



**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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## PROJECT/PROGRAMME PROPOSAL

### PART I: PROJECT /PROGRAMME INFORMATION

Project or programme category:	<b>Regular project</b>
Country:	<b>Benin</b>
Project or programme title:	PROJECT TO STRENGTHEN FOOD SECURITY AND COMMUNITY RESILIENCE TO CLIMATE CHANGE IN THE COMMUNES OF BOUKOMBE AND BOPA
Type of Implementing Entity:	<b>National Implementing Entity (NIE)</b>
Implementing Entity:	<b>National Fund for Environment and Climate (FNEC)</b>
Implementing Entity:	Caritas Bénin
Amount of Funding:	3,053,742 US dollars

#### 1. **Background and context of the project**

The Republic of Benin is a West African state located in the tropical zone between the equator and the Tropic of Cancer (between parallels 6°30' and 12°30' north latitude and meridians 1° and 30°40' east longitude). It is bounded to the north by the Niger River, which is the natural border with the Republic of Niger, to the northwest by Burkina Faso, to the west by Togo, to the east by Nigeria, and to the south by the Atlantic Ocean. Its surface area is 114,763 km<sup>2</sup>. From north to south, Benin extends for about 700 km. Administratively, it is a decentralized State with twelve (12) departments divided into 77 Communes, four of which have a special status, namely Abomey-Calavi, Cotonou, Porto-Novo and Parakou, 546 districts and 5295 villages and city districts. The relief of Benin is not very uneven.

Benin's climatology is characterized by two (2) climatic nuances separated by the latitude of Savè:<sup>12</sup> i) the sub-equatorial (or Beninese) in the south; ii) a Sudanese climate in the north and; iii) a transitional climate that is similar to a sub-Sudanese climate in the central zone.

Average annual rainfall varies between 800 and 1,400 mm in the south, compared with 800 to 1,100 mm in the north with a high degree of spatio-temporal variability. The average annual temperature varies between 27° and 29°C. More and more, frequent extreme weather events have been observed in the country since the 1950s, reflecting the effectiveness of climate variations and changes (MEHU, 2001)<sup>3</sup>. The hydrography includes four large basins such as the Beninese basin of the Niger River, the Volta basin, the Mono-Couffo basin and the Ouémé basin, the largest river in the country.

In terms of biodiversity, BENIN has three (03) types of vegetation such as the wooded savannah in the northern Sudanese regions ; the shrubby savannah in the center with species such as mahogany, Iroko, Samba and the forest in the South and Middle Benin.

Benin is one of the countries with a high demographic growth. The annual inter-censal growth rates are 3.25% between 1992 and 2002 and 3.50% between 2002 and 2013. (INSAE, 2015).

At the 2013 census, the population was estimated at 10,008,749 inhabitants of both sexes, of which 5,120,929 were women, or 51.2% of the total population. INSAE estimates<sup>4</sup> put the population at 11,884,127 in 2019,

<sup>1</sup> <https://presidence.bj/home/le-benin/geographie/>

<sup>2</sup> <https://web.facebook.com/1432400200371237/posts/1903476896596896/>

<sup>3</sup> MEHU (2001). Benin initial national communication on climate change. Cotonou

<sup>444</sup> <https://insae.bi/statistiques/indicateurs-recents/43-population> (Website consulted on 16/06/2021)

with 50.8% women. Benin's population is predominantly young, with a median age of about 16 years (RGPH4, INSAE). This high population pressure has negative impacts on environmental resources. These negative repercussions are aggravated by climate variability and extreme weather events that further impact socioeconomic activities and the living conditions of the population, particularly in rural areas (UNDP, 2015). In Benin, the Human Poverty Index (HPI) is estimated at 36.6% at the national level, compared to 47.6% in Atacora (the department to which the commune of Boukombé belongs) and 29.1% in the department of Mono where the commune of Bopa is located. The value of the HPI is a reminder that Benin is a developing country whose poor and vulnerable populations do not have sufficient means to sustainably meet their own needs. According to INSAE (2020)<sup>5</sup>, the incidence of monetary poverty estimated at 38.5% in 2019 at the national level is even higher in the departments of Atacora (60.5%) and Mono (43.0%).

Among the eight agro-ecological zones identified in Benin due to the homogeneity of their physical, biological, economic and social characteristics, zones 1, 4, 5 and 8 are the most vulnerable to the adverse effects of climate change (MEPN, 2008). CARITAS BENIN is a non-governmental organization that intervenes in certain Communes of these zones, including Bopa (Agro-ecological Zone 8) and Boukombé (Agro-ecological Zone 4). This project is initiated to contribute to the improvement of the adaptive capacity of the vulnerable populations of these Communes in the face of the adverse effects of climate change. Agriculture in Benin, being essentially rain-fed, is the most affected livelihood.

## **1.1. Geographic and socio-économique Context of the Commune of Bopa**

### **▪ Geographic and administrative location**

The Commune of Bopa is located in the southeast of the Department of Mono. It is bordered to the north by the Communes of Dogbo and Lalo, to the south by the Communes of Comé and Houéyogbé, to the east by the Couffo River and Lake Ahémé, which it shares with the Communes of Allada and Kpomassè, and to the west by the Communes of Lokossa and Houéyogbé (map 1). It is in the form of an elongated polygon and covers an area of 365 km<sup>2</sup>, or 22.74% of the area of Mono and about 0.32% of the total area of the country. The commune of Bopa has eighty-three (83) localities (villages and city districts) spread over seven (7) arrondissements, namely: Agbodji, Badazouin, Gbakpodji, Bopa centre, Lobogo, Possotomè and Yègodoé (table 1). The chief town of the Commune is Bopa.

### **▪ Socio-economic characteristics**

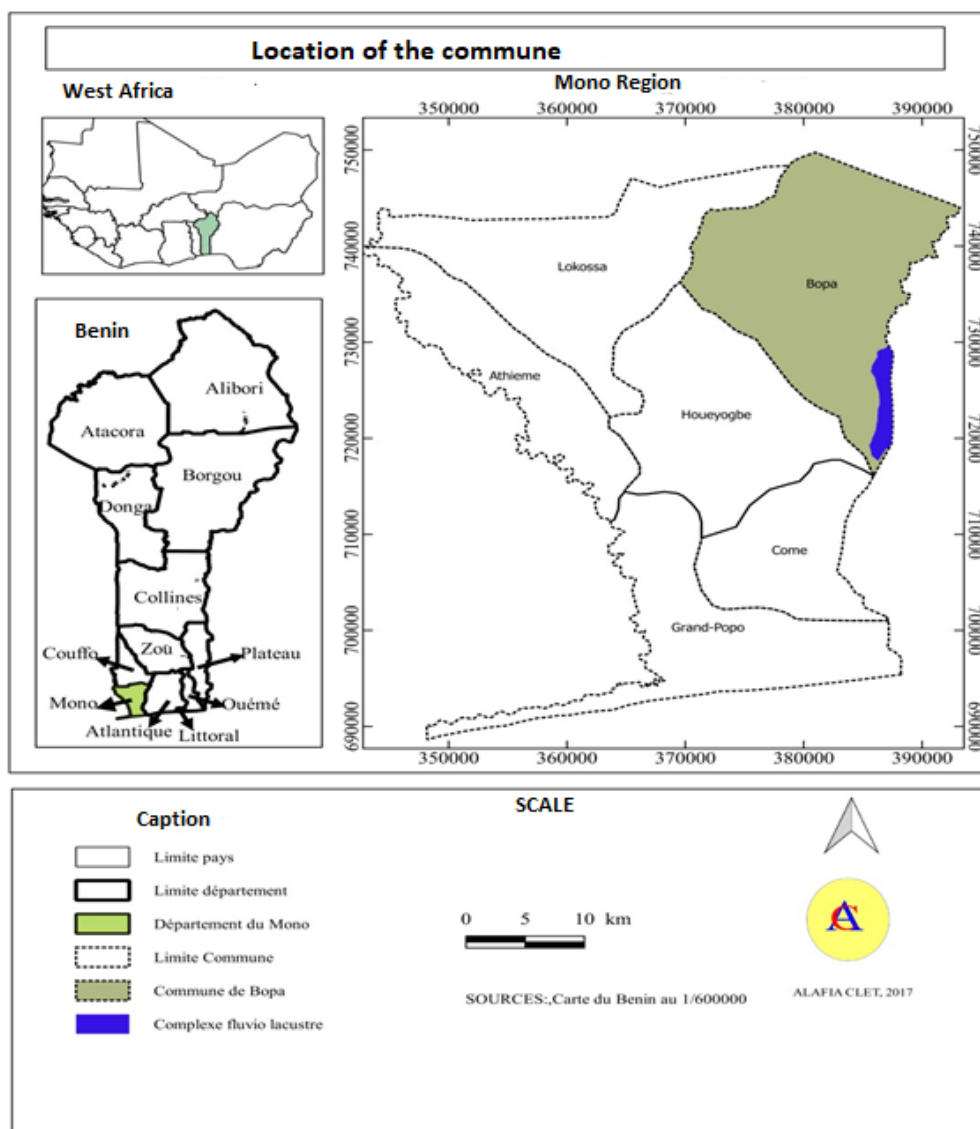
The dominant branches of activity in the Commune are "Agriculture, Fishing and Hunting" (73.8%), followed by "Trade, Catering and Accommodation" (9.9%) and finally, "Manufacturing Industries" (6.2%) and "Other Services" (6.5%). 99.5% of agricultural households are involved in crop production, of which 50% cultivate cassava, 25% maize and 14% beans/cowpea. Traditional equipment is used by 100% of households for agricultural work. It is important to note that in this Commune, there are approximately 26% female heads of household. The analysis of gender tools (profile of access to and control of resources and women's socio-political position) reveals:

- the poor access to and control of land by women;
- the difficulty of accessing and controlling factors of production ;
- Women's poor access to income ;
- the low involvement of women in local decision-making bodies ;
- the existence of a strong socio-cultural and religious hold on women.

In addition, only one in ten women make decisions in the home (including daily budgeting, investments, children 's education, family planning, and health care services) compared to seven in ten men who make decisions on the same issues. This notable trend is observed in African society in general.

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<sup>5</sup> POVERTY NOTE IN 2019



**Map 1: Location of the commune of Bopa**

Source : PDC 2018-2022 Commune of Bopa (2017)

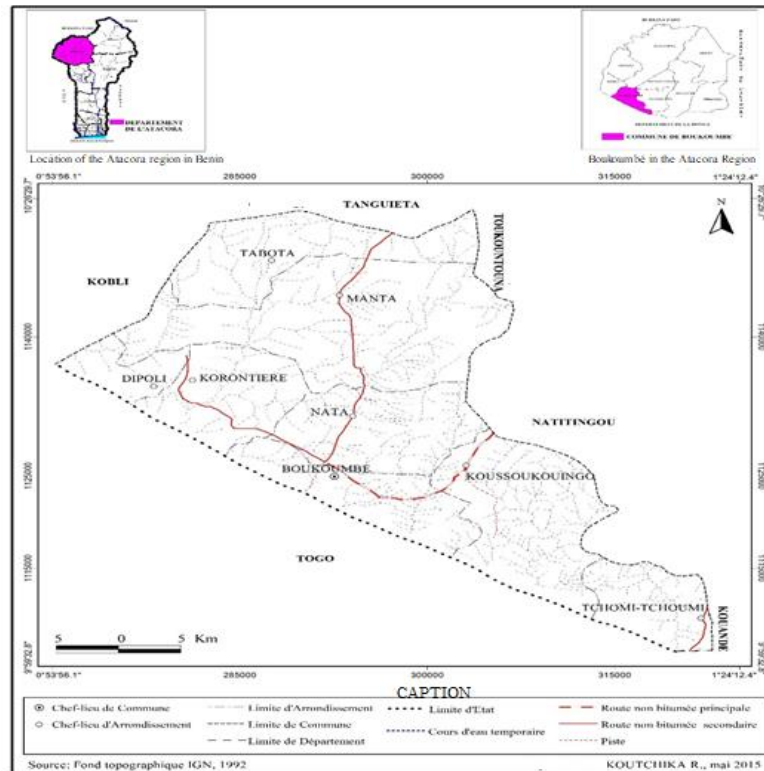
## 1.2. Geographic and socioeconomic context of Boukombé

### ▪ Geographic location

The Commune of Boukombé is located between 10° and 10°40' north latitude and 0°75' and 1°30' east longitude. Located in the Sudanian zone, it covers an area of 1036 km<sup>2</sup> (Commune de Boukombé, 2005; MdSC, 2010), bordered to the northeast by the Commune of Tanguiéta, to the northwest by the Commune of Coby, to the south by the Commune of Natitingou, to the east by the Commune of Toucountouna, and to the west by the Republic of Togo (Map 2).

### ▪ Socio-demographic data

The results of the last general population and housing census (RGPH4) indicate the cosmopolitan status and social characteristics of the commune of Boukombé. The commune includes several socio-cultural groups dominated by the Bètammaribè, who constitute the majority group. The enclave nature of the communities in a territory with a steep relief and subject to strong erosion gives them socio-demographic characteristics that are on the fringe of the average characteristics of the Atacora Department (INSAE, RGPH4 2013).



**Map 2 : Location of the commune of Boukombé**

Source : PLACC Boukombé (2015)

### 1.3. Climatic and environmental context of the project areas

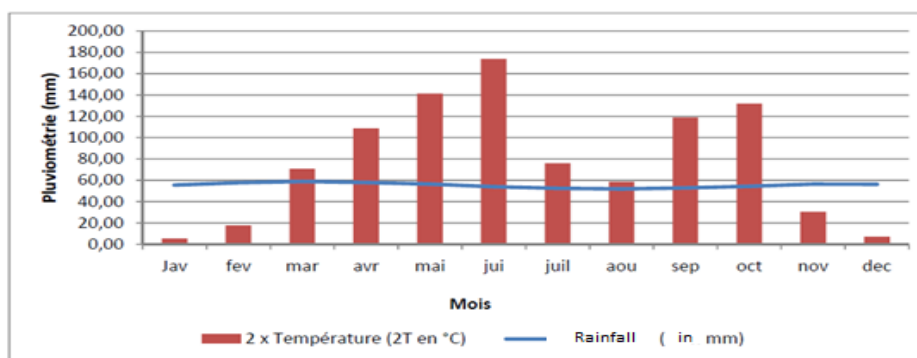
#### 1.3.1. Climatic and environmental context of the Commune of Bopa

- **Climature**

In the NAPA 1 report for the Commune, the rainfall and temperature data used here are respectively for the Commune of Bopa and Cotonou (synoptic station near Bopa), due to the non-existence of temperature data for the Commune of Bopa from ASEANA.

Figure 1 shows the umbrothermal diagram for the commune of Bopa. According to BAGNOULS and GAUSSEN (1953), a dry month is one in which rainfall is less than twice the average monthly temperature ( $P < 2T$ ). In light of this theory, the figure below shows that the Commune of Bopa is characterized by a subequatorial climate with four seasons such as a long dry season (from November to March), a long rainy season (from March to July), a short dry season (July to August) and a short rainy season (September to November).

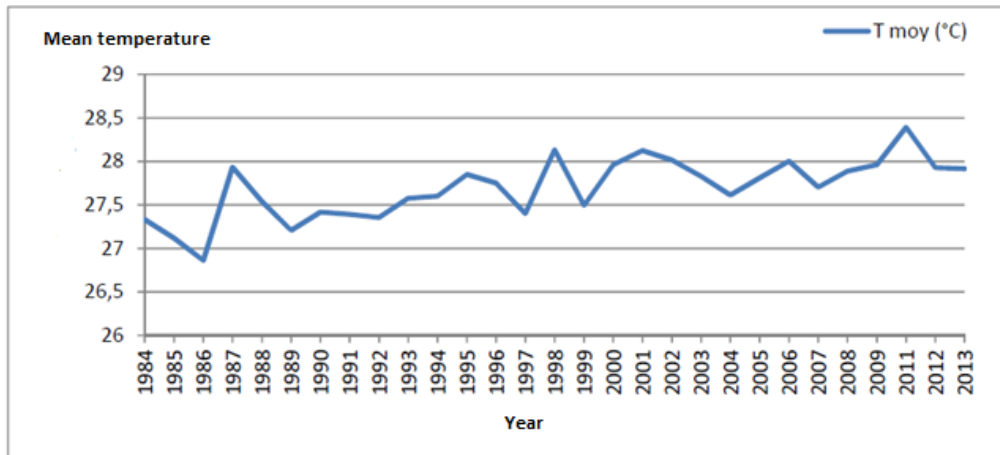
The annual rainfall in the commune varies between 54.2mm and 1204.7mm of water. The months of June and September are generally the wettest in the year with respective averages of 173.66mm and 119.01mm of rainfall. From December to March, the continental trade wind (or harmattan) blows, which is a dry and hot wind.



