REGIONAL PROJECT/PROGRAMME PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme:	Promoting Climate-Smart Agriculture in West Africa
Countries:	Benin, Burkina Faso, Ghana, Niger and Togo
Thematic Focal Area[1]:	Food security
Type of Implementing Entity:	Regional Implemented Entity
Implementing Entity:	Banque Ouest Africaine de Développement (BOAD)
Executing Entities:	ECOWAS Regional Agency for Agriculture and Food (RAAF) in collaboration with Directorates in Charge of Environment, Agriculture, and Livestock in the 5 countries indicated above
Amount of Financing Requested:	US$14 Million

[1] Thematic areas are: Food security; Disaster risk reduction and early warning systems; Transboundary water management; Innovation in adaptation finance.

Project / Programme Background and Context:

Provide brief information on the problem the proposed project/programme is aiming to solve, including both the regional and the country perspective. Outline the economic social, development and environmental context in which the project would operate in those countries.

A. GEO-DEMOGRAPHIC CONTEXT OF THE COUNTRIES COVERED BY THE PROJECT

Geographical localisation

The countries covered by the present project "Promoting Climate Smart Agriculture in west Africa" include: Benin, Burkina Faso, Ghana, Niger and Togo. These five (05) countries are located in West Africa and cover an area of 1,950,902 km^2. They are comprised in latitudes 4 ° 44 'and 23 ° 17' North and longitudes 5 ° 30 'West and 16 ° East. Burkina Faso and Niger are landlocked countries while Benin, Ghana and Togo are coastal countries. The following figure shows the location of these five (05) countries in West Africa.

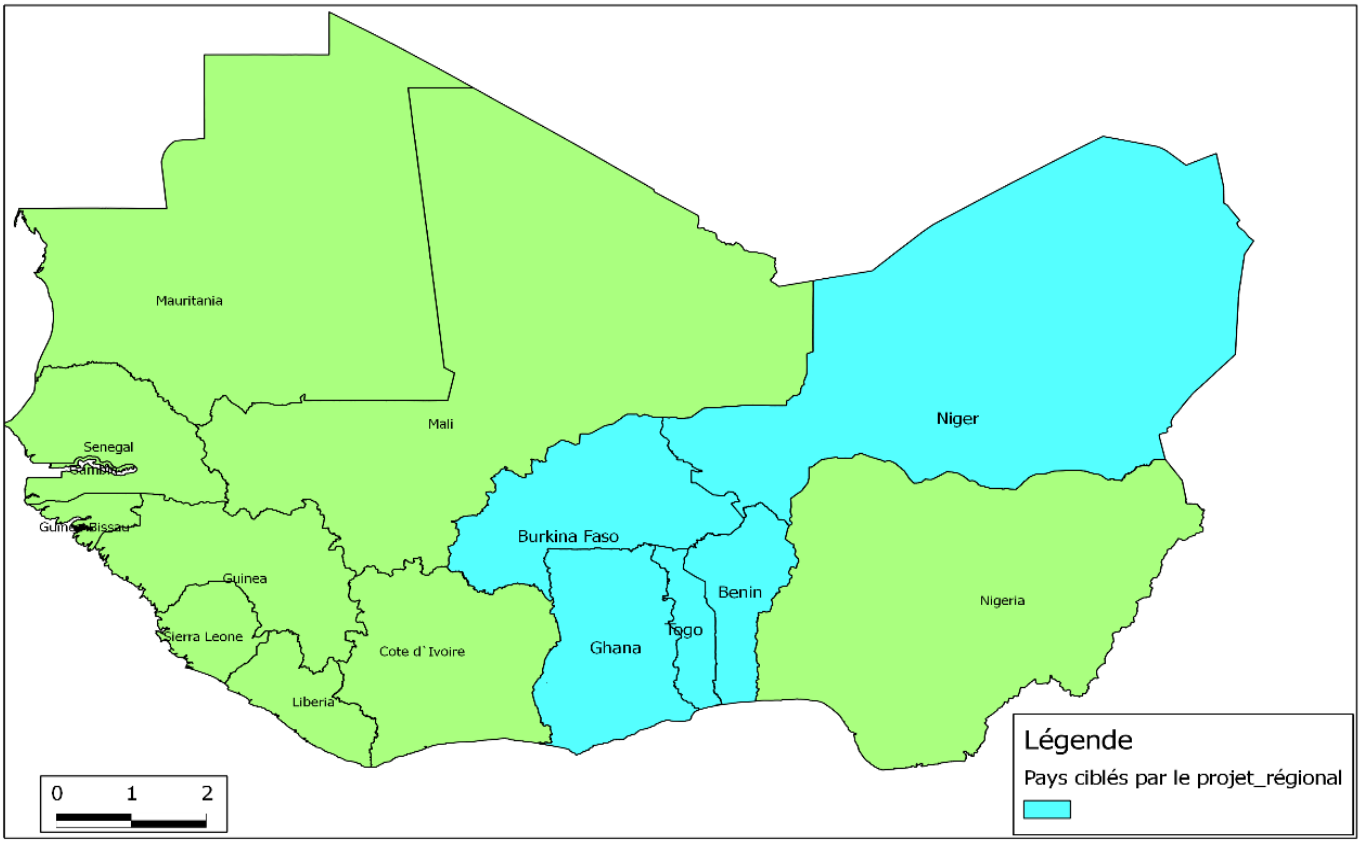


Figure 1: Geographical localization of the five countries concerned by the project

Demographic characteristics

Benin, Burkina Faso, Ghana, Niger and Togo are characterized by strong population growth of 2.77%, 2.94%, 2.27%, 3.84%[2] and 2.57% respectively. The total population in these five (05) countries is estimated at 88 million inhabitants in 2017 (UN, 2017), that is about 24% of the population of West Africa, whereas it was only 15 million inhabitants in 1950. The population has almost sixfold in less than 70 years in these five countries. At this rate, this population will reach in the near future, in 2050, 203 million inhabitants, according to the United Nations forecast. This will undoubtely have an impact on the management of countries' natural resources and food security.

Administratively, each country is subdivided into regions and/or departments whose number and size differ from one country to another (see table below). The population is unevenly distributed across these countries and regions, reflecting disparities in the physical environment. The highest density of the population is recorded in Togo (135 inhabitants/km2) while the lowest density is recorded in Niger (17 inhabitants/km2). The low density in Niger is mainly due to the fact that three-quarters (3/4) of the country are desert, including the desert of Ténéré which is among the most dangerous deserts in the world. In the livable and cultivable zone of Niger, the density can reach 40 inhabitants/km2. This is the case of the regions of Maradi (53.5 inhabitants / km2) and Dosso (44.5 inhabitants/km2).

The following table presents the demographic characteristics of the countries concerned by the project.

Table 1: Demographic characteristics of the countries concerned by the project.

Country	Total area (km^2)	Population (hbts)	Rural population (%)	Rural population (hbts)	Annual growth rate (%)	Density of the population (hbt/km^2)
Benin	114 763	11 458 611	51,73	5 927 821	2,77	102
Burkina Faso	274 400	19 173 322	66,25	12 702 973	2,94	70
Ghana	238 533	28 656 723	44,24	12 676 513	2,27	120
Niger	1 267 000	21 563 607	75,00	16 169 866	3,84	17
Togo	56 600	7 691 915	57,89	4 452 751	2,57	135

Depending on the area of residence, on average 3 out of 5 inhabitants live in rural areas in these countries. The country with the highest rural population rate (75%) is Niger. This high proportion of the population in rural areas reflects its heavy reliance on agriculture and livestock as the main source of income and livelihood. In these areas, the population is concentrated around natural resources and arable land, which is becoming increasingly insufficient, as a result of population growth and the adverse effects of climate change (rising temperatures, falling rainfall, intensifying droughts). , reduction of the vegetative period, floods, etc.).

[2] The annual population growth rate in Niger remains the highest rate in the world.

In addition to the high growth rate in the five countries, the fertility rate is high (on average 5.15 children / woman[3]) as a result, the population is extremely young. The proportion of the inactive population under 15 is 43.21% on average (Benin 43.04%, Burkina Faso 45.04%, Ghana 38.2%, Niger 49, 31%, Togo 40.46%[4]). This inactive proportion places a heavy burden on the working-age population, generally between the ages of 15 and 64 (according to the International Labor Office). However, in Sub-saharan Africa and more specifically in the project area, the 15 to 20 age group is in most cases an additional burden, as a result of the relatively high unemployment rate.

Beyond the youth of the population, its distribution by gender shows a slight predominance of women (50.24%) compared to men (49.76%)[5]. The proportion of women is increasing, 54%, in the range of the population older than 55 years. Thus, many women found themselves heads of households though their status and condition do not allow them to fully assume this role. In rural areas, the phenomenon is more pronounced because of the high rate of mortality of older men compared to women, but also the extended migratory movement of young boys to urban centers and abroad looking for a job and a better life, leaving the women heads of households. In this area where agricultural activity is the main source of income, households headed by widows remain vulnerable.

B. VARIABILITY AND CLIMATE CHANGE

B.1 : RAINFALL REGIME

The climate of the countries concerned by the project is influenced by two trade winds: the monsoon and the harmattan. The point of contact between these two trade winds (southern moist air masses and northern dry air masses) is called the Intertropical Convergence Zone (ITCZ). The precipitation regime is due to the displacement of this ITCZ which performs seasonal south to north movements. Between May and September, moist air masses from the southwest move northward. This corresponds to the period when the rainfall is at its maximum. In arid, semi-arid, subtropical zone, the rainy season is concentrated in a single season for a period of two to five months, as is the case in the project area. In contrast, the southern part of the coastal countries experience two rainy seasons which also tend to disappear to make way for an increasingly shorter rainy season.

[3] The fertility rates according to the countries are: 4.86 children / woman for Benin, 5.79 children / woman for Burkina Faso, 4.03 children / woman for Ghana, 6.6 children / woman for Niger and 4.48 children / women for Togo.
[4] http://populationsdumonde.com/fiches-pays/
[5] Depending on the country, the rates are: Benin (50.24% men and 49.76% women), Burkina Faso (49.78% men and 50.22% women), Ghana (49.32% men and 50, 68% women), Niger (49.6% men and 50.4% women).

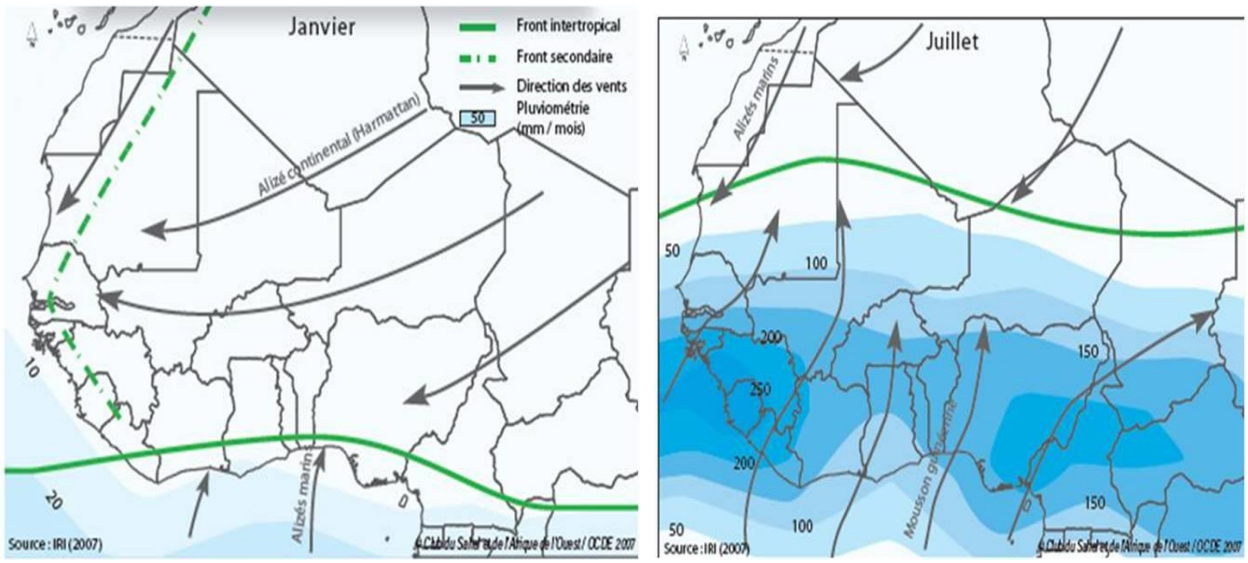


Figure 2: The average seasonal beat of the ITCZ in West Africa
Source: Atlas CSAO/CILSS/FAO/CEDEAO

B.2.: CLIMATIC ZONES

Based on rainfall averages, guided by the south/north ITCZ movement, West Africa is divided into six major climate zones, according to the World Meteorological Organization (WMO, 2001). These are: the hyper-arid zone, the arid zone, the semi-arid zone, the subhumid dry zone, the subhumid humid zone and the humid zone. The project area is located in semi-arid and subtropical dry areas. In these areas the rainy season is concentrated on one single season whose duration is becoming shorter (2 to 5 months) thus prolonging the drought period.

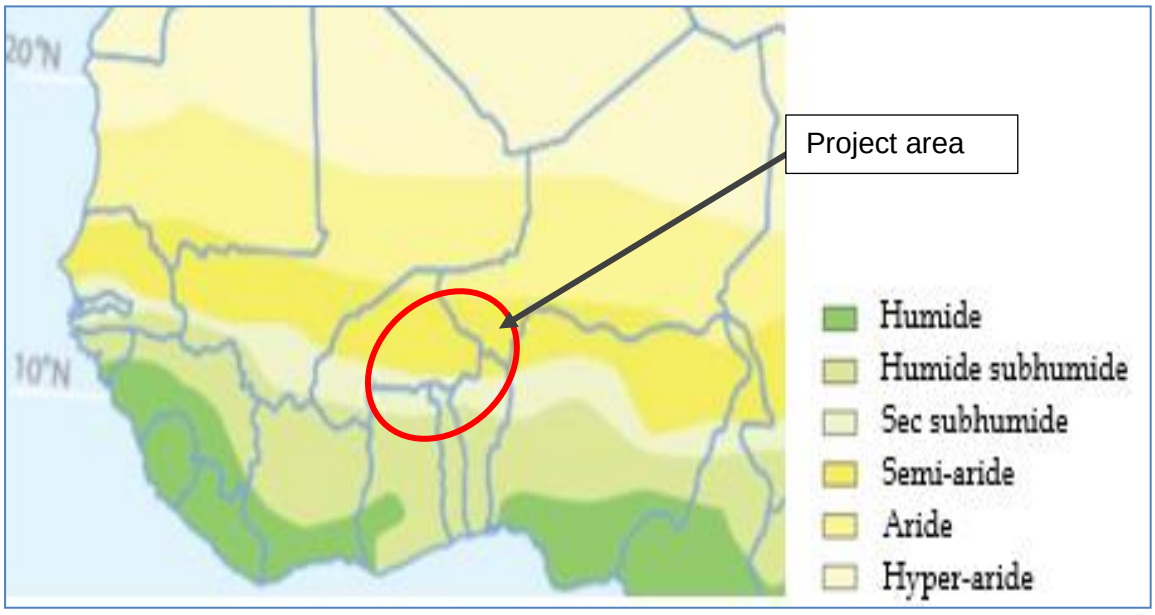


Figure 3: West Africa climate zones illustrating the project area (red circle)
Source: CEDEAO-CSAO/OCDE, 2008

The climatic zones shown on the map above are changing with the advent of climate change, which sometimes makes it difficult to define climatic zones in the regions. Thus, the classification may differ from one author to another and according to the models used. According to the International Fund for Agricultural Development (IFAD, 2001), for example, West Africa is divided into four (4) climatic zones: the arid zone (50% of the surface area), the semi-arid zone (20%), the subhumid zone (20%) and the wetland (10%). Efforts must therefore be made to make local, reliable data available that can harmonize the delimitation of climate zones in the current context of climate change

B.3 : CLIMATE VARIABILITY AND CHANGE IN THE PROJECT AREA

In West Africa, climate change is manifested through various facts. According to the 5th Evaluation Report by the Intergovernmental Panel on Climate Change (IPCC), temperatures observed in West Africa have increased over the past 50 years. It was noted that the number of cold days and nights has dropped and that the number of hot days and nights have increased between 1970 and 2010[6]. With regard to rainfall, they have declined during the last 50 years with the migration of isohyets towards the south.

