains (VACs) in promising sectors in order to diversify the sources of income of the most vulnerable communities	Result 2.1: Sources of income of the local populations are diversified through the promotion of corn, soya, cassava and market gardening	Output 2.1.1: Producer groups are better structured and are committed to the maize, soybean, cassava and market gardening VACs	Activity 2.1.1.1 : Organize consultations (focus groups, interviews) with producers in the corn, soybean, cassava, cashew and market gardening sectors to identify groups and their operating methods Activity 2.1.1.2 : Support the creation of a platform bringing together the various groups and equipped with an operating plan for the groups proposed by them, which will promote better management of the VACs of maize, soybean, cassava, cashew and market garden crops sectors.	420,000 -
		Output 2.1.2: The management mechanism of the innovation platforms of the maize, cassava, soybean, cashew nut and market gardening sectors are in place and operational.	Activity 2.1.2.1: Define and validate by the stakeholders the management mechanism of the innovation platforms of the VACs of maize, cassava, soybean, market garden and cashew nuts, and ensure their coordination. Activity 2.1.2.2: Monitor the running of the innovation platforms of the VAC of maize, cassava, soya, market garden and cashew nuts sectors	

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Project components	Expected results	Expected outputs	Activities	Amount (in Us dollars)
	Result 2.2 : Sources of income of the local populations are diversified through the promotion of the beekeeping sector	Output 2.2.1 Modern beekeeping techniques are mastered by beekeeping groups in both arrondissements	Activity 2.2.1.1: Organize consultations (focus groups, interviews) with beekeepers (selected at the level of the two arrondissements) on local beekeeping techniques used by beekeepers living in the classified forests of Bassila and Penessoulou	
			Activity 2.2.1.2 : Provide training modules tailored to modern beekeeping techniques that respect the environment. Relay beekeepers will be trained for a duplication of the training to other beekeepers	
			Activity 2.2.1.3 : Follow up on the beekeepers' adoption of the taught modern beekeeping techniques	
		Output 2.2.2 : Increase honey harvesting capacity for beekeepers through the acquisition of kits	Activity 2.2.2 1: Organize consultations (focus groups, interviews) with beekeepers (selected at the level of the two arrondissements) to define the needs of the groups in beekeeping kits (Kenyan hive, protective suit, and other equipment).)	
			Activity 2.2.2.2 : Make beekeeping kits available to beekeeping groups and independent beekeepers	
			Activity 2.2.2.3 : Install honey factories for honey refinement	
	Result 2.3 : Sources of income of local women's groups are diversified through the promotion of the shea butter industry	Output 2.3.1 : Women producers' groups are better structured and are committed to the shea butter VACs	Activity 2.3.1.1: Organize consultations (focus groups, interviews) with women shea butter producers to identify groups and their operating methods	
Activity 2.3.1.2 : Create a platform that brings together the various groups and propose a mode of operation for the groups to better manage the shea butter VACs				
Output 2.3.2 : The material capacities of women's groups are built for the collection and processing of shea		Activity 2.3.2.1: Organize consultations with women shea butter producers to define the needs of the groups for materials and equipment for collecting and processing shea butter.		

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Project components	Expected results	Expected outputs	Activities	Amount (in Us dollars)
		butter through the acquisition of tricycles and semi-industrial shea butter production units.	Activity 2.3.2.2 : Make tricycles and semi-processing units available to groups of women producers to increase their capacity to collect and process shea	
3. Component 3 : Reinforcing the local governance and management framework for CC adaptation	Result 3.1 : The local governance and CC adaptation framework is operational	Output 3.1.1--: Communal actors are trained on the adaptation of the agriculture and forestry sectors to CC	Activity 3.1.1.1 : Identify the training needs of communal agents on the adaptation of the agriculture and forestry sectors to CC. The training could be extended to the NGO partners of Bassila town Hall working in the fields of natural resource protection and CC.	750,000
			Activity 3.1.1.2 : Provide tailored training modules on adapting the agriculture and forestry sectors to CC	
		Output 3.1.2 The guide for the coordination of the local governance and adaptation to CC framework is validated and used by communal actors and communities bordering the classified forests of Bassila and Pénessoulou	Activity 3.1.2.1 : Organize consultations for the capitalization of good practices and lessons learned from this project.	
			Activity 3.1.2.2 : Develop a guide for the coordination of the local governance and CC adaptation framework and have it validated by the stakeholders	
			Activity 3.1.2.3 : Ensure the dissemination of the guide. The guide can be published on the website of the National Association of Benin Communes (ANCB).	
		Output 3.1.3 : The gender approach is taken into account in the adaptation to CC at the level of the two arrondissements	Activity 3.1.3.1 Organize consultations with communal actors and neighbouring communities on the distribution of gender roles in the project results framework, its strengths and weaknesses	
Activity 3.1.3.2: Have the gender consultation report validated by stakeholders and take steps to support strengths and address weaknesses during project implementation.				

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Project components	Expected results	Expected outputs	Activities	Amount (in Us dollars)
	Result 3.2 : CC adaptation management is effective in both arrondissements	Output 3.2.1 : The community early warning system is functional, allowing appropriate measures to be taken in time, in anticipation of extreme weather events	Activity 3.2.1.1 Organize consultations with stakeholders to choose environmental and climatic risk management methods and strategies adapted to local conditions	
			Activity 3.2.1.2: Update/develop the community early warning system	
			Activity 3.2.1.3: Organize training modules on the dissemination of climate information for Town Hall services, community radio stations, and farmers	
		Output 3.2.2 : Teachers, schoolchildren, opinion leaders and community radio hosts have become aware of and have taken ownership of good CC adaptation practices	Activity 3.2.3.1 : Raise awareness among the general public in the two boroughs about good practices for adapting to CC (radio programmes, posters, sketches, contests in schools and high schools, etc.)	
	Activity 3.2.3.2 : Produce communication tools that are accessible to speakers of national languages (awareness-raising songs in the local language Anii on good CC adaptation practices, translation of posters and sketches into local languages, etc.)			
	Result 3.3. : Enrichment of communal, community and private forests with climate change resilient species.	Output 3.3.1 : Indigenous tree species resilient to climate change and adapted to the edaphic conditions of Bassila are identified and their seeds and seedlings are produced	Activity 3.3.1.1 : organize stakeholder consultation for the final selection of tree species that are drought or flood resistant and adapted to the soil conditions of the selected sites	
			Activity 3.3.1.2 : Have nurseries produce seeds and seedlings to meet the needs of communal, community and private forests	
Activity 3.3.1.3 : Have nurseries produce seeds and seedlings to meet the needs of communal, community and private forests				
Output 3.3.2 :		Activity 3.3.2.1: Organize planting operations in communal, community and private forest		

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Project components	Expected results	Expected outputs	Activities	Amount (in Us dollars)
		Communal and community forests are enriched and private forests established using CC resilient species.	plots Activity 3.3.2.2: Have the young plants maintained and monitored.	

4. Project implementation cost (9%)		222,300
5. Overall cost of the project		2,470,000
6. Project cycle management charges requested by the implementing institution (8%)		197,600
Amount of funding requested		2,889,900

Projected timeline for project implementation

Project duration: 4 years (48 months)

Steps	Projected dates
Start of project implementation	January 2023
Mid-term evaluation (if any)	January 2025
End of the project	January 2027
Final evaluation	March 2027

PART II: PROJECT OR PROGRAMME RATIONALE

- A. Describe the components of the project/programme, with particular emphasis on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. In the case of a programme, show how the combination of different projects will contribute to the overall increase in resilience.

Through its three successive Communal Development Plans (2005-2009; 2011-2015 and 2018-2022), the Commune of Bassila has marked its commitment to improving the living conditions of disadvantaged populations (Commune de Bassila 2004, 2010, 2017). The strategic orientations and objectives such as «Distribute wealth equitably», «Improve the quality and accessibility of basic social services for the population» and «Reduce the effects of CC and the strong pressure on natural forests» reflect the willingness of the communal authorities to support the most vulnerable communities in their efforts to fight for survival in the context of CC. These include communities living along the Bassila and Pénessoulou forests, whose livelihoods have deteriorated over the past few decades, largely due to the negative impacts of climate change.

It is reported that 30% of the population of this region live below the poverty line and 49% are under 15 years of age (Commune of Bassila, 2010). Fifteen years earlier, the incidence of food poverty was 23%, placing the region at the top of the list of agro-ecological zones with food problems in Benin (Larivière *et al.*, 1997). In 2013, for the Commune of Bassila, the Human Poverty Index was 43.6% and the multidimensional poverty rate was 46.2%.

The present project, whose purpose is to build resilience of the populations living in the classified forests of Bassila and Penessoulou, the most vulnerable to CC, is in line with this logic. The project is structured around 3 components which are:

1) capacity building of the most vulnerable small-scale farmers on good practices of adaptation to climate change, 2) development of value-added chains of promising sectors in order to diversify the sources of income of the most vulnerable communities and 3) reinforcing the local governance and management framework for adaptation to CC.

Component 1: Capacity building of the most vulnerable small farmers on good practices for adaptation to climate change

Rainfed agriculture is dependent on climate, and the slightest climatic shock has a direct impact on

crops, soils (which are the support, water reservoir and food source) and livestock. The implementation of climate-smart agriculture techniques, including water conservation, soil conservation, and land restoration techniques, and the mastery of climate-smart seed technology, requires material and know-how support that the project will provide to small farmers

Result 1.1: On-farm resilience is enhanced through the adoption of water and soil conservation and land restoration techniques

Output 1.1.1: Farmers are trained in water and soil conservation and land restoration techniques.

Activities of the Output 1.1.1:

Activity 1.1.1.1: Identify, among the small farms bordering the classified forests of Bassila and Pénéssoulou, those whose state of degradation of water, soil and land justifies the training of farmers in techniques for the conservation, improvement and restoration of these resources. Some farms could be used as training fields.

Activity 1.1.1.2: Provide customized training modules on water conservation, soil conservation, land restoration and other relevant techniques. These trainings will be mostly practical and will be conducted in selected training fields in the two arrondissements

Activity 1.1.1.3: Follow up on the application of good practices by the beneficiaries during the implementation of the project.

Output 1.1.2: The technical itineraries and practices of the improved production system (SAP) are adopted by the farmers

Activities of the Output 1.1.2:

Activity 1.1.2.1: Identify with the neighbouring farmers of the classified forests of Bassila and Pénéssoulou the technical itineraries and practices of the improved production system (SAP) that are technically feasible, economically profitable and socially acceptable on their farms. Identify farms that can serve as training fields for specific technical itineraries.

Activity 1.1.2.2: Provide tailored training modules on technical itineraries and improved production system practices. The training will take place on selected fields in the two arrondissements

Activity 1.1.2.3: Monitor the application of good practices by the most vulnerable farmers.

Output 1.1.3 : The material capacities of producers are built through support for various equipment (small tools, personal protective equipment, composting bags, sprayers, etc.)

Activities of the Output 1.1.3:

Activity 1.1.3.1: with stakeholders (selected from the two arrondissements) the specific material needs of the organized groups.

Activity 1.1.3.2: Provide equipment to the farmers' groups and train them in its use when necessary

Result 1.2: Water resources are managed in an integrated manner for farmers

Outputs 1.2.1: Improved stormwater storage capacity through the construction of a water reservoir for farmers in each arrondissement

Activities of Output 1.2.1:

Activity 1.2.1.1: Organize consultations with water users (market gardeners, livestock breeders, fish farmers, households, etc.) to specify the modalities for joint use of the water reservoirs.

Activity 1.2.1.1.2: Construct water reservoirs

Output 1.2.2: Market gardening developments are carried out in the vicinity of the water reservoirs for the areas allocated to market gardening.