**Figure n°1: Umbrothermal Diagram of the commune of Bopa**  
(ASEANA data, 2015)

## Temperature

The evolution of the average temperature in Cotonou reported on the commune of Bopa from 1984 to 2013 shows a general upward trend (Figure No. 2). The deviations from the normal average temperature recorded each year during the same period are approximately  $-2.5^{\circ}\text{C}$  to  $+2^{\circ}\text{C}$  and show an upward trend from 1998 to 2013.

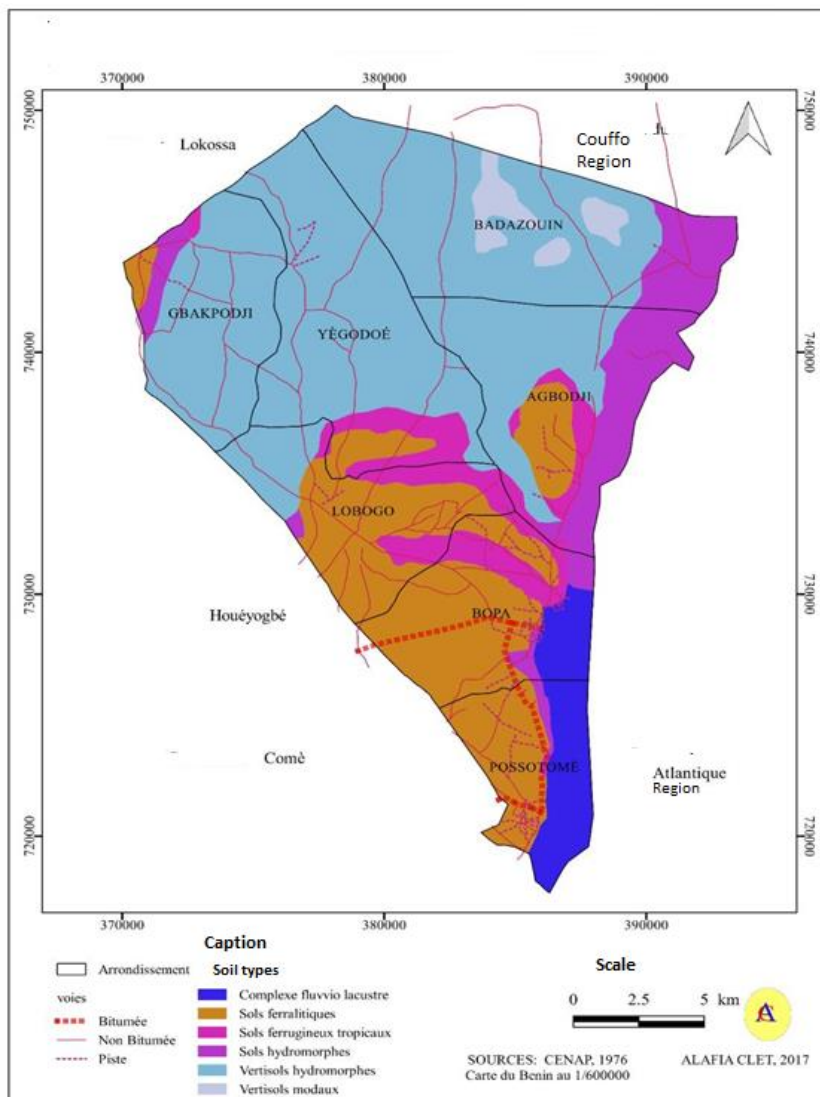


**Figure n°2: Mean temperatures variability in Cotonou**  
(ASECNA data, 2015)

### ▪ Soils

The Commune of Bopa has a diversity of soils (Map 5) that are favorable to agricultural practices. These different soils can be grouped into three (03) major groups represented on the pedological map (see map 1) of the commune of Bopa. These are:

- ☞ **Vertisol-hydromorphic or black earth.** These are clay soils with a poor physical structure. These black soils cover more than half of the total area of the commune, i.e., 20,106 ha, or 55%. They cover the arrondissements of Badazouin, Yègodoé, Gbakpodji, Agbodji and part of Lobogo ;
- ☞ **Ferralitic soils or bar soils on loose sediment:** This type of soil covers more than 20% of the total area of the commune, i.e. 8267 ha. It is located in the arrondissements of Possotomè, Bopa and the southern part of Lobogo ;
- ☞ **Hydromorphic soils:** This type of soil is made up of wetland areas (valleys and basins) and covers part of the arrondissements of Bopa, Possotomè and Agbodji. These are sandy-clay soils covering more than 10% of the total area of the commune. These soils exist in three different natures, namely: moderately organic and humid in Gley, mineral or slightly humid in deep Gley and mineral or slightly humid in pseudo-Gley.



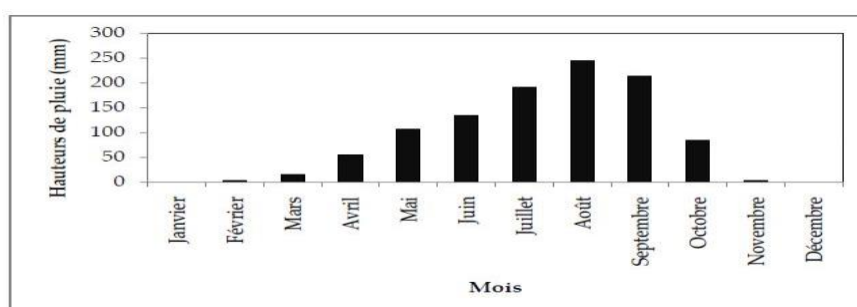
**Map 5 : Soil map of the commune of Bopa**

### 1.3.2. Climatic and environmental context of the Commune of Boukombé

- **Climate**

The climate of Boukombé is tropical Sudanian with two seasons: the rainy season (April to October), dominated by monsoon flows, and the dry season (November to March), marked during the early months by the harmattan.

The average annual rainfall during the standard climatological period 1981-2010 is 1053.6 mm. August and September are the wettest months (more than 40% of annual rainfall) and March and April are the hottest months.

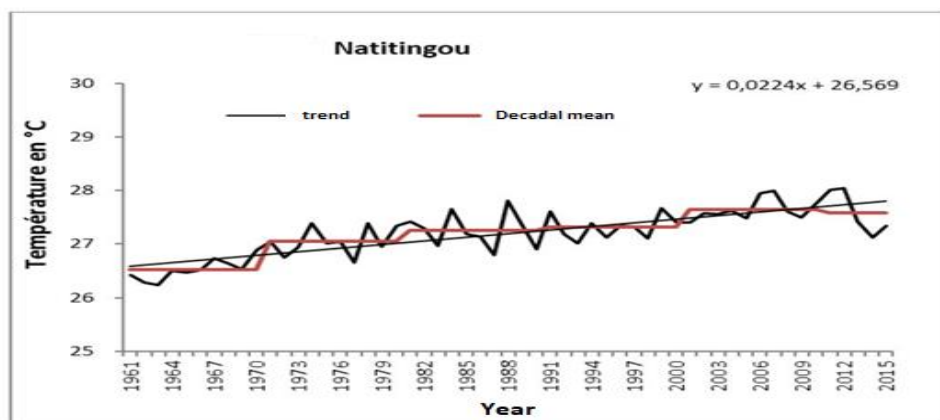


**Figure 8: Rainfall pattern in the Commune of Boukombé (1981-2010).**  
(ASECNA data, 2015)



The average annual temperature is 28°C while relative humidity varies from 27.1% to 82.8% (Wala and Sinsin, 2010).

The annual average temperatures of the Natitingou synoptic station, which is representative of the region, show an increasing trend of slope 0.02 between 1961 and 2015 (Figure 9). The analysis of the evolution of the decennial averages over the same period shows after each decade, an increase in temperature ranging from 0.10°C to 0.61°C. In particular, the decade 2001 - 2010 was warmer in the region with temperature averages equal to 27.64°C against an average of 27.32°C for the previous decade, an increase of 0.32°C.



**Figure 10: Annual and decadal mean temperature variability in Natitingou**

**Source :** Ouorou Yerima *et al.* (2020)<sup>6</sup>

#### ▪ Soils and vegetation

**The soil types** most commonly encountered in the Commune of Boukombé are leached tropical ferruginous soils, characterized by a low organic matter content, a sandy texture, and a structure that is particulate and susceptible to erosion. Hydromorphic soils are also found in the Wetlands, with good fertility potential. Large Wetlands exist in the western zone (Korontière, Ouest Manta, Ouest Tabota). There are many small Wetlands that are used for rice cultivation.

Despite the constraints associated with their use, the soils of the commune are used for the production of cotton, cereals (corn, sorghum, small millet, and fonio), and grain legumes. Thus, voandzou and groundnuts are grown in the Koussoucoingou arrondissement, cowpeas in several localities, roots and tubers, notably sweet potatoes, potatoes, taro and yams in Koukongou, and cassava in Koutchatié in Korontière. The schist soils are particularly favorable for fonio production in the Manta arrondissement. There has been a decline in soil fertility and a reduction in food production.

**The vegetation** of the Commune is dominated by clear and wooded savannahs. The Sahelian landscape has already taken root. *Adansonia digitata* (baobab), *Borassus aethiopum* (palmyra Palm), *Parkia biglobosa* (African locust bean), *Vittelaria paradoxa* (shea tree), *Diospyros mespiliformis*, *Ceiba pentandra* (kapok tree), *Blighia sapida* (false mahogany) and *Tamarindus indica* (tamarind tree) are the most common woody species. Around the settlements, there are physical signs of deforestation due to heavy agricultural encroachment. The fauna is characterized by the rarity of animal species. The wildlife population consists of deer, agouti, rabbit, rat, partridge, wild guinea fowl, etc.

Human activities are profoundly modifying the Commune's landscape (Table 6). The land use units have changed significantly in 20 years (between 1995 and 2015): the areas of open forest and wooded savannah and forest galleries have declined by 17% and 25% respectively, to the benefit of fields and fallows, plantations, and settlements, whose areas have increased by 4.7%, 18%, and 115% respectively during the same period...

#### 1.4. Vulnerability of the project areas

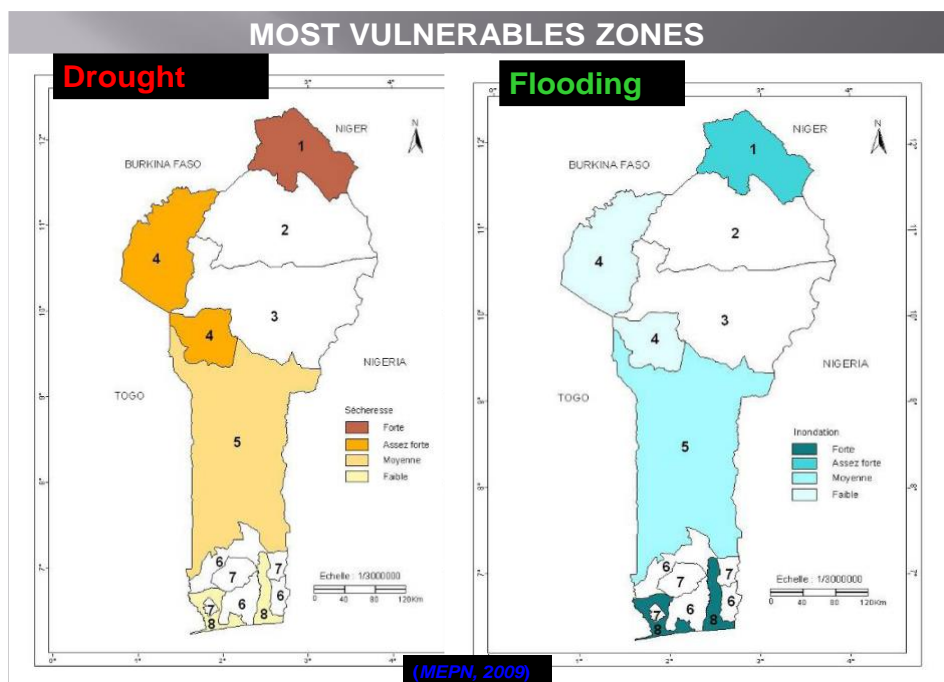
Benin is potentially vulnerable to environmental and climatic crises, the damage of which is perceptible in all environmental and social components of the country. The work carried out as part of the joint assessment of vulnerability to climate change in the most vulnerable geographical areas of Benin (PANA, 2008) has established the following results:

- Drought, floods and late and heavy rains constitute three major climate risks in Benin;
- Violent winds and excessive heat are also two climatic risks that can be very important in certain localities, in certain situations.

<sup>6</sup>Léa Guèguè OUOROU YERIMA, Gyslaine HOUNTO, Isidore YOLOU, Ibouaïma YABI and Fulgence AFOUDA (2020). Climatic variability and agricultural production in agro-ecological zone III in northern Benin. *AfriqueSCIENCE* 16(2) (2020) 76 – 85



Furthermore, Benin is divided into eight agro-ecological zones based on climatic and agro-pedological parameters, cropping systems, population density, plant cover and certain constraints. The four most vulnerable agro-ecological zones have received special attention under the PANA1 project. These include agro-ecological zones 1 (extreme north of Benin), 4 (North Donga West-Atacora zone), 5 (Central cotton zone) and 8 (fisheries zone). The location of these zones is shown on Map 6 below:



**Map 6 : Level of exposure to drought and flood risks in Benin most vulnerable agro-ecological zones**

It should be noted that the NAPA1 project interventions covered 9 villages in the 9 targeted communes. Many other communes and villages in these four most vulnerable agro-ecological zones have not been able to benefit from these actions. While flooding is the primary risk in the south (agro-ecological zone 8), drought remains very pronounced in the north (agro-ecological zones 1 and 4). According to projections to 2025, all three agricultural sub-sectors (crop, livestock and fisheries production) are vulnerable to climate change, but to varying degrees. Therefore, the following options could help the communities concerned to better adapt:

- Establishment of an early warning and disaster management system,
- development of crop and livestock production systems adapted to climate change
- water management in agricultural systems,
- promotion of aquaculture in fisheries areas<sup>7</sup>.

In addition, studies conducted as part of Benin's preparation for access to the Green Climate Fund show that in Benin (PPB-FVC, 2017), according to rainfall projections, in the southern region of Benin (at latitudes below 7.5°N), there could be practically unchanging annual rainfall up to the year 2100, compared to the reference period (1971 - 2000). North of this latitude, a slight increase would be observed, up to 13% and 15% in 2100, respectively in the northwest and northeast. On a monthly scale, a decrease in rainfall could reach 21% by 2100 in the month of April in the south of the country. As for the North, the projections did not indicate a precise trend on a monthly scale. The temperature projections for Benin indicate an increase in all regions by 2100. The highest temperature increase would be 3.27°C, compared to the reference period 1971 - 2000, while the lowest value would be 2.6°C in the southwestern part. This trend is likely to result in a water deficit under certain conditions, as the increase in temperature generally leads to an increase in potential evapotranspiration (PET).

#### 1.4.1. Justification for the choice of localities to host the project

The programs developed by Caritas Benin for the benefit of vulnerable populations in certain vulnerable communes are struggling to lift the beneficiaries out of their precariousness because of the severity of the effects of climate change. The present project has therefore identified agro-ecological zones 4 and 8, mainly the communes of Boukombé and Bopa.

Stakeholder and community consultation missions were organized in the arrondissements of Manta and Natta in the commune of Boukombé and in the arrondissements of Badazoui and Yègodoé in the commune of Bopa, in order to better understand the causes, manifestations and effects of climate change on community livelihoods.

<sup>7</sup>Second national communication of the republic of Benin on climate change, june 2011

Several reasons determined the choice of these arrondissements. First, the two targeted communes are part of Caritas Benin's focus areas where community resilience to climate change projects had been or are being implemented, without having covered the selected villages and arrondissements.

From a demographic point of view, these arrondissements are among the most populated rural arrondissements of the concerned communes (Manta 13,633 inhabitants, Natta 11,239 inhabitants, Badazoui 16,163 inhabitants, Yègodoé 15,237 inhabitants) and have more women than men.