AN INCREASE IN TEMPERATURES

According to CILSS, temperatures in West Africa have evolved somewhat faster than the global trend, with increases ranging from 0.2 ° C to 0.8 ° C per decade since the late 1970s in the Sahelo-Saharan, Sahelian and Sudanese zones. The linear trend of warming over the last 50 years from 1956 to 2005 (0.13 ° C per decade) is almost twice that of the last 100 years from 1906 to 2005 (see figure below).

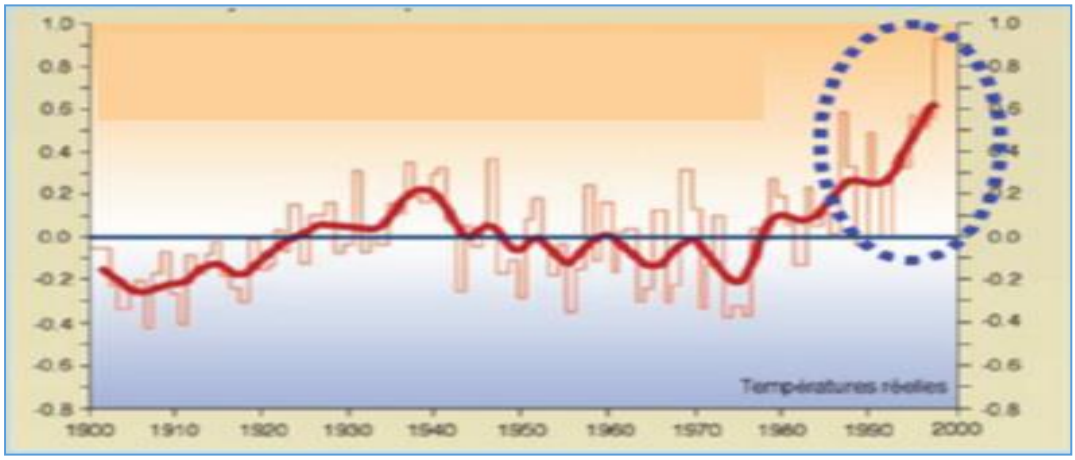


Figure 4: Temporal evolution of temperature's anomalies (1900 à 2000)
Source : CEDEAO-CSAO/OCDE/ CILSS, 2008

In the countries concerned by the project, this increase has been noted with sometimes greater importance in the regions / departments targeted.

[6] GIEC 2014

In Benin, according to the second communication on climate change, there has been an increase in average temperatures of around 1°C at the national level. It is the same for the minimum temperatures which experienced an increase of the order of 0.5 to 1°C. Interannual variations in mean temperature were in the range -0.6 to + 0.8° C between the period 1961-2010 at the national level. In the departments concerned by the project (Natitingou for example), these variances were much clearer, showing a rising temperatures in this zone between the period of 1961 to 2010 (figure opposite).

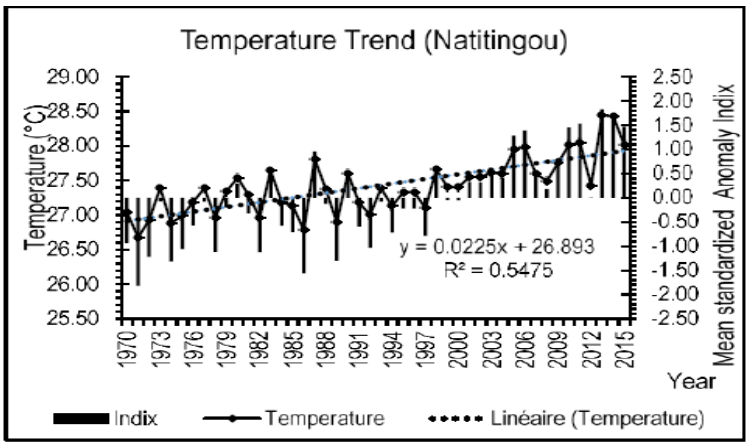


Figure 5: Interannual temperature variability at Natitingou in the project area

Source : Octo Journal of environment research, 2016

In Burkina Faso, the average annual temperature has increased by at least 0.5°C over the period 1961-2008 on all synoptic stations in the country. The national average of 27.5°C in 1961 increased to 28.5°C in 2008. In the project area, the change in temperature between the periods 1961-2000 reflects this increase with an average that rose from 27.5°C in 1961 to 28.3°C in 2000. The figure to the right illustrates the evolution of temperature in the project are.

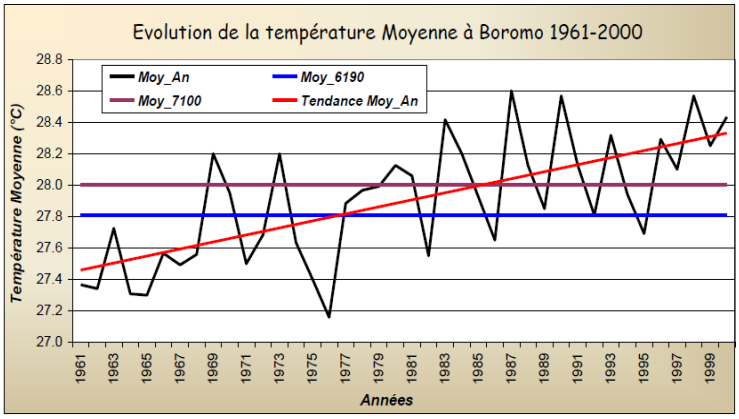


Figure 6: Evolution of temperature in the project areas

Source : Deuxième communication sur les changements climatiques, 2014

In Ghana, according to the third communication on climate change in 2015, the country has recorded a rise of 1°C since 1960 with an average of 0.21°C per decade. This increase was much more pronounced in the northern regions of the country (project area) where a 37% increase in temperature was recorded between 1960 and 2010. The figure to the right indicates that there was an increase in average temperature over the period 1981-2010 compared to that of 1951-1980.

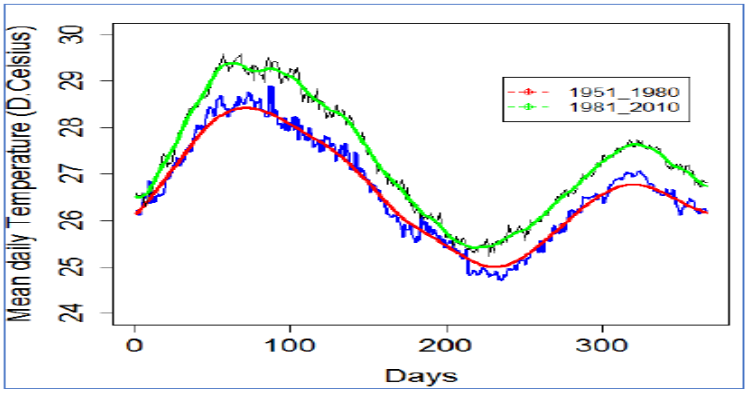


Figure 7 : Annuel cycle of temperature (period 1951-1980 et 1981-2010)

Source : Third communication on climate change, 2015

In Niger and particularly in the project area (Tillabery region, for example), the rise in temperatures has significantly accelerated and continued since 1980. The period of 1990-2007 was particularly hot and persistent in the years 2010. Temperature differences between the current period and the period 1951-1979 averaged +0.99°C. The rise in minimum temperatures is +1.44°C against +0.53 ° C for maxima.

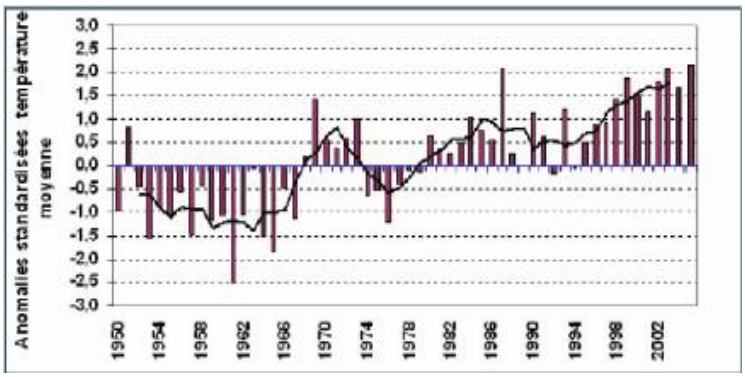


Figure 8 : Evolution of interannual temperature at Tillabrery in Niger (project area)

Source : CILSS, le Sahel face aux changements climatiques

In Togo, the linear trend of the national average of the temperature data indicates a 1°C warming. Between the period of 1961 and 2012, the recorded temperature differences were of the order of 0.7 and 1.2°C. The project area is one of the areas that recorded a larger gap as shown in the figure. In this area, the rise in temperature recorded in the 1960s has not recovered and the situation is deteriorating. The following figure illustrates the case of Mango in the savanna region (project area).

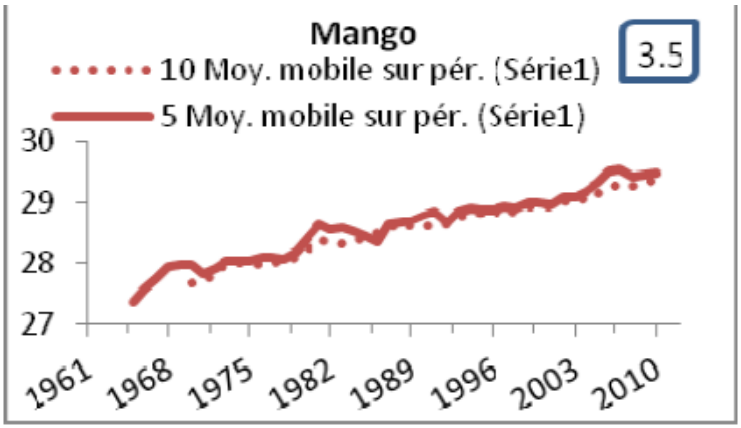


Figure 9: Evolution of interannual temperature at Mango in Togo (projet area)

Source : Third communication on climate change, 2015

This increase in temperature, noted in all the countries concerned by the project has had an impact on the means of agricultural production of the populations and has reduced the capacity of the natural regeneration of the ecosystems. With the future looking even worse for Africa and particularly West Africa, these impacts will continue to grow.

According to the IPCC projection models, temperatures in Africa are expected to increase faster than the global average increase in the 21st century (James and Washington, 2013). Independently of the prediction scenarios (RCP2.6 and RCP8.5), these models predict the evolution of the temperature from + 3°C to + 6°C. For mid-century (2031-2060), mean warming is expected to reach + 2.8°C over 1961-1990 (Thornton et al. 2015). According to Mora et al. (2013), the average surface air temperature is expected to exceed the simulated variability of the 20th century by 2047 (± 14 years) according to RCP8.5. However, in tropical regions, particularly tropical West Africa, these unprecedented climates are expected to occur 1 to 2 decades earlier than the global average. Diffenbaugh and Giorgi (2012) identify the Sahel and tropical West Africa as hot spots of climate change. The following maps show the predictable rise in temperature in West Africa (project area in a yellow circle)

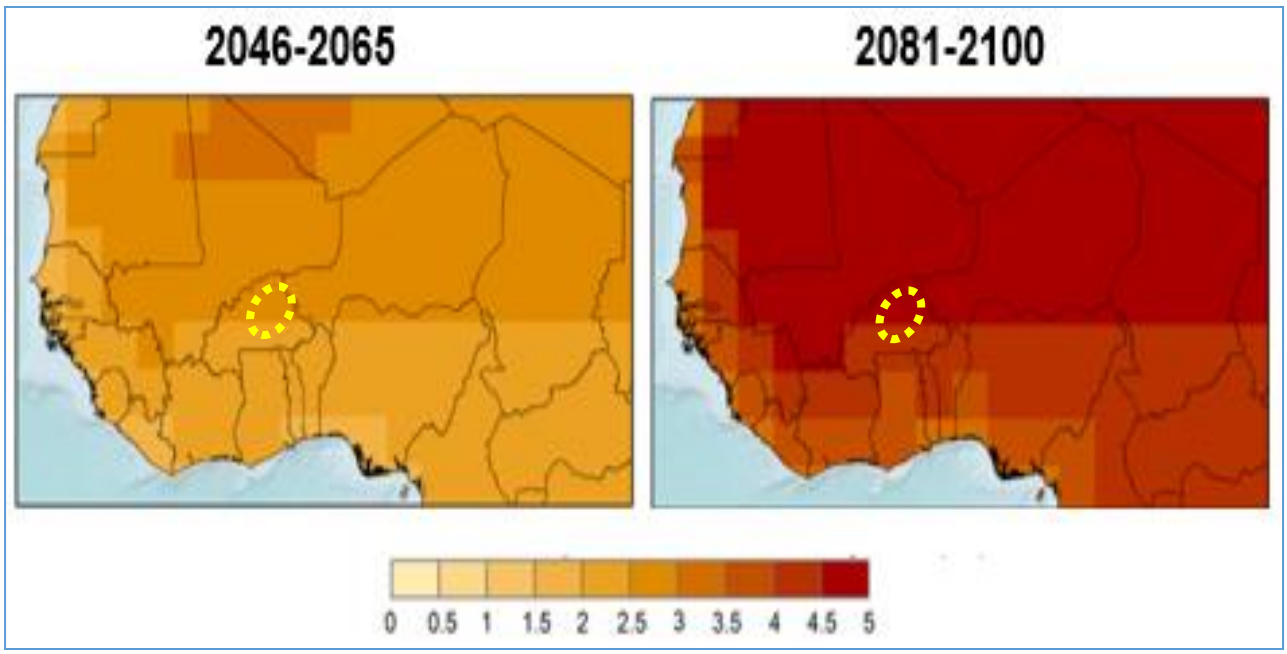


Figure 10: Future evolution of temperature variation in West Africa
Source : CILSS (2016)

A DECREASE OF RAINFALL

In contrast to temperatures that experienced an increase, rainfall has declined in recent decades. This reduction was greater in the Sahel as well as in the semi-arid regions in which the project is located, with episodes of high deficits in 1972-1973, 1982-1984 and 1997[7]. In this zone, rainfall has decreased from 15 to 30% on average. Although rainfall appears to have come close to normal mean values since the late 1990s, the long-term trend since 1900 still indicates a decrease in rainfall in the Sahel (Nicholson, 2005). In addition, the mode of distribution of rainfall is changing towards the delay of rainfall events and the shortening of the single rainy season that characterizes the project area, as pointed out by the populations during public consultation meetings in the framework of this project.