Activities of Output 1.2.2:

Activity 1.2.2.1: Organize a consultation with market gardeners to specify the locations suitable for their specific activities on sites shared with other users

Activity 1.2.2.1.2: Develop the areas allocated to market gardening for the benefit of market gardeners.

Output 1.2.3: Farmers are trained in integrated water resources management (IWRM) best practices and how to manage water use conflicts

Activities of Output 1.2.3:

Activity 1.2.3.1: Organize consultations (focus groups, interviews) with stakeholders (selected from the two arrondissements) on local water resource management practices, water use conflicts, and ways to improve practices or reduce conflicts in the two arrondissements

Activity 1.2.3.2: Provide tailored training modules on IWRM best practices and water use conflicts.

Activity 1.2.3.3: Monitor farmers' adoption of integrated water resources management (IWRM) best practices and water use conflict management.

Result 1.3: Setting up a mechanism for the revolving of seeds and plants adapted to climate change (maize, cassava, soya and market gardening).

Activities of Output 1.3.1:

Activity 1.3.1.1: Organize nurseries into seed and seedling chains corresponding to the needs of farms bordering forest areas

Activity 1.3.1.2: Organize the production of seeds and plants adapted to climate change according to the campaign plans of the neighbouring communities (corn, cassava, soybeans and market gardening).

Output 1.3.2: The mechanism for supplying seeds and plants to producers is operational.

Activities of Output 1.3.2:

Activity 1.3.2.1: Define with stakeholders (Town Hall, ATDA, and farmers) the mechanisms for making seeds available to farmers

Activity 1.3.2.2: Organize the supply of seeds and plants to farmers on time.

Component 2: Development of value-added chains (VACs) in promising sectors in order to diversify the sources of income of the most vulnerable communities.

The agricultural sectors as they are currently organized (production and sale of crops in their current state, which are sometimes sold off) do not allow for an optimal profit from agricultural production. This is particularly worrying as the trend in agricultural production has been downward over the last few decades due to climate change (see Vulnerability Matrix). The development of VACs, by diversifying the sources of income, would help to make a greater profit from production. In the perspective of improved production (Component 1), farmers' incomes would increase and new jobs would be created. In addition to the maize, soybean, shea butter and market gardening sectors, the local populations of the classified forests of Bassila and Pénessoulou have the comparative advantage of being able to develop beekeeping VACs.

However, the development of VACs cannot be achieved without better organization of producers, their training, the setting up of management mechanisms, and their provision of appropriate materials and equipment.

Output 2.1: Sources of income of the local populations are diversified through the promotion of corn, soya, cassava and market garden crops

Output 2.1.1: Producer groups are better structured and are involved in the maize, soybean, cassava, cashew and market gardening VACs

Activities of Output 2.1.1:

Activity 2.1.1.1 : Organize consultations (focus groups, interviews) with producers in the corn, soybean, cassava, cashew and market gardening sectors to identify groups and their operating methods

Activity 2.1.1.2 : Provide support for the setting up of a platform bringing together the different groups and equipped with a group operating system developed by the groups, which will promote better management of the VACs of the maize, soybean, cassava, cashew and market garden crops sectors.

Output 2.1.2: The management mechanism of the innovation platforms of the maize, cassava, soybean, cashew nut and market gardening sectors is in place and operational.

Activities of Output 2.1.2:

Activity 2.1.2.1: Ensure that the stakeholders define and validate the management mechanism of the innovation platforms of the maize, cassava, soybean, market garden and cashew nut sectors, and ensure their coordination.

Activity 2.1.2.2: Monitor the running of the innovation platforms of the VACs of the maize, cassava, soya, market garden and cashew sectors

Result 2.2 : Sources of income of the local populations are diversified through the promotion of the beekeeping sector

Output 2.2.1: Modern beekeeping techniques are mastered by beekeeping groups in both arrondissements

Activities of Output 2.2.1:

Activity 2.2.1.1: Organize consultations (focus groups, interviews) with beekeepers (selected at the level of the two arrondissements) on local beekeeping techniques used by beekeepers living in the classified forests of Bassila and Penessoulou

Activity 2.2.1.2: Provide training modules tailored to modern beekeeping techniques that respect the environment. Relay beekeepers will be trained for a duplication of the training to other beekeepers

Activity 2.2.1.3: Follow up on the adoption by beekeepers of the taught modern beekeeping techniques

Output 2.2.2: Increase honey harvesting capacity for beekeepers through the acquisition of kits

Activities of Output 2.2.2:

Activity 2.2.2.1: Organize consultations (focus groups, interviews) with beekeepers (chosen at the level of the two arrondissements) to define the needs of the groups in beekeeping kits (Kenyan hive, protective suit, and other equipment).

Activity 2.2.2.2: Make beekeeping kits available to beekeeping groups and independent beekeepers

Activity 2.2.2.3: Install honey factories for honey refinement

Result 2.3: Sources of income of local women's groups are diversified through the promotion of the shea butter industry

Output 2.3.1: Women producers' groups are better structured and are committed to the shea butter VACs

Activities of Output 2.3.1:

Activity 2.3.1.1: Organize consultations (focus groups, interviews) with women shea butter producers to identify groups and their operating methods

Activity 2.3.1.2: Create a platform that brings together the various groups and propose a mode of operation for the groups to better manage the shea butter VACs

Output 2.3.2: The material capacities of women's groups are built for the collection and processing of shea butter through the acquisition of tricycles and semi-industrial shea butter production units.

Activity of Output 2.3.2:

Activity 2.3.2.1: Organize consultations with women shea butter producers to define the needs of the groups for materials and equipment for collecting and processing shea butter.

Activity 2.3.2.2: Make tricycles and semi-processing units available to groups of women producers to increase their capacity to collect and process shea

Component 3: Reinforcing the local governance and management framework for CC adaptation

Bassila Town Hall is in charge of local governance and must work for the well-being of its citizens. During the stakeholder consultation, communal agents expressed the need for capacity building to better support the promotion of social equity, accessible basic social services for the population and the development of relevant measures for adaptation to CC.

The reinforcement of the local governance and management framework for adaptation to climate change provides an opportunity to capitalize on the achievements of this project and facilitate their sustainability. The population growth indicates that in a status quo context, the pressure of neighbouring populations on the resources of classified forests will be even greater in the years to come. This project will help develop a guide for implementing adaptation to climate change for communal actors and rural populations living near classified forests. Women producers and processors of agricultural products are an important link to consider in the adaptation to CC.

A successful management of adaptation to climate change must be seen as a common concern. Teachers, schoolchildren, opinion leaders and community radio hosts must be made aware of CC adaptation in order to act as relays to other segments of the community. This will provide a basis for the effective functioning of the early warning system and the dissemination of climate information.

Result 3.1: The local governance and CC adaptation framework is operational

Output 3.1.1: Communal actors are trained on the adaptation of the agriculture and forestry sectors to CC

Activities of Output 3.1.1:

Activity 3.1.1.1: Identify the training needs of communal agents on the adaptation of the agriculture and forestry sectors to CC. The training could be extended to the NGO partners of Bassila Town Hall working in the fields of natural resource protection and climate change.

Activity 3.1.1.2: Provide tailored training modules on adapting the agriculture and forestry sectors to CC

Output 3.1.2: The guide for the coordination of the local governance and adaptation to CC framework is validated and used by communal actors and communities bordering the classified forests of Bassila and Pénessoulou

Activities of Output 3.1.2:

Activity 3.1.2.1: Organize consultations for the capitalization of good practices and lessons learned from this project

Activity 3.1.2.2: Develop the coordination guide for the local governance and CC adaptation framework and have it validated by the stakeholders.

Activity 3.1.2.3: Ensure the dissemination of the guide. The guide can be published on the website of the National Association of Benin Communes (ANCB).

Output 3.1.3: The gender approach is taken into account in the adaptation to CC at the level of the two arrondissements

Activities of Output 3.1.3:

Activity 3.1.3.1 Organize consultations with communal actors and neighbouring communities on the distribution of gender roles in the project results framework, its strengths and weaknesses

Activity 3.1.3.2: Have the gender consultation report validated by stakeholders and take steps to support strengths and address weaknesses during project implementation.

Result 3.2: CC adaptation management is effective in both arrondissements

Output 3.2.1: The community early warning system is functional, allowing appropriate measures to be taken in time, in anticipation of extreme weather events

Activities of Output 3.2.1:

Activity 3.2.1.1: Organize consultations with stakeholders to choose environmental and climatic risk management methods and strategies adapted to local conditions

Activity 3.2.1.2: Update/develop the community early warning system

Activity 3.2.1.3: Organize training modules on the dissemination of climate information for Town Hall services, community radio stations, and farmers

Output 3.2.3: Teachers, schoolchildren, opinion leaders and community radio hosts have become

aware of and have taken ownership of good CC adaptation practices

Activities of Output 3.2.3:

Activity 3.2.3.2: Raise awareness among the general public in the two boroughs about good practices for adapting to CC (radio programmes, posters, sketches, contests in schools and colleges, etc.)

Activity 3.2.3.2: Produce communication tools that are accessible to speakers of national languages (awareness-raising songs in the local Anii language on good CC adaptation practices, translation of posters and sketches into local languages, etc.)

Output 3.3. Communal and community forests are enriched and private forests established using CC resilient species.

Output 3.3.1: Indigenous tree species resilient to CC and adapted to the edaphic conditions of Bassila are identified and their seeds and seedlings are produced.

Activities of Output 3.3.1:

Activity 3.3.1.1: Organize stakeholder consultation for the final selection of tree species that are drought or flood resistant and adapted to the soil conditions of the selected sites

Activity 3.3.1.2: Organize a consultation of stakeholders for the choice of tree species resilient to CC and adapted to the edaphic conditions of Bassila

Activity 3.3.1.2: Have nurseries produce seeds and seedlings to meet the needs of communal, community and private forests

Activity 3.3.1.3: Have women's groups produce seedlings to be delivered to forestry planting sites

Output 3.3.3: Communal and community forests are enriched and private forests established using CC resilient species

Activities of Output 3.3.3:

Activity 3.3.3.1: Organize enrichment operations of communal and community forest plots and installation of private forests.

Activity 3.3.3.2: Ensure the maintenance and follow-up of young plants

Figure 11 below summarizes the components and results of the project.