**Moreover, agriculture is the dominant economic activity in these localities and is the main source of wealth creation. It employs about 85% of the active population (Boukombé) and 99.5% of the agricultural households that work in the vegetable sub-sector. In the specific case of Bopa, the two selected arrondissements are all located in the black soil zone, which is very favorable to agriculture, but due to the negative effects of climate change, a decline in agricultural yields has been noted. In the commune of Boukombé, the food production situation remains unsatisfactory. Climate and environmental risks and their impacts in the commune of Bopa**

The manifestations of climate change, for most populations, are expressed differently and are not the same depending on the environment. In Bopa, the main climatic risks are flooding, pockets of drought, and violent winds.

The effects of these risks are felt in the agricultural, livestock, fishing and agri-food processing sectors. The impacts are manifested by losses in yield and financial profitability, high mortality in the various types of livestock, the gradual disappearance of certain activities, and difficulties in carrying out certain activities such as processing.

In order to cope with the effects of climate change, the populations have developed a number of adaptation strategies:

- The modification of sowing periods (earlier than expected or later) ;
- The conversion to other crops such as rice in areas that are generally flooded, such as Agbodji, and soybeans, whose plants are resistant to flooding as long as they are not completely submerged.
- The use of indicators such as the flight of the hawk or the leafing out of the iroko to identify the right time for harvesting or sowing, with an accuracy that seems to diminish with time ;
- The installation of crops according to toposequences;
- The use of improved varieties. The use of improved varieties, particularly maize seed.
- Conversion to other activities such as trade and resale.

The table of climatic risks identified by arrondissement and the table of the vulnerability matrix (Tables 1 and 2) are presented below

**Table 1: Climate risks identified by arrondissement of Bopa**

Sector	Identified climate hazards			
	hazard 1	hazard 2	hazard 3	hazard 4
<b>Badazouin</b>	Intense rain/ Flooding	Late rain/ Drought pocket	Excessive heat/ Heat wave	Strong winds/ Increase in frequency and severity of strong winds
<b>Yègodoé</b>	Intense rain/ Flooding	Late rain/ Drought pocket	Excessive heat/ Heat wave	Strong winds/ Increase in frequency and severity of strong winds

**Source:** Field surveys, March 2021

**Table 2: Vulnerability matrix of the commune of Bopa**

Target climate variable	Hazard	Sensitivity element	Impacts
Intense rainfall	Increase in the frequency of floods, which occur mainly from April onwards (for the last ten years almost every year, compared to a return period of 3 years over the last 3 decades)	Crop production (priority crops: maize, soya, beans, selected palms) other crops: sugar cane, tomatoes and Processing activities of cassava into gari, maize into flour and patties, oil palm into palm oil, soap and liquor (sodabi), soybean into milk and cheese etc.	<ul style="list-style-type: none"> <li>• Crop destruction estimated at 75% on average</li> <li>• Maize: destruction of fields and loss of about 100% in case of flooding (300,000 to 600,000 F for good years against 0 for bad years)</li> <li>• Soybeans: destruction of soybean fields and 100% loss when intense rains occur at harvest time;</li> <li>• Crop destruction Loss assessment has increased to the range of 40%-100% loss 30 years ago, to 60%-100% loss (for almost 10 years) for crops such as corn.</li> <li>• Limited availability of soybean raw material for cheese and milk processing.</li> <li>• Low availability of raw materials from agricultural production (maize, cassava, soybean, oil palm) for processing activities</li> <li>• Amplifies food insecurity</li> </ul>
		<ul style="list-style-type: none"> <li>• Hydro-morphic soils (67% of the soils of the commune)</li> <li>• Position of farms (e.g. in depressions)</li> <li>• Soil waterlogging due to excess water from artesian wells</li> <li>• Delay in the availability of improved seeds (in the case of corn)</li> <li>• Absence of seed producers in the commune</li> </ul>	<ul style="list-style-type: none"> <li>• Increased prevalence of avian diseases;</li> <li>• Increased mortality</li> <li>• Restricted mobility and increased stress</li> <li>• Low availability of feed due to destruction of production by floods and for feed production</li> <li>• Limited availability of cassava processing residues for pig feed due to low yields in cassava fields</li> <li>• Low availability of feed due to flooding and feed production</li> <li>• Increased production costs due to the purchase of feed for mixed breed pigs</li> <li>• proliferation of pathogens leading to the death of livestock</li> <li>• Mortality rates (poultry and goats) and epidemics</li> <li>• Proliferation of harmful germs</li> <li>• High mortality between 50%-100%.</li> </ul>
	Increased intense runoff	<ul style="list-style-type: none"> <li>• Filling of the watercourse with sediments and branches of acadja</li> <li>• Destruction of mangrove plantations</li> <li>• Use of prohibited fishing gear</li> </ul>	<p style="text-align: center;">Increased intense runoff</p> <ul style="list-style-type: none"> <li>• Decrease in the depth of Lake Ahémé due to silting</li> <li>• Destruction of spawning areas</li> <li>• Decrease in fish catch estimated at 66 to 75% (for the last fifteen years, a night of fishing has brought in 200 to 1000 FCFA compared to 3000-4000 FCFA in the 1980s)</li> </ul>
Late rains (about thirty years ago, the first rains came in February; for the last ten years or so, even at the end of March, no rain has fallen)	Increased duration of pockets of drought (now from 2 to 4 weeks) / Random modification of the rainy season	Crop production (priority crops: maize, soybean, bean, selected palm) other crops: sugar cane, tomato, etc. The endogenous methods of seasonal forecasting no longer make it possible to predict the seasons (this is the case, for example, of the "Gangan" and "Holih" birds that announce the beginning and end of the rains, which 30 years ago enabled farmers to know when to sow and harvest. Similarly, despite the sacrifices to deities that in the past helped to attract the rains are no longer effective	<ul style="list-style-type: none"> <li>• Random modification of the agricultural calendar (in the past, maize was sown around February 15 and harvested in April; nowadays, even at the end of March, sowing has not yet been done)</li> <li>• Increased water stress of crops</li> <li>• Even the rice crop (April to June) adopted because of the intense rains in April is affected by pockets of drought</li> <li>• Proliferation of invasive plants ("azuimanh" in local language) that affect the corn crop</li> <li>• Decrease in crop productivity</li> </ul>
Temperature	Temperature Increased frequency and severity of excessive heat (heat wave)	Crop production (corn, rice, soybeans, etc.)	
			<ul style="list-style-type: none"> <li>• Increased frequency of crop watering</li> <li>• Decreased productivity of off-season crops estimated at 40%.</li> </ul>

Target climate variable	Hazard	Sensitivity element	Impacts
			Animal production (poultry, goats and pigs, fry)
			<ul style="list-style-type: none"> <li>• High mortality after farrowing (rabbit and poultry)</li> <li>• Goat mortality estimated at 70%.</li> <li>• Increased stress in pigs and rabbits</li> <li>• High mortality of pigs</li> <li>• Decreased productivity of fish species</li> </ul>
			Crop production
Strong winds	Strong winds/ Increased frequency and severity of strong winds	<ul style="list-style-type: none"> <li>• Slash-and-burn farming</li> <li>• Driven hunt</li> <li>• Straw roofing of houses</li> </ul>	<ul style="list-style-type: none"> <li>• Increased fire frequency</li> <li>• Destruction of homes and harvested products</li> </ul>

**Source :** Field survey data, March 2021

These data from the field survey are supported by the results established by the PANA 1 project in its vulnerability assessment report in the commune of Bopa.

▪ **Climatic and environmental risks and their impacts in the commune of Boukombé**

The main climatic risks facing the commune of Boukombé are drought, rising temperatures, and high winds. In addition to these risks, there is the delay of rains, their sudden arrival, and their abrupt cessation. These risks have an impact on certain sectors of activity in the commune, such as agriculture, livestock, fishing and food processing. In the commune of Bopa, climate change has impacts on the various indicators used to monitor the different activities of these sectors: loss of financial profitability; loss of yield ; high mortality in the different types of livestock; progressive disappearance of certain activities; difficulty in carrying out certain activities such as processing ; progressive and accelerated drying up of water resources ; progressive evolution of famine.

Faced with these difficulties, the populations have developed some adaptation strategies, including: The adoption of improved seeds such as maize (EVTT 90, EVTT 97, SYNEE 2000) ; the conversion to the production of drought-resistant crops such as fonio; the creation of market gardening wells reinforced by the AMSANA project; the long-distance route in search of water; the construction of bunds for irrigated crops such as rice; composting; improved water management techniques for livestock ; the use of bark in livestock rations to deal with certain diseases; the table below shows the climatic risks identified by arrondissement and the vulnerability matrix (tables 3 and 4).

**Table 3 : Climate risks identified by arrondissement of Boukombé**

Arrondissement	Identified climate hazards			
	hazard 1	hazard 2	hazard 3	hazard 4
<b>Manta</b>	Rarity of rain/drought	Late rain/drought pocket	Excessive heat/heat wave	Strong winds/ Increased frequency and severity of strong winds
<b>Natta</b>	Rarity of rain/drought	Late rain/drought pocket	Excessive heat/heat wave	Strong winds/ Increased frequency and severity of strong winds

**Source :** Field survey data, March 2021

**Table 4 : Vulnerability matrix of the Commune of Boukombé**

Target climate variable	Hazard	Sensitivity element	Impacts
Rarity of rainfall	Seasonal drought  (The rain disappears when the need is greater) Delay in the onset of rains, scarcity and randomness of rains with the feeling that farmers no longer know when to plant)		On water resources
			<ul style="list-style-type: none"> <li>Compared to the 1980s, the disappearance of several streams / lowering of the water table, which near the rivers was flush (about 1 m from the ground) and which has dropped to about 60 m nowadays</li> <li>Partial filling and rapid drying up of dams (e.g. Dipoko-Fontri dam)</li> <li>Lowering of the static groundwater level</li> <li>Water fetching made more difficult for women who have to wake up earlier and walk a longer distance to fetch water (nowadays they walk 4 times the distance they used to)</li> <li>Very low water availability and poor water quality (unclean water) for domestic and socio-economic uses (school canteens)</li> <li>low water availability for domestic and socio-economic uses</li> </ul>
			On crop production Priority crops in Manta: corn, fonio, sorghum, rice, market gardening Priority crops in Natta: sorghum, maize, fonio, soybean, market gardening and processing
			<ul style="list-style-type: none"> <li>Decrease in the production of sorghum whose robust stems are used to fence the market gardening farms against the cattle</li> <li>The sowing of fonio, which used to be done in April (because of the first rains), is now done in June (and by "chance")</li> <li>Proliferation of worms and invasive plants (striga) that affect crops</li> <li>Decrease in maize production estimated at 50 to 100%. (0 to 3 bags/0.25 ha nowadays against 6 bags/0.25 ha before).</li> <li>Decline in soybean production estimated at 50 to 90% (1 to 5 bags/ha compared to 8 bags/ha previously)</li> <li>Low availability of resources for compost production and manufacturing</li> <li>Limited availability of water resources for watering vegetable crops</li> <li>Complete cessation of market gardening activities since 2016, whereas 10 years ago market gardening was practiced normally (in the arrondissement in particular)</li> <li>Low availability of raw materials (fonio, rice, cassava) for processing activities</li> <li>Decline in fonio processing capacity, estimated at 66.6% (when there is water, 6 bags are processed satisfactorily; when there is not enough water, as has been the case in recent years, only 2 bags are processed, and this is with an unsatisfactory cleanliness rate)</li> </ul>
		On animal production (e.g. poultry, goats, cattle)	
			<ul style="list-style-type: none"> <li>Limited availability of water resources for livestock watering</li> <li>Scarcity of fodder causes difficulties in feeding livestock</li> <li>Difficulty in feeding and watering leads to a gradual loss of interest in livestock production</li> <li>Conflicts of use due to the fact that people and herders share the land (DICON1)</li> <li>Increased mortality rate</li> <li>Decrease in the laying capacity of guinea fowl (which represent 75% of the poultry raised and poultry occupies 80% of the farm) due to poor watering</li> <li>Conflicts of use due to the fact that people and breeders share the same source</li> <li>Increase in guinea fowl mortality (estimated at 80-100%)</li> </ul>

Target climate variable	Hazard	Sensitivity element	Impacts
			On fisheries production
		Use of pesticides leached by runoff water that is discharged into water points and streams, which is harmful to aquatic life	<ul style="list-style-type: none"> <li>Decline in fish production over the past ten years compared to the 1980s and 1990s when fishing was abundant even near Boukombé.</li> <li>Fishing is disappearing in the Commune</li> <li>Low availability of water resources to maintain fish ponds in water</li> <li>Increased production costs due to the purchase of water for fish farming</li> <li>Increase in the mortality rate of fish</li> <li>Decline or even progressive disappearance of fishing activity.</li> </ul>
Late rains			Crop production, priority crop
Increase in the length of pockets of drought (30 years ago, at the beginning of the season, pockets of drought lasting no more than 2 weeks were noted, as opposed to pockets of drought lasting at least 2 to 3 weeks at the beginning of the season for the last ten years) + It no longer rains normally and therefore there is a lack of control over the seasons + Shift of the beginning of the rainy season (about 30 years ago, the beginning of the season was in April or even early May; for the past ten years, the rains have not settled until June, the month of planting)	Increase in the length of pockets of drought (for the past ten years, there have been pockets of drought for two weeks during the rainiest month of August, whereas thirty years ago, the month of August did not record any pockets of drought)  Shift of the beginning of the rainy season to June and the peak of the season to September  Shift of seasons : September becomes the rainiest month instead of August		<ul style="list-style-type: none"> <li>Annual decrease in yields of around 10% for various crops, the most affected of which are corn, sorghum, fonio, rice, legumes (cowpea, soybeans and pigeon peas), etc.y</li> <li>High mortality of African locust bean, shea and palmyra trees (which die on their own)</li> <li>The sowing of fonio, which used to be done in April (because of the first rains), is now done in June (and by "chance")</li> <li>The good harvests are hazardous ("we cultivate by chance (fonio)")</li> <li>Impossibility of growing vegetables after January because surface waters dry up, resulting in a 60% loss</li> <li>Approximately 84% loss for rice (before 6 bags/0.25 ha and today 1.5 bags/0.25 ha)</li> </ul>
			On animal production
			<ul style="list-style-type: none"> <li>Disappearance of several avian species, including oxpeckers, crows and birds that herald the end of the rainy season and are used endogenously for seasonal forecasting</li> </ul>
Temperature	Increase in the frequency and severity of excessive heat (heat wave)	On animal production (poultry, especially guinea fowl, goats, cattle, :): High mortality of poultry left to roam to feed and thus subjected to excessive heat	
Strong winds (In the past, on a scale of 30 years back, strong winds existed but were not as devastating)	High winds/ Increase in frequency and severity of high winds (Previously, strong winds were observed at the beginning of the season, allowing mangoes and shea nuts to fall and facilitating harvesting) + Strong winds/ Increase in the frequency and severity of strong winds (increasingly strong winds in the last ten years, compared to thirty years ago, when winds of this category were hardly noticeable except at the beginning of the rainy season to announce the arrival of the rains)		<ul style="list-style-type: none"> <li>More pronounced uprooting and destruction of crops</li> <li>Increased vulnerability of income-generating activities to high winds</li> <li>The wind of the past was not as destructive as today's wind, which makes unripe shea and African locust bean fall, thus hindering harvesting</li> <li>Uprooting of crops (e.g. Sorghum)</li> </ul>

Source: Field survey data, March 2021.