In addition to this significant decrease in rainfall, countries are facing abrupt changes, in recent years, between wet years and dry years. CILSS studies indicate that after 1993, a new mode of variability appears to occur within the rainfall regime in the region. The interannual evolution, considered at the scale of the whole region, showed an alternation between very wet years and very dry years (figure 11 below). This new mode of variability makes interannual forecasts even more difficult and imposes new adaptation strategies. Indeed, this mode of variability causes sudden floods and dry spells that appear in the middle of the agricultural season. The cultural calendar has become very confusing for people who do not have weather information.

[7] CILSS (2016). The Landscapes of West Africa: A Window on a World in Full Evolution. U.S. EROS Geological Survey, 47914 St St, Garretson, SD 57030, UNITED STATES

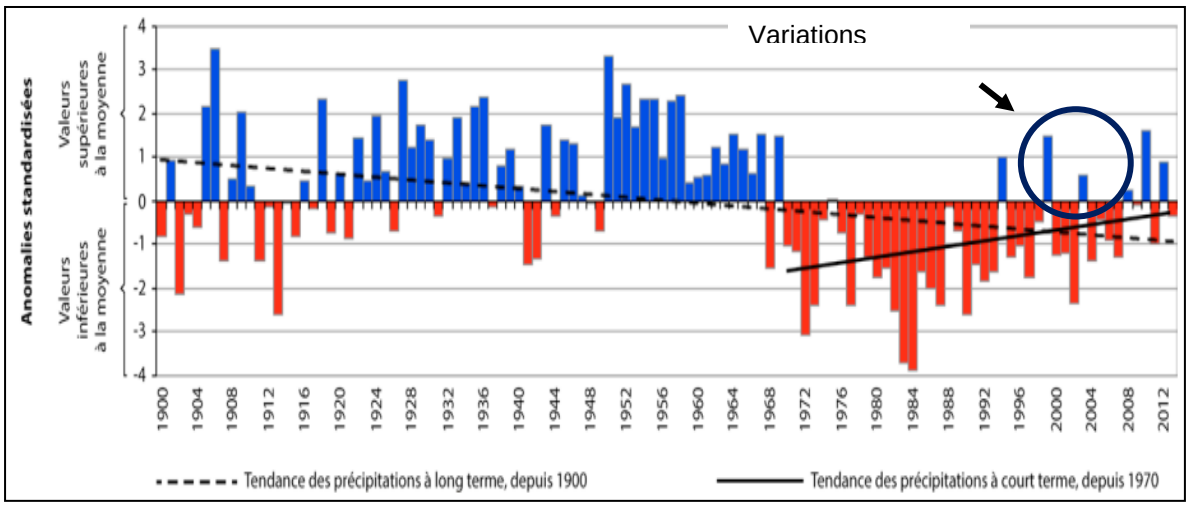


Figure 11: Rainfall variations between 1900 and 2012 with abrupt alternations between 1992-2012
Source : MITCHELL, 2013

A CONCERN ABOUT THE SLIDING OF ISOHYETS TO SOUTH

The trend of general decline in precipitation and rising temperatures has resulted in a shift of isohyets to the south.The cases of Burkina Faso and Niger taken as an example, clearly show this phenomenon.

During the period 1931-1960, Burkina Faso was able to receive an annual rainfall of over 1,200 mm in the southwestern part[8]. However, after 1960 there was a significant decrease in rainfall and a disappearance of the isohyet 1 200 mm on the rainfall map of Burkina Faso (Figure 12). The 900 mm isohyet that encircled the center of Burkina Faso was found almost to the south of the country and is expected to continue to migrate further south according to projections. This shift is also observed in Niger where the 600 mm isohyet which was above Niamey in the years 1950-1967 was completely down Dosso after about two decades. The 800 mm isohyet has completely disappeared on the map of Niger (Figure 13)..

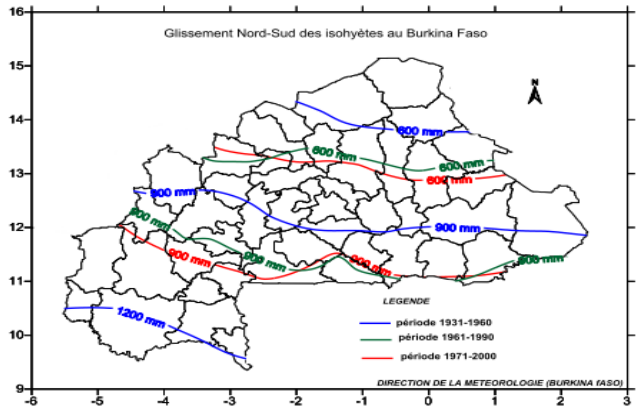


Figure 12: Southward Sliding of Ishoyetes in Burkina Faso
Source : Meteorological Directorate of Burkina Faso

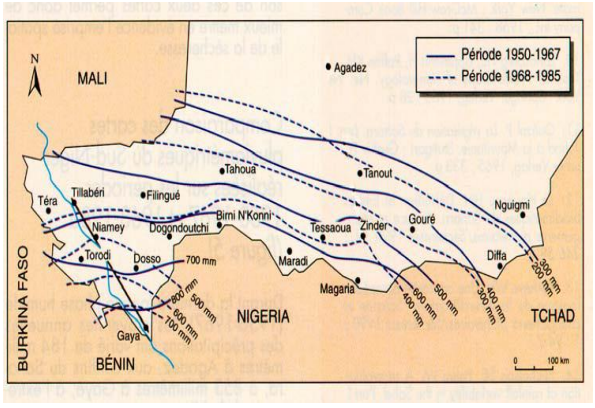


Figure 13: Southward Sliding of Ishoyetes in Niger[9]

[8] Deuxième communication nationale du Burkina Faso, 2014
[9] Variabilité climatique au Niger : Impacts potentiels sur la distribution de la végétation. MAHAMANE et al, nd.

This displacement of isohyets towards the south followed by a phenomenon of aridification of agro-climatic zones is recorded in the other countries and regions concerned by the project. Over the years, the slippage insidiously catches people who have not prepared or even less, do not have agro-climatic information. Adaptation actions should make it possible to prepare people to better understand the behavior and the trend of the climate in their area and to better adapt to the adverse effects of climate change which are increasing and diversifying...

Therefore, exchanges should be organized between the populations located in the same climatic zone in order to share the lessons learned from the best and the bad practices to cope with the bad weather conditions which announce themselves even worse in the western part of the Africa where the project is located.

For projected rainfall, variations in the results of global models mean that confidence in the robustness of projections of changes in regional precipitations is "low to medium" in view of the lack of regional data. However, several global models indicate that the seasons of heavy rains are marked by delays in the beginning of the season by the end of the 21st century.

The projection related to extreme events shows that the risks of drought are inconsistent for West Africa. The results of the regional modelling however suggest an increase in intensity and frequency of extreme precipitation episodes, especially in highlands and mountain areas. Although projections are more uncertain (Rowell, 2012) and show greater spatial and seasonal dependence (Orlowsky and Seneviratne, 2012), projected changes in potential evapotranspiration and negative precipitation anomalies for the western Sahel could cause a virtual elimination of the growing season of the region by 2041-2060 in the project area[10] .

In the countries covered by the project, the frequency of droughts and floods will be a serious concern in the years to come. The seasonal hydrological and meteorological forecasting efforts undertaken by Agrhymet, should be strengthened and data made locally available for this project.

C : IMPACTS OF CLIMATE CHANGE ON PRODUCTION FACTORS

The increase in temperatures and the decrease in precipitation, noted in all the countries covered by the project, have an impact on the means of production, particularly water, soil and vegetation

C.1. Impacts sur les ressources en eau

Of the five countries involved in the project, three (03) countries are in the Niger Basin including Benin, Burkina Faso and Niger. Southeastern Burkina Faso, the northern parts of Ghana and Togo involved in the project are in the Volta Basin. The following figure shows the different basins of West Africa and those found in the project area (see red dashed circle).

[10] Niang et al., 2014: The Landscapes of West Africa: A Window on a World in Full Evolution. U.S. Geological Survey EROS, 47914 St and 252, Garretson, SD 57030, UNITED STATES.

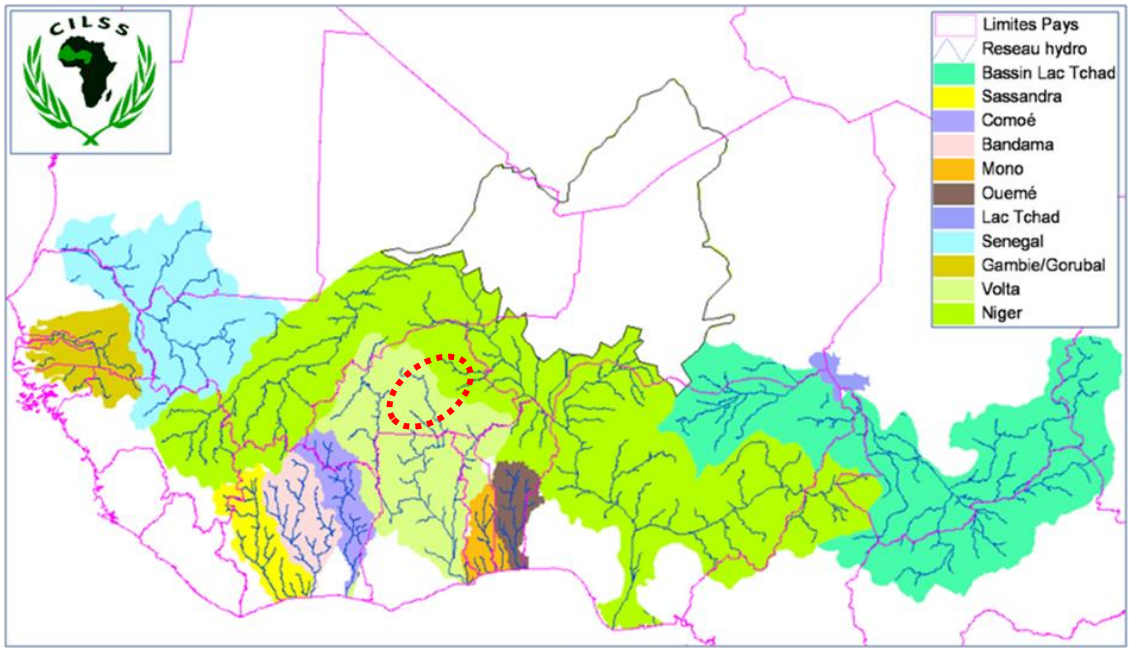


Figure 14: The main river basins of West Africa
Source CRA, 2012.

Despite the importance of basins in the project area, they suffer from chronic deficits. Indeed, the changes are manifested by: (i) the irregularity of the rains; (ii) recurring droughts; (iii) rainfall decrease from about 15% to 30%; (iv) the disruption in the duration of the different seasons of the year with a beginning of season now very variable and spread out; (vi) the reduction of surface water resources at the level of the main basins (40 to 60%) with the consequence of a drastic reduction in the volumes of water passing through major rivers such as Niger and Volta; (vii) more and more severe low flows with frequent stopping of flows; (viii) a filling deficit of most detentions; (ix) the disappearance of temporary water points; (x) degradation of plant resources reducing infiltration rates and increasing erosion and filling of water points. (xi) All of these problems have had a negative impact on the availability of usable water by the people in this project area. Added to this is the weak technical and financial capacity to mobilize water for agro-pastoral and food purposes.

Studies have indicated that the water resource of the Niger River and Volta River basins that waters the project area is becoming more sensitive to climatic variability.

From 1969 to 1994, there was a 34% decrease in the annual Niger river module and more than 70% in minimum daily flows. The low water period went from 50 days to 120 days. The dynamic volume of the river has increased from 1800 m3 in 1970 to 200 m3 in 1990. There is also a reduction in water reserves because every year, 27 billion m3 are lost. This loss could partly be due to the evaporation more and more important in connection with the rise in temperatures. For example, the drop in Niger River flows in Niamey (Figure 16) is much greater than that of rainfall by 40 to 60% since the early 1970s compared with 20 to 30% for rainfall at the Niamey station. . The analysis of the hydrograph of the Niger River in Niamey (Figure 17), also shows that: (i) the peak flow of the Guinean flood arrives earlier and earlier, (from February / March in the 1950s to December / January) in recent decades; (ii) the drying is also becoming faster, the minimum flow occurring in the past in June / July, is recorded as early as May during the last decade.

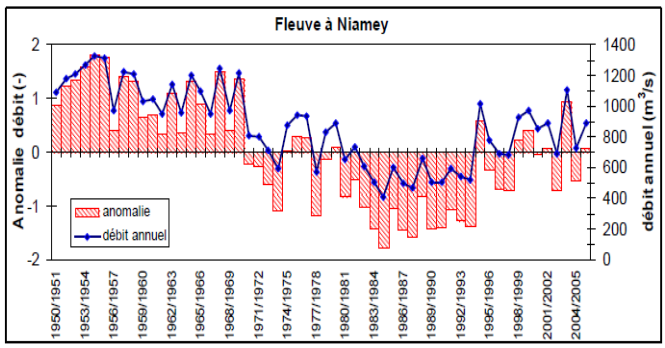


Figure 15: Anomalies et débits annuels du fleuve Niger à Niamey (1950-2005)

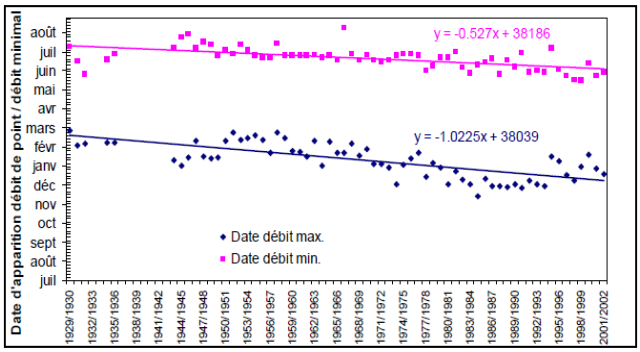


Figure 16:Déplacement des dates d'apparition des débits de pointe (crue guinéenne) et minimal du fleuve Niger à Niamey

In Ghana, simulations using climate change scenario projections have suggested a reduction in runoff of between 15 to 20% and 30 to 40% for the years 2020 and 2050, respectively, in all watersheds of which Volta where is located a part of this project. Towards 2050, with population growth, climatic disruption will lead to an increase in the demand for irrigation water. In Ghana's inner arid savannah, where this project is located, this increase could be as much as twelve times the current needs (Oli Brown and Alec Crawford)[11].