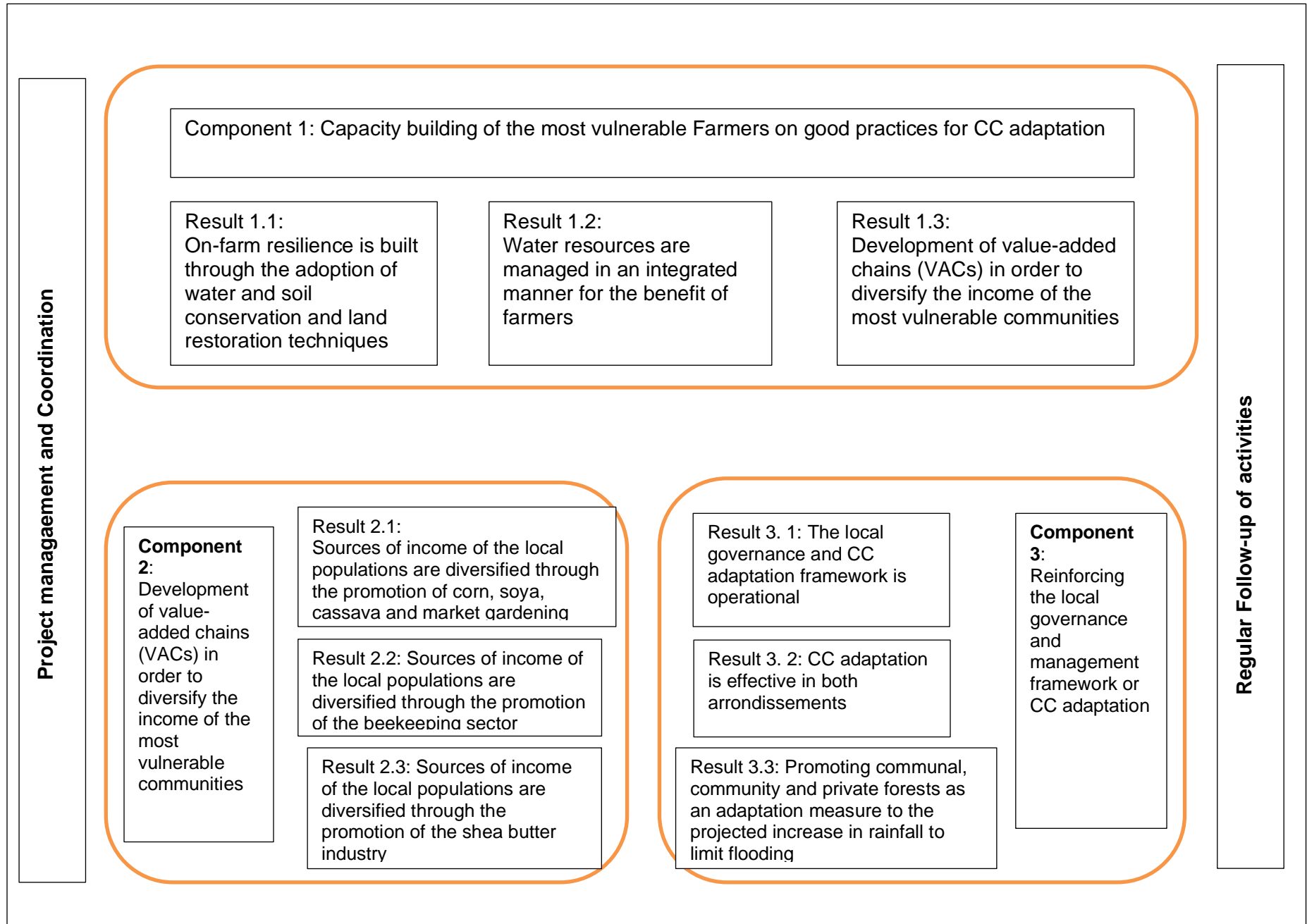


Figure 11: Components and expected results of the project and links between them.

B. Describe the new and innovative solutions and approaches to climate change adaptation provided by the project

The project itself is innovative: building resilience of neighbouring populations in classified forests as an approach to reducing pressure on neighbouring forests. The new and innovative approaches provided by each component are described below.

Under Component 1: Capacity building of the most vulnerable small farmers on good practices for adaptation to CC

This component will deal with climate-smart agriculture, water and soil conservation and land restoration techniques, monitoring of technical itineraries and adoption of SAP (Improved Production System) practices as well as water management for the benefit of producers in order to prevent and limit water use conflicts.

Climate Smart Agriculture (CSA) is an approach to define the measures needed to transform and reorient agricultural systems in order to effectively support agricultural development and ensure food security in the face of CC

. For the crop production sub-sector, the project will develop practices related to the use of improved varieties (short-cycle, drought-resistant and disease-resistant varieties), seedling management (reseeding, over-seeding, changing the date of sowing) prevention and management of climate risk, climate information, management of cropping systems and the agricultural calendar, management practices of production plant material, physical conservation practices of water and soil and biological conservation practices of water and soil.

With regard to SAP (Improved Production System) practices, the project will reinforce the supervision of vulnerable agricultural producers on the monitoring of technical itineraries and the adoption of resilient technologies.

In order to increase the productive capacity of the land, water use efficiency and productivity must be improved. This can be achieved by reducing high water losses through runoff and evaporation on unprotected soils, collecting water, improving infiltration and increasing storage capacities. As competing water uses lead to conflicts, it is planned to develop a conflict prevention and resolution mechanism. The project may also introduce fish farming as an innovative activity in the Commune of Bassila.

To ensure the availability of seeds, a mechanism for revolving seeds and plants adapted to climate change will be designed and implemented.

Under Component 2: Development of value-added chains (VACs) in order to diversify the income of the most vulnerable communities.

In terms of VACs, the current situation of the communities bordering Bassila and Pénessoulou is not encouraging because most of the agricultural production is sold (sometimes sold off) without further

processing. By diversifying the sources of income, the development of the value chain will therefore help to make maximum use of current production and, with a view to increasing production (Component 1), significantly increasing farmers' income and creating new jobs. In addition to the maize, soybean, shea butter and market gardening sectors, the project intends to develop (for local populations living in the classified forests of Bassila and Pénessoulou) a comparative advantage in the development of beekeeping VACs, which have not been developed to date.

However, the development of the VACs cannot be done without a better organization of producers, their training, the establishment of management mechanisms, and their provision of various materials and equipment. The project will support producers in the creation of innovation platforms for the maize, soybean, market garden, shea butter and honey sectors. These platforms can be used beyond the life of the project and can inspire the creation of innovation platforms for the VACs of other crops.

Under Component 3: Reinforcing the local governance and management framework for climate change adaptation.

As noted above, the Bassila Town Hall has expressed in its PDC-3 (Commune Development Plan) its desire to «reduce the effects of CC and the strong pressure on natural forests». However, this PDC does not provide for the establishment of a local governance and management framework for adaptation to CC. Through the present project, the reinforcing of the local governance and CC adaptation management framework will help consolidate and ensure sustainability and to capitalize on the achievements beyond the life of the project. Drawing on the lessons learned during the first two years of the project, the project will develop a guide for implementing CC adaptation for the benefit of communal actors and rural populations living near classified forests. This will be a major innovation that will have a beneficial impact beyond Bassila and Benin, as the guide, which will be posted on FNEC website, will be available for consultation throughout the world. Gender mainstreaming in CC adaptation efforts is not yet a reality in Benin. This project will be one of the first to give real content to the consideration of women producers and processors of agricultural products in the adaptation to CC.

In addition, this project perceives the management of adaptation to CC as everyone's business (teachers, schoolchildren and students, opinion leaders and community radio hosts), thus promoting its integration into the habits of the population. This will be an important basis for the effective functioning of the early warning system and the efficient dissemination of climate information at the local level in order to inform communities about weather forecasts at different temporal scales (weekly, monthly, seasonal and others). The period (weeks or decades) of the start of the rainy season (which conditions land preparation and sowing operations) and the period (weeks or decades) of the end of the season (which conditions harvests) will need to be communicated to the target populations. This information will also have a snowball effect on non-target populations.

Singing songs in local languages about adaptation to CC is also a new approach to awareness raising that will be effective. The promotion of community forests and especially private forests enriched with CC resilient species is another new approach of the project. The degradation of these forests, which usually supply the rural wood markets, is due to the decline and even disappearance of species vulnerable to CC, such as

Azelia africana and *Pterocarpus erinaceus*, and the overexploitation of fast-growing species. The state of degradation of these forests is such that firewood and charcoal harvesters tend to shift their focus to the classified forests of Bassila and Penessoulou, at the risk of unbalancing the ecosystem services provided by these forests to neighbouring communities. The implementation of this adaptation option will guarantee the satisfaction of the domestic energy needs of the populations without harming the ecological functions of the ecosystem and under the supervision of the forestry administration and communal authorities, in application of the texts organizing the rural wood markets, in particular Decree No. 2005-708 of November 17, 2005 and Inter-ministerial Order No. 041/MEPN/MDGLAAT/DC/SGM/DGFRN/SA of July 29, 2009

The project will also support existing initiatives to promote communal and community forests by integrating with the Town Hall the establishment of incentives to encourage good practices.

- C. Describe how the project/programmes provides economic, social and environmental benefits, with particular reference to the most vulnerable communities and vulnerable groups within communities, including gender considerations. Describe how the project/programme will avoid or mitigate negative impacts, consistent with the Adaptation Fund's environmental, social and gender policy.

The purpose of the project is to address the food insecurity of the most vulnerable farmers living in the classified forests of Bassila and Pénessoulou. To do this, the project reconciles social, economic and environmental benefits.

Social benefits

The project aims to support the population in adapting to the societal impacts of CC and is therefore primarily social in orientation. As described in the "Project Targets" section, the number of direct beneficiaries is estimated at more than three thousand producers. Gender has been a major focus since the stakeholder consultation phase, during which women's participation in the exchanges was identified as a key criterion. Similarly, the project plans to specifically support women shea butter producers and to ensure that gender is taken into account in the communal management guide for adaptation to CC.

In rural areas, where school enrollment and health center attendance are limited by household income, the project will improve school enrollment and health center attendance.

From a social point of view, communal agents as well as NGOs working in the field of natural resource preservation will be equipped to participate in the sustainability of the project's achievements.

Economic benefits

The building of resilience to climatic shocks that negatively impact agricultural production and, in turn, the income of producers is the direct economic benefit of this project. In doing so, the project's activities are designed to contribute to the fight against poverty and to the improvement of household and community incomes. Indeed, thanks to these activities, a relatively large number of people will have incomes above the poverty line. In addition, the various interventions will improve the living conditions of the populations, their food security, and will make them more resilient during lean periods. The development of VACs generates additional financial resources and sources of employment in order to reduce unemployment. The activities of seedling production, reforestation or forest enrichment will provide temporary employment for youth and women.

Environmental benefits

The environmental benefits of this project go beyond the commune of Bassila alone. Indeed, the project will lead to a significant reduction in the pressure on classified forests with the possibility of scaling up the experience of Bassila and Penessoulou to other forest areas under the management of ONAB or other organization in charge of forest resource management.

The project emphasizes the reconciliation of vulnerable communities living near forest ecosystems with their physical and biotic environment, through good practices freely agreed upon, inspired by the right understanding of the conjunction of their interests and the interests of the environment for the sustainable satisfaction of their essential needs. The project will also assist communal authorities in laying the foundations for participatory governance of CC adaptation. If implemented, it will make a considerable contribution to soil and water conservation, the restoration of microclimates and the maintenance or improvement of soil fertility, as well as the mitigation of the negative impacts of CC (regulation of rainfall, restoration of the water cycle, reduction of watercourse congestion, reconstitution of wild animal herds, etc.).

In order to remain consistent with the Adaptation Fund's environmental and social policy, an environmental and social impact assessment will be conducted during the drafting phase of the full project document.

D. Describe or produce a cost-benefit analysis of the proposed project/programme.

Given the situation of poor people who depend on natural resources for their livelihoods, doing nothing about the adverse effects of CC is always more costly for ecosystems and human systems than adaptation measures. The cost of inaction can be more expensive than the cost of action (Andrieux and Van Effenterre, 2009).

The ratio of additional costs due to the implementation of adaptation measures and additional

Annex 5 to OPG Amended in October 2017

benefits at the level of ecosystems and human systems in terms of guaranteeing the sustainability of resources, and in terms of reducing poverty and meeting food and health needs, for example, should make it possible to judge the effectiveness of adaptation measures. Oxfam International (2009) estimates that the cost of adaptation in developing countries will be at least \$50 billion per year, and much more if global greenhouse gas emissions are not reduced rapidly.

In order to reach a larger number of beneficiaries, project activities must be cost-effective. To be efficient, precedence is given to the priorities of the target populations and the proposed actions are essentially the result of consultation with the beneficiary populations themselves. The table below provides a summary of the cost-effectiveness analysis.