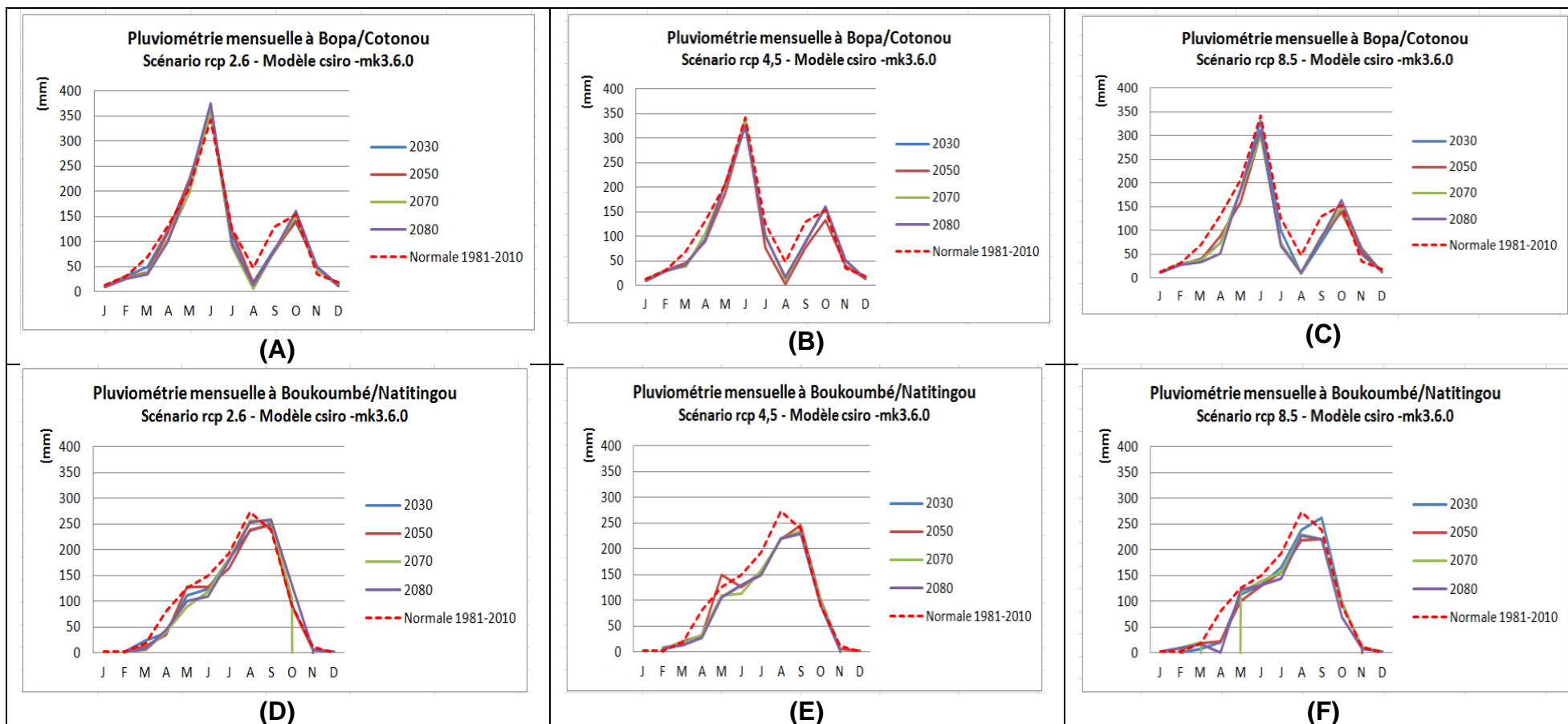
These data are supported by the results of the vulnerability study conducted under the Benin Green Climate Fund Readiness Project (BCP-GCF, 2017).

- **Future climate variability in the project areas**

In general, the climate projections carried out under the RCP 2.6, RCP 4.5 and RCP 8.5 scenarios at the 2030, 2050, 2070 and 2080 horizons show a mixed evolution of precipitation and an increasing trend in temperatures in the Bopa and Boukombé communes region.

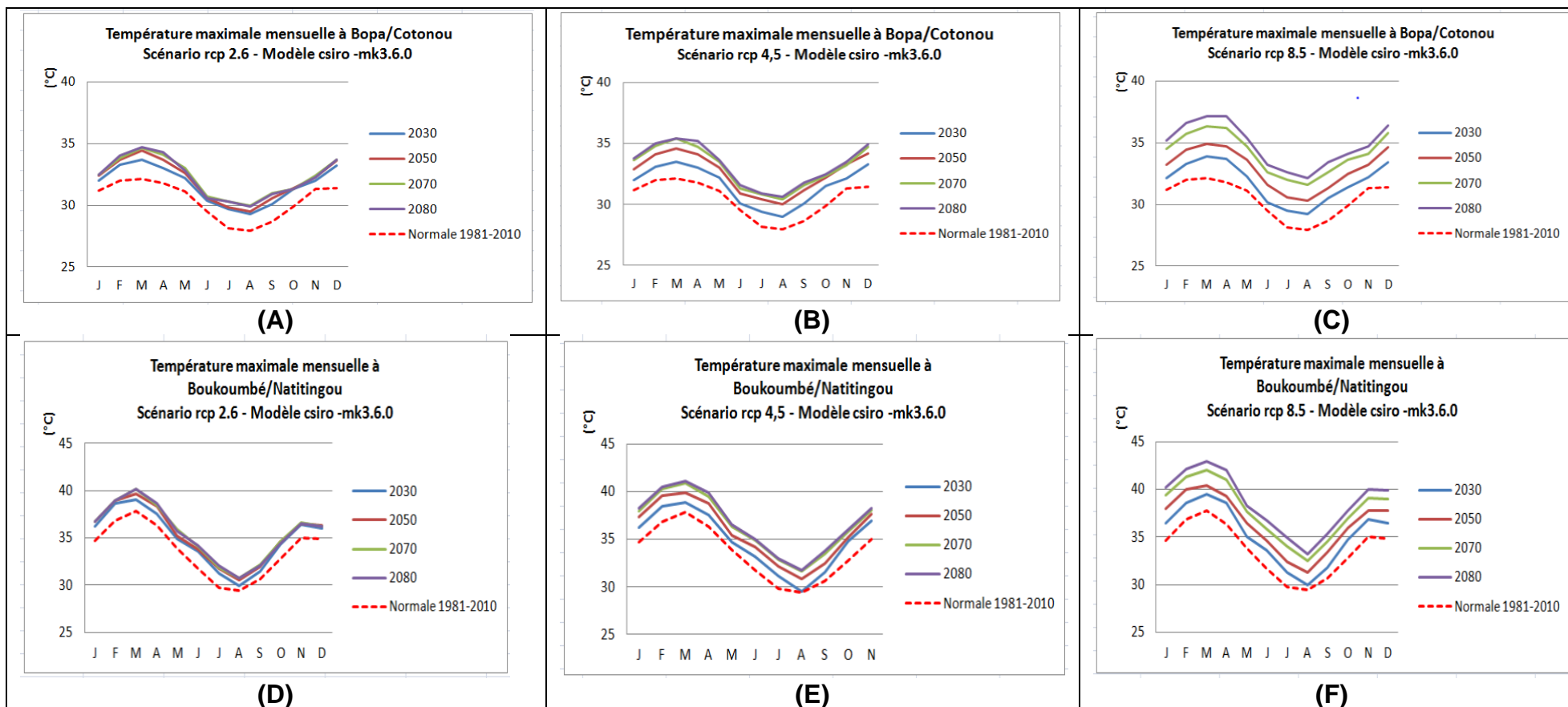
With regard to rainfall, according to the outputs of the CSIRO-mk3.6.0 model used in the context of the work to prepare Benin's Third National Communication on climate change, in the commune o Bopa, rainfall in the wettest months would remain practically unchanged until 2080, all climate scenarios taken together; rainfall in the wettest months would be significantly lower than the 1981-2010 climate normal, particularly during the second rainy season. In Boukombé, a generalized decrease in rainfall will affect the Commune during the first phase of the rainy season, from April/May to August/September (see Figure 4).



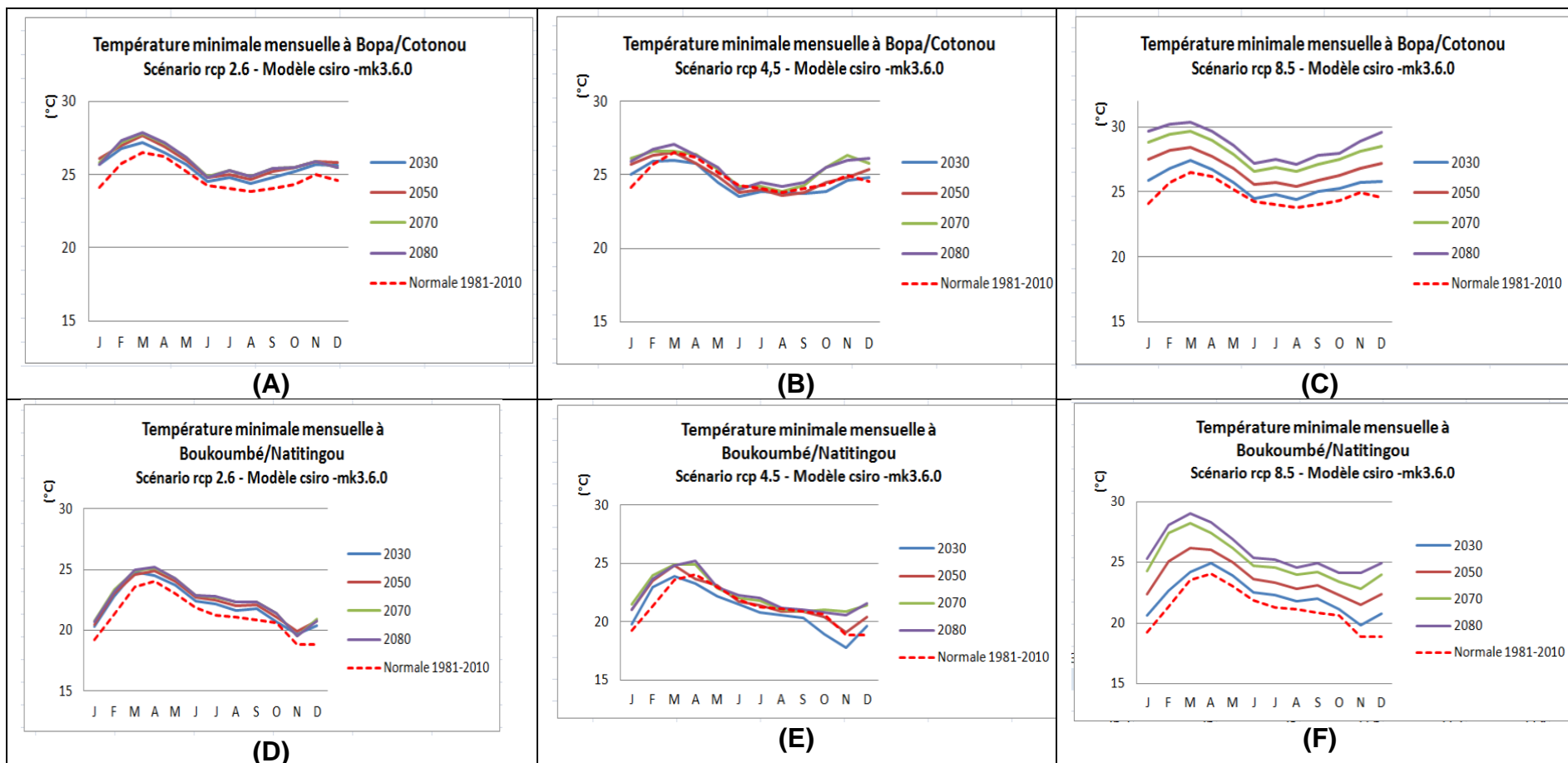


**Figure 11 : Monthly rainfall of the climate normal (1981-2010) and rainfall projection according to the CSIRO Mk3 6.0 climate model under the RCP.2.6, RCP.4.5 and RCP.8.5 scenarios in the regions of Bopa and Boukoubé (represented by the synoptic stations of Cotonou airport and Natitingou).**

Concerning temperatures, the upward trend observed during the past decades will continue in the future, especially for monthly maximum and minimum temperatures as shown in Figures 1 and 2. Deviations from normal, which hardly reach 2° in the optimistic scenario RCP 2.6, could exceed 5°C during the months of March-April in Boukoubé in the pessimistic scenario RCP 8.5 (Figures 1 and 2).



**Figure 12 :** Monthly maximum temperature of the climate normal (1981-2010) and projection of monthly maximum temperatures according to the CSIRO Mk3 6.0 climate model under the *RCP.2.6*, *RCP.4.5* and *RCP.8.5* scenarios in the Bopa and Boukoubé regions (represented by the Cotonou airport and Natitingou synoptic stations).



**Figure 13 :** Monthly minimum temperature of the climate normal (1981-2010) and projection of monthly minimum temperatures according to the CSIRO Mk3 6.0 climate model under the RCP.2.6, RCP.4.5 and RCP.8.5 scenarios in the regions of Bopa and Boukoubé (represented by the synoptic stations of Cotonou airport and Natitingou)

The analysis of future climatic variability thus reveals a tendency (i) to maintain rainfall in the wettest months and a rainfall deficit in the driest months in the Commune of Bopa, (ii) to a generalized rainfall deficit in the first phase of the agricultural season in Boukombé, and (iii) to an increase in minimum and maximum temperatures in the two Communes.

#### ▪ **Effects of future climate variability**

The downward trend in rainfall in the months that are usually less rainy, particularly those of the short rainy season, will make it increasingly difficult to meet the water needs of crops in the second agricultural season in Bopa. In Boukombé, the rainfall deficit will affect the entire active vegetation phase of the crops and will require appropriate provisions for the success of the commune's only agricultural season. However, it should be noted that according to a recent analysis of rainfall in Boukombé, the rainfall deficit would be relatively low by 2050 on an annual scale and under the RCP 4.5 scenario, not exceeding 3% (Akponipkè et al., 2020)<sup>8</sup>.

The persistence of the rising temperature trend in the two Communes will lead to an increase in potential evapotranspiration and difficulties in supplying water to the population, livestock and crops.

#### **1.4.2. Vulnerability analysis and adaptation initiatives in the project areas**

The government, with support from the Global Environment Facility (GEF) and UNDP, developed and implemented the NAPA1 project (2010-2014), whose interventions covered 9 villages in 9 communes. This project to strengthen the capacities of farming communities to adapt to climate change in the four (04) most vulnerable agro-ecological zones (1, 4, 5, 8) of Benin has achieved convincing results that have had a very positive impact on the livelihoods and strategies of vulnerable beneficiary groups. In the commune of Bopa, the conclusive results obtained by the NAPA1 in the village of Sèhomi deserve to be duplicated in other villages with the same agroecological characteristics. Similarly, in this commune, Caritas Benin implemented a USAID-funded project to strengthen community resilience to the adverse effects of climate change (C-RAFT) between 2015 and 2017. This project focused more on community preparedness and risk awareness but did not focus on people's adaptation to the adverse effects of climate change. In Boukombé, Caritas Benin is building the capacities of rural women for their economic empowerment. It has also implemented for the 2017-2018 period, a Support Project for Food Security and Women's Empowerment (PASAAF) and a Project to Improve Food Security through the Promotion of Agroecology. Upon evaluation of these different initiatives, communities expressed the need to be supported to better adapt to the increasingly pronounced drought and flooding in these regions for a sustainable improvement in household food security. This is why the present project plans not only to reinforce the achievements of the previous interventions but also to accompany the vulnerable populations in the identification and adoption of local strategies of adaptation to climate change.

In both Boukombé and Bopa, the units of exposure most vulnerable to climate change remain similar as highlighted by NAPA (2008). Indeed, in the northern agro-ecological zones, watersheds, food crops, water resources, small-scale farmers, herders, emerging market gardeners and farmers, and fishermen are highly exposed to climate risks. The same is true in the southern agro-ecological zones for food crops, land, water resources, human health, biodiversity, small-scale farmers, fishermen and pastoralists<sup>9</sup>. This means that climate change is a permanent threat to the development of Benin's communes. Thus, reducing the impacts of climate change on vulnerable livelihoods requires that appropriate adaptation techniques be developed to ensure sufficient agricultural production to guarantee food security in the most exposed localities.

The main food crops grown in the communes of Bopa and Boukombé are cereals, pulses, tubers and root crops, and market garden crops. In recent years, the relative balance of production or annual sown areas has been broken in favor of more resilient food crops or those benefiting from adaptation measures. In Bopa, for example, recurrent floods that destroy the efforts of producers in the rice-growing basins have led to a drastic reduction in sowing, or even to the abandonment of the crop (Development Plan 2018-2022 (2017)).

The same is true for tomatoes, for which less than 60% of the area planted at the beginning of the 2010s has now been planted.

In the commune of Boukombé, rice production, which benefits from a few rudimentary developments with water control, as part of the endogenous adaptation strategies developed by local communities, has supplanted traditional cereals as of the 2013-2014 season (DDAEP/Atacora, 2021). Sorghum, which is more drought tolerant than maize, has seen a steady increase in production since 2011. Fonio, which is well adapted to the ecology of the region, is maintained with sustained production levels.

According to the perception of the people interviewed, several factors make Beninese communities more vulnerable. These include poverty, which prevents them from having access to resources, means and

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<sup>8</sup>Akponipkè P.B.I., P. Tovihoudji, B. Lokonon, J. Amègnaglo, R. Yégbèmey et E. Kpadonou (2020). Etude de vulnérabilité sectorielle face aux changements climatiques au Bénin : Extension au Pôle de Développement Agricole III (PDA III, Atacora-Ouest). Secteur : Agriculture. Rapport Final. Projet d'Appui Scientifique aux processus de Plans Nationaux d'Adaptation (PAS-PNA). GIZ – MCVDD, Cotonou. 83 p.