For groundwater, easily accessible alluvial aquifers used for agricultural and human consumption are increasingly vulnerable to climate change because they are associated with watercourses. Flows over time and space, the low soil holding capacity have reduced the recharge of these water bodies. The water that was already accessible at a depth of a few meters (2 to 10m) is currently accessible several tens of meters deep and lack of technical and financial resources farmers and herders can no longer mobilize this water, "according to the beneficiaries''

C.2. Impact on soils

At the pedology level, the space of the countries concerned by the project contains several types of soils, the main ones being: (i) raw mineral soils, not suitable for agriculture and livestock; (ii) undeveloped soils, which are of two types (poorly evolved soils and poorly developed soils); (iii) sub-arid soils, very sensitive to wind erosion and also to very low fertility; (iv) tropical ferrous soils, suitable for crops with low water requirements; (v) ferritic soils characterized by the persistence of iron and aluminum, and the leaching of other cations. These soils give good yields for food crops; (vi) hydromorphic soils, mainly along watercourses, in fossil valleys and on deposits. They are very clayey soils, poorly drained; (vii) Vertisols are soils rich in nutrients, but often difficult to work, given their clay texture

Most surfaces in the project area are characterized by shallow and fragile soils. Associated with the adverse effects of climate change recorded, rainfall deficits and temperature rises, these soils are degrading from year to year. The most visible manifestations of this process of soil degradation are, among others: (i) degradation of vegetation; (ii) the formation of cuirass following the drying of the surface layers and the induration of the soil by the precipitation of iron oxides and hydroxides; (iii) reduction of rainwater infiltration; (iv) the acceleration of erosion; (v) floods; (vi) impoverishment and salinization of soils; (vii) the reduction of diversity and productivity of plant resources; (viii) increased competition in land use between agricultural and livestock / livestock production systems; (ix) changing the balance of natural ecosystems. These phenomena aggravate the decline

[11] Assessing the Impact of Climate Change on Security in West Africa: A Country Case Study of Ghana and Burkina Faso,

in agricultural yields, the exaggerated expansion of agricultural areas sown, malnutrition and food insecurity, impoverishment, rural exodus, etc.

As a result of the adverse effects of climate change (the southward migration of isohyets), soil degradation and prolonged dry seasons, peasants are now migrating to fertile areas, in the south of the country, which has a two rainier season than the north. These migrations of large populations that congregate in small, fertile areas increase competition for valuable, fertile lands and accelerate the degradation of natural resources (MECV and SP/CONEDD, 2006).

C.3. Impacts on biodiversity, forest resources and protected areas

The countries covered by the project have a range of natural habitat, of great importance for the preservation of regional biodiversity and natural heritage. We can mention, among others:

- The Transboundary Biosphere Reserve of the W-Arly-Pendjari Complex (32,250 km2): It is one of the largest reserves of Sudano-Sahelian savannahs in West Africa. It consists of two central cores: (i) the W Regional Park which straddles the Benin (577,235 ha), Burkina Faso (235,543 ha) and Niger (221,142 ha) borders; (ii) the total wildlife reserve of Arly (93,000 ha) in Burkina Faso and the Pendjari National Park in Benin (480,000 ha). It includes 16 other reserves (partial reserves or hunting areas) that surround the two central zones;
- Mole National Park: it is the largest protected area in Ghana in the northern region and covers approximately 457,700 ha;
- The Oti-Kéran-Mandouri complex located in the northern part straddling the regions of Savanes and Kara in Togo. It covers about 179,000 ha.

These different protected areas have a relatively high biological diversity. There are herbaceous savannas (*Loudetia togoensis, Andropogon pseudapricus, Pennisetum pedicellatum, etc.*), shrub savannas (*Combretum spp., Terminalia spp., Acacia spp., Anogeissus leiocarpus, Balanites aegyptiaca, Ziziphus mauritiana, etc*.), degraded savannahs on a cuirass plateau, savannas with *Mytragyna inermis and Andropogon gayanus var. bisquamulatus*, and finally wooded savannas *(Anogeissus leiocarpus, Terminalia spp., Isoberlinia doka and dalzielli, Daniellia oliveri, Burkea africana ...).* In the south, the plant formations are more closed and they consist of dry forests and forest galleries at the edge of the rivers *(Acacia sieberiana, Diospyros mespiliformis, Borassus aethiopum, Mitragyna inermis, Kigelia africana, Anogeissus leiocarpus, Cola laurifolia, Sizygium guineense, Antidesma venosum, Carapa procera, Voacanga africana, Antiaris africana ...).* It is also home to almost all the large mammal species (about 52 species), birds, reptiles and amphibians of the West African Sudanian savannah[12]. The following figure shows the national and regional protected areas encountered in the project area.

[12] Union Internationale pour la Conservation de la Nature, 2010

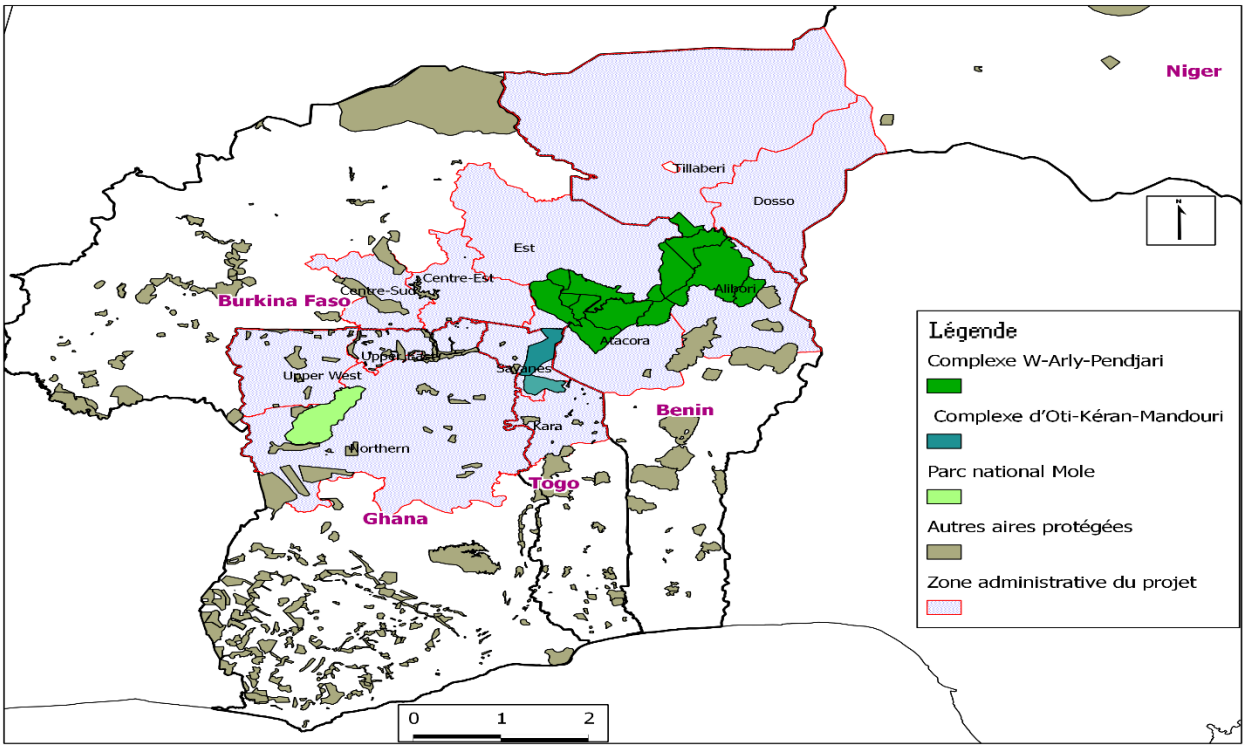


Figure 17: Protected Areas in the project zone
Source: Global Protected Areas Database (IUCN-WCMC, 2017), supplemented with data from OpenStreetMap 2017

Apart from natural biological diversity, in the countries covered by the project, there is agricultural biodiversity and biological diversity of domestic fauna and livestock.

Agricultural biodiversity is dominated by cereals and cash crops. Maize, millet, sorghum and rice account for the main cereals grown by the majority of the population, followed by wheat and fonio. People also grow cowpeas, peanuts, onions, peppers, nutsedge, sesame, cotton, etc.

The biological diversity of domestic and farmed fauna or livestock comprise essentially to mammalian and bird classes. The types of species and breeds encountered are *Bos indicus*, *Bos taurus, Ovis aries, Capra hircus, Camelus dromedarius, Equus caballus, Asinus asinus, Gallus gallus domesticus and Numida meleagris*. Some of these animal breeds are highly sought after in the subregion for their food and dairy abilities as well as for the quality of their skins. The herd is reared according to three extensive production systems but adapted to the agro-ecological conditions of the countries, namely sedentary livestock, transhumant livestock and nomadic livestock. However, this farming activity is strongly affected by the current climatic conditions which result in the scarcity of water and fodder

Although biodiversity is important in the countries concerned by the project, it is now threatened by combined actions of climate change and anthropogenic practices. These are: (i) rising temperatures and intensification of droughts that do not favor the survival of certain species, (ii) poor agricultural practices (shifting cultivation practiced through the clearing of vegetation, fires bush, etc.); (iii) abusive exploitation, sometimes beyond the control of the competent authorities; (iv) poverty that forces people to resort to unsustainable natural resources; (v) the degradation of natural formations due to the destruction of soil structure, water and wind erosion; (vi)

conversion of forest land to agricultural land. The last becomes more and more important in connection with the decrease of the fertility of the soils put in culture.

Given the high demand in this project, the large number of potential beneficiaries in waiting, the exit of several sites that can be developed, and the limited financial resources dedicated to each of the beneficiary project country, it is better to invest these resources in subprojects considered very interesting but which will have no links with protected areas. The improvements that will be made must enable the recovery of degraded or degraded lands, with technologies that will contribute to the increase of yields and production, in order to eliminate shifting cultivation on slash-and-burn, to reducing the sown areas and the pressure on natural resources. This project is therefore designed to have no negative impacts on protected areas.

D: IMPACTS OF CLIMATE CHANGE ON AGRICULTURE AND LIVESTOCK

The impacts of climate change on the means of production (water, soil, vegetation) have negative impacts on the agricultural and livestock sectors

D.1. Impacts on the agriculture sector

In the agricultural sector, climate change has had an impact on the production, planning and execution of agricultural activities. These include, among others: (i) changes in precipitation (irregular rains, pockets of drought in the rainy season, more pronounced dry seasons and more or less frequent droughts); (ii) frequent disturbances in cropping calendars (delayed rains, early end of the rainy season, for example); (iii) an increased frequency of extreme and abnormal events (storms, floods, abnormally high temperatures, etc.).

The impact of these climate variability on agriculture is exacerbated in the project countries by other factors, such as: (i) degradation of soil fertility; (ii) deforestation; (iii) loss of diversity of agricultural varieties; (iv) lack of technical capacity in agriculture and adaptation to climate change; (iv) insufficient support for farmers' organizations to strengthen their resilience to the adverse effects of climate change; (vi) the lack of technologies for the improvement of adapted agricultural varieties, soil fertility, water mobilization for agricultural purposes; (vii) insufficient financial resources for agricultural development.

This set of facts affects agricultural yields and favors the expansion of land under cultivation and the degradation of natural resources. This reduces grazing space and exacerbates conflicts between herders and farmers

D.1.1. Decrease in agricultural yield in the project area

Observed decline in agricultural yields

In Burkina Faso, and particularly in the project intervention regions (Eastern, east-central and south-central regions), the data indicate that cereal yields (all speculations combined) decreased from the 2005/2006 crop year (Figure 19). Cereal production in this zone remains highly fluctuating and irregular. This poses a problem of permanent disposnability of the food over several consecutive years. The increase in production is mainly due to the increase in crop areas and thus a conversion of forest land to agricultural land (Figure 20). In addition to this conversion of forest lands, the use of chemical fertilizers by peasants in order to improve yields has been added. Despite this massive use of chemical fertilizers, yields are still declining (Figure 19). To cover production and food needs, farmers are resorting to an increase in areas, thus aggravating the degradation of soils already affected by climate disruption.

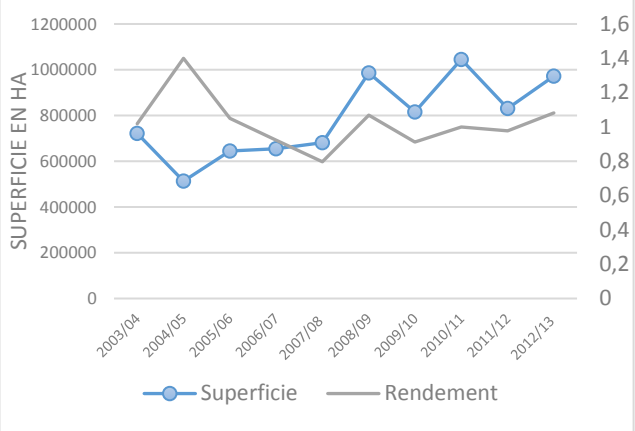


Figure 18: Evolution of cereal areas and yields in the three intervention regions of the project in Burkina Faso

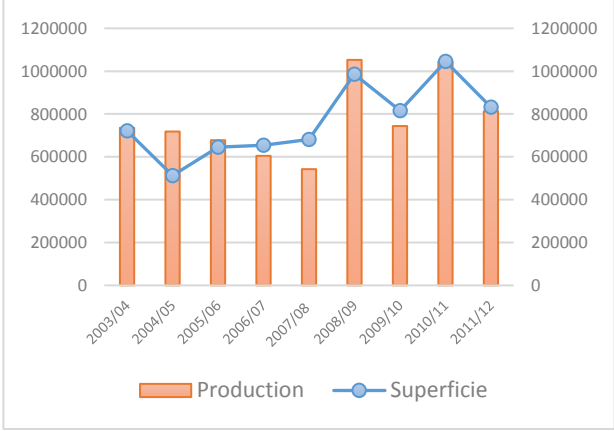


Figure 19:Change in cereal area and production in the three intervention areas of the project in Burkina Faso

Source: Global Lead (avec des données tirées de de l'annuaire des statistiques agricoles, DGESS, 2012)

In Niger the same observation has been made. An analysis of the evolution of yields of millet and sorghum crops shows that, in recent decades, yields have fallen from 406 kg / ha for millet to 388 kg / ha, and 319 kg / ha at 206 kg/ha for sorghum (CILSS, 2007) (Figures 21 and 22). If there has been an increase in food production, it is only the result of an extension of cultivated areas with the impact on natural resources. Despite the desired yields through the use of fertilizers, the trend is still downward. Climatic disturbances due to pockets of drought, irregular rains, excessively abundant rains with floods, etc. are more and more frequent, affecting year-to-year yields and making the production and therefore the availability of cereal products in the country is very unstable.