Table 8 : Business case study for the project

Components	Component Cost (US\$)	Approximate number of beneficiaries	Benefits	Variations of the project proposals
Capacity building of the most vulnerable small farmers on good CC adaptation practices	1,300,000	1,000	Farmers adopt climate-smart agriculture (CSA), improved production systems (SAP), water and soil conservation (SWC) and sustainable land management (SLM) techniques. Similarly, water management can limit water deficits and flooding and promote market gardening and other activities	A variant could be the establishment of a cereal bank, with the limitation of supply difficulties since production only decreases. Taking more coercive measures to reduce pressure on the forests with the disadvantage of endless conflicts
Development of value-added chains (VACs) in promising sectors in order to diversify the income of the most vulnerable communities	420,000	2,000	VACs platforms for maize, soya, shea, cashew and honey are operational, allowing the diversification of producers' income and creating new jobs	The alternative here could be to develop warrantage, with the limitation that when agricultural products are sold, the flow of agricultural products may cause the sale price to fall. In addition, warrantage requires financial institutions to be ready to accompany the process and can only generate a limited number of jobs.

Annex 5 to OPG Amended in October 2017

<p>Reinforcing the local governance and management framework for CC adaptation</p>	<p>750,000</p>	<p>100 direct beneficiaries (thousands of indirect beneficiaries)</p>	<p>Adaptation to CC is a common concern from communal agents to opinion leaders, teachers, students, and farmers.</p> <p>The implementation guide for adaptation to CC for the benefit of actors and rural populations living near classified forests facilitates scaling up.</p>	<p>The variant here is to limit the project to the arrondissements of Bassila and Pénessoulou and to vulnerable farmers, thus limiting the possibility of scaling up to other arrondissements of the commune.</p>
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- E. Describe how the project/programme is consistent with national or sub-national sustainable development strategies, including, where applicable, the National Adaptation Plan (NAP), national or sub-national development plans, poverty reduction strategies, national communications or action programmes, or other relevant instruments, if they exist.

Benin's commitment to mitigate CC and adapt to its adverse effects was made with the ratification of the United Nations Framework Convention on CC (UNFCCC) in June 1994, the ratification of the Kyoto Protocol on February 25, 2002, and more recently, the signature and ratification of the Paris Agreement on April 22, 2016 and October 31, 2016 respectively. This commitment is supported by the National Strategy for the Implementation of the UNFCCC (MEHU, 2003), three national communications on CC (MEHU, 2001; MEHU, 2011; MCVDD, 2019), the National Adaptation Programme of Action for Climate Change (MEPN, 2008), the First Nationally Determined Contribution (MCVDD, 2017), the First Biennial Update Report (MCVDD, 2019), and the National Adaptation Plan for Climate Change (MCVDD, 2021).

Recently, Benin has adopted the National CC Management Policy (PNGCC 2021-2030) and the Law n°2018-18 of August 06, 2018 on CC. This project responds on the one hand to the provisions of these political and legislative instruments in terms of combating global warming and reducing the vulnerability of disadvantaged populations to CC, and on the other hand to the sustainable development strategies, in particular the Growth Programme for Sustainable Development (PC2D) and the Low Carbon and CC Resilient Development Strategy (2016-2025).

The provisions that support the project's activities are, in particular, those of the Law on the Forest Regime and its implementing decree of July 2, 1996, the forest policy of November 1994 and the Framework Law on the Environment of February 12, 1999. All sectoral policy documents and all national development planning tools are anchored in the vision of sustainable development with a particular focus on the protection of forest ecosystems and the participation of local populations in their environmentally sound management.

In the field of environment and sustainable development, the main policies and strategies developed and implemented by Benin and which justify the project are:

- the Environmental Action Plan (PAE) adopted in June 1994 by the government and updated in 2001, which aims to change behavior, in particular by raising the standard of living and awareness of all Beninese, controlling the evolution of natural resources and better management of biodiversity, and improving the living environment of all Beninese;
- the National Agenda 21 adopted on January 22, 1997 and whose objective is to define the orientations and the conditions to reach sustainable development;
- the Long Term Prospective Studies of Benin at Horizon 2025, initiated since 1998, which integrate the concerns of sustainable development and make the rational management of the environment a priority, and defines Benin's vision as follows: «Benin will be in 2025, a flagship country, a well-governed country, united and peaceful, with a prosperous and competitive economy, cultural influence and social well-being». This calls for an environmentally sound management of natural and human resources;
- The National Action Programme to Combat Desertification (PAN/LCD), elaborated in

1998 to identify the factors that contribute to desertification and the concrete measures to be taken to combat desertification and mitigate the effects of drought;

- the National Strategy and Action Plan for the Conservation of Biological Diversity adopted in 2002 and aimed at contributing to the sustainable development of Benin and to poverty reduction through the conservation and sustainable use of biological resources and the fair and equitable sharing of the benefits derived from the exploitation of these resources;
- The National Decentralization and Devolution Policy (PONADEC) adopted in 2009 with three main objectives: (i) to implement a harmonious and balanced land-use planning policy, integrating the entire national territory to achieve sustainable and equitable development, (ii) to ensure the implementation of the principles of good territorial governance through a modernized and efficient administration, (iii) to reduce the level of poverty by improving access to basic services and enhancing the economic potential of the communes.

This project is part of this national dynamic by targeting in particular the relevant targets of the SDGs prioritized by Benin (MPD, 2017). These include target 1 of SDGs 13 (build resilience and adaptive capacity in all countries to climate-related hazards and natural disasters and target 2 of SDGs 15 (promote sustainable management of all types of forests, halt deforestation, restore degraded forests and significantly increase afforestation and reforestation globally).

At the local level, the project responds to the concerns successively expressed by the communal authorities of Bassila in the various planning documents (Communal Development Plan of Bassila 3rd Generation (PDC 3) 2018-2022), the Master Plan of Territorial Development for Horizon 2025. These concerns refer to the provisions of national policies and strategies for local development and respond to the aspirations of the populations.

- F. Describe how the project/ programme meets relevant national technical standards, if any, such as environmental assessment standards, building codes, etc., and is consistent with the Adaptation Fund's environmental and social policy.**

This project is developed in accordance with the framework and instructions of the Adaptation Fund, the Least Developed Countries Group guidelines for the development of adaptation programmes and plans, as used in the development of Benin's National Action Programme for Adaptation to CC (NAPA) in 2008, the Benin Agriculture and Food Sector Adaptation to CC Project (PANA1) implemented from April 2011 to March 31, 2016 with funding from the Global Environment Facility, the Project to Build Resilience of the Energy Sector to the Impacts of CC in Benin (PANA Energie or PANA2) launched in 2017, and the National CC Adaptation Plan (NAP) developed in December 2021.

It is also in line with Benin's national guidelines for the development of adaptation projects resulting from the workshop organized by the National Environment and Climate Fund in Cotonou on October 4 and 5, 2011.

Regarding the evaluation of the costs of participatory management works, the standards used essentially concern the definition of the tasks, the monetary value of the man-day, the average yields of certain speculations and the prices on the market, the working time for the realization of the works, the costs related to the maintenance of the plantations, and for the protection of the forest. For this purpose, reference was made to the standards used by the National Wood Office.

For the implementation of the project, the physical interventions on the ground will respect the

national and sub-regional standards in the matter. In particular, they will be subject to the environmental impact studies recommended by Law No. 98-030 of February 12, 1999 on the Framework Law on the Environment in the Republic of Benin. Suppliers and operators in charge of all work shall apply the provisions of Law No. 93-009 of July 2, 1993 on the forest regime in the Republic of Benin, Law No. 2002-016 of October 18, 2004 on the wildlife regime in the Republic of Benin, and the normative and technical specification provisions validated by the Benin Center for Standardization and Quality Management (CEBENOR) created by Decree No. 97-520 of October 17, 1997.

During the drafting of the project document, the stakeholders, in particular the targeted operators and communal officials, will be consulted again to further refine the activities to be implemented. Similarly, an ESIA will be developed during the project document drafting phase.

G. Describe whether there is any duplication of the project/ programme with other funding sources.

This project will be implemented with a number of initiatives active in the commune of Bassila that share the same objectives of supporting the development of sustainable livelihoods for vulnerable populations. These include:

- a) the Cashew Nut Sector Development and Agricultural Entrepreneurship Support Project (PADEFA-ENA), financed by the African Development Fund (ADF), which covers 19 cashew nut producing communes in the Departments of Borgou, Collines, Donga and Zou. Its areas of intervention are (i) food and nutritional security, (ii) development of the cashew nut value chain, particularly the local processing of raw cashew nuts, (iii) youth and women's employment, and (iv) climate change, building resilience of populations and improving endogenous production systems. The overall objective of the Project is to contribute to poverty reduction and improved food and nutrition security while the key specific objective is to contribute to the sustainable increase of stakeholders' income. It was launched in 2019 for a 5-year period under the execution of the Territorial Agency for Agricultural Development No. 4, (ATDA4).
- b) b) the Ruminant Herd Sedentarization Project in Benin (ProSeR-Benin), which operates in 40 communes in all departments except the Littoral Department. Launched in 2020 for a period of 5 years, with the financial support of the West African Development Bank (BOAD) and executed by the Territorial Agency for Agricultural Development (ATDA) of Hub 2 (ATDA2), this Project aims to improve the living conditions of farmers/breeders and the productivity of the milk and meat value chains, to ensure an increase in the income and entrepreneurial capacities of the actors, as well as the viability of pastoral camps.
- c) the Support Project for Communal Forest Management - Phase II (PAFEMCOM-II) which covers the departments of Atlantique, Zou, Collines du Borgou and Donga. Implemented by the Ministry of Living Environment and Sustainable Development (MCVDD) with funding from the African Development Fund (ADF) and the Global Environment Facility (GEF), this project aims to stabilize forest ecosystems based on the promotion of value chains of green economy products (smart agriculture, promotion of non-timber forest products, promotion of fishery products, development of natural resources, promotion of ecotourism products, etc.), as well as the improvement of the quality of life of local communities.), as well as the improvement of food and nutritional security and the incomes of small and vulnerable producers, the alleviation of the impact of poverty on rural households and the building of resilience of populations, particularly women and youth. It has three operational components: (i) promotion of green economy value chains; (ii) sustainable management of natural resources; and (iii) support for adaptation to CC.

The following is a description (though not exhaustive) of other significant past and current initiatives on which this project can expand its impact.

- a) Forest Resource Restoration Project in the Bassila Region (financed by the German Cooperation (GTZ and GFA terra Systems). Between 1988 and 2004, the project was implemented to limit the degradation of ecosystems by targeting specific actions involving the neighbouring communities and including: the management of classified forests, the management of village lands, the control of agricultural practices, the control of pastoral practices, the management of vegetation fires, the management of natural forests in the protected domain of the State, and the economic valorization of forest products.
The management plan developed within this framework for the classified forest of Bassila has not been implemented. The plan for the Pénessoulou classified forest, developed for a period of ten (10) years, was implemented from 2002 and expired in 2012. These two management plans are updated by the National Forestry Office in 2013, without taking into account and integrating the themes of CC. No funding is yet envisaged for their implementation. Through this project, additional measures to take into account adaptation to CC are targeted to ensure the sustainability of results and lead to the resilience of ecosystems and human systems to CC.
- b) Project for the Integration of Sacred Forests in Benin's Protected Areas (PIFSAP) carried out from 2011 to 2016 with the support of the Beninese Government, the Global Environment Facility (GEF) and the United Nations Development Programme (UNDP). The commune of Bassila has benefited from the project.
- c) Project to support food security through the development of lowlands (PSAAB): hydro-agricultural development; construction of stores.
- d) Rural Development Support Project (PADER): various supports to farmers.
- e) The activities of the Communal Unit of the Territorial Agricultural Development Agency (ATDA), including the marketing of 6,000 seedlings at a unit price of US\$ 0.18 instead of US\$ 1.35¹², and the reforestation project of 50 ha in the locality of Mbôrôkô. In addition, the maintenance of old shea trees can be a means of boosting the VAC shea trees mentioned above.
- f) The initiatives of the Town Hall in terms of reforestation, including 4 days of reforestation during the month of June.
- g) Various supports from the PTFs (Belgian (CTB) and German (GIZ) technical cooperation) to farmers through the construction of stores; the development of rural roads; the development of lowlands.
- h) The initiatives of NGOs such as GRADIB-ONG (technical support to processors), SOPADA ONG (which intervenes in agriculture) and N3D ONG (Environment; Agriculture; IMS).