<sup>9</sup>MEPN (2008). Programme d'action nationale d'Adaptation aux changements climatiques du Bénin (PANA-Bénin), Cotonou.

opportunities to prepare for or adequately deal with the occurrence of a disaster; food insecurity, which is related to problems of food availability and accessibility; and environmental degradation, deforestation and irrational land use, which create precarious conditions that aggravate the effects of disasters. In addition to these, there is the lack of education and information of the populations at risk, who are often unaware of good practices for survival in the event of disasters.

All in all, the populations of the localities targeted by the project are vulnerable to varying degrees to the climatic and environmental risks described above, and their effects on the economic activities of vulnerable groups are just as significant. According to the sectoral documents consulted (Plan de Développement Communal, Plan de Contingence Communal) and the people interviewed in both Boukombé and Bopa, livelihoods (agriculture, livestock, fishing), food security, and water resources are the most at-risk exposure units, and the social groups most affected are small-scale farmers, including women, youth, minority groups, livestock breeders, and fishermen. The impacts of climate risks include soaring food prices, food insecurity, malnutrition, undernourishment, reduced incomes and increased poverty.

## **2. Project Objectives**

**General Objective:** This project aims to contribute to the improvement of food security, the resilience of vulnerable communities and their agricultural production systems to the effects of climate change in the communes of Boukombé and Bopa.

### **Specific objectives**

Specifically, the project will aim to:

1. Strengthen the capacities of vulnerable communities on locally proven resilient practices and technologies to increase yields of targeted agricultural crops (plants, animals and fisheries)
2. Strengthen the resilience of vulnerable households through economic empowerment through the development of Income Generating Activities (IGA)
3. To sustainably improve the nutritional status of children under 5 years of age, pregnant women and nannies in vulnerable households through the promotion of new food consumption patterns based on local products in the communes of Boukombé and Bopa.

## **3. Project components and funding**

The project is organized around three technical components.

1. Component 1: Strengthening the resilience of local agricultural production systems to the effects of climate change
2. Component 2: Economic empowerment and improved nutrition of vulnerable households
3. Component 3: Capitalization, dissemination of good practices and lessons learned and sustainability

These closely related components are presented in Table 11 below:

**Table 5 : Components of the project**

N°	Components of the project	Actual expected output	Expected results	Activities	Cost components	Project cost (US dollars)
	<p><b>Component 1: Strengthening the resilience of local agricultural production systems to the effects of climate change (maize, cowpeas, soybeans, cassava, market gardening, etc.)</b></p>	<p>Increase in yields of the main agricultural crops by 20% to 30%</p>	<p>Farmers adopt restoration and sustainable land management practices</p>	<p>Support for the inventory and dissemination and application of restoration and sustainable land management practices</p>	<p>Information and awareness-raising workshop for stakeholders; Village animation sessions; Design, translation and publishing of brochures and posters on climate change; Small tools and products (shovels, wheelbarrows, hoes, organic fertilizers and sprayers, seeders)</p>	<p><b>1,374,500</b></p>
<p>The populations have easy access to materials/equipment and certified seeds</p>			<p>Training and support for the application of adapted technical itineraries</p>	<p>Training workshop for trainers; implementation of school fields on sustainable land management methods and restoration techniques Kits for producers</p>		
			<p>Support in kits of small materials/equipment and resilient seeds</p>	<p>kits of small materials/equipment: hoes, cutters, rakes, pots etc. ; Provision of resilient seeds (traditional seeds, seeds proposed by INRAB)</p>		
		<p>Installation of climate change resilient infrastructures for the promotion of agriculture and livestock</p>	<p>Resilient water mobilization, storage and distribution structures are built</p>	<p>Construction of 2 solar energy boreholes with market gardening for the benefit of vulnerable women in Bopa</p>	<p>2 photovoltaic boreholes with market gardening facilities</p>	
				<p>Rehabilitation of a water reservoir with market gardening in Boukombé</p>	<p>1 water reservoir with market gardening</p>	
	<p><b>Component 2 : Economic empowerment and improved nutrition of vulnerable households</b></p>	<p>Increased income of vulnerable agricultural households</p>	<p>Producers have easy access to the market and reduce the sale of products at harvest time</p>	<p>Establishment of a warrantage process with CECI groups (Communauté d'Epargne et de Crédit Internes)</p>	<p>Construction of 4 resilient food storage stores  Support for the establishment and formalization of 15 CECI groups of 25 people (training of 375 members, CECI kits: boxes, tables and benches, registers, calculators, bill checkers, padlocks, pens, etc.) Training of members of CECI groups and local elected officials on the warrantage process. Organization of one warrantage per year</p>	<p><b>787,000</b></p>

N°	Components of the project	Actual expected output	Expected results	Activities	Cost components	Project cost (US dollars)
			Producers engage in other income-generating activities (IGAs) that strengthen their resilience	Support for the development of innovative IGAs that are resilient to climate change (sustainable beekeeping in Boukombé, fish farming integrated with market gardening in Bopa)	Training of beneficiaries on resilient production techniques; Provision to CECI groups of 15 installation kits (beekeeping, fish farming, market gardening) ; Support and advice to CECI groups in the implementation of IGAs	
		Improvement of the nutritional status of children under 5 years of age, pregnant women and nannies in vulnerable households	The population adopts good food practices based on local products with high nutritional values	Behavior Change Communication (BCC) on good food practices	Design, translation and publication of image boxes, posters and leaflets on local foods and good food practices; Training of community relays on good food practices; Training of the population on good food practices to improve the food security situation	
		Support for the formulation of balanced food rations based on local products		Support for the organization of cooking demonstrations		
		Support for the production and valorization of local species with high nutritional value		Support for communities in the promotion of home gardens		
	<b>Component 3 : Capitalization, dissemination of good practices and lessons learned and sustainability</b>	Sustainability of achievements	Climate change adaptation measures are taken into account in the activities of the deconcentrated structures	Capacity building of local elected officials and executives of the deconcentrated structures and those in charge of the sectors for the integration of climate change adaptation in the Annual Investment Plans (AIP)	<b>Workshops</b>	<b>408,828</b>
Strengthening local structures for collecting information for a better management of the effects of climate change at the local level			Workshops			
Capitalization and dissemination of good practices		The good practices promoted are documented and disseminated	Capitalization and dissemination of good practices	Capitalization workshops Accountability workshops Community animation sessions for the dissemination of good practices		
		The community early warning system is	Strengthening community-based climate disaster management	Support to local authorities in revitalizing the community warning system and disseminating		



N°	Components of the project	Actual expected output	Expected results	Activities	Cost components	Project cost (US dollars)
			functional	mechanisms at the local	the warning	
<b>Project execution cost</b>						<b>2,570,328</b>
<b>Total cost of the project</b>						<b>2, 814,509</b>
<b>Project implementation cost (9.5% of execution cost)</b>						<b>244,181</b>
<b>FNEC management cost (8.5% implementation cost)</b>						<b>239,233</b>
<b>Amount of funding requested</b>						<b>3,053742</b>

#### 4. Projected timeline for project implementation

The project is planned to be implemented over a period of forty-eight (48) months.

**Table 6 : Project implementation schedule**

Steps	Planned dates
Start of project implementation January	January 2023
Mid-term review (if planned)	January 2025
Project closure	January 2027
Final evaluation	March 2027

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

**Component 1: Strengthening the resilience of local agricultural production systems to the effects of climate change (maize, cowpea, soybean, cassava, and vegetable crops, etc.).**

The main adaptation activities of this component are presented by expected result as follows:

**Expected results 1.1:** Farmers adopt restoration and sustainable land management practices.

- **Support to the dissemination and application of restoration and sustainable land management practices**

This activity takes into account several aspects, including (i) informing different stakeholders about climate change, its manifestations, and means of response, depending on their level of involvement in the project, and (ii) sustainable land management methods and restoration techniques.

- **Training and support for the application of adapted technical itineraries**

This component supports two aspects: (i) training in production processes integrating adaptation to climate change, and, (ii) technical support for the application of technical itineraries adapted to the climate change context. It should be noted that the autonomous adjustments traditionally practiced by the populations, which allowed them to ensure some subsistence production, are no longer adapted to the current climate context. It will therefore be necessary to train the populations on new production methods that take into account the constraints of climate change. In the same way, the populations will benefit from support in the application of these methods, so that they can themselves ensure the production according to the resilient technical itineraries.

**Expected results 1.2:** The populations have easy access to materials/equipment and certified seeds.

- **Support in small material/equipment kits and resilient seeds**

The training needs are not the only needs of the populations. The optimization of the effects of training and support requires the availability of appropriate tools and materials necessary for production. Thus, this component takes into account:

- Support in small material/equipment kits: hoes, cutters, rakes, cooking pots, etc;
  - The provision of resilient seeds: it is no longer a question of using large quantities of traditional seeds and not harvesting the fruit of these efforts because of the effects of climate change, but to achieve the desired production with just enough seeds and plants adapted to climate change.
- **Construction of 2 solar energy boreholes with market gardening in Bopa and rehabilitation of a water reservoir equipped with a water treatment system in Boukombé**

Water is the element at the heart of all needs in the context of climate change. A population, for whatever reason, needs water (for production, consumption and domestic uses). The provision of two (2) solar-powered boreholes and one (1) water reservoir in certain villages of Bopa and Boukombé for access to water will improve the availability of water resources for rice production and market gardening and food security.

**Component 2: Economic empowerment and improved nutrition of vulnerable households**

Gender and social inclusion considerations are cross-cutting considerations taken into account particularly in the activities of this project. Article 26 of the Basic Law of Benin provides that “the State guarantees equality to all before the law without distinction of origin, race, sex, religion, political opinion or social position. Men and women are equal in law. The State protects the family and particularly the mother and the child. He watches over the disabled and the elderly”. It is a national orientation on which all interventions are based.

**Expected results 2.1:** Producers have easy access to the market and reduce the sale of products at harvest time.

- **Implementation of a warrantage process with CECI groups (Communauté d'Epargne et de Crédit Internes).**

CECI groups are groups whose main purpose is to save money for future use. This is therefore a matter of good financial management, to which the warrantage system will be coupled. This is a system that

aims to store products from the harvest in exchange for monetary compensation for individual use. This will allow a better autonomy of the agricultural households.

**Expected results 2.2:** Producers engage in other income-generating activities (IGAs) that strengthen their resilience.

- **Support for the development of innovative and climate change resilient IGAs (sustainable beekeeping in Boukombé, fish farming integrated with market gardening in Bopa).**

Faced with the constraints related to climate change, it is important to change the mode of production and consumption. Thus, the new climatic conditions require adapted production methods. For this component, it will be necessary to train the populations on resilient production techniques.

**Expected results 2.3:** The populations adopt good food practices based on local products with high nutritional values

- **Behavior Change Communication (BCC) on good food practices;**

Food insecurity at the population level reflects the uncertainty or limitations on the availability of safe and nutritious food or the ability of individuals to have the minimum required to meet their food and nutritional needs through socially acceptable means. Climate change generally has a negative effect on food production, quality, availability, and consumer access. This activity of Component 2 aims at training the population on good habits to adopt in terms of food practices, in order to improve the food security situation.

- **Support for the formulation of balanced food rations based on local products;**

The populations that do not have permanent access to local agricultural products, due to the effects of climate change, have difficulties to compose balanced and/or rich food rations. This activity will focus on training the population on the formulation of balanced food rations based on the main local agricultural products with high nutritional values, in order to improve the food security situation in the Communes of Bopa and Boukombé.

- **Support for the production and development of local species with high nutritional value;**

In the context of climate change coupled with food insecurity, it is important to develop new initiatives in the various food practices. In the context of climate change coupled with food insecurity, it is important to develop new initiatives in the various food practices. These initiatives could be based, among others, on the production of local food plants with high nutritional values and resilient to climate change. This is the intention behind this activity.

**Component 3: Capitalization, dissemination of good practices and lessons learned and sustainability**

**Expected results 3.1:** Climate change adaptation measures are taken into account in the activities of the deconcentrated structures

- **Capacity building of local elected officials, executives of deconcentrated structures and sector managers for the integration of adaptation to climate change in the Annual Investment Plans (AIP)**

Climate change is a global issue whose impact is observed in all economic and geographic sectors and at the level of all actors without any particular distinction. Each institutional or community actor has its share of responsibility in the measures to be taken to address it. Thus, for a sustainable improvement in the living and working conditions of the population, each actor must play his part, particularly at the level of local, communal and national decision-making bodies. The aim is to provide the managers concerned with the knowledge and know-how needed to take into account adaptation to climate change in development strategies and annual implementation plans.

- **Strengthening local structures for collecting information for better management of the effects of climate change at the local level ;**

To the global scale of climate change, the vulnerability of natural and human systems and the adaptive measures or options oppose their local dimensions. That is why this activity of component 3 aims to strengthen local structures for collecting information to promote better management of the effects of climate change and ensure the effective involvement of all stakeholders, guarantors of the sustainability of achievements. This activity will be carried out in synergy with Benin Early Warning System (SAP-Benin) and its Standard Operating Mode of communication (MON).

**Expected results 3.2 :** The good practices promoted are documented and disseminated.

- **Capitalization and dissemination of good practices;**

The elements of success that this project will have established in the face of the harmful effects of climate change in certain pilot sites in the Communes of Bopa and Boukombé are sources of inspiration that can be shared with the stakeholders of other sites in the same communes or communes belonging to the same agro-ecological zones. This activity aims to build databases and/or knowledge related to the project's achievements, and to disseminate good practices through appropriate channels: site visits by local development professionals, hosting of pupils and students on field trips or for end-of-study internships, local radio and television broadcasts, public lectures, etc.

**Expected results 3.3 : The community early warning system is functional**

- **Strengthening community-based climate disaster management mechanisms at the local level ;**

This project activity aims to strengthen the village committees set up by the National Civil Protection Agency (ANPC) to effectively expand their mission to climate risk management in the Communes of Bopa and Boukombe. Currently, these mechanisms are not sufficiently functional in these communes.

*B Describe how the project / programme 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, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.*

The implementation of this project will have definite benefits that can be grouped around each of its main dimensions (social, economic, food and nutrition security, environmental, community and/or institutional, gender sensitive).

**At the social level**, the general interest of the community is at the heart of the actions planned. Equal access to resources and gender equity will strengthen human capital. Taking into account the specific needs of vulnerable groups, taking into account the culture of the area, guarantees a quality intervention. The project will generate jobs for the population, especially for young people and women. These jobs will be direct or indirect, seasonal or annual, and will be created in agricultural product processing units, market gardening operations and other high value-added agricultural sectors. In addition, thanks to the project, better intra-community solidarity and cohesion between members of the groups will be developed, which will increase their resilience to climate change.

The application and generalization of the CECI (Community Savings and Internal Credit) approach to mitigate the social effects of climate risks on rural communities in the communes of Bopa and Boukombé will not only strengthen the solidarity and cohesion of poor households, particularly those headed by women, but also create conditions for the development of their managerial capacity and their social security.

**On the economic level** the new practices acquired, coupled with capacity building, will allow the populations to face the negative effects of climate change and, through this, to improve productivity and production for a better economic profitability. In the same way, the economic conditions of the producers, when they are improved, will allow through the process of payment of taxes and or royalties (especially by the market), an improvement of the economic status of the Commune. The adoption and development of new crops and animal breeds that are resilient to climate change will allow producers to make their farming systems more profitable. The expansion of initiatives of this nature will promote economic flows that are potentially beneficial to the Commune.

**In terms of food and nutritional security**, the various techniques learned by the beneficiary populations, as well as the support they will receive, will enable them to be sufficiently equipped to deal with the effects of climate change. They would have developed appropriate reaction capacities in the face of specific critical situations, including the reception of early warning messages, to limit the negative impacts on food production. From the smallest producer, to the institutional bodies, measures will be taken to fight against the reduction of the food insecurity rate in the area.

**At the institutional and communal level**, the dissemination of knowledge will enable the population and the various stakeholders to have basic knowledge of climate change, its manifestations and the strategies to adopt to reduce its effects. The attention of national and sub-national decision making

bodies will be drawn to the strengthening or the implementation of proactive strategies and application modalities in the form of guidelines to be followed in case of announced manifestations of extreme weather and climate phenomena. It will be necessary to strengthen the institutionalization of early warning systems in the sense of decentralization with increased accountability of departmental and communal authorities, including the inclusion of operating and intervention costs in the Annual Investment Plans of the Communes. The main advantage is to bring the decision-making centers closer to the intervention centers for greater efficiency. To this end, it will be necessary to resize the National Platform for Disaster Risk Reduction and Adaptation to Climate Change and the National Civil Protection Agency (ANPC) in order to strengthen preventive measures and improve the involvement of local actors and technical expertise. land restoration, sustainable land management, soil improvement benefits.