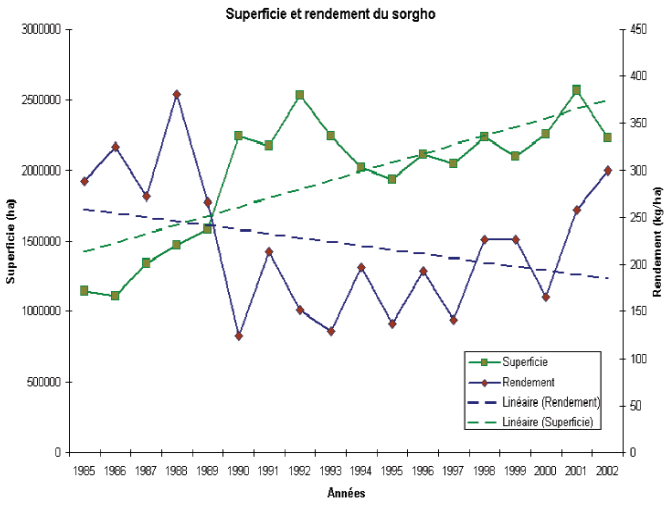


Figure 20: Yield per hectare of sorghum between 1995 and 2002
Source: CILSS, 2007

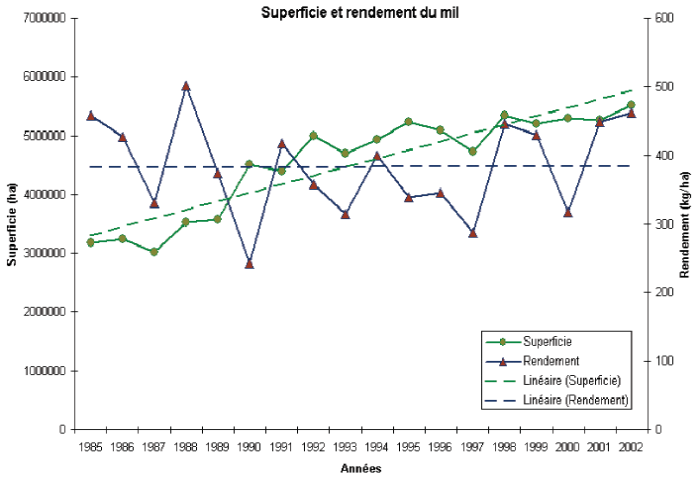


Figure 21: Yield per hectare of millet between 1995 and 2002

In Togo, this situation of declining yields was also observed. While the area sown in rice and paddy crops, yields have been declining in the last decade. The following figures show the evolution of yields and areas sown in rice and maize in Togo.

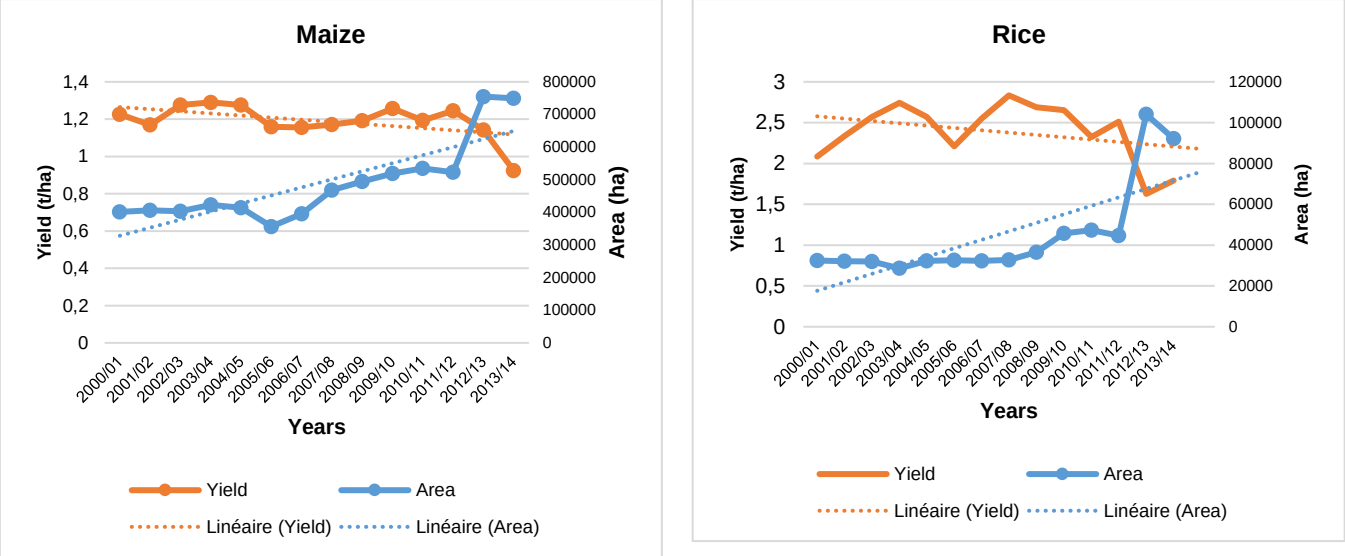


Figure 22: Yield per hectare of maize and rice and Area cultivated between 2000 and 2014 in Togo
Source: Direction des Statistiques agricoles du Togo

In Benin, particularly in the project area (Natitingou and Kandi), the production of small millet, for example, is very oily with a downward trend since 1995. This very strong fluctuation in the production is the climatic result of the disturbances with a strong fluctuation of the rainfall from one year to another. This makes the crop calendar very confusing for farmers and affects the yields and the overall production of millet (mostly rainfed) in the project area. As for rice, there is an upward trend in production, but it is also fluctuating and especially below demand. An important part is imported to cover the needs of a popupaltion in strong growth. However, market access for the rural populations targeted under this project remains very difficult because of poverty. The following figures show the evolution of small millet and rice production in the Benin project area over the period of 1995 to 2012.

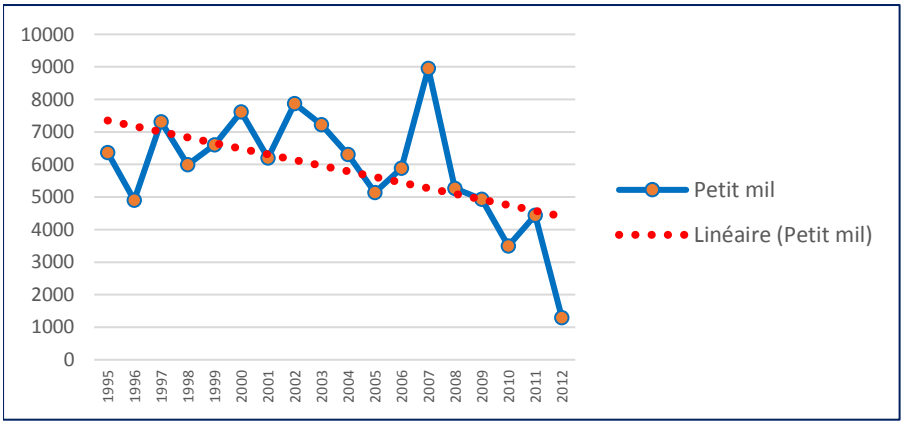
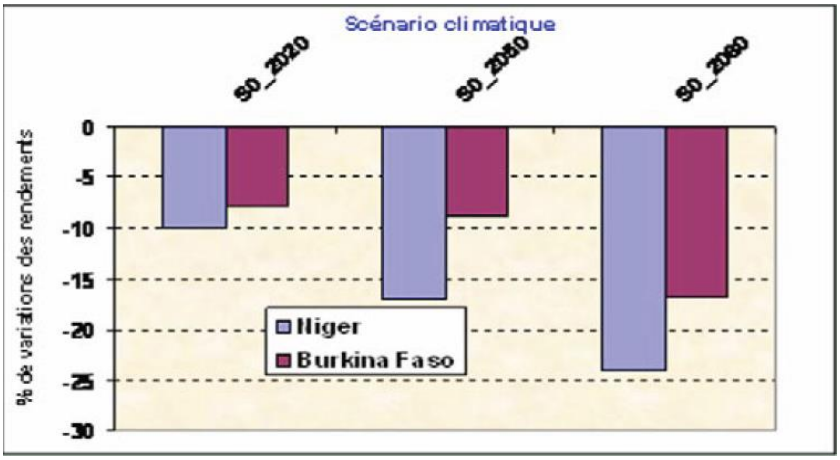


Figure 23: Evolution of millet production in Natitingou and Kandi (project area) in Benin
Source: FAO Data, 2012

Ghana is not spared from this phenomenon of general decline in crop yields. The increase in production is mainly due to the increase in areas under cultivation with their negative impacts on natural resources (see pages 22 to 25). In Ghana, areas planted increased by 146% between 1975 and 2013.

Expected decline in yields

According to Agrhymet studies (Sarr et al., 2007, AGRHYMET, 2009), yields are expected to continue to decline in the coming years in relation to the amplification of climate change. These studies also found that yields of crops such as millet/sorghum will decrease by more than 10% in the case of temperature increases of + 2 ° C and insignificant rainfall variations by 2050. + 3 ° C will reduce agricultural yields by around 15 to 25%. Figure 22 illustrates the expected decreases in millet and sorghum yields in Niger and Burkina Faso.



Légende :

S0_2020: Temperature increase of 1 °C
S0_2050: Temperature increase of 1.5 ° C
S0_2080: Temperature increase of 3 ° C

Figure 24: Rate of variation in grain yields of millet / sorghum in Niger and Burkina Faso according to temperature increase scenarios
Source : CILSS, 2016

A study on the variation of maize yields according to several hypotheses of global warming has shown that yields fall immediately as soon as the temperature increases by 1 ° C and the rise in temperatures up to 2 ° C would cause a drop in maize yield of more than 5% in the tropics (André et al., 2003). Indeed, the increase in temperature will result in a reduction in the duration of the development stages of plant and the total cycle time. A corn crop, for example, will see its cycle shortened by about 6 days for a temperature rise of +2 ° C. The reduction of the cycle, especially in the reproductive and maturation phase, will result in a reduction in the number and size of grains and a decrease in yield[13]. For example, in Burkina Faso and Niger, cereal yields could decrease by 10 to 25% between 2020 and 2080 as shown in the previous figure.

FAO simulations show that yields of cereal crops will generally decrease in the tropical and subtropical areas, where the present project is located, by 2050. These declines will be relatively large and estimated at around 20 to 50% throughout the Sahelian belt (FAO, 2008). This will have negative consequences for food security and people's survival.

[13] CILSS: The Sahel in the Face of Climate Change: Challenges for Sustainable Development

D.1.2. Disturbing expansion of cultivated land and degradation of natural resources

Declining crop yields, linked to climate change, favored the expansion of cultivated land.Indeed, with the decline in agricultural yields, farmers have no choice but to increase the area planted so that they can not only reach the level of previous productions but also meet the needs of a growing population The annual rate of expansion of land under cultivation has, however, been much higher than the population growth in the countries and is becoming worrying in view of the cultivable areas of the countries and the non-extensible limits for them. As the population is growing and the yields are decreasing, the populations have increased the fields to cover needs.

The high demographic growth in the countries covered by the project imposes a greater demand for food with a substantial agricultural production. At the same time, the aridifcation of the climate, dry spells during rainy season, floods due to the frequency of the heavy rains leading to the degradation of the lands, to the decrease of the productivity and the food production. In order to cope with food needs, rural populations have no choice but to expand agricultural areas on already deteriorating soils.

In Benin, expansion of agricultural land remains major in most regions, the average rate of expansion is estimated at 5% per year. Agricultural areas grew from 9.2 to 27.1 percent of the total area of the country between 1975 and 2013.

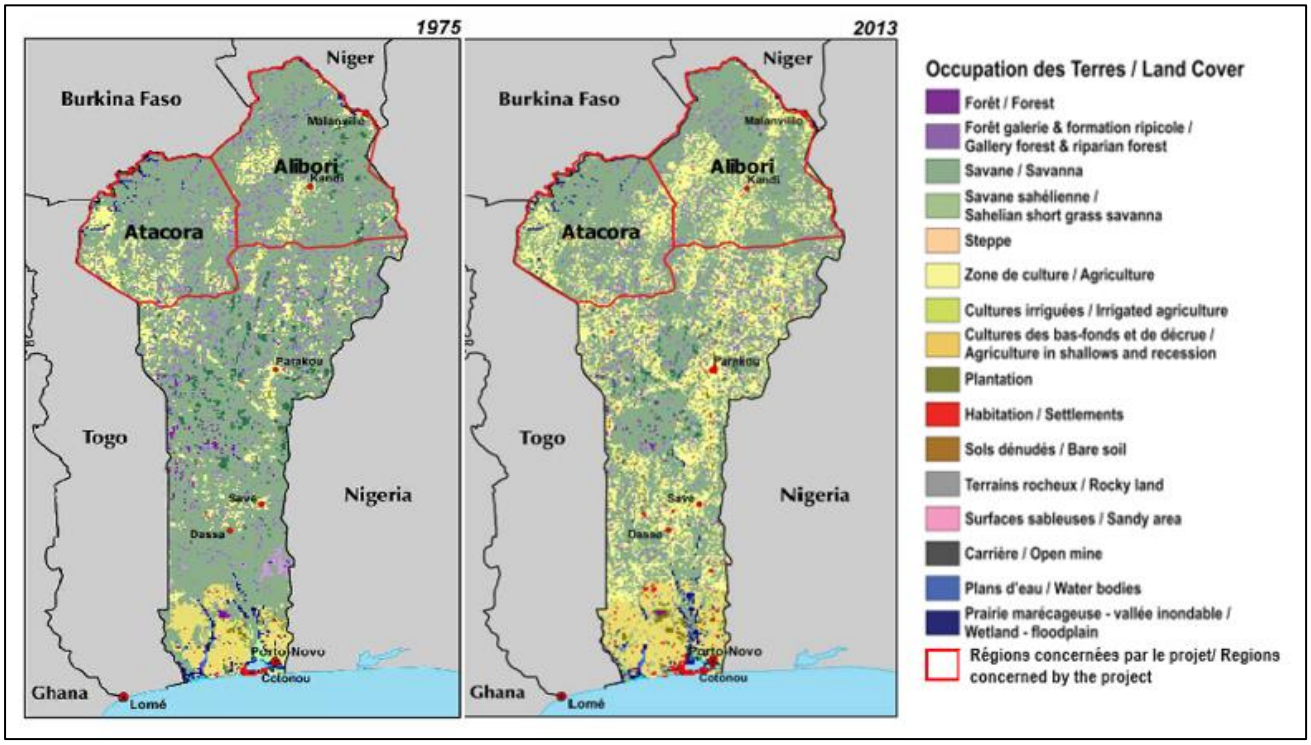


Figure 23: Evolution of agriculture land occupation in the project area in Benin in 1975 and 2013
Source: CILSS (2016). The Landscapes of West Africa: A Window on a World in Full Evolution

In Burkina Faso, between 1975 and 2013, savannas (Sahelian and Sudanian) were reduced by 39%. The country's share of rainfed areas increased from 15 % in 1975 to 39 % in 2013, an increase of 160%. This rate of expansion exceeds 4 percent per year, which equates to about 1,720 square kilometers of additional crops each year. If this trend continues, Burkina Faso agriculture will deplete its cultivable land by 2030. The following figures show the land in Burkina Faso.