This project will build upon the lessons learned from previous projects. Similarly, synergy will be sought with ongoing projects (e.g., those of ATDA).

No other funding sources are being sought for the implementation of this project.

H. Describe aspects related to ownership and knowledge management and dissemination of lessons learned from the project.

In this project, adaptation to CC is seen as everyone's business. This is why the appropriation and dissemination of lessons learned is an important part of the project. As soon as the project is launched, posters on the project will be displayed at FNEC, ONAB, the Bassila Town Hall and the arrondissements offices of Bassila and Penessoulou. A launching workshop will be

¹² CFAF 100 instead of CFAF 750. The exchange rate considered is from July 06, 2021.

organized to inform and mobilize stakeholders around the project. This will be an opportunity to update ongoing initiatives with which synergies will be sought.

As for components 1 and 2, a film showing the starting situation, the mid-term situation and the situation three months after the end of the project will be produced to highlight the achievements, lessons learned and constraints overcome in order to use them for future projects.

Component 3 on the governance framework and management of adaptation to CC is the one that requires the most communication activities. Customized training for communal agents, integration of gender in the management of adaptation to CC, the adaptation guide for neighbouring populations of classified forests to CC, awareness-raising for schoolchildren, students, opinion leaders, and the composition of a song in the local language will be disseminated via various channels (community radio, national radio, national television, on the websites of the National Association of Communes of Benin (ANCB) and FNEC, and in the newspapers)

In addition, the members of the Participatory Forest Management Committees (COGEPAF) of Bassila and Pénessoulou will be considered for training on the themes of CC, forestry and agriculture. Local elected officials, notables and decision-makers of the Commune and the Arrondissements will be associated to this training. Each COGEPAF will be responsible for returning the lessons learned to the grassroots community from which it originates, with the assistance of the experts assigned for the training. The committee presidents will also be responsible for public awareness sessions through appropriate channels (local radio stations, conferences, etc.), under the supervision of the communal authorities.

During the implementation of the project, pupils and students from technical and vocational training institutions, the national universities of Abomey-Calavi and Parakou and private university centers will be welcomed to prepare their dissertations or final theses in the field of CC, the environment and sustainable management of natural resources.

At the end of the project, an end-of-project workshop will be organized to share the results with the stakeholders (FNEC, ONAB, and their partners) as well as with the scientific community. An important channel is also the AF website.

- I. Describe the consultative process, the list of stakeholders consulted during project preparation, particularly vulnerable groups, and gender considerations, in accordance with the Adaptation Fund's Environmental and Social Policy and Gender Policy

The consultation process took place in two phases. The first phase consisted of discussions with the town hall and the relevant technical services involved at the town hall (the Mayor and his agents, the communal cell of the ATDA, the Bassila Cantonment, NGOs). Note that this session was chaired by the Mayor of the commune. The second phase consisted of separate meetings with producers from the arrondissements of Bassila and Penessoulou. The meetings took place at the Bassila town hall and the Pénessoulou arrondissement office. Apart from the meeting with the Mayor and the technical units, the two other meetings at the level of the arrondissements took place in local languages. A translator was assigned to the task. Because of the Covid-19 pandemic, a sample of 40 people consisting of women, youth and adults from different villages in each arrondissement was considered. Particular attention was paid to the respect of barrier gestures. Indeed, hand-washing facilities were installed at the entrance to the rooms and protective masks were distributed free of charge to participants who did not have them.

At each meeting, after the greetings, representatives of FNEC and ONAB set the context of the project before leaving the floor to the consultants for the actual discussions. The consultants began by identifying the producer groups present and their origins in order to

guide the discussions. At the same time, a list of participants was drawn up. An interview guide (Annex 3) serves as a compass for the discussions. The following aspects were discussed: The most important hazards and their trends in the locality under consideration, the impacts of these hazards on their activities (agriculture, livestock, fishing, processing of agricultural products) in terms of increased or decreased yields, the endogenous adaptation measures implemented by the populations, the initiatives and projects underway to reinforce endogenous adaptation measures, and finally, their expectations in relation to adaptation to CC.

The meetings took place from 25 to 26 March 2021.



Photo 1: Meeting with the Municipality of Bassila and the technical units



Photo 2: Meeting with participants from the arrondissement of Bassila



Photo 3: Meeting with producers of the arrondissement of Pénessoulou

J. Justify the funding requested, focusing on the overall cost of the adaptation rationale.

CC is undoubtedly an additional constraint for developing countries. In the absence of adaptation measures, the current situation could become chaotic for populations powerless to cope with climate hazards and seeing their livelihoods deteriorate. The Adaptation Fund is therefore an opportunity to turn the situation around. This report will contribute at various levels:

Under Component 1: Capacity building of the most vulnerable small farmers on good practices for adaptation to CC

Status quo scenario (excluding this project): increased vulnerability of the local populations of Bassila and Penessoulou to future climatic hazards, accelerated soil degradation, increased pressure on classified forests

Acceptance scenario and funding for this project from the Adaptation Fund: adoption of climate-smart agriculture (CSA), improved production systems (SAP), water and soil conservation (WSC) and sustainable land management (SLM) techniques, support for various materials and equipment to increase the work force, better water management for producers.

Under Component 2: Development of value-added chains (VACs) in promising sectors in order to diversify the income of the most vulnerable communities

Status quo scenario (excluding this project): The way the agricultural sectors are organized (production and sale of crops that are sometimes sold off) does not allow the greatest profit to be made from agricultural production. This is particularly alarming since agricultural production has declined over the past few decades due to CC (see Vulnerability Matrix).

Acceptance scenario and funding for this project from the Adaptation Fund: the development of VACs by diversifying sources of income therefore allows for the greatest benefit to be derived from current production and, with a view to increasing production (Component 1), to significantly increase the income of farmers and create new jobs. In addition to the maize, soybean, shea butter and market gardening sectors, the local populations of the classified forests of Bassila and Pénessoulou have the comparative advantage of being able to develop beekeeping.

However, the development of VACs cannot be achieved without better organization of producers, their training, the establishment of management mechanisms, and their provision with various materials and equipment.

Under Component 3: Reinforcing the local governance and management framework for CC adaptation.

Status quo scenario (excluding this project): Component 5 of the Development Plan of the Commune of Bassila «to reduce the effects of CC and the strong pressure on natural forests» could take a long time to be implemented. Similarly, the few adaptation projects will continue to be carried out in an uncoordinated manner, as the local governance framework does not allow for better coordination of initiatives.

Acceptance scenario and funding for this project from the Adaptation Fund: The Reinforcement of the local governance and management framework for adaptation to CC will help consolidate and ensure the sustainability and capitalize on the achievements of this project. The development of a guide for the implementation of adaptation to CC for the benefit of communal actors and rural populations living near classified forests allows lessons to be learned for scaling up. The consideration of gender and women producers and processors of agricultural products in the adaptation to CC is effective. In addition, the management of adaptation to CC becomes everyone's business, promoting the effective dissemination of climate information for the benefit of farmers and the preservation of the livelihoods of communities living along the Bassila and Pénessoulou classified forests.

K. Describe how the sustainability of project/ programme outcomes was considered in the design of the project/ programme.

This project is in line with the logic of SDG 13 and SDG 15, and therefore targets and integrates the principle of sustainability. Stakeholder consultation prior to the drafting of the concept note and project document is undertaken to ensure an appreciable level of ownership of the project by the beneficiaries. Similarly, as specified above, activities are largely driven by the aspirations and expectations of stakeholders, ensuring their short, medium and long-term commitments. A monitoring and evaluation mechanism is also planned, in which stakeholders will be involved to ensure that the implementation of the project does not deviate from the initial objectives. This monitoring and evaluation mechanism, if properly implemented, can serve as a springboard to ensure that the achievements of the project are sustained by the stakeholders. Each of the three components is proposed with a view to economic, social and environmental sustainability.

Under Component 1: Capacity building of the most vulnerable small farmers on good practices for adaptation to CC

Activities planned for this component allow for the sustainable building of resilience of target producers. Indeed, the learning of Sustainable Land Management (SLM), Water and Soil Conservation (WSC), Improved Production System (SAP) and Climate Smart Agriculture (CSA) techniques will allow to reconcile production improvement and environmental sustainability. Better water management for the benefit of market gardeners and other users associated with the establishment of a committee for the prevention and resolution of conflicts related to water will allow the sustainability of activities that depend on it. Similarly, the provision of equipment to increase work capacity and facilitate field activities will be a motivating factor for farmers.

Under Component 2: Development of value-added chains (VACs) in promising sectors in order to diversify the income of the most vulnerable communities

As indicated above, the development of the value-added chains proposed in this project will be carried out in conjunction with the producer groups, the town hall and the ATDA's communal unit. The better structuring of producer groups proposed in the case of the project prior to the establishment of the development platforms for the maize, soybean and shea butter VACs is precisely intended to ensure the sustainability of results even beyond the duration of the project. The synergy to be developed with the town hall and the ATDA communal unit aims to continue the collaboration that has already begun during the stakeholder consultation phase so that the support provided to the VACs development platforms is sustainable.

Under Component 3: Reinforcing the local governance and management framework for CC adaptation.

This component is essentially oriented towards the sustainability of the project. The reinforcement of the local governance framework is planned to this end. Capacity building of communal agents on CC-agriculture-forestry themes will equip them to better play their local governance roles during the project and beyond. The development of the implementation guide for adaptation to CC for the benefit of stakeholders and rural populations living near classified forests is essentially part of sustainability. Similarly, the vision that underlies the management of adaptation to CC in this project, particularly the fact that adaptation to CC is perceived as everyone's business, makes it possible to mobilize different social strata (opinion leaders, teachers, students, etc.) for the project's cause and beyond. The song to be written for the awareness raising of the population will allow for a quick and sustainable dissemination. The same applies to the videos to be produced, which may serve and inspire other projects and actors beyond the life of this project.

- L. Provide an overview of the environmental and social impacts and risks identified as relevant to the project/ programme.

A full Environmental and Social Assessment will be conducted at the time of preparation of the full project document, for the purpose of demonstrating the level of compliance with the environmental and social principles of the Adaptation Fund. In accordance with the provisions of Decree No. 2017-332 of July 06, 2017 on the organization of environmental assessment procedures in the Republic of Benin, this project will be subject to an environmental impact assessment prior to its implementation. A strategic environmental assessment will be put in place and accompanied by an Environmental and Social Management Plan if necessary, when the project implementation sites are clearly identified. At this stage of the concept note, the available information allows for the completion of the environmental and social risks and impacts table.