**On the environmental level**, the project will contribute to the conservation of biodiversity and the fight against erosion through the introduction of endangered forest species useful to local communities. Environmental and social impact studies will be carried out before the implementation of climate change resilient infrastructures in order to identify measures to avoid or minimize negative impacts. The various measures that will be taken will allow the reduction of recurrent extreme events such as floods. Similarly, the application of climate-resilient production techniques and sustainable land and water management techniques will definitively have benefits in terms of soil improvement and land restoration. They will considerably improve the living conditions of populations and the development of green spaces in human settlements and highly anthropized ecosystems.

***C Describe or provide an analysis of the cost-effectiveness of the proposed project / programme***

The analysis of the profitability of this project refers to the solid experience of the promoter CARITAS Benin reflected in the aspects taken into account in the different components.

Through Component 1 on strengthening the climatic resilience of local agricultural production systems, and affecting the direct beneficiaries who are the most vulnerable populations, the project will contribute directly to strengthening the capacities of the target populations.

Component 2 on economic empowerment and improved nutrition of vulnerable households aims to strengthen the economic capacity of poor farming households, encourage the adoption of more resilient crops and provide training on the methodology for designing and developing rich and nutritious food rations based on local products. These actions directly affect vulnerable populations, so as to bring about a change in their behavior that will help correct the effects of food insecurity, the effectiveness of the interventions and the profitability of the project for the beneficiaries. In addition, the establishment of CECL groups will facilitate initiative-taking by members and their economic empowerment.

As for component 3, on capitalization, dissemination of good practices, lessons learned and sustainability, it will allow the beneficiary populations to add their share of contribution to the fight against the harmful effects of climate change and to the strengthening of the efficiency of local and national interventions. The capacity building of institutional actors will allow for a rigorous monitoring to ensure the sustainability of the project's effects and therefore its effectiveness and profitability.

The table 7 presents the profitability analysis of the project.

Table 7 : Project profitability analysis

Components of the project	Component Cost (US\$)	Approximate landmass (km <sup>2</sup> )	Approximate number of beneficiaries	Benefits	Variant of the project proposals
<b>Strengthening the resilience of local agricultural production systems to the effects of climate change (maize, cowpeas, soybeans, cassava, market gardening, etc.)</b>	<b>1,374,500</b>	560	2,000	Farmers adopt restoration and sustainable land management practices. They also benefit from resilient structures for water and seeds mobilization, storage and distribution and from climate-resilient infrastructures to promote agriculture and livestock activities	A variant could be the introduction of new, more productive crops at the risk that they fail to adapt to local conditions
<b>Economic empowerment and improved nutrition of vulnerable households</b>	<b>787,000</b>	300	4,000	Vulnerable farming households increase their income through innovative activities that build their resilience in the agricultural sector. They also adopt good food practices based on local products with high nutritional values for children, pregnant and nursing women	The alternative here could be the proposal of commercial activities that would focus on increasingly less available agricultural products and force rural women to migrate to the city where nutritious food is more expensive for women, children and the elderly
<b>Capitalization, dissemination of good practices and lessons learned and sustainability</b>	<b>408,828</b>	700	200 direct beneficiaries (thousands of indirect beneficiaries)	Measures are in place for the sustainability of the project's achievements, the inclusion of climate change adaptation measures in local development plans and the dissemination of good practices. In particular, local committees in charge of climate disaster prevention and active disaster response are functional	The variant is to limit ourselves to Arrondissement of Badazouin and Yegodoè (Bopa) and Manta and Natta (Boukombé), thus limiting the possibility of scaling up in the other Arrondissements and vulnerable communities of the two Communes

In sum, all of the planned activities (capacity building, water reservoir development, equipment supply, economic security, etc.), coupled with the knowledge dissemination strategy, constitute an innovation and an added value that will allow the populations to perpetuate the potential benefits of the project, with a better understanding of climate change, its manifestations and the means to reduce vulnerability to these effects.

**D** Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national adaptation plan (NAP), national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist

The elaboration of the present project referred at the national and international level to the following plan, strategy and policy documents:

- The Regional Program for Agricultural Investment, Food Security and Nutrition (PRIASAN), set up by the Economic Community of West African States (ECOWAS), which has the overall objective of contributing in a sustainable manner to the satisfaction of the food and nutritional needs of the population, economic and social development and poverty reduction in member states, as well as the reduction of inequalities between territories, zones and countries. At the specific level, the objective is to (i) contribute to increasing productivity and agro-sylvo-pastoral and fisheries production through diversified and sustainable production systems, and to reduce post-production losses, (ii) promote contractual and inclusive agricultural and agro-food value chains geared towards regional and international demand, (ii) promote contractual and inclusive agricultural and agri-food value chains oriented towards regional and international demand, with a view to regional market integration, (iii) improve access to food, nutrition and resilience of vulnerable rural populations, and (iv) improve the business environment, governance and financing mechanisms of the agricultural and agri-food sector.
- The Government's Action Program based on the United Nations 2030 Agenda for Sustainable Development (SDGs) and the conclusions and recommendations of the Paris Agreement (COP21), notably:
  - in its Pillar 2: Engage in the structural transformation of the economy (Strategic Axis No4: Improving economic growth), and
  - Pillar 3: Improving the living conditions of the population (Strategic Axis No 6: Strengthening basic social services and social protection and Strategic Axis No 7: Balanced and sustainable development of the national territory)
- The Nationally Determined Contribution (NDC) in which the objectives of adaptation measures in Benin's agricultural sector are, among others, the diversification and promotion of high value-added agricultural sectors, as well as the modernization of resilient agricultural infrastructures in the context of climate change for food and nutritional security
- The National Action Program for Adaptation to Climate Change (NAPA) which aims to promote the development of a framework for coordination and implementation of climate change adaptation activities in the country, capacity building and synergy of different programs in the field of environment through a participatory, community and multidisciplinary approach. Within the framework of agriculture, the program provides for the strengthening of food production systems.
- The National Climate Change Adaptation Plan (NAP), whose objective is to integrate climate change adaptation into policies, development planning strategies, development programs and budgeting processes in all sectors of activity, both at the national and local levels. Sectors covered by the NAP include agriculture, water resources, health, coastal zones, forestry, energy, tourism, and infrastructure and urban development. This programmatic approach to climate change adaptation in the eight national development priority sectors leads to increased empowerment of local communities in integrating adaptation and climate resilience building into local development planning. This project follows the same logic for the areas of food security in the Communes of Bopa and Boukombé.

Because of the strong involvement of local communities in the implementation of the project and the sustainability of its results, the Communal Development Plans specifying the local strategic orientations are also taken into account. These are



- the Bopa Communal Development Plan 2018-2022, whose strategic orientations are (i) improving the productivity of agricultural land and the production of plant, animal and fishery products in priority agricultural sectors, (ii) strengthening and developing basic infrastructure (iii) improvement and strengthening of the quality of local governance, mobilization of own resources and human capital, (iv) equitable and sustainable development of the communal area, and (v) strengthening and development of decentralized cooperation, inter-communality and the gender approach.
- The 3rd generation Communal Development Plan (PDC) of the Commune of Boukombé (2018-2022), based on the following strategic orientations (i) promotion of local economic development and youth employment, (ii) provision of quality basic social services, (iii) management of natural resources and adaptation to the effects of climate change, (iv) promotion of local governance and women's leadership, and (v) promotion of food and nutritional security.

**E** Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

The project is consistent with the Adaptation Fund's environmental and social policy and Benin's environmental and social regulations. Limited negative environmental impacts may result from some activities under Component 1 that will exploit sustainable land management and restoration technologies and resilient water mobilization and storage, distribution, and use structures. However, all relevant agricultural and agri-food processing, water and soil resource management, and environmental and social standards in the country will be met. The main relevant national laws and regulations are as follows:

- Law No. 98-030 of February 12, 1999 on the framework law on the environment in the Republic of Benin ;
- Law n°2018 - 18 of 06 August 2018 on climate change in the Republic of Benin;
- Law No. 2018-20 of 23 April 2019 on the pastoral code in the Republic of Benin;
- Framework Law No. 2014-19 of August 7, 2014 on fishing and aquaculture in the Republic of Benin ;
- Law No. 84-009 of March 15, 1984 on food control;;
- Law n°2013-01 of January 14, 2013 on the Land and Domain Code in the Republic of Benin, amended by Law n°2017-15 of May 26, 2017 ;
- Law n° 87-015 of September 21, 1987 on the Public Health Code ;
- Law n° 2010-44 of October 21, 2010 on water management in the Republic of Benin;
- Law n° 2002-016 of October 18, 2004 on the wildlife regime in the Republic of Benin
- Law No. 87-015 of September 21, 1987 on the Public Health Code ;
- Law No. 97-029 of January 15, 1999 on the organization of Communes in the Republic of Benin ;
- Law n° 2011-26 of January 9, 2012 on the prevention and repression of violence against women ;
- Law n° 98-004 of January 27, 1998 on the Labor Code in the Republic of Benin ;

**F** Describe if there is duplication of project / programme with other funding sources, if any.

The "Integrated Program to Strengthen Food Security and Community Resilience to Climate Change in the Communes of Boukombé and Bopa" is a unique initiative in its spirit, approach and territorial location.

**The Commune of Bopa** The Commune of Bopa has benefited from a large number of development projects of national scope, focused on the issue of nutrition and without any formal link to climate variability and change. These include initiatives such as the Community Nutrition Project (PNC: 2011-2015), the Multisectoral Food, Health and Nutrition Project (PMASN: 2014-2019), as well as the Nutrition-Sensitive Agriculture and Small Producers Support Project (PADA-Nutrition) and the Early Childhood Nutrition and Development Project (PNDPE), which are still in progress.

The Commune has also benefited from several climate change adaptation projects such as the Integrated Adaptation Program to combat the adverse effects of climate change on agricultural production and food security in Benin (NAPA 1). The objective of this project implemented between

2011 and 2016 was to "strengthen the capacities of agricultural demonstration communities in selected Communes to adapt to extreme events and impacts of climate change in the four vulnerable agro-ecological zones of Benin.

By intervening in the Commune of Bopa, this project will build on the good practices of these two groups of initiatives while correcting shortcomings.

As far as **the Commune of Boukombé** is concerned, the prioritization of the targets of the Sustainable Development Goals (SDGs) in Benin in 2017, the domestication of the SDG indicators and the spatialization of the priority targets, have made it possible to assign to this Commune, among others, the generic target of SDG 13 relating to the fight against climate change. This is specifically target 13.1 aimed at "building resilience and adaptive capacity to climate-related hazards and natural disasters in all countries". The priority action and the related domesticated indicator are respectively the improvement of the resilience of populations to climate change and the implementation of national and local strategies for disaster risk reduction (MPD, 2017, 2018a, 2018b)

As in the Commune of Bopa, this project is at the multi-sectoral level in Boukombé and will implement activities to adapt to climate change and strengthen the resilience of rural communities and their livelihoods.

The project is not submitted to any other funders. The synergy or complementarity links between this project and some past or ongoing projects in the Communes of Bopa and Boukombé are presented in Table 14.

It should be specified that the objectives of the project will be achieved on the basis of the funds requested from the Adaptation Fund and without the need for additional funding from other financial partners

**Table 8 :** Synergy or complementarity links with some past or ongoing projects

Projects	Links/Synergy/Objectives	Lessons learned
<b>Commune of Bopa</b>		
Community Nutrition Project (PNC: 2011-2015)	Health and nutrition projects Improve the basic socio-economic conditions of poor communities in the Commune of Bopa	Projects that have not integrated climatic hazards, the impact of which is likely to limit the sustainability of results
Multisectoral Food, Health and Nutrition Project (PMASN: 2014-2019)		
Nutrition-Sensitive Agriculture and Support for Small Producers Project (PADA-Nutrition)	Health and nutrition projects that have taken into account the issue of climate change s	Ongoing projects
Early Childhood Nutrition and Development Project (PNDPE)	Improve the basic socio-economic conditions of poor communities in the Commune of Bopa	
Integrated Adaptation Program for the fight against the adverse effects of Climate Change on agricultural production and food security in Benin (PANA 1) 2011-2016	Strengthen the capacities of agricultural demonstration communities in selected Communes to adapt to extreme events and the impacts of climate change in the four vulnerable agro-ecological zones of Benin (Commune of Malanville (Agro-ecological Zone 1), Ouaké and Matéri (agroecological zone 4), Savalou and Aplahoué (agroecological zone 5) and Bopa, Adjohoun, Quinhi and So-Ava (agroecological zone 8)	The achievements of the project were to have a positive impact on human health (following better nutritional status), the purchasing power of households, as well as the living environment of young people and women from the most vulnerable rural areas of the country, but no activity of the said project had targeted these outcomes
<b>Commune of Boukombé</b>		
HELVETAS project for training and capacity building in poultry production	Agriculture and water sector projects	Reports of climate change not explicit
Local IWRM Support Project (PROTOS PAGIREL, 2006-2011)		
Local Water Governance project in 5 municipalities in northern Benin (GLEauBe, 2009-2014)		
Multisectoral Support Program for Food and Nutritional Security in Atacora (AMSANA, 2015-2020)	Ensure stable availability of food and market gardening products, increase and diversify income and enable better prevention of malnutrition, particularly for vulnerable populations (women and young people)	The project design took into account the problem of adaptation to climate change but implementation problems related to the weakness of technical capacity building activities in terms of efficient management and monitoring of infrastructure and equipment chains resilient have limited results
Water Quality Improvement Project in Benin (QualiEau 2011-2015)	Secure the quality of water in the selected communities and build the capacities of the various actors in the management of drinking water, hygiene and sanitation	Climate resilience building activities are clearly embedded in these projects executed to the satisfaction of stakeholders
Programme d'Appui aux Communes dans la gestion de l'Eau et de l'Assainissement au Bénin (PACEA 2011-2016).	Strengthen and support all public and private actors involved in drinking water management in their effective roles for equitable and sustainable management of WASH services	

**G** *If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned*

Effective communication, knowledge management and learning are essential to the success of this project. This is why it has been taken into account in the design of the project and integrated into the different components.

Component 1, related to strengthening the resilience of local agricultural production systems to the effects of climate change and taking into account the dissemination of information on sustainable land management, technical support on production itineraries, etc. takes into account the production and sharing of information that will be transmitted through different channels (training sessions, social networks, websites). Technical support alone constitutes a form of communication and regular sharing of information and/or knowledge, providing information on how to adapt to the risks that the beneficiaries will have to face. The first factor that will allow the populations to become familiar with the technology is andragogical: the working language will play an important role. All community trainings will be conducted in the local languages spoken in the project's implementation area. The documents prepared and translated into languages, the image boxes, the audiovisual aids, the role plays and the simulations will be the factors of ownership of the communities.

Similarly, Component 2, with the establishment of CECI groups, will allow for the production and sharing of information on good income management, savings and intervention strategies. Communication activities on good practices and support activities are means of producing, sharing and assimilating knowledge. Also, technical support for the formulation of nutritious food rations, perhaps even rations that will be constituted using newly discovered local species, is an excellent means of knowledge acquisition.

Finally, Component 3, which is broader and takes into account the decision-making bodies and institutions in charge, also ensures the production, sharing and assimilation of the knowledge necessary to strengthen their level of involvement.

**H** *Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund*

The process of identifying adaptation measures and activities, and the drafting of the Concept Note followed a participatory approach that took into account stakeholders (farm households, local and communal authorities, decentralized state structures, etc.) who were regularly consulted. Similarly, the consultants were asked to provide information on the project intervention areas. This information had to be oriented in the same way as the national and communal strategies planned for this purpose. In sum, all stakeholders concerned with the theme of climate change and food security were consulted

The stakeholder consultation phase required several steps:

- (i) Documentary research;
- (ii) Consultation of resource persons involved in different administrative structures, ministries, organizations whose themes are related to climate change, sustainable agriculture, water needs, food, nutrition, health, etc. in the concerned localities ;
- (iii) Field survey mission in the arrondissements of Badazouin and Yegodoè in the commune of Bopa, and the districts of Manta and Natta in the commune of Boukombé ;
- (iv) Elaboration of the preliminary draft of the Concept Note;
- (v) Validation of the Concept Note, in a workshop or meeting gathering the different stakeholders, the promoters, the implementing entities, the beneficiaries and organizations concerned by the theme. This validation session allowed for the collection of critical information needed to improve the document.

The consultations were organized in Bopa on March 22 and 23, 2021 at the town hall and in the districts of Badazouin and Yègodoé and in Boukombé on March 24 and 25 in the conference room of the town hall and in the districts of Manta and Natta.