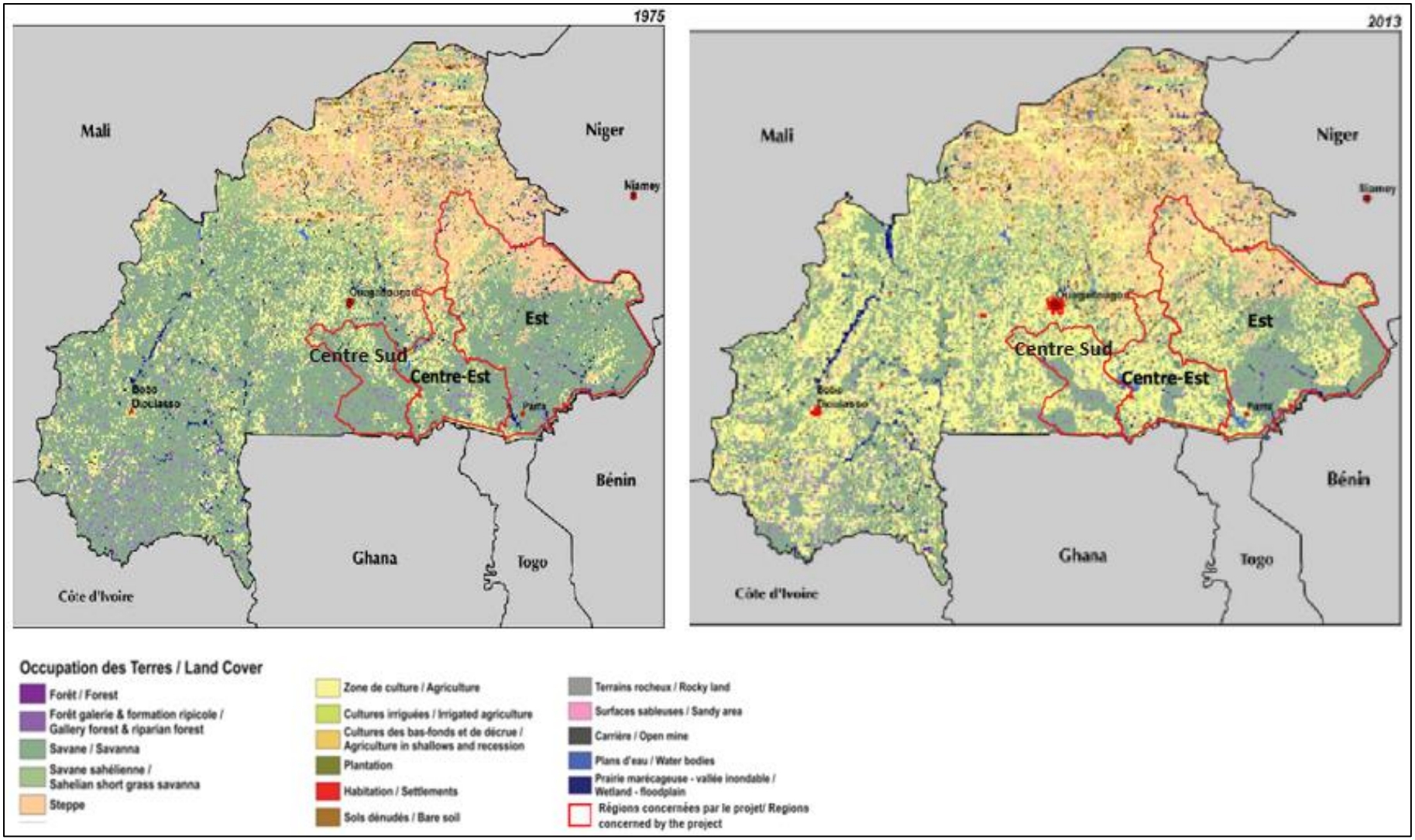


Figure 25: Evolution of agriculture land occupation in the project area in Burkina Faso in 1975 and 2013
Source: CILSS (2016). The Landscapes of West Africa: A Window on a World in Full Evolution

In Ghana, the most obvious change in land use is the sharp increase in cultivated land area across all regions. The strongest growth, cultivated agricultural soils, is however observed in the north-east, center-east and south-west regions of the country. This rate of agricultural expansion is unprecedented in Ghana, invading and displacing many other types of land use, such as savannahs, open forests and dense forests. From 1975 to 2000, the area of cultivated land increased from 13 percent to 28 percent of the country's area. Since 2000, this expansion has accelerated and agricultural coverage reached 32 percent of Ghana's area in 2013. The savannas fell sharply from 51 percent to 40 percent of the territory between 1975 and 2013

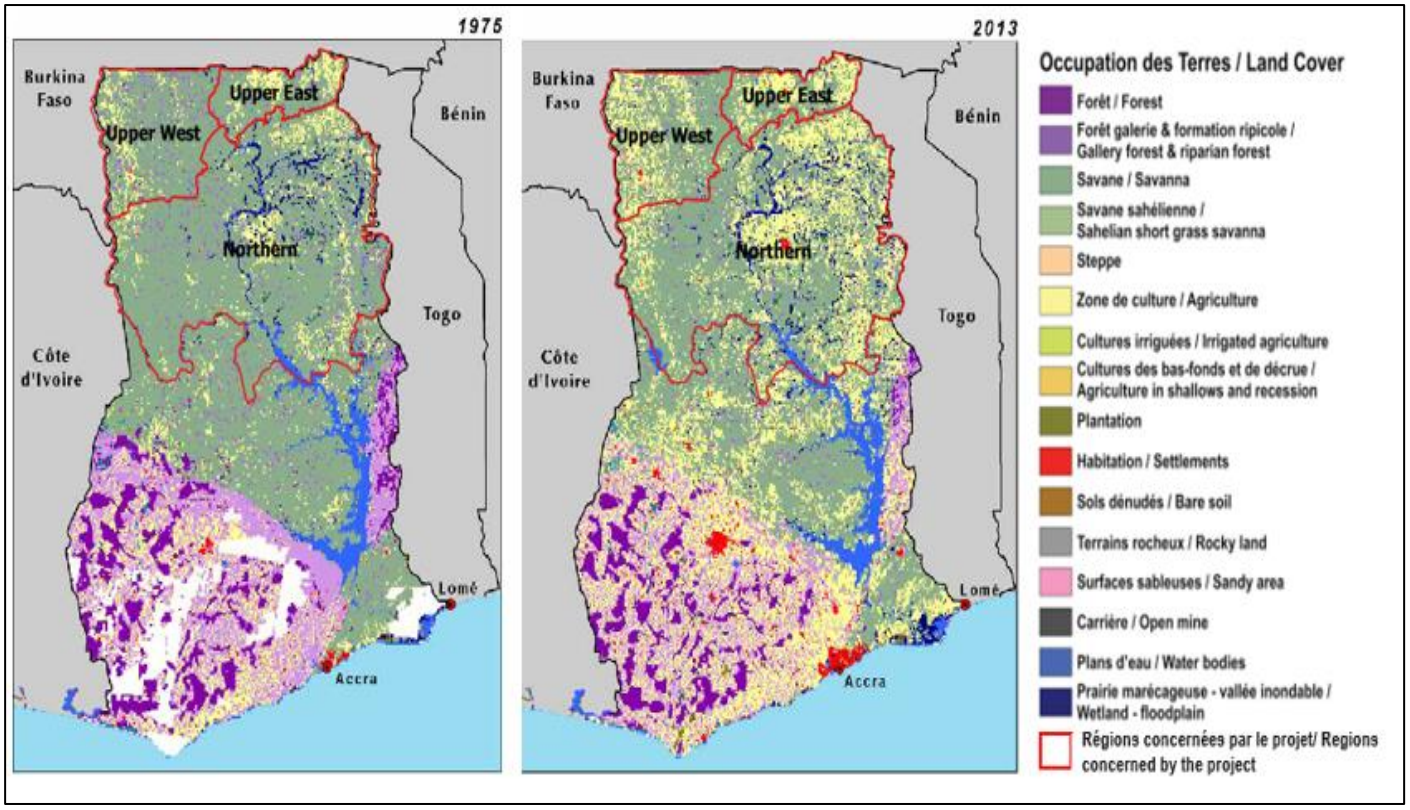


Figure 26: Evolution of agriculture land occupation in the project area in Ghana in 1975 and 2013
Source: CILSS (2016). The Landscapes of West Africa: A Window on a World in Full Evolution

In Niger, agricultural expansion is spectacularly observable at the landscape level. Over the period of 1975 to 2013, rainfed areas increased from 12.6 % in 1975 to 18.1 % in 2000 and 24.5 % in 2013. Agricultural expansion has mainly involved productive sandy soils of the Tillabery valleys region where cultures are now encroaching on traditional pastoral lands. Sandy areas have increased by 24.8% since 1975

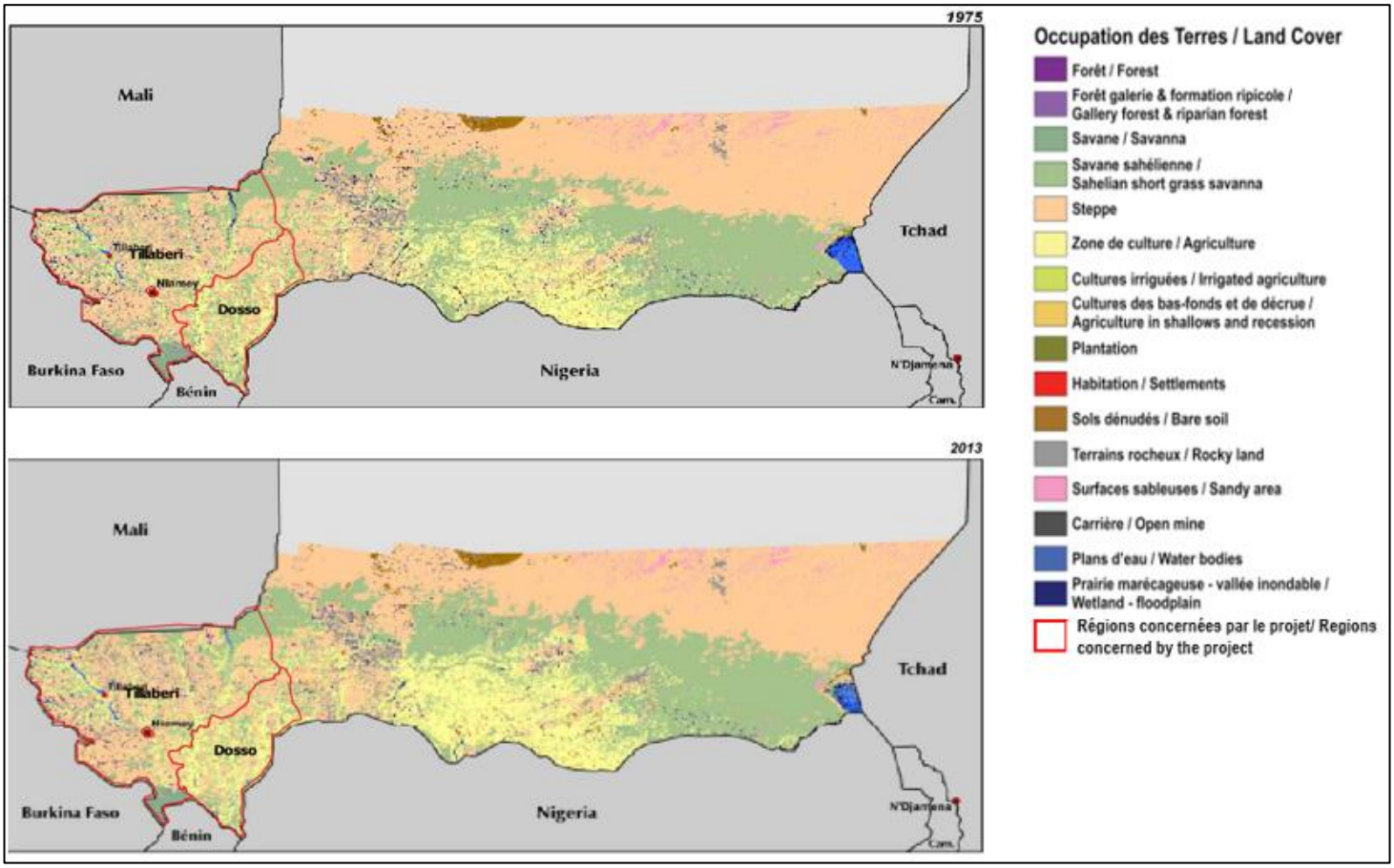


Figure 27: Evolution of agriculture land occupation in the project area in Niger in 1975 and 2013
Source: CILSS (2016). The Landscapes of West Africa: A Window on a World in Full Evolution

In Togo, there has been a significant change in land use in recent decades. These years have been marked by a significant increase in agricultural land in all parts of the country at the expense of the forest lands that shelter biodiversity. The rate of expansion is estimated at 7% / year. The semi-deciduous / dry / clear forests, riparian forests and wooded / tree / shrub savannahs which occupied a surface area of 4.78 million hectares in 1975 occupied only 3.46 million hectares in 2010, a loss of 1.3 million hectares of forests with the biodiversity they contained (Table 2 below). The most dramatic changes are observed in the northern regions of the country, particularly in the dry Sudan Savannah ecoregions and the Oti Plain, which cover the two regions concerned by the project in Togo (USGS EROS, 2013).

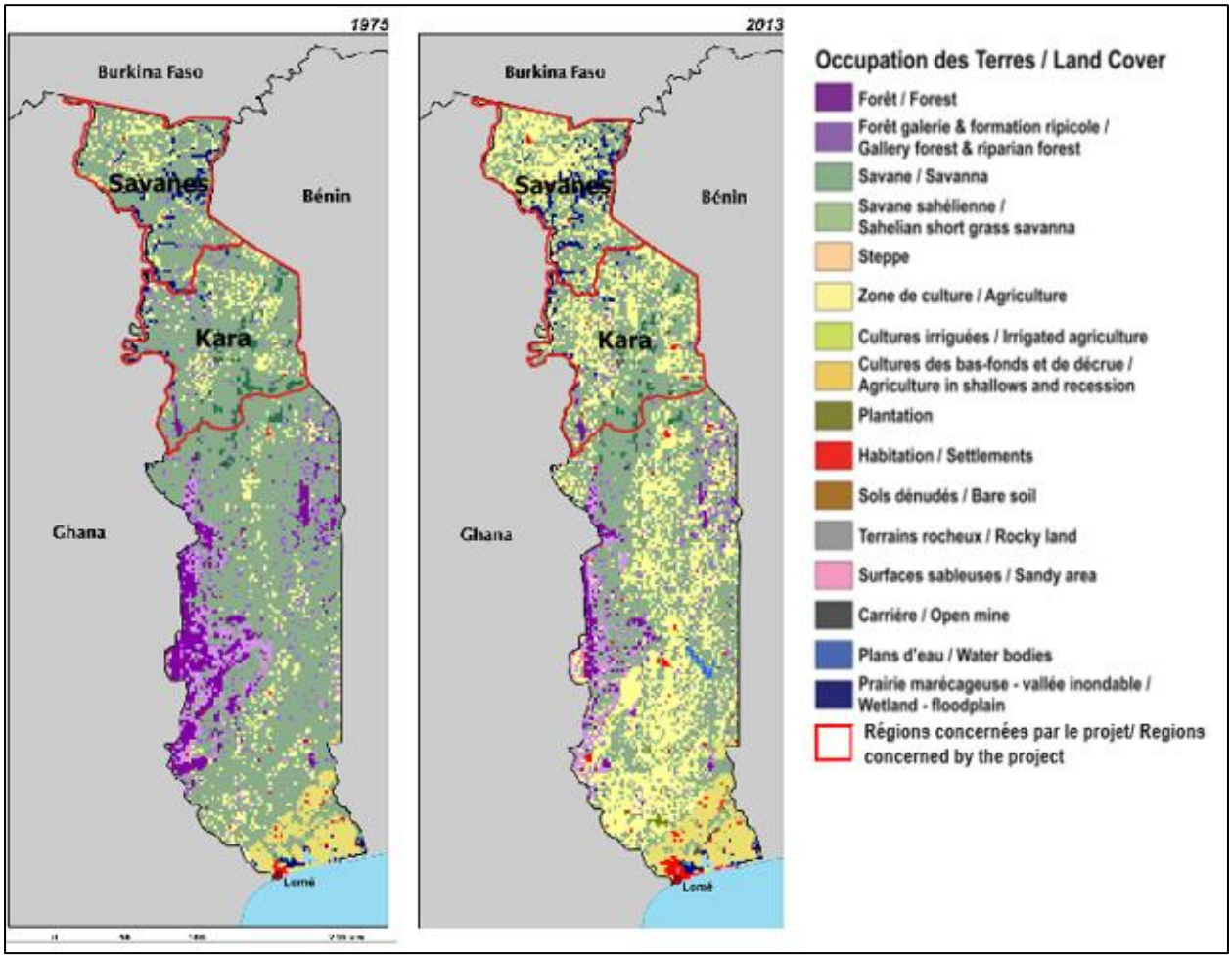


Figure 28: Evolution of agriculture land occupation in the project area in Togo in 1975 and 2013
Source: CILSS (2016). The Landscapes of West Africa: A Window on a World in Full Evolution

In all countries, there is a spectacular expansion of land under cultivation. If this trend continues, agriculture will deplete cultivable land in countries before 2050. This period will be further shortened with the adverse effects of climate change, which is increasing.