Table 9: Environmental and social impacts and risks

Environmental and social principles checklist	No further assessment required for compliance	Potential impacts and risks, additional assessment and management required for compliance
Compliance with the law	The proposed project has been developed in accordance with the provisions of the Multilateral Environmental Agreements and the laws in force at the national level, notably the Framework Law on the Environment, the Law on CC, the	

Environmental and social principles checklist	No further assessment required for compliance	Potential impacts and risks, additional assessment and management required for compliance
	Laws and regulations relating to food safety, health, soil management, water, biological diversity, etc. During the project, coherence with the texts related to Decentralization will be rigorously respected.	
Access and Equity	The project provides equitable access to all targeted vulnerable groups in the beneficiary arrondissements. To ensure that no one is left out, depending on the composition of the communities, selection criteria will be developed and agreed upon during the full proposal development phase in a consultative manner.	However, certain categories of people (orphans, disabled, displaced, affected by HIV/AIDS or Corona Virus, etc.) may be excluded because of their status. Specific awareness-raising measures will be taken in the communities concerned.
Marginalized and vulnerable groups	The project gives priority to the most vulnerable farmers, particularly men and women whose livelihoods have deteriorated considerably due to climate shocks. The first two components of the project are entirely devoted to this.	However, some of the target populations who do not know how to read and write may not benefit from certain spin-offs, such as the guide for implementing adaptation to CC for populations living along the banks of classified forests. To overcome this difficulty, an illustrated version of the guide in local language will be produced. Similarly, populations without radios and cell phones may not benefit from climate information. This risk will be overcome by using traditional means of communication (griots, etc.)
Human rights	The project ensures that the rights of direct beneficiaries, i.e. men, women, youth and children, are respected, depending on their involvement in the implementation. The consultation of stakeholders prior to the drafting of this NC was part of this logic.	
Gender equality and women's empowerment	Adaptation to CCs considered as a common concern	-
Basic labor rights		Inequality of pay between men and women and child labor are risks that could have an impact on the proper execution of activities. The project will remain vigilant to the respect of the Labor Code in force in the Republic of Benin. Attention will be paid to the elimination of child labor.
Indigenous Peoples	The Project's beneficiary communities do not have indigenous peoples as defined by the United Nations, but the project	-

Environmental and social principles checklist	No further assessment required for compliance	Potential impacts and risks, additional assessment and management required for compliance
	will ensure that the activities do not violate traditional customs and practices.	
Involuntary Resettlement	Project activities will be implemented with communities in their own localities and on their own land. No resettlement of populations to new localities is planned.	-
Protection of natural habitats	The project aims to make farmers more resilient to climatic shocks and to reduce pressure on classified forests, thus contributing to the protection of natural habitats.	However, the construction of the reservoir planned for component 1 could lead to the destruction of some natural habitats. The ESIA to be prepared during the drafting of the project document will allow better documentation of these aspects.
Conservation of biological diversity	The project plans to make farmers more resilient to climatic shocks and to reduce pressure on classified forests, thus contributing to the conservation of biodiversity	Although the project has many environmental benefits, including improved soil health, water conservation, and reduced use of chemical fertilizers and pesticides, the conversion of land for food crop production may affect biodiversity. Consultations will be required during the development of the environmental and social impact framework to identify appropriate measures and develop training modules that incorporate this concern.
CC	The project is being undertaken to build resilience of small farmers to CC. It also proposes to reinforce the local governance framework and management of CC adaptation.	
Pollution Prevention and Resource Efficiency	The project will contribute to sustainable land management, water use efficiency and water pollution prevention.	
Public Health	The project's activities promote the health of the beneficiaries. The provision of various equipment is intended to facilitate field work. In the same way, the improvement of the financial capacity of the beneficiaries will make it possible to face the expenses of health care)	-
Tangible and intangible assets	None of the project's activities have an impact on the physical and cultural heritage of humanity.	
Land and soil conservation	Component 1 of the project focuses on land conservation through soil and water conservation techniques (SWC) and water control to facilitate market gardening and other activities around the reservoir that	

Environmental and social principles checklist	No further assessment required for compliance	Potential impacts and risks, additional assessment and management required for compliance
	the project proposes to build.	

PART III: IMPLEMENTATION PROVISIONS

A. Describe the project/ programme implementation arrangements

The implementing entity at the national level is the National Environment and Climate Fund (FNEC), which is responsible for overseeing and coordinating the project activities in the commune of Bassila in close collaboration with ONAB. FNEC is responsible for the management of the financial resources allocated by the Adaptation Fund, as well as the quality of the results before the Adaptation Fund Board. It shall produce periodic implementation reports for the Adaptation Fund.

The physical and financial implementation of the project will be carried out at the national level by a project management team. A Project Monitoring Committee (PMC) will ensure the management follow-up and the orientation to be given according to the evolution of the implementation activities with a view to achieving the objectives.

At the local level and in each of the two intervention arrondissements, monitoring will be ensured by a local committee placed under the supervision of the Communal Authority in order to facilitate the capitalization of achievements at the end of the project and the possibility of extension or duplication on other sites.

The Project Monitoring Committee (PMC), chaired by FNEC, will play the role of the Steering Committee with the following mission: (i) define the reorientation of the project activities, (ii) ensure the implementation of the whole project, (iii) validate the annual work plans and budgets as well as the quarterly plans and budgets, (iv) and (v) make recommendations for the next steps of implementation. This committee will meet once a year to assess and adopt the activities of the previous budget year and to review and approve the Work Plan and Budget for the following year. The PSC is composed as follows: a representative of FNEC; representatives of multi-sectoral stakeholders including the ministries in charge of agriculture, water, health, living environment and sustainable development, local governance, the designated national authority, national environmental authorities/agencies, and a representative of civil society. The committee may call on resource persons as needed.

The project team will be as follows: a Project Manager who is the Director General of ONAB, an officer in charge of the sustainability of the achievements, a Secretary-Accountant and an officer in charge of monitoring and evaluation and the Community Facilitators.

-the Project Manager: is responsible for the organization and structuring of all programmatic activities, data collection and periodic reporting. He or she assists the other team members. He or she works with FNEC, local authorities and any other institution and external collaborators to achieve results.

-the Monitoring and Evaluation Officer:: he or she monitors the day-to-day activities of the community facilitators, ensures the planning of activities, the implementation and monitoring of work plans agreed upon with the Coordinator. He or she supports the team in the planning of activities (annual, quarterly, monthly, weekly). He or she also ensures the production and documentation of programme performance indicators.

- the Sustainability Manager: the Sustainability Manager is responsible for capitalizing on,

supporting and monitoring studies and action research to ensure the sustainability of actions at the end of the project. He or she develops a sustainability plan through knowledge management and the improvement of rich exchanges and sharing with the communities. It documents good practices and lessons learned. He or she also contributes to communication.

-the Secretary-Accountant: he or she is responsible for supporting the management team in the preparation of budgets and work plans, producing financial reports and analyzing requests for funds from all stakeholders. He/she reviews monthly and quarterly accounts, ensuring timely submission and payment to all stakeholders. It contributes effectively to the administrative management of the project according to the procedures of the donor and those established by the ONAB.

At the local level, the Local Project Committee (LPC), chaired by the Communal Authority or its representative, plays a facilitating and monitoring role at the local level and will ensure the capitalization of all the project's achievements.

- Two (02) Community Facilitators in charge of implementing and monitoring field activities in order to collect and feedback information.

- A support staff

The General Management, Technical Management, Administrative and Commercial Management, and Financial Management of the ONAB will be part-time on the project; they will ensure supervision, quality control and compliance with contractual and partnership principles, but also and above all the achievement of objectives and performance indicators. FNEC will be the eye of the external monitoring and evaluation on a daily basis for cross-referencing data and information from the internal monitoring team. Joint FNEC/ONAB missions will facilitate the proper execution of activities.

Focal points per arrondissements will be the facilitators' relays. They will be endogenous facilitators who may or may not be integrated into the groups; they are the vectors and guarantors of sustainability under the supervision of the groups' decisive bodies.

B. Describe the financial and project risk management measures

An analysis of the financial and risk management framework will be fully developed during the drafting phase of the full project document. This framework will be drafted in accordance with the procedures and operations manuals to ensure that the various stakeholders are taken into account. The financial management policies of the Adaptation Fund will be taken into account in the development of the framework.

However, at this stage a summary analysis of the financial and project risk management measures is presented below:

Table 10 : Financial and Project Risk Management Measures

Types of risk and impacts on the project	Level of impact on project objectives (low, medium, high)	Probability of occurrence (low, medium, high)	Mitigation Strategy
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<p><u>Financial:</u> Change in exchange rate Delay in the establishment of funds <u>Potential impact:</u> Lack of financial resources to carry out some project activities</p>	Low	Low	<p>Budget 10% for contingencies</p> <p>Make each stakeholder play their role in the process</p>
<p><u>Political :</u> Change political regime not in favor of climate actions Excessive politicization among local elected agents in Bassila because the project is not implemented in all arrondissements <u>Potential impact:</u> Delay in project implementation, Conflict between local actors</p>	medium	Low	<p>From the outset, have FNEC, ONAB and the Bassila Town Hall sign protocols of agreement.</p> <p>In the event of a change of regime, inform the new authorities and find a mechanism to involve them.</p>
<p><u>Environmental</u> Poor monitoring of the ESMP <u>Potential impact :</u> Potential negative impacts are not managed</p>	Low	Low	<p>Monitoring and evaluation should pay particular attention to the implementation of the ESMP</p>
<p><u>Sanitary</u> COVID 19 or other pandemic <u>Potential impact :</u> Delay in project implementation</p>	High	High	<p>Ensure compliance with pandemic measures</p>

C. Describe the environmental and social risk management measures, in relation to the Adaptation Fund's Environmental and Social Policy and Gender Policy

An environmental and social study will be conducted at the full project proposal writing phase. An environmental and social management plan will be produced and implemented during the project implementation phase.

An assessment will identify environmental and social risks in the targeted communes. Procedures will then be put in place to effectively manage these risks. These procedures, which will be linked to the environmental and social policy in Benin, will be in line with the gender policy of the Adaptation Fund.

D. Describe the monitoring and evaluation procedures and budgeted M&E plan, in accordance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund

A project monitoring and evaluation mechanism will be implemented to assess progress towards the achievement of project objectives and outcomes. This will allow the identification of strengths and weaknesses in the implementation of the project with the intention of carrying out corrective actions in time. Internal monitoring will be conducted by the CGSN. The CGSN will conduct annual monitoring missions to assess the compliance of the implementation of activities, in close collaboration with the CICC. A monitoring mission will make recommendations to the PAC. A monitoring and evaluation plan for the project will be developed, and a monitoring and evaluation expert will be assigned to ensure that the expected results are linked to the guidelines of the AF and the project indicators.

During project implementation, technical support will be provided to technical services and producer organizations for the development of monitoring and evaluation tools.

Monitoring and evaluation will be carried out through:

- evaluation and planning of meetings with the various stakeholders;
- periodic reports and annual review by the project team;
- field missions

Annual evaluation : An annual evaluation conducted by the CGSN, in collaboration with the CICC will be submitted to the PAC. This evaluation will take into account progress towards objectives, knowledge acquired, and risk management. This evaluation will cover technical and financial aspects.

Mid-term evaluation: This will consider the effectiveness, efficiency and relevance of the project activities within the project context. The report produced will shed light on issues requiring decisions and actions, as well as initial lessons learned from the formulation, implementation and management of the project. This evaluation would lead to the reorientation of specific activities if necessary.

Final evaluation: Recommendations from this evaluation, which will be carried out at the end of the project, may suggest additional measures to reinforce the sustainability of the project.

- E. Please include a project results framework, including milestones, targets, and indicators including one or more indicators from the AF results framework and linked to the AF Gender Policy

A summary results framework is presented in this section along with implementation indicators that will be used during monitoring and evaluation. This framework will be further developed during the drafting of the full project document.