The lists of the different meetings and actors met are annexed to this report (annexes 1 to 6). It is important to note that the activities of the primary sector are the main activities of the area. Agriculture being a part of this sector, it occupies an important place in the daily life of the commune and in its capacity to create economic flows. Unfortunately, this sector is experiencing enormous difficulties because agriculture in the area is essentially rain-fed and therefore dependent on climatic

conditions which, with their current variability, cause serious problems for farming households.

Faced with all these difficulties, it is urgent to take new measures, measures that take into account the production, sharing and assimilation of good knowledge and or practices through the implementation of concrete improvement actions, all this, in the dynamics of the objectives of the Adaptation Fund.

Table 9 presents the summary of the stakeholders who participated in the consultations in the municipalities of Bopa and Boukombé.

**Table 9 : Summary of stakeholders who participated in the consultations**

Town Hall	Town Hall of BOPA						Town Hall of BOUKOUMBE					
Sex	Man		Woman		Total		Man		Woman		Total	
Number of Individuals	15		5		20		15		1		16	
Percent (%)	75		25		-		94		6		-	
District	District of Badazouin			District of Yègodoé			District of Manta			District of Natta		
Environments	Ma n	woma n	Total	Ma n	woma n	Total	Ma n	woma n	Total	Ma n	woma n	Total
Number of Individuals	15	13	28	17	6	23	23	14	37	30	14	44
Percent (%)	53	47	-	74	26	-	62	38	-	68	32	-
Stakeholders description	-Institutional & local actors: second deputy Mayor, town hall technical services, National Civil protection Agency, agricultural extension service agency, Regional Directorate of water and forest, CARITAS ; -NGOs: AVPN, MORIJA;						-Institutional & local actors: Mayor, deputy mayor, town hall technical services, agricultural extension service agency, CARITAS ; -NGOs: BOPDOS, CERD-BENIN, UCPR ; -Active participation of stakeholders.					
	-Associations & groups: producers ; processors - Active participation of Chief of villages, young people, adults, men and women - Discussion in native language with a translator to enable Active participation of stakeholders			-Associations & groups: animal breeders, processors, farmers, religious ; - Active participation of head of arrondissement, Chief of villages, young people, adults, men and women - Discussion in native language with a			-Associations & groups : animal breeders, processors, farmers,, fishermen ; - Active participation of head of arrondissement, Chief of villages, young people, adults, men and women - Discussion in native language with a translator to enable			-Associations & groups: processors, farmers, animal breeders,; - Active participation of head of arrondissement, Chief of villages. young people, adults, men and women - Discussion in native language with a translator to enable Active participation of stakeholders		

		translator to enable Active participation of stakeholders	Active participation of stakeholders	
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The exploitation of information obtained in the field made it possible to outline the vulnerability matrices of the different communities encountered. These matrices were subjected to the test of confrontation with the data archived in the competent national institutions. Adjustments have been made where necessary. The vulnerability matrices presented in this document are the results of the confrontation.

*I Provide justification for funding requested, focusing on the full cost of adaptation reasoning.*

The objectives of the project are fully in line with the food security thematic area of the Adaptation Fund. The project is designed in such a way that its objectives will be achieved based on the requested funds from the AF and without the need of additional funding from other donors.

**Component 1 : Strengthening the resilience of local agricultural production systems to the effects of climate change (US\$ 1,347,500)**

In the communes targeted by the project, agricultural production levels are in continuous decline. The causes identified are the degradation of land, water and biological resource management systems, exacerbated by climate variability and change. Conflicts between farmers and herders over natural resources are increasing. The lack of knowledge of the new rainy cycles limits the forecasting guidelines of the public services in charge of supervising agricultural production.

The activities planned in this component will enable the development and dissemination of new knowledge on climate variations, the dates of rainy events and solutions to cope with them in the agricultural and food production sector. The populations in charge of production, agro-food processing and marketing will be informed and accompanied: they will inscribe their actions in the sense of economic and social profitability and sustainability. This component takes into account in particular:

- training on sustainable land management ;
- the provision of equipment and resilient seeds;
- the rehabilitation of water reservoirs ;
- the construction of boreholes.

**Component 2 : Economic empowerment and improved nutrition of vulnerable households (\$787,000)**

For this component, the non-implementation of the project would mean the continuation of the mismanagement of rural households' income, the sustained lowering of their standard of living and their impoverishment, and would lead to the intensification of their vulnerability to the adverse effects of climate change. The lack of knowledge of good adaptive practices regarding the composition of balanced diets would particularly limit the nutritional development of families, mothers and children.

The implementation of this component will allow:

- The training of populations on good practices to adopt in case of climate change events ;
- the establishment of village savings and internal credit community (CECI) nuclei committed to learning and practicing the management of domestic funds and thus promoting financial autonomy, particularly with the establishment of the warrantage system ;
- Capacity building on the design of rich and nutritious diets based on local products for families.

**Component 3 : Capitalization, dissemination of good practices and lessons learned and sustainability (US\$ 408,828)**

The non-implementation of this component would leave the various local, communal and institutional actors with a lack of capacity to face the various challenges facing their localities. This would lead to problems of involvement in the monitoring of activities, which would considerably limit the quality and sustainability of the project's achievements.

This component, once completed, would allow, among other things:

- A better involvement of the different actors concerned by the different themes (climate change, food security, risk management);
- The development and availability of strategic risk management documents;
- a good sustainability of the project's achievements ;



- A thorough understanding of the different environmental and climatic phenomena that will occur in the localities.

With this funding request, the project proposal will help to strengthen the resilience of rural populations, the various stakeholders involved and the production activities of goods and services.

**J Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project / programme**

Sustainability of outcomes has greatly guided the project design and the approach to implementing activities. As an initiative to improve the food security and resilience of vulnerable communities and their agricultural production systems to the adverse effects of climate change in two communes, the project is designed to integrate climate change adaptation into local development strategies, stakeholder knowledge and capacity, communal partnerships and budgetary commitments, and the development and implementation of best adaptation practices. Gradually during the implementation of the project and definitively at the end of the programmed activities, adaptation to climate change will have to be anchored in the multiple areas of sustainability.

**Environmental sustainability** : The implementation of resilient technologies in the areas of agricultural production and processing, food rationing, land, water and production systems management, and household economy management will lead to increased crop and livestock productivity, purchasing power of stakeholders and adaptive capacity of households and the entire rural community. Despite the projected trend of global warming and its consequences in terms of disruptions to hydrological cycles, agricultural season cycles and crop vegetative cycles, farms benefiting from resilient technologies will show a good level of resilience and resist impacts. Despite extreme weather events, farmers will ensure good food production, which is essential for achieving food security and enhancing the sustainability of community livelihoods. The use of resilient seeds will result in water savings in vegetable and field crops. Substitution of agrochemicals with organic fertilizer will help protect the environment and water from chemical pollution and limit adverse effects on human and animal health and the health of micro fauna and wildlife.

**Social and economic sustainability** : Ensuring good crop yields and production levels in the context of climate change will have a substantial impact on livelihoods, and enable communities to develop economic opportunities in their rural communities. The project will focus on creating new opportunities for producers of **maize, cowpeas, soybeans, cassava, vegetable crops, sorghum, fonio, rice, etc.** and link them to other economic opportunities along agricultural value chains. Public-private partnerships can be initiated or strengthened at the commune level so that farmers - especially women and youth - can engage in and benefit from high value-added activities, such as product processing, that provide direct, indirect, temporary employment, etc.

**Institutional, political and financial sustainability**: The project will be implemented through national and communal producer organizations, non-governmental organizations (NGOs), and local development associations. These organizations already exist in the sectors, themes and crops covered by the project. They will be encouraged through participatory and consultative processes to assume leadership and ownership of the issues involved. The project will focus on strengthening the institutional capacities of communal and departmental branches of national and regional research centers (INRAB, IITA, Universities), regional and national implementing entities and extension institutions (DDAEP, ATDA, DDS, DDCVDD), local NGOs and development associations, and producer groups. The capacities necessary for the extension and intensification of the themes promoted by the project will thus be developed and will guarantee the continuation of the processes after the end of the project.

**K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme**

This project was developed in accordance with the 15 environmental and social principles of the Adaptation Fund's Environmental and Social Policy.

Some of the activities under Component 1, which will exploit technologies for restoration and sustainable land management and resilient water mobilization and storage, distribution, and use, may have limited environmental impacts that could result in a Category B rating for the project, as suggested by the results of the preliminary screening and the various analyses conducted during data collection.

A full Environmental and Social Assessment will be carried out at the time of preparation of the full

project document, to demonstrate the level of compliance with the environmental and social principles of the AF. 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 execution.

The potential environmental and social risks identified during the initial screening phase made it possible to document the table of environmental and social principles of the Adaptation Fund's Environmental and Social Policy as follows (Table 10 ).

**Table 10 : Environmental and social risks**

Environmental and Social Principles Checklist	No additional 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, including the Framework Law on the Environment, the Law on Climate Change, the Laws and regulations relating to food safety, health, soil management, water, biological diversity, etc. With respect to environmental and social assessment, a detailed assessment will be conducted during the development of the full project proposal.	
Access and equity	The project provides equitable access to all targeted vulnerable groups in the beneficiary communes. 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, refugees, disabled, displaced persons, people affected by HIV/AIDS or Corana Virus, etc.) may be excluded because of their status.
Marginalized and vulnerable groups	The project gives priority to the most vulnerable people among the targeted communities, i.e., small-scale farmers, herders, fishermen, market gardeners, emerging farmers, pregnant women and nannies from vulnerable households.	However, some of the target populations who are illetrate may not benefits from the outcomes such as the implementation guide for climate change adaptation for people living near 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 guarantees respect for the rights of direct beneficiaries, i.e., men, women, youth and children, depending on their involvement in the implementation. The consultation of stakeholders prior to the drafting of this Concept Note was part of this logic. Adaptation to Climate Change, seen as everyone's business, will contribute to this.	
Gender equality and women's empowerment	In its design, this project fundamentally takes into account gender equality and women's empowerment. Activities such as the construction of solar-powered boreholes with market gardening for the benefit of vulnerable women and the development of innovative income-generating activities that are resilient to climate change for the benefit of producers are planned for this purpose  Activities such as the development of shea butter CVAs and the inclusion of gender in the CC adaptation guide are planned to this end.	However, since the communities of Bopa and Boukombé are predominantly patriarchal, there may be risks of inequality. A participatory and inclusive approach for the design and implementation of project activities and the empowerment of women for the tasks falling within their competence will contribute to the promotion of these values

Environmental and Social Principles Checklist	No additional assessment required for compliance	Potential impacts and risks, additional assessment and management required for compliance
Fundamental labor rights		unequal 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 ensure compliance with 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 communes do not have indigenous peoples as defined by the United Nations, but the project will ensure that all vulnerable groups benefit fully from the actions to be implemented	-
Involuntary resettlement	Project activities will be implemented with communities in their own localities and on their own land. No resettlement of populations in new localities is planned.	-
Protection of natural habitats		The project implementation strategy envisages the safeguarding of endangered plant species through reforestation, beekeeping, etc. In addition, productivity gains resulting from the adoption of resilient technologies could lead some actors to convert natural areas into agricultural land. For this reason, the project will identify protected areas in the intervention zones during the environmental and social impact assessment and will raise awareness among the populations on the importance of safeguarding and protecting these areas.
Conservation of Biodiversity		Despite the many environmental benefits of the project, including improved soil health, water conservation, and reduced use of chemical fertilizers and pesticides, the conversion of land for food crop production may affect biological diversity. Consultations will be needed in developing the environmental and social impact framework to identify appropriate measures and develop training modules that incorporate this concern.
Climate Change	No further assessment is required. The activities initiated in this project aim to strengthen the resilience of beneficiary communities and support them in sustainably adapting their livelihoods and ecosystems to climate change	
Pollution prevention and resource efficiency		The project will contribute to sustainable land management, water use efficiency and water pollution prevention. However, soil fertility restoration and crop processing activities can cause pollution. The environmental and social impact assessment will identify avoidance measures
Public health	The various climate adaptation interventions planned for the project should make it possible to improve the health of the beneficiary populations (reduction in the risk of disease and financial capacity to meet health care costs).	-
Tangible and intangible heritage	None of the project's activities will have an impact on the physical and cultural heritage of humanity. On the contrary, the project aims to improve the traditional knowledge and know-how of the communities and to accompany them to live in harmony with nature and the variations of its components	
Land and soil conservation	The project is not expected to cause any damage to land and soil. On the contrary, the sustainable land	

Environmental and Social Principles Checklist	No additional assessment required for compliance	Potential impacts and risks, additional assessment and management required for compliance
	management techniques and adaptive food production and processing technologies promoted by the project should contribute to strengthening the resilience of land and soil resources	

### **Institutional arrangement for project implementation**

This section will be developed during the drafting phase of the full project proposal

#### **A. Financial and project/program risk management measures**

This section will be developed during the drafting phase of the full project proposal

#### **B. 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.

#### **C. Monitoring and Evaluation Modalities and Budgeted M&E Plan, in accordance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund**

This section will be developed during the drafting phase of the full project proposal

#### **D. Project results Framework**

This section could be developed in the final drafting phase of the project document.

#### **E. Alignment of project objectives with the Adaptation Fund Results Framework**

The full alignment table of project objectives and indicators with Adaptation Fund results and indicators will be developed at the full proposal stage. However, it is presented in the Table 11 is a draft of the future alignment table.

**Table 11 : Alignment of Proposed Project Objectives/Outcomes with Adaptation Fund Results Framework**

<b>Project Objective(s)</b>	<b>Project Objective Indicator(s)</b>	<b>Fund Outcome</b>	<b>Fund Outcome Indicator</b>
<b>1. Strengthening the resilience of local agricultural production systems to the effects of climate change (maize, cowpea, soybean, cassava and market gardening, etc.)</b>	<b>Number of local agricultural production systems whose resilience is strengthened</b>	<b>Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level</b>	3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses
			3.2. Percentage of targeted population applying appropriate adaptation responses
		<b>Outcome 5: Increased ecosystem resilience in response to climate change and variability-induced stress</b>	5. Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress
<b>2. Component 2 : Economic empowerment and improved nutrition of vulnerable households</b>	<b>Number of households enjoying economic autonomy after the end of the project Number of vulnerable households with improved nutrition Number of women and young people benefiting from economic autonomy at the end of the project</b>	<b>Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas</b>	6.1 Percentage of households and communities having more secure access to livelihood assets
			6.2. Percentage of targeted population with sustained climate-resilient alternative livelihoods
		<b>Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level</b>	3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses
			3.2. Percentage of targeted population applying appropriate adaptation responses
		<b>Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets</b>	4.1. Responsiveness of development sector services to evolving needs from changing and variable climate
			4.2. Physical infrastructure improved to withstand climate change and variability-induced stress
<b>3 : Capitalization, dissemination of good practices and lessons learned and sustainability</b>	<b>Number of good practices promoted Number of village committees operational in the early warning system against climate disasters and for the active fight against the adverse effects of climate change</b>	<b>Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas</b>	6.1 Percentage of households and communities having more secure access to livelihood assets
			6.2. Percentage of targeted population with sustained climate-resilient alternative livelihoods
		<b>Outcome 8: Support the development and diffusion of innovative adaptation practices, tools and technologies</b>	8. Innovative adaptation practices are rolled out, scaled up, encouraged and/or accelerated at regional, national and/or subnational level.

**F. Detailed budgets**

This section will be developed during the drafting phase of the full project proposal

**G. Disbursement schedule**

This section will be developed during the full project document writing phase

**PART IV: ENDORSEMENT BY THE DESIGNATED GOVERNMENT  
AUTHORITY FOR ADAPTATION FUND AND CERTIFICATION BY**



ADAPTATION FUND

Republic of Benin, Cotonou, January 7, 2022

N° 022/DGEC/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 project to strengthen food security and community resilience to climate change in the communes of Boukombe and Bopa.

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.





## **Bibliographic references**

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PNUD (2015). Rapport national sur le développement humain 2015 : Agriculture, Sécurité alimentaire et développement humain au Bénin », Cotonou, Bénin 144 p.

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## **ANNEXES: Attendance lists and photos for stakeholder consultation meetings**

Annex 1: Attendance list Bopa Town Hall.

Annex 2: Attendance list Badazouin arrondissement/Bopa commune.

Annex 3: Attendance list Borough of Bègodoé Arrondissement

Annex 4: Attendance list Boukombé Town Hall.

Annex 5 : Attendance list Manta arrondissement /Boukombé Commune.