The results of various analyzes show that the agricultural sector in all its forms is subject to climatic constraints that reinforce unsuitable farming practices due to lack of technical skills, organizational and financial support. Large fluctuations in yields and outputs are recorded with implications for food availability in the countries and food security is not assured.

Given that yields are declining at the level of climatic disturbances, and the rate of increase in cultivated land continues to be exaggerated, with a tendency for agricultural land to be depleted, and population growth is high in the countries involved in the project, there is a fear of chronic food insecurity in the coming years, if nothing is done to build the capacity of farmers to adapt their technical and traditional knowledge and agricultural practices to strengthen resilience of both the population and the agriculture and livestock that feed them. However, the livestock sector is also facing the adverse effects of climate change.

D.2. Impacts of climate change on the livestock sector

The basic pattern of transhumance follows a north-south migration in which pastoralists and their livestock move from the more arid regions of the north to the wetter parts of the south. This traditional seasonal north-south migration of hundreds of kilometers and three to eight months within or across national borders is the classic practice of transhumance in West Africa. Thus, transhumance is a means of adaptation to the difficult agroecological conditions of the Sahelian zone and a means of using ecological complementarities between the Sahel and Sudan regions. There is a general consensus that transhumant pastoralism is essential for maintaining the ecological resilience of dryland ecosystems and ensuring livestock productivity. In West Africa, transhumant pastoralism is important for livestock productivity since it affects 70 to 90% of cattle in the Sahel and 30 to 40% of small ruminants in the West African Sahel (SWAC / OECD, 2007). . The benefits of transhumance vary according to the different actors involved and the social relations between transhumant pastoralists and host communities. For transhumant pastoralists, the benefits include: (i) herd productivity (more milk and improved breeding performance of the herd); (ii) the reduction of herd mortality which implies the preservation of pastoralists' livestock assets; (iii) low production costs and opportunities to establish social relations with host communities[14].
Animal production accounts for up to 40% of the national gross product and pastoralism provides 50% of meat and 70% of milk in West Africa[15].

The following figure shows the pastoral routes in West Africa. The dotted circle illustrates the area of intervention of the project.

Axes de transhumance transfrontalière au Sahel et en Afrique de l'Ouest.
Source : Elevage au Sahel et en Afrique de l'Ouest, Note aux Décideurs Numéro 3, CSAO/OCDE.

Transhumance movements have evolved significantly in recent decades. Indeed, several groups of pastors have moved from circumscribed mobility in the Sahelian zone to movements towards the Sudanian zone. These transformations were made under the constraint of droughts which resulted in a scarcity of fodder and water points. This modification of itineraries and destinations of transhumant herds requires pastoralists to integrate

[14] Transhumance and endemic ruminant livestock in the subhumid zone of West Africa - contexts, concepts and challenges. International Livestock Research Institute (ILRI). July 2010
[15] ECOWAS-SWAC/OECD (CEDEAO-CSAO/OCDE/CILSS). 2008 - Climate and Climate Change. The Atlas on Regional Integration in West Africa. Environment Series. Version française. http://www.oecd.org/swac/publications/38903590.pdf

into other social networks to benefit from areas of withdrawal of alliances that can guarantee access, particularly to water and pasture. In host areas that are also increasingly affected by the adverse effects of climate change through unusual droughts, reduced growing time (forage production), decreased soil productivity and availability water resources, the extension of cultivated land, there is a problem of concurrency in the management of resources leading to conflicts between farmers and transhumant. These impacts of climate change on the livestock sector have implications for food security. Livestock farming is practiced by a number of households to compensate for the lack of food. It is one of the main sources of livelihood for pastoral and agropastoral communities and plays an important role in diversifying the income of farming communities.

With rising temperatures and recurring droughts, natural water points in transhumance corridors tend to decrease in content and in some cases disappear. With climate change, expansion of cultivated land has become a barrier for extensive livestock and transhumance as pastures decline. From 1975 to 2013, the expansion of cultivated land was, for example, 5% / year in Benin, 4% in Burkina Faso, 7% in Togo. During this period, the areas planted increased by 194% in Benin, 160% in Burkina Faso, 146% in Ghana, 100% in Niger and 266% in Togo. This also has the consequence of reducing the space that serves as pasture. For example, in Burkina Faso, Sahelian and Sudanian savannas were reduced by 39%, in Ghana savannas declined by 11%, in Niger a good part, which is 24.8% of the vegetation used for pasture was transformed into sandy surfaces, in Togo dense forests have been reduced by 50%

Also, the reduction of the corollary fodder of the decrease of the period of vegetation and the drought, consecutive to the climatic disturbances, takes the cattle to feed on the plants still in vegetation in the fields and to seek the water of watering in cultivated areas

This phenomenon exacerbates sedentary farmer / breeders conflicts and transhumant pastoralists with loss of livestock and human life. In countries such as Benin and Togo, where transhumance corridors exist in some places, the lack of livestock watering water pushes livestock out of the corridor to search for water in the cultivated areas, thus aggravating conflicts. In Ghana, conflicts between transhumant and farmers are more pronounced, as the organization of transhumance is not as advanced as in the other four beneficiary countries of the project. The compensation requested by farmers to clear areas for transhumance corridors is not sustainable for the moment by the State. An in-depth study is needed to address the issue of transhumance in this country

The impact of the adverse effects of climate on agriculture and livestock production results in food insecurity, malnutrition and impoverishment of the population.

E: POPULATION VULNERABILITIES, FOOD INSECURITY, POVERTY AND MALNUTRITION

The most vulnerable groups to the adverse effects of climate change are poor rural people who depend directly on crops and livestock. This rural population, which accounts for over 70% of the total population of the project countries, is badly affected by the adverse effects of climate change, with negative effects on low-income households (SP / CONEDD, 2007). The high rural population reflects the strong dependence of the latter's economies on the primary sector dominated by agriculture and livestock.

According to FAO (2007), agriculture-based livelihood systems are already vulnerable to the risk of climate change, increased crop failure, livestock loss, increasing water scarcity and the destruction of land production factors. Pre-existing socio-economic discrimination is likely to intensify and compromise the nutritional status of women, children and the elderly, sick and infirm.

In the face of the adverse effects of highly diverse and growing climate change, rural people are struggling to

adapt and face food insecurity, poverty, malnutrition and even conflict over natural resource management.

E.1. Food insecurity

The sudden alternation of dry periods and wet periods, and the accentuation of pockets of drought in the middle of the growing season induce large fluctuations in the vegetation of the crops, resulting in a decrease and sometimes a total loss of production. However, agricultural production contributes nearly 90% to the coverage of rural food needs. The disruption of agricultural production therefore keeps a large part of the population in a situation of food insecurity. In West Africa, for example, about 14% of the population is food insecure (FAO, 2015). Although disparities can be noted between the countries involved in the project, food insecurity is omnipresent, especially in rural areas where people live only from agriculture and livestock farming.

In Benin, according to the results of the Global Vulnerability and Food Security Analysis (AGVSA 2014), 11% of households in Benin face severe or moderate[16] food insecurity and 34% of households are exposed to food insecurity. In the intervention departments of the project, only 28% and 29% of households are respectively food secure in Alibori and Atakora. The remaining households are in a situation of severe food insecurity, moderate or vulnerable to food insecurity.

In Burkina Faso, a large part of the population lives in a situation of chronic food insecurity. According to the report of the International Food Policy Research Institute (IFPRI) 2013, Burkina Faso is in a state of alert, with a hunger index of 22.2 placing it in 65th position among 78 countries evaluated. The country faces problems of availability and access to particularly serious food especially in the Sahelian zone. According to available data, only 16.5% of households are food secure. Severe, low and medium food insecurity affects respectively 6%, 48% and 30% of households[17].

In Ghana, the situation is no better, especially in the northern part, where agriculture is heavily affected by climatic hazards and the poor state of agricultural soils. The production remains below the demand. In 2009 for example, meat production was at 49,689 tons for a demand of 70,000 tons, with a shortfall of 20,311 tons (30% of the needs) met by imports. The undernourished population represents 5% of the total population (FAO 2015).

In Niger, the report of the joint survey on household[18] vulnerability to food insecurity (April 2015) shows that in rural areas, 15.7% of the population is food insecure and 33% is exposed[19] to food insecurity. The situation is more worrying in the Tillabery region, which is part of the project area where 45% of the population is food insecure.

In Togo, if at the national level, the figures show that since 2008, the cereal balance is to be encouraged[20], food security at the household level, in terms of food availability, stability of supplies, accessibility to food and their harmfull effect has only been partially[21] achieved. Indeed, in the project area, the food situation is precarious and people suffer from a lack of food to cover the annual needs. Productions are quickly sold after harvest in order to cope with expenses including education. An important food deficit is created between the periods of

[16] These households have inadequate food consumption or can not meet their minimum food needs without resorting to irreversible adaptation strategies.
[17] National Survey on Food Insecurity and Malnutrition (ENIAM, 2009).
[18] This survey was conducted by the INS Niger General Directorate, the Government of Niger, the Early Warning and Disaster Prevention Services, the World Food Program (WFP), the United Nations Development Program (UNDP).), the United Nations Food Organization and the United Nations (FAO), Save the Children and FEWS NET
[19] Joint Rural Household Food Vulnerability Survey (December 2014 - January 2015)
[20] Food production is estimated during the 2011/2012 crop year at 2 906 816 tonnes against 2 211 984 tonnes in 2004/2005. Overall, food production has increased annually by 3.07%.
[21] Third National Communication on Climate Change, Oct. 2015, P.25

March to August. During this period, the majority of households in the project area are facing severe food insecurity. 11.4% of the population is undernourished (FAO 2015).

To overcome this food insecurity, people in the project area have developed coping strategies that are unfortunately not sustainable and plunge them into more food insecurity. Strategies developed include: (i) burning of fuelwood and / or charcoal production for commercial purposes to generate some income and buy some food; (ii) reducing the number of meals per day, from 3 or 2 meals per day to one (01) meal per day; (iii) reducing the amount of food per meal per person; (iv) help from relatives; (v) transfer of food to repay the next agricultural season; (vi) rural exodus; etc..

E.2. Poverty

The adverse effects of climate change on the population's sources of income (agriculture, livestock, etc.) annihilate the efforts of the population to get out of poverty, this poverty, itself reinforced by food insecurity due to the adverse effects of the climatic changes.

In Benin, the severity of poverty has increased from 0.039 in 2011 to 0.12 in 2015[22]. This increase in poverty is partly due to the deterioration of household incomes that come mainly from agriculture.

In Burkina Faso, according to data from the Multisectoral Continuous Survey (CME), the poverty rate fell between 2009 and 2014, from 47% to 40%[23]. It should be noted, however, that this reduction remains very insignificant in terms of the number of poor people, from 7,116,316 to 7,034,390 in 2014, a reduction of about 1.50 per cent in the number of poor people. In addition, the national rate hides the realities in rural Burkina Faso where poverty is more pronounced.

In Ghana, the incidence of poverty has declined in recent years, from 31.9% in 2006 to 24.2% in 2013[24]. However, in the project areas, poverty affects a large proportion of the population, with 70.07% in the Upper West, 50.04% in Northern and 44.4% in Upper East (Ghana). Statistic Service, 2012/2013).

In Niger, the poverty rate that stood at 45.1% in 2014 (National Institute of Statistics) rose to 48.9% in 2015 (World Bank, 2016). The situation is however variable depending on the environment. Thus, poverty affects rural populations more than 65.7% compared with 55.5% in urban areas.

In Togo, according to the 2011 QUIBB survey, poverty affected 58.7% of the population in 2011 compared to 61.7% in 2006[25]. In the Savannah region, poverty increased from 86.7% to 90.8% between 2006 and 2011 and from 74.2% to 68.4% in the Kara[26] region. According to the study on the geographical location of poverty, nine of the ten poorest prefectures are located in the northern part of the country, including the five prefectures of the Savanes region (Kpendjal (96.2%), Tandjoaré (94, 5%), Oti (91.7%), Tone (87.6%), and Cinkassé[27] (85.0%)). According to the poverty profile of Togo (2016), poverty is higher among households headed by agricultural producers (72.6% in 2015).