Table 11 : Project Results Framework

Objectives	Component activities	Starting situation	Performance indicator	Expected results	Evaluation method
Through the adoption of adapted techniques, the project will improve and maintain the livelihoods of male and female producers despite climatic shocks.	Component 1: Tailored training for producers on climate-smart agriculture techniques, provision of various equipment to increase producers' work capacity, construction of a water reservoir to increase rainwater storage capacity, establishment of a mechanism to provide producers with seeds and plants adapted to CC	Increase in the number of producers powerless to cope with the deterioration of their livelihoods due to climatic shocks The excessive dependence of producers on the sale of their products in the state Little investment in VACs development Limited knowledge on approaches to adapting the agriculture-forestry sector to CC Little investment in concrete CC adaptation measures Increasing number of extreme events	Level of resilience of producers to climate shocks Quantitative data on yield increases for key targeted crops Percentage of producers whose livelihoods are improved. Number of Town Hall agents trained on adaptation to CC in the agriculture-forestry sector and on integrating gender into adaptation The implementation guide for adaptation to CC for actors and rural populations	More than 1000 producers are trained on AIC, More than 1,000 people are involved in the development of VACs More than 100 communal agents and other stakeholders are trained on the adaptation of the agriculture and forestry sectors to CC and on the integration of gender in CC adaptation Alerts are issued for more than 50% of extreme events to enable communities to respond	List of producers and communal agents and other stakeholders benefiting from training ATDA production statistics Reports of field visits and facilitators The implementation guide for adaptation to CC for the benefit of stakeholders and rural populations living near forests Monitoring and evaluation reports Photos and videos comparing the initial situation with that of the project

Annex 5 to OPG Amended in October 2017

<p>The project will also diversify the sources of income of the target communities so that they can benefit more from agricultural production.</p>	<p>Component 2: Training/structuring of producer groups and establishment of innovation platforms for the maize, soybean, market garden, cashew, shea, and honey VACs, provision of equipment to shea processors and beekeepers to increase shea and honey harvesting capacities.</p>	<p>(droughts and floods) for which no forecasting measures are developed</p>	<p>living near classified forests is validated and disseminated</p> <p>Number of flood or prolonged drought alerts issued, allowing communities to be informed of weather forecasts and rapid interventions to be undertaken</p> <p>Areas of private and community forests maintained in the two arrondissements</p>	<p>effectively</p> <p>The implementation guide for adaptation to CC for the benefit of stakeholders and rural populations living near classified forests is used in the two arrondissements and beyond</p> <p>The pressure on classified forests is reduced by half</p>	
<p>Similarly, the project will create a local governance framework conducive to effective management of adaptation to CC</p>	<p>Component 3: Training of Town Hall agents on the adaptation of the agriculture and forestry sectors to CC, development of a guide for the implementation of adaptation to CC for the benefit of actors and rural populations living near classified forests, integration of gender in adaptation to CC, establishment of a community early warning system to limit the loss of means of subsistence, enrichment of communal, community and private forests with</p>				

Annex 5 to OPG Amended in October 2017

	CC-resistant species				
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F. Provide evidence of alignment of project objectives with the Adaptation Fund's Results Framework

The project will be consistent with the AF's strategic results framework. Details will be provided during the drafting phase of the project document.

Project Objective(s) ¹	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)

¹ The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

Project Outcome(s)	Project Outcome Indicator(s)	Fund Output	Fund Output Indicator	Grant Amount (USD)

- G.** Please include a detailed budget with budget notes, a budget on the use of the Implementing Entity's management fee, and an explanation and breakdown of implementation costs.

The overall project budget is US\$2,889,900 of which US\$222,300 is for the project implementation cost and US\$197,600 is for the Implementing Entity management charges.

- H.** Please include a disbursement schedule with milestones

The disbursement schedule will be detailed during the drafting of the project document.

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government² *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

<p><i>Prof Martin Pépin AÏNA, General Director of Environment and Climate, Ministry of the Living Environment and Sustainable Development</i></p>	<p>Date: (January, 10, 2022)</p>
---	----------------------------------

B. Implementing Entity certification *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person’s name, telephone number and email address*

<p>I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (.....list here.....) and subject to the approval by the Adaptation Fund Board, <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.</p>
<p> </p>

⁶ Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

<i>Dr Appolinaire D.GNANV</i> Implementing Entity Coordinator	
Date: <i>January, 10, 2022</i>)	Tel: +229 97192464 and email: gnanviappolinaire@yahoo.fr
Project Contact Person: BIAOU Mathieu, DMRF	
Tel: +229 97608219 And Email: biaoumathieu@yahoo.fr	



ADAPTATION FUND

Republic of Benin, Cotonou, January 7, 2022

N° 023 /DGECE/MCVDD/SD

To: The Adaptation Fund Board c/o
Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Subject: Endorsement for Building resilience to climate change of the neighboring populations of the classified forests of Bassila and Penessoulou in the Central region of Benin

In my capacity as designated authority for the Adaptation Fund in Benin, I confirm that the above national project proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in the regions.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by National Fund for Environment and climate and executed by national executing entity.

Sincerely,

Prof Martin Pépin AINA
General Director of Environment and
Climate.





Project Formulation Grant (PFG)

Submission Date: 10 January, 2022

Adaptation Fund Project ID:

Country/ies : BENIN
 Title of Project : Strengthening the resilience to climate change of the populations living around the classified forests of Bassila and Pénessoulou in central Benin.
 Type of IE (NIE/MIE) : NIE
 Implementing Entity : Fonds National pour l'Environnement et le climat.
 Executing Entity/ies : Office Nationale du Bois, Mairie de Bassila, Cellule Communale de l'Agence Territoriale de Développement Agricole 4.

A. Project Preparation Timeframe

Start date of PFG	June 2022
Completion date of PFG	September 2022

B. Proposed Project Preparation Activities (\$)



Describe the PFG activities and justifications:

List of Proposed Project Preparation Activities	Output of the PFG Activities	USD Amount
In-depth consultations with the municipal authorities of Bassila, communities bordering classified forests, private sector actors and youth and women's organizations on the environmental risk management system, intervention strategies in the face of climate risks and species of trees resilient to climate change	Consultation reports and stakeholder engagement documents on project implementation, monitoring and evaluation	6,000
Technical, social and environmental feasibility study of two water reservoirs with the full participation of the final beneficiaries (market gardeners, breeders, fish farmers, households, etc.)	Technical, social and environmental study reports for a better choice of development options	10,000
In-depth study of the profitability or cost-effectiveness of project activities	In-depth cost-effectiveness analysis document for a better choice of adaptation options	5,000
Deepening of knowledge of the current and future impact of climate change on	Improved analysis of the relationships between	6,000

vulnerable social groups bordering classified forests (women, young people, etc.) and on their means of subsistence	environmental issues, the living conditions of social groups and the resilience of livelihoods and communities to climate change	
Total Project Formulation Grant		27,000

C. Implementing Entity

This request has been prepared in accordance with the Adaptation Fund Board's procedures and meets the Adaptation Fund's criteria for project identification and formulation.

Implementing Entity Coordinator, IE Name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
Dr. GNANVID Appolinaire Fonds National pour l'Environnement et le Climat	 	January 9, 2022	BIAOU Mathieu	(+229) 95 57 25 90	biaoumathieu@yahoo.fr

Bibliographical References

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ANNEX 1 : Attendance list

**REALISATION DE L'ENQUETE DE TERRAIN EN
VUE DE L'ACTUALISATION DES NOTES
CONCEPTUELLES POUR LE FOND
D'ADAPTATION**

Client : Fond National pour l'Environnement et le Climat : ONAB CARITAS

Date : 25/03/2021 Localité : Mairie de Bassila
Liste des participants

N°	Noms & Prénoms	Structure/Provenance	Contacts	Signature
1.	KOUAGOU Catherine	B2 Bassila	97395719	
2.	GOGRETO Théophile	ATAA4 Bassila	96366163	
3.	OGBOLO Cady	ONAB/Bassila	95771267	
4.	BIAO K. Justin	ONG ADRIA / Adjo	97712480	
5.	STRENON Cécile	Cantonement / Bassila D'EF	97659326	
6.	ASSANKPON Patrice C.	Cantonement / Bassila D'EF	97-127200	
7.	ZANNOU E. Jean	ONAB	64204065	
8.	TOUNDOU O. Paul	ONAB	64369243	
9.	BOUPENI Franck	CAI Pérenoué	97027734	
10.	ISSOU ZA KARI Filikuhina	Mairie/Bassila	97290250	

11.	ATCHOU Xavier	Région Pédagogique Bassila	97549302	
12.	TCHABO Biaou Alibaba	WE ONG	97027869	
13.	IMBOU A. Raïmi	Rpt Roi HCHIRAO	97079077	
14.	SOULE ABDOU-Raïmi	Rpt Roi Bassil	97248488	
15.	IDRISSOU Youssoufou	Président jeunesse	97026657	
16.	TBOURAFIWA Allassane	Pkt coord Bassila	69021709	
17.	BOUKARI T. Youka	C/OUHEHA Bassila	97829098	
18.	SELLA Alimiyéou	RPST UCOUUP/Bassila	96907323	
19.	Wahaban TCHABIKOUOU	Chasseur	66535817	
20.	ABABOU Houkaila	Pkt chasseur		
21.	ATIGOU MFERI Orou Abam	Chasseur	97368420	
22.	SOULE ANTOUËSSOU	Rpt Imame central	97517295	
23.	ADAM Babanne	Pkte Associat. Jeunesse	97128135	
24.	SABISSA J. Chakiron	Rpt CAI Bassila	96228663	
25.	OUSSOUHARE Moucharabou	ONAB/Bahion	95036162	
26.	ASSOUMA Hadji	ONAB/Bahion	98246261	
27.	IDRISSOU Moubamba	Journaliste FPI Kouffé	69899794	

REALISATION DE L'ENQUETE DE TERRAIN EN
VUE DE L'ACTUALISATION DES NOTES
CONCEPTUELLES POUR LE FOND
D'ADAPTATION

Client : Fond National pour l'Environnement et le Climat : ONAB CARITAS

Date : 26/03/2021

Localité : Arron Dissement Bassila Centre / Com. Bassila
Liste des participants

N°	Noms & Prénoms	Structure/Provenance	Contacts	Signature
1.	ISSA Kassiyou	CV Bassila Aler	97 47 69 25	
2.	INOUSSA Sahamataou	CV Bassila Aler	97 02 79 87	
3.	AROUNA Boniferaou	Bassila Zongo	68 90 05 50	-
4.	MOUSSA H. AVVA NATHA	BASSILA ZONGO	97 71 17 33	
5.	OROU-Mouftaou Kayodo	Fabricant de charbon Mamigri	97 49 56 78	
6.	TCHABI Biaou ALibabe	DNG W.E.	97 02 78 67	
7.	OGBOLO Cadjé	ONAB	95 71 12 67	
8.	ASSOUNA Hadjy	ONAB	65 65 74 47	
9.	HODAGIBE Zalla	Contaminant Forestier	97 85 76 09	
10.	FOFANA Sarhatou	Mairie/ Bassila	97 69 69 33	

11.	ODAH I.M. Damien	C/BECAD Harris Banda	67142270	
12.	YACOUBOU Awala	COGEPAF Adjiré	96111928	
13.	N'KOYANA N'de	Ass. Ap. Bassila	97097849	
14.	ZANNOU E. Jean	Suppléant Doint focal FNEC/DNAB	64104065	
15.	TOUNDOH O. Paul	Point Focal FNEC/ONBB	64869243	
16.	BAOU Mathieu	DMRE/PNOC	17608217	
17.	ABOUNDJOU Maliki	Maini Bassila SG	97046032	
18.	IBOURAITA Hassane	Pat. coord. Bassila	69021709	
19.	YACOUBOU Hassane	CV Bassila 3	96528978	
20.	ALAKPHE Dumouyon	org. coord. Bassila	96435873	
21.	OLOUKPEDE Abdou Roger	Exploitant forestier agréé	97166390	
22.	BOUKARI I. Ymala	C/ONAB Harris	97827098	
23.	AFFO B. Harissou	Bassila Alkam	96387994	
24.	TAIROU Safirou Taïrou	Bassila Alkam	96817682	
25.	TORONOU F. Ange Patrick	ONAB/CT-Bel-Ind	95813465	
26.	DROSSUMARE Moucharafa	DNAB/Belcom	35036162	
27.	KONBE Abdoulaye	CV ANSIRI	91242256	