Annex 6 : Attendance list Natta arrondissement /Boukombé commune.

Annex 7: Pictures of the participants after the work **sessions**

Annex 1: Attendance List at Bopa Town Hall

Annex 5 to OPG Amended in October 2017

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 : 22/03/2021 Localité : Mairie de Bopa

Liste des participants

N°	Noms & Prénoms	Structure/Provenance	Contacts	Signature
1.	HOUNKPE K. Samuel	Caritas Lokossa	94 19 65 81	
2.	BABADANKPOSSI Blandine	Caritas Bénin/Djéffa	66 30 67 85	
3.	Tobou Maxime Cofi Jude Couratin	Caritas Bénin/Djéffa	94 76 76 01	
4.	KOUKPOUNOU Hylb	CARITAS Bénin/Djéffa	95 05 19 06	
5.	Goubou Simplicie	Caritas BENIN	97 13 24 74	
6.	GBEKAN Herman	Caritas BENIN	63 40 76 04	
7.	HOTCHI Agathe	Agent IMS Mairie - Bopa	97 13 25 10	
8.	VIKELI A. René	Agent IMS Mairie - BOPA	97 71 90 92	
9.	BAKO SEÏDOU Noumatou	Plan Inter-Bénin/Bogalémi	97 26 38 38	
10.	EÏN Sylvain	CLUB DE Mairie BOPA	97 36 34 83	

11.	AMADJEZO S. Bertin	ONG-MORITA	61 72 38 82	
12.	GBESSO Déné	DAM-BOPA	97 06 85 85	
13.	CHANOU J. Hack	SG - BOPA	97 19 75 17	
14.	KOUYÉ KOKOU	Point focal Nulata	97 61 90 26	
15.	DAN SOH Olivia Ayawa	chargé de Programm Caritas Lokossa	96 09 99 78	
16.	AFFO Antoinette	CP ONG AVPA	96 30 47 22	
17.	OZOUÉ C. Célestine	PF-ANPC/BOPA	97 18 77 40	
18.	ALHOUN Léopold	ATDA7/Bopa	96 84 18 23	
19.	TIGBE Ariane	CS Bopa	62-00-00-98	
20.	SOUNOU Nicodème	Responsable des Hauts et Forêts	65 09 78 09	
21.	BADOU Djigbo Félicien	Consultant	97 95 75 19 / 61 13 38 85	
22.	BAGAN Thomas	Expert Acc	95 71 45 29	

Annex 2 : Attendance list at Badazouin arrondissement/Commune of Bopa

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 : 22/03/2021 Localité : Arrondissement/Badazouin/Commune BOPA

Liste des participants

N°	Noms & Prénoms	Structure/Provenance	Contacts	Signature
1.	BABADANKPOSSI Blandine	Caritas Bénin/Djéffa	66 30 67 85	
2.	KOUKPOUNOU Fidèle	Caritas BENIN	95 05 19 06	
3.	TOHO Jude	Caritas BENIN	94 76 76 01	
4.	GBEKAN Herman	Caritas BENIN	60 60 39 08	
5.	KOUKPOUNOU Camille	Caritas BENIN	60 60 99 16	
6.	FIDEMANTIN Martine	" "	60 60 99 14	
7.	ADIKPETO Adeline	" "	60 60 99 15	
8.	ZOHAN Lucien	HOMBETE	97 25 09 25	
9.	TCHERKESSI Juvénile	HOMBETE	96 32 16 48	
10.	HOUNTOKANDE MAHISI	HOMBETE		

11.	BESSOU Malénu	HOMBETE	97 25 27 13	
12.	Goubou Simplicie	Caritas BENIN	97 13 24 74	
13.	VAVO Victoire	HOMBETE	66 62 87 40	
14.	AHI Bonke	CV Hombete	97 35 36 23	
15.	DOGBOSSOU Schaphain	Hombete	66 07 37 98	
16.	MERPONOU DANCHA	HOMBETE		
17.	ANATO Severin	cv Badazouin	96 68 77 32	
18.	AGBERKPESSI Ahamkou	Badazouin		
19.	KINDEDOHOU Séhenou	Badazouin		
20.	LANTÉHO Félicienne	Badazouin	97 71 33 66	
21.	GUISSE Antoine	AKPLENOU		
22.	DANTANDO Armand	AKPLENOU	62 20 33 93	
23.	HOUNGUIA Albert	AKPLENOU CV	97 06 37 21	
24.	HOUNASSO HEGNONSI	AKPLENOU	96 63 82 20	
25.	KAEI YE Hessi	AKPLENOU	96 40 22 23	
26.	TOTOGO Gossouin	Badazouin		
27.	AMANHOU Filémène	Badazouin		

28.	DEGBOSSE Aman	AKPLENOU	66 34 69 46	
29.	KOUMENSSI Mansan	Badazouin		
30.	FANOU Valérie	AKPLENOU	66 73 08 42	
31.	GANVO Albert	AKPLENOU	66 44 87 93	
32.	BESSOU Bertine	AKPLENOU	97 69 73 24	
33.	ADJAA Heunguia	Badazouin	62 47 00 13	
34.	DAN SOH Olivia Ayawa	chargé de Programm Caritas Lokossa	96 09 99 78	
35.	HOUNSOUNOU VI C. Toussaint	CA Badazouin	97 03 15 85	



Annex 3 : Attendance list at Yègodoé arrondissement

Annex 5 to OPG Amended in October 2017

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 : 23/03/2021 Localité : Arrondissement Yegodoe

Liste des participants

N°	Noms & Prénoms	Structure/Provenance	Contacts	Signature
1.	KOUKPONOU Pado	CARITAS Benin	97051908	[Signature]
2.	BABADANKPOUJI Blandine	Caritas Benin/ Djéffa	66 30 67 85	[Signature]
3.	GROUDOU Simplice	CARITAS BENIN	9713 24 74	[Signature]
4.	GIBEKAN Hermann	CARITAS BENIN	96 45 07 17	[Signature]
5.	TOTO Jude	Caritas Benin	94 76 76 01	[Signature]
6.	HOUNKPE C. Pionnard	CARITAS BENIN	96811550	[Signature]
7.	ADIKPEO Adeline	CARITAS BENIN	61-15-94-81	[Signature]
8.	EIDEMANTI Marine	CARITAS BENIN	67 13 37 29	[Signature]
9.	KOUKPONOU Camille	CARITAS BENIN	95 61 30 21	[Signature]
10.	TANOUDJI Auréole	CARITAS BENIN	94617495	[Signature]

11.	KPOTO Joachim	LONFIN	97434569	[Signature]
12.	KENDU Germain	LONFIN	97432184	[Signature]
13.	TOSSOU Virginie	LONFIN	96 20 62 10	[Signature]
14.	BOGADSI Marthe	LONFIN	67 38 61 05	[Signature]
15.	KPOTO Lucian S.	CV LONFIN	97434647 62 18 66 75	[Signature]
16.	ADJAFIO Simon	LONFIN	97-04-93 45	[Signature]
17.	GIBEDE Antoine	DJEKIAN	Pas de contact	[Signature]
18.	SIAVE Affi	DJEKIAN	Pas de contact	[Signature]
19.	TEKOU Abpiti	DJEKIAN	67256636	[Signature]
20.	GIANWI Norvino	DJEKIAN	Pas de contact	[Signature]
21.	GOWSA H. Richard	TDHOUEA	97 93 01 95	[Signature]
22.	GOLISA-CONAN Samuel	TDHOUEA	66 24 15 19	[Signature]
23.	GANKOU Jean	TDHOUEA	97 86 35 61	[Signature]
24.	DAGBO K. Antoine	TDHOUEA A.	66 89 59 62	[Signature]
25.	KAKPO Givoh Marc	TDHOUEA - KPOTI	51 44 35 22	[Signature]
26.	SOSSA Fili	TDHOUEA - KPOTI	60 69 35 84	[Signature]
27.	DEGBOE Bernadette	TDHOUEA - AKLOH	66 12 88 12	[Signature]

35.	BOGADSI Marthe	CV YEGODOE	97428257	[Signature]
31.	KOPEKALLO Hounou	TDHOUEA AKLOH	97 85 35 37	[Signature]
30.	DOKOU ANTOINE	TDHOUEA AKLOH	93 70 18 89	[Signature]
30.	KOPIKOU Zéphire	CV TDHOUEA AKLOH	97 17 83 27	[Signature]
38.	ADJAFIO Simon	TDHOUEA A	92 33 38 83	[Signature]

Annex 4: Attendance list at Boukombé Town Hall.

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 : 24/03/2021 Localité : Mairie de Boukombé

Liste des participants

N°	Noms & Prénoms	Structure/Provenance	Contacts	Signature
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2.	Abbe Gilles K. SAMBÉVI	DIRECTEUR Caritas Natimale	9700 22 27	[Signature]
3.	MICHA N. André	C.P Caritas Natl	96676339	[Signature]
4.	M'PO Moïse	C.M A-TA3/CCB	96 21 93 10	[Signature]
5.	KOINITACHA Blandine	PAH/Boukombé	97521183	[Signature]
6.	OTCHARIA Sébastien	PE-SAN Mairie	9400202	[Signature]
7.	ADOUNKPE Martial	FNEC/Cotonou	97578867	[Signature]
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9.	DARI Yéou Eric	CPC-BOUKOMBÉ	97 05 13 64	[Signature]
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16.	Toto Jude	Caritas Benin Direction Nationale	94967601	[Signature]
17.	OMATA Jonathan	WCPA Kounadoga	97350447	[Signature]
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Annex 5 : Attendance list at Manta arrondissement /Commune of Boukombé.

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: 24/03/2021

Localité: Arrondissement Manta / Commune Boukombé

Liste des participants

N°	Noms & Prénoms	Structure/Provenance	Contacts	Signature
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3.	M'BALLE Ibia	Dipokou 1		<i>[Signature]</i>
4.	NTANGOU Hélène	Dipokou 1		<i>[Signature]</i>
5.	YANTIKOUA Hélène	Dipokou 1		<i>[Signature]</i>
6.	SOUWEN GAMBIRGANE	Dipokou 1	66385466	<i>[Signature]</i>
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10.	MITCHANTI Tempo	Dipokou 1		<i>[Signature]</i>

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12.	KAPA PA Rociojema	Dipokou 1	96610596	<i>[Signature]</i>
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14.	TCHANA TI N'TONI	Dikou - Kein		<i>[Signature]</i>
15.	TATCHA N'TABOUTI	Dikou - Kein		<i>[Signature]</i>
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17.	M'BETTI Messa	Tatchadiéta	64956809	<i>[Signature]</i>
18.	NANBI H. Claude	Dikou - Kein	91366306	<i>[Signature]</i>
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20.	SATIKOUA Fackola	Dipokou 1	96105936	<i>[Signature]</i>
21.	NTCHA Appalino	Tatchadiéta		<i>[Signature]</i>
22.	M'BETTI Wameukou	Dikou - Kein	96361085	<i>[Signature]</i>
23.	NAMBOUA Iubia	Tatchadiéta	64371974	<i>[Signature]</i>
24.	N'DAH Jael	Tatchadiéta		<i>[Signature]</i>
25.	N'WE Emile	Dipokou 1	66839351	<i>[Signature]</i>
26.	TAWÉ Noël	Dikou - Kein	97051762	<i>[Signature]</i>
27.	TAYA Dieudonné	Dipokou 1	68423301	<i>[Signature]</i>

28.	TAWÉ Kenami	TATCHADIETA	0735 32 11	<i>[Signature]</i>
29.	YANTIKOUA Teno	Dikou - Kein	66486556	<i>[Signature]</i>
30.	N'WE TANYO	Dipokou 1		<i>[Signature]</i>
31.	N'SATI Palice	Dipokou 1	91444538	<i>[Signature]</i>
32.	N'WE Elicenne	Dipokou 1	66222889	<i>[Signature]</i>
33.	M'BALLE Delphine	Dipokou 1	67006451	<i>[Signature]</i>
34.	IKOUTI NTCHA	Dikou - Kein	57976299	<i>[Signature]</i>
35.	TCHANATI Roger	TATCHADIETA	63926646	<i>[Signature]</i>
36.	KOUAROU B. D. Calixte	CA Manta	96403558	<i>[Signature]</i>
37.	KOUEGNON Marcel	Commune Manta	9666998	<i>[Signature]</i>
38.	BIAOU Mathieu	FNEC	97608219	<i>[Signature]</i>
39.	ADOUANPE Nathaniel	FNEC	9797867	<i>[Signature]</i>
40.	KOUKOUA PABE	CARITAS Béni	9605700	<i>[Signature]</i>
41.	TOHO Jude	CARITAS Béni	94767607	<i>[Signature]</i>
42.	BASSAMAKPOBI Blandine	Commune Béni / Boukombé	66306785	<i>[Signature]</i>

Annex 6 : Attendance list at Natta arrondissement /Commune of Boukombé.

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


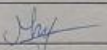
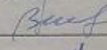

Date: 25/03/2021

Localité: Arrondissement Natta / Com. Bouk

Liste des participants

N°	Noms & Prénoms	Structure/Provenance	Contacts	Signature
1.	NTCHIE TA DA N'HAWE TANI	Koumangou	96678616	<i>[Signature]</i>
2.	NTOUA BASSAM	Koumangou	97626311	<i>[Signature]</i>
3.	M'POUFOUA B. Habat	Koumangou	66950518	<i>[Signature]</i>
4.	TENA Hélène	Koumangou		<i>[Signature]</i>
5.	NTCHA Louis	Koumangou	67627578	<i>[Signature]</i>
6.	NTCHA Evariste	Koumangou	67604970	<i>[Signature]</i>
7.	M'BETI Mathieu	Koumangou	69351013	<i>[Signature]</i>
8.	KOUAGOU FADIME	Koutoulougou		<i>[Signature]</i>
9.	M'PO ROMARIN	Koumangou	67867535	<i>[Signature]</i>
10.	NTANGOU NIKEVI	Koutoulougou	66432746	<i>[Signature]</i>

11.	KAMBIA Mathieu	Koutoulougou	66181910	<i>[Signature]</i>
12.	M'PO Jael	Koumangou	96745259	<i>[Signature]</i>
13.	NTCHA Jodias	Koumangou		<i>[Signature]</i>
14.	KOUAGOU Robert	Koutoulougou		<i>[Signature]</i>
15.	NTCHA Andrei	Koutoulougou		<i>[Signature]</i>
16.	NTCHA Madeline	Koutoulougou		<i>[Signature]</i>
17.	KAMBIA Pascaline	Koumangou		<i>[Signature]</i>
18.	NTCHA Evariste	Koumangou	61851696	<i>[Signature]</i>
19.	NTCHA M. Bénoît	Koumangou	97969825	<i>[Signature]</i>
20.	BADIA Koutoulougou	Koumangou	96653114	<i>[Signature]</i>
21.	NONBO Tempo Delphine	Koumangou		<i>[Signature]</i>
22.	NTCHA Madeline	Koumangou		<i>[Signature]</i>
23.	TAKOUASSEHA Siqueleine	Koumangou/B	69330551	<i>[Signature]</i>
24.	NTOUA Saanne	Koumangou/B	90186295	<i>[Signature]</i>
25.	YESITIBA N. Y. Y. Y.	Natta	97356524	<i>[Signature]</i>
26.	GNAMOU B. Bawéri	Natta	97320809	<i>[Signature]</i>

28.	N'TCHA K M'PO M	CA	Koumacougou	97652626	
29.	Valery Aïssidou		Kouparougou		
30.	M'PO Alicia		Kouparougou	97350971	
31.	BABADANKPOÏ Blandino		Caritas Bekin Djeffa	66306785	
32.	YOKOSSI Ghislainelle		Caritas Natitingou	67302230	
33.	N'TCHA H. André		Caritas Natitingou		
34.	YEMA M'PO Véronique		Koutantougou		
35.	KOUAGOU Catherine		Koutantougou		
36.	N'TCHA Catherine		Koutantougou		
37.	N'TCHA Marceline		Koutantougou		

### ANNEXES 7: Pictures of the participants at the work sessions



Photos 1 & 2: Picture of the participants after the work session at the Bopa Town Hall (02/03/2021)

Photos 3 : Work session in the arrondissement of Badazouin/Bopa (02/03/2021)





**Photos 4** : Work session in the arrondissement of Badazouin/Bopa (02/03/2021)



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**Photos 5&6** : Work session in the Borough of Yégodoé/Bopa (03/03/2021)



**Photos 7** : Work session at the Town Hall of Boukombé - (04/03/2121)



**Photo 8&9** : Work session in the arrondissement of Manta and Natta/Boukombé (04/03/2021)