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28.	BABO Djibo Fehaou	Consultant	97967519 24136375	
29.	ATTO Nestor	Consultant	97520984	
30.	TCHOBO Gervand	Assistant Consultant	94313411	
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REALISATION DE L'ENQUETE DE TERRAIN EN
VUE DE L'ACTUALISATION DES NOTES
CONCEPTUELLES POUR LE FOND
D'ADAPTATION

Client : Fond National pour l'Environnement et le Climat : ONAB CARITAS

Date : 26/03/2021

Localité : Arrondissement Pénessoulou / Com. Bassali

Liste des participants

N°	Noms & Prénoms	Structure/Provenance	Contacts	Signature
1.	SAI Fou Souhouna	Pénessoulou ^{SG Pénessoulou}	96 01 05 37	
2.	ATAMOUNOU Moutakilou	Nagayilo / C.A. PAF	96 01 0 900	
3.	ALKALI Djililou	NIORO / C.A. PAF	97 35 43 78	
4.	SOUMAILA Safiwou	Pénessoulou ^{SG} / C.A. PAF	97 60 75 54	
5.	YACOUBOU Goussoulaye	Pénélam ^{Pénélam} / C.A. PAF	96 53 32 46	
6.	OKOTOKRO Sahouda	Pénélam / TRANS ^{TRANS} / Gani		
7.	MAGAZI Rafia	Pénélam / TRANS ^{TRANS} / Gani	62 07 54 92	
8.	AKPO Aliétou	Pénélam / Ppicult.	68 49 44 61	
9.	LEA Bassali	Kodowari ^{Char-} / Gani		
10.	SOULEMANE Affissétou	Kodowari		

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11.	ATTA Rafatou	Pénessoulou ^{PEN}		
12.	MOUMOUNI Fatimataou	Pénessoulou / Pén		
13.	ISSA Zénalou	Pénessoulou / TRANS ^{TRANS} / Gani		
14.	ASHANTI Mouhammed	Nagayilo / C.A. PAF	96 93 43 32	
15.	ALIBOU A. Zidjani	Kodowari	96 79 55 17	
16.	MOUMOUNI Sahada	Pénessoulou / Association ^{Association} / Gani	99 69 93 88	
17.	Atta K. Saouda	Pénessoulou / Coopération ^{Coopération} / Gani	97 05 10 83	
18.	MENINA ISSO Sahidou	Nagayilo / C.A. PAF ^{SG}	96 35 25 04	
19.	ALASSANE Abdourehmane	Pénessoulou ^{Pén} / Pén	97 11 76 39	
20.	ALIDOU Djibrilou	Pénessoulou / C.V.	97 14 99 21	
21.	ZAVARA Habibou	Nagayilo / C.V.	97 37 28 86	
22.	ZAMOUS E. Jean	ouars ^{ouars}	64 10 40 65	
23.	ADAMEVA Mohamed	Pénessoulou / Ppicult.	96 55 76 56	
24.	AMADOU D. Abdou	Pénessoulou / Association ^{Association} / Gani	97 82 91 45	
25.	KEOULETI OMBI Martin	Pénessoulou / Association ^{Association} / Gani	96 06 67 18	
26.	ATTAK Sahadateou	Pénessoulou / FENAFAB	97 32 26 59	
27.	ISSIFOU - Moussa	NIORO / C.V.	96 01 20 46	

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28.	ISSIFOU Salifou	Penessoulou/ ^{Mariouche}	67 27 85 70	Handwritten signature
29.	MAGAZI Mamouda	Penelan / C.V.	66 19 71 07	Handwritten signature
30.	ZAKARI Issiaka	NiORO / ^{SG} PEPI		Handwritten signature
31.	MADJANISSI Mouritala	NiORO / ^{ORPA} PEPI	95 10 84 30	Handwritten signature
32.	ASSOUMANO Samouratou	Penelan / ^{Trans. Gari}		Handwritten signature
33.	ISSIFOU Yacoubou	Penessoulou / ^{champion}	69 76 16 02	Handwritten signature
34.	BIAO K. Justin	Abidjo / PRONGANNA	97 71 24 80	Handwritten signature
35.	CROSSOMARE Moucharapu	Behicon / ONAB	95 03 6 62	Handwritten signature
36.	Fournéri Kardoum	CA / Penessoulou	97 02 77 34	Handwritten signature
37.	ASSOUMBA. Hady	C/TEP / ONAB	96 24 26 61	Handwritten signature
38.	AMIDOU Adjara	Penelan / PePi.		Handwritten signature
39.	SOULEMANE Salifou	Penessoulou / ^{champion}	96 55 07 03	Handwritten signature
40.	AKO Nestor	Consultant	97 37 89 51	Handwritten signature
41.	BAWOU D. Fehiem	Consultant	97 96 75 19	Handwritten signature
42.	TCHOSO Gienane	Assistant Consultant	94 91 34 11	Handwritten signature
43.	TOUNDOH O. Paul	C/ISS / ^{PEC} Handwritten	66 36 24 63	Handwritten signature
44.	KARIMOU Sahirou	Penessoulou / Apicult	97 35 63 97	Handwritten signature

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45.	AYOUBA Ganiou Toure	Penelan / ^{rdt} Apicult	96 00 66 38	Handwritten signature
46.	YACOUBOU Issaka	Nagayile / ^{champion}		A
47.	ABOUBOU Alidou	Penessoulou / ^{ancien} C. A/Ex	94 32 98 14	Handwritten signature
48.	TCHERPASSI Pidele	Penessoulou / ^{rigid}	64 26 62 25	Handwritten signature
49.	ISSIFOU El-Kamir	Penessoulou / Apiculteur	66 29 13 06	Handwritten signature
50.	ALANDA Adiatou	Penessoulou / Apiculteur	61 73 60 31	Handwritten signature
51.	Pamatau SBEDOU	Nagayile / ^{Trans. Gari}	66 43 55 71	vn
52.	ALASSANE Z. Ayoubou	Penessoulou	97 02 70 63	Handwritten signature

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Annex 2: Agricultural statistics for the commune of Bassila between 2011 and 2020

Speculations	Variables	2012	2013	2014	2015	2016	2017	2018	2019	2020
Corn	Sup (ha)	6409	5297	7442	5387	9741	8961	8970	15014	11183
	Rend (kg/ha)	3284	565	2701	2860	2577	2642	2731	2532	2079
	Product (ton)	21049	2992	20098	15409	25101	23675	24500	38015	23246
Rice	Sup (ha)	1159	1275	1215	1045	1128	1365	1369	1255	1546
	Rend (kg/ha)	4048	2949	3325	3406	3225	2700	2739	2500	4820
	Product (ton)	4692	3760	4040	3560	3638	3686	3750	3138	7451
Sorghum	Sup (ha)	2539	2686	2265	1706	1480	1547	1535	1885	2646
	Rend (kg/ha)	1525	1566	1590	1556	1572	900	945	1367	855
	Product (ton)	3872	4207	3602	2654	2326	1392	1450	2577	2262
Small millet	Sup (ha)	685	-	533	308	603	599	435	522	489
	Rend (kg/ha)	1087	-	1097	1096	1097	800	1131	1035	900
	Product (ton)	745	-	585	337	662	479	492	540	440
Total Cereals	Sup (ha)	10792	9258	11455	8446	12952	12472	12309	18675	15864
	Rend (kg/ha)	2486	1693	2178	2229	2118	1761	1887	1859	2163
	Product (ton)	30358	10959	28325	21960	31727	29232	30192	44270	33400
Cassava	Sup (ha)	3101	3208	3237	3004	3970	3014	3075	5008	4614
	Rend (kg/ha)	28666	18899	21810	22917	14942	15473	15447	16000	15520
	Product (ton)	88893	60629	70598	68844	59321	46635	47500	80132	71615
Yam	Sup (ha)	5504	6000	5477	6312	7098	6785	6775	6209	5755
	Rend (kg/ha)	21875	16821	18558	18949	18162	14000	14465	18500	16500
	Product (ton)	120400	100925	101643	119609	128916	94990	98000	114873	94953
Sweet potato	Sup (ha)	413	-	477	237	240	269	275	195	76
	Rend (kg/ha)	9494	-	9648	9598	9654	9200	9455	9529	7500
	Product (ton)	3921	-	4602	2275	2317	2475	2600	1857	573
Taro	Sup (ha)	10	-	6	4	2	5	3	6	6
	Rend (kg/ha)	10656	-	11535	9008	11179	9900	17667	2750	9725
	Product (ton)	107	-	69	36	22	52	53	18	58

Annex 5 to OPG Amended in October 2017

Total Roots and Tubers	Sup (ha)	9028	9208	9197	9557	11310	10073	10128	11419	10451
	Rend (kg/ha)	17673	17860	15388	15118	13485	12143	14258	11695	12311
	Product (ton)	213320	161554	176912	190764	190576	144152	148153	196880	167200
Cowpea/beans	Sup (ha)	477	3208	813	276	695	619	620	649	803
	Rend (kg/ha)	799	18899	824	837	844	850	871	848	879
	Product (ton)	381	60629	670	231	587	526	540	550	706
Voandzou	Sup (ha)	607	600	421	164	216	362	384	398	296
	Rend (kg/ha)	915	1000	906	913	911	920	900	911	928
	Product (ton)	555	600	381	150	197	333	346	362	275
Soybeans	Sup (ha)	929	1022	1104	935	1138	1410	1495	2249	2708
	Rend (kg/ha)	397	926	771	719	763	1200	1171	1950	2000
	Product (ton)	369	946	851	672	869	1692	1750	4386	5416
Total Pulses	Sup (ha)	2013	4830	2338	1375	2049	2391	2499	3296	3807
	Rend (kg/ha)	704	6942	834	823	840	990	981	1236	1269
	Product (ton)	1305	62175	1902	1053	1652	2551	2636	5299	6396
Tomatoes	Sup (ha)	88	95	28	25	63	69	75	58	70
	Rend (kg/ha)	11068	18474	15571	15800	13125	17500	18867	10000	14562
	Product (ton)	974	1755	436	395	827	1208	1415	580	1019
Pepper	Sup (ha)	248	250	263	169	47	65	69	164	103
	Rend (kg/ha)	3750	1600	1991	2314	2435	2054	2029	4500	2102
	Product (ton)	930	400	524	390	114	134	140	738	216
Okra	Sup (ha)	219	90	219	137	237	204	209	199	206
	Rend (kg/ha)	3248	10000	3758	3681	4480	4176	4258	4009	3972
	Product (ton)	711	900	823	502	1063	852	890	798	818
Total Vegetable Crops	Sup (ha)	555	435	510	330	347	338	353	421	379
	Rend (kg/ha)	6022	10025	7107	7265	6680	7910	8385	6170	6879
	Product (ton)	2615	3055	1783	1287	2004	2193	2445	2116	2054

Source : **Source:** Commune of Bassila Communal Development Plan 2018-2022 (2017)
Data DDAEP/Atacora, Natitingou (2021)

ANNEX 3 : Interview guide

Updating of two Benin concept notes for submission to the Adaptation Fund

Stakeholder consultation

Date:

Commune :

Arrondissement:

Villages :

List of stakeholder groups or associations interviewed :

.....
.....

Topic to discuss/information requested

1. Stakeholders' understanding of climate change:
Have you ever heard of climate change?

2. Manifestations of climate change:
What changes in the climate have you seen in the last decade compared to the last 30 years?
What change in rainfall, excessive heat, strong winds?

3. Assessments of impacts on a 30-year time scale
What are the effects or impacts of the changes described (question 2) on your activity in terms of losses or gains? What was your production 30 years ago? What has been your production over the last ten years?
List of endogenous adaptation measures adopted and initiatives underway or planned
What are you doing to address the impacts described in question 3?

4. List of desired types of interventions
What types of interventions would you like to see to reinforce current endogenous adaptation efforts?