[22] Integrated modular survey on the living conditions of households 2nd edition (EMICoV-Suivi 2015)
[23] National Institute of Statistics and Demography
[24] Living standards surveys in Ghana cycle 6, 2014
[25] In Togo, although the poverty rate has dropped, the number of poor people has increased. If we report these rates to demographics in 2006 and 2011, we can see that the number of people affected by poverty in Togo increased from 3,404,136 in 2006 to 3,737,419 in 2011, an increase of 333,283 poor people in 5 years
[26] Poverty Profile, QUIBB 2006 and 2011
[27] The other prefectures are: Mô (87.9%), Blitta (79.6%), and Tchamba (78.0%)) in the Central Region, Dankpen (78.0%) in the region of Kara and Akébou (77.5%) in the uplands region

Whether in either country, the above data show that poverty affects rural populations who have only agriculture and livestock as sources of income. Food insecurity and poverty are therefore strengthen and reinforce malnutrition

E.3. Prevalence of malnutrition

In many households in West Africa, malnutrition is an important issue due to the depth of poverty in the countries. According to the World Bank, 47 percent of the population in Ghana were undernourished in 1991 compared to 38 percent in Togo, 26 percent in Burkina Faso and 28 percent in Niger. Even though the prevalence rate of undernourished population have improved over the years, the number of malnourished still remains high with over 3.6 million undernourished in Burkina Faso, 1.8 million in Niger and over 1.3 million in Ghana. It is important to emphasize that even though the prevalence rate of undernourished population in Burkina Faso decreased from 26 percent in 1991 to 21 percent in 2014, the number of undernourished population actually increased by 1.2 million over the period. This situation is almost similar in the other countries. In 2014, 11% of the population in the project zone suffered from malnutrition (World Bank, 2014). This percentage conceals the prevailing situation in rural areas where the population is predominantly agricultural. This rural population is the most vulnerable to malnutrition. For example, 30 percent of the households in rural areas of Benin are malnourished compared to 15 percent in urban areas. The situation is similar in the other countries concerned by the project. In Niger, for example, the rate of malnutrition is still high and is constantly increasing. It rose from 13.3% in 2013 to 14.8% in 2014 and then to 15% in 2015, reaching "the emergency threshold" of 15% set by the World Health Organization (WHO)[28]. The most vulnerable to malnutrition are namely: (i) children under the age of 5; (ii) households headed by self-employed farmers and breeders; (iii) female-headed households; (iv) households in which the head is uneducated; (v) etc. These challenges of malnutrition exacerbate the already complex problem of poverty due to a lack of agricultural income. Combined, they lead to chronically malnourished and frequently ill children—and an inability to purchase food and pay for children's education and health care. It creates a visceral circle of food insecurity, poverty and malnutrition, destroying natural resources and therefore the adverse effects of climate change.

F. THE WEAKNESS IDENTIFIED ON THE FIELD WHICH LIMIT THE RURAL POPULATION RESILIENCE IN THE PROJECT AREA

During the field missions, stakeholder meetings and desk research, it is noted that large deficits in the provision of rural extension services in the Project area greatly affect the effectiveness and sustainability of the interventions of the project adaptation to climate change at the level of government technicians (environment, meteorology, agroclimatic services, livestock, water and etc ...), communities and farmers. Deficits identified include:

- Insufficient awareness of the remarkable latitudinal displacement of isohyets to the south at regional and national levels results in a general reduction of average rainfall over large parts of the project area;
- Insufficient awareness of climate change trends in the project area resulting in deep aridification in agro-climatic zones for which appropriate approaches and technologies need to be sought and disseminated;
- Insufficient collaboration between sectors and difficulties in pooling approaches to solve problems due to: (i) irregular rainfall; (ii) the recurrence of pockets of drought affecting agricultural and livestock production; (iii) the decline of soil fertility; (iv) the decrease of the growing season of the plant cover flora; (iv) increasing resource management conflicts between pastoralists and farmers;

[28] http://www.lefigaro.fr/flash-actu/2016/06/02/97001-20160602FILWWW00057-niger-le-taux-de-malnutrition-atteint-le-seuil-d-urgence-onu.php

- The use of the same technologies over the years without adaptation to the known difficulties and disturbances of climate change;
- Lack of information on technologies that have demonstrated resilience in local agriculture. This gap is observed between: (i) localities living in the same agro-climatic zone in the same country; (ii) localities living in the same agro-climatic zone but in different countries of the project area; (iii) the localities of the same countries or of the different countries which have the same;
- Lack of technical capacity in rural extension services / civil society organizations on the development of climate change adaptation technologies in integrated approaches for local sustainable development that address adaptation concerns, productivity / income and mitigation. This includes the lack of integration of environmental management practices into local (soil and water management) and landscape (livestock) projects;
- Lack of technical capacity of rural extension services and civil society organizations to use participatory methods to develop appropriate climate change adaptation projects. The field observations show that the development of participatory projects can greatly reduce the non-adoption of the project when the funding runs out at the end of the project; this is mainly due to a better integration of the concerns and ideas of farmers / pastoralists-which promotes ownership of project interventions by farmers / communities;
- Lack of capacity of farmers' organizations (POs), civil society organizations, and technicians to formulate small-scale projects and mobilize resources. While a growing number of subsidized institutions make climate change adaptation project funding available to local institutions, they are often unable to access these resources given their limited knowledge of project development, monitoring activities, technical and financial requirements.

Given the diversity and complexity of the problems identified, adaptation strategies in the project area should provide mutually reinforcing sustainable solutions that are easily manageable by the farming community.Thus, there is a strong needs for building technical capacity for integrated climate change adaptation, agriculture productivity/income and GHG mitigation activities planning, both long-term perspectives on adaptive capacity building/policy development and near-term climatic risk management. Particularly the need include participative development of on-site agricultural and water-management adaptation actions and the development of contingency plans (e.g. flood protection) for climate-risk management. A further focus will lie on the strengthening of interactions between relevant actors for climate change adaptation: government, meteorological services, agriculture sector, research institutions, regional and national government, and the media and local and indigenous communities.

Climate-smart agriculture (CSA) is an approach in West Africa to increase the resilience of populations to climate disturbances, food security and to reduce poverty in vulnerable regions[29]. This will be the basis of the present project approach to promote the change in the adaptation interventions. This choice is supported by the ECOWAS and UEMOA member states which pledged in Bamako, Mali in June 2015 for the promotion of climate-smart agriculture in West Africa.

This type of agriculture: i) is adapted to the new climate constraints; (ii) ensures food and nutrition security; (ii) sustainably protects the environment, thus reducing agriculture-induced emissions.

[29] This can be seen in the founding of the ECOWAS-led West African Alliance for Climate-Smart Agriculture, NEPAD's commitment to raise and invest US$ 25 million on CSA interventions across the African region by 2025, World Bank's and other international organization's increasing CSA project portfolio, as well as the widespread and increasing integration of CSA as an approach into West African regional and national plans related to climate change, development, and sectoral development.

G. NEED FOR CHANGE OF APPROACH

The climat smart-agriculture integrates socially and culturally appropriate ‘smart’ technologies with sustainable market development in order to better rural livelihoods and reduce climate risk, while simultaneously also realizing climate mitigation targets. For the West African context there is a strong agreement that conservation of soils and water resources, as well as intensification of crop systems along with improving farmer’s and pastoralist’s capacities to engage into adaptive management are part of key pathways which CSA interventions should support. There is further strong agreement that the policy environment for CSA must become more supportive and that CSA advisory systems must become better qualified in order to help communities and producers to identify, select, and implement practices that are climate smart in their particular context and location. Therefore, because of technological adequacy and social and cultural appropriateness vary from context to context, there is no generally applicable technological designs to make agriculture and livestock 'smart'. In fact, there are many complementary approaches which have to be adapted to the social, economic, and biophysical parameters on the ground. From the agro-climatic perspective, this is necessary because rainfall patterns (erratic, well-distributed) and climatic zones differ considerably across the project region, including arid, semi-arid, and sub-humid zones. Soil conditions and quality also vary considerably. From the socioeconomic perspective it is clear that community and farmer capacities vary strongly, with different levels of empowerments and needs.

In West Africa, the use of efficient water technologies in semi-arid regions opens significant space for CSA interventions, including in interactions with livestock. Otherwise there is a clear need to address corn cropping systems (sole crop and intercropping), which have significantly increased in the Sahelian and sub-humid zones; agroforestry and pastoralism management are further points of entry. In some regions fish production (aquaculture) and rice production may be relevant. A recent review by CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) identified 73 promising farm-level interventions for climate-smart agriculture including interventions in agronomy, agroforestry, livestock, postharvest management, and energy systems, all of which affect differently the three CSA dimensions of adaptation (resilience, adaptive capacity), mitigation, and agronomic and economic productivity differently. Furthermore, all interventions have to be driven by local demand and adapted to the local context while taking into account accompanying policies such as social policy, and institutional development and coordination across scales, in order to avoid potential dis-adoption of technologies once the project ends. CSA therefore promotes the development and implementation of gender-specific approaches to promote women’s inclusion. Strong monitoring and evaluation protocols also play an important part. This is evident from the numerous and increasing research and knowledge base on place-specific CSA farm-level management practices. Within this context, the mainstreaming of CSA into policy and practice is yet much focused on productivity and adaptive capacity, with lesser concern for mitigation. While this is understandable from a climate justice perspective, additional income streams from the CDM mechanism might increase the benefits of CSA for family farmers in the future, despite current lack of prioritization of agriculture in the UNFCCC processes and GHG measurement difficulties at local scale.

Integrated solutions for sustainable agricultural intensification

In accordance with ECOWAS overall approach to CSA, the planned interventions will be directed towards adding value to climate change adaptation and building resilience. Already successfully tested adaptation measures with a capacity to scale up will be further implemented, taking into account agro-ecological zones and demand by the communities, using participatory rural project design processes which have proven to increase local project ownership. Focus will be on using CSA approaches as a vector to integrate adaptation with economic development and productivity, and by this improving food security more sustainably by improving availability, access, and nutritional values across time.

However the scaling up of these best practices related to climate change adaptation in agriculture is limited due to insufficient resources and the characteristics of family farming technics in the sub-region. The capitalization and scaling up of these practices are the challenge that will be addressed by this project.

TARGET AREAS AND BENEFICIARIES

The project "Promoting Climate-smart agriculture in West Africa" is to be implemented in the eastern, east-central, and south-central regions of Burkina Faso; in the southern parts of the Tillabery and Dosso region of Niger; in the Alibori and Atacora regions of Benin, in the Savanah and Kara regions of Togo and in the Northern-East, North-West and Northern regions of Ghana, that is, a surface area of 355,158 km^2 for a population of about 15,658,772 inhabitants (Figure 4).

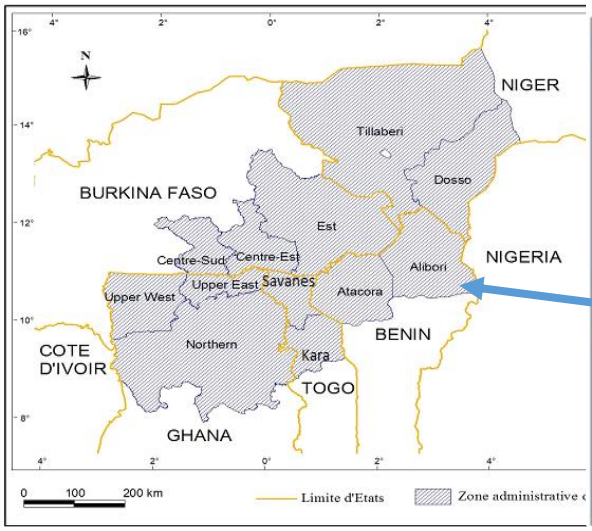


Figure 29 :Administrative regions concerned by the project intervention area.

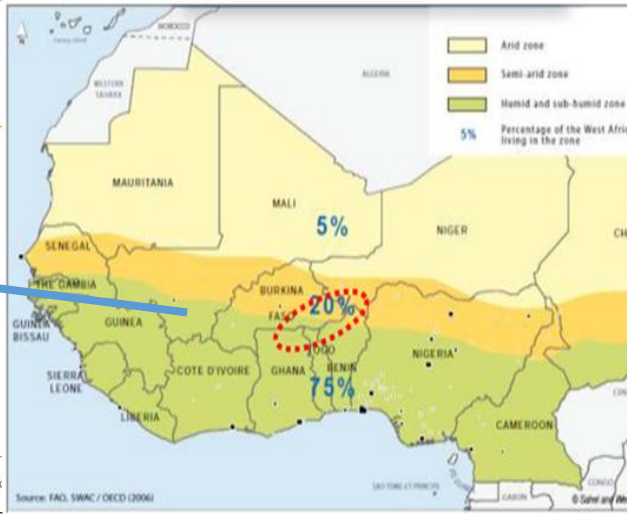


Figure 30. Main climatic zone in West Africa and percentage of population living those areas. The red circle illustrates the project intervention area.

With a population of about 80 million inhabitants for the five countries (World Bank 2014), the agricultural population represents a large share of the total population in these countries: Benin (56.2%), Burkina Faso (71%), Ghana (48.48%), Niger (81. 54%) and Togo (60.47%). In the project intervention areas, the population is estimated as follows: (i) Benin: The population of the Alibori and Atakora regions is approximately 1,373,000; (ii) Burkina Faso: The number of population in the regions of East, Center-East and Center-South is 3 891 352 in 2015 with a growth rate of 3.08% (National Institute of Statistics of Burkina faso); (iii) Ghana: The population of the North-East, North-West and North regions is estimated at 4 394 420 inhabitants with a growth rate of 2.19%; (iv) Niger: the population of the southern areas of Tillabery and Dosso is about 4.6 million with a growth rate of 3.8; (v) Togo: The population in Savanes and Kara is 1.5 million with a growth rate of 2.6% (Directorate General of Statistics and National Accounts).

In this zone, cereals, tubers, legumes and market gardening products are grown.

Cereals observed are maize, sorghum, millet, rice and fonio. Among the tubers; the main speculations observed are yam, manico, sweet potato, etc. In the leguminous class, we can distinguish cowpea,

beans, voanzou, peanuts, etc. As for market gardening products, tomato, potato, onion, carrot, cabbage, okra, chili, etc. are found.

As part of this project, crops adapted to the resilient techniques and technologies to change the production support food security will be promoted. These include cereals. Apart from cereals, the project seeks to develop seasonal counter market gardening to support nutritional health and above all generate income for farmers. This will support food security in the sense that peasants cope with the costs of education, health, etc. commercialize a significant part of the cereal production, already very weak, in connection with the climatic disturbances

Beneficiaries

Direct beneficiaries of the project are estimated as follows:

- 7,600 households, or 53,200 people, including 26,600 women, are direct beneficiaries of site development activities;
- 3,000 breeders are beneficiaries of activities to improve the mobility of transhumant livestock;
- At least 60 000 producers have access to agro-meteorological information for agricultural planning;
- 120 Local community / municipal officers and officers are trained on the CSA approach and the formulation of micro-projects ;
- 250 national technicians (agriculture, water, livestock, environment, forests, and adaptation) are trained to promote CSA;
- 50 NGOs / Associations are trained on the CSA approach and the identification, formulation of intelligent agriculture projects in the face of climate;
- 100 representatives of farmers' organizations are trained on the CSA approach;
- 36,000 people, 50% of whom were women, benefited from CSA sensitization in villages / communities;;
- 250 people.representatives of groups of which 125 women participated in on-site learning visits for about 10,000 members of producer groups;
- At least 300,000 people benefited from dissemination activities of lessons learned and project knowledge.

Project / Programme Objectives:

List the main objectives of the project/programme.

The Regional Project « Promoting Climate-Smart Agriculture in West Africa » aims to reduce the vulnerability of farmers and pastoralists to increase climatic risk, which undermines the level of food security, income generation, and the supporting ecosystem services of poor communities.

The specific objectives of the project are:

1. Strengthen knowledge and technical capacity through regional and local interactions for the promotion of agriculture practices resilient to the adverse effects of climate change;
2. Scaling up best practices related to climate change adaptation in agriculture and pastoralism at local and regional level
3. Share knowledge and disseminate lessons learned on resilient agricultural best practices related to climate-smart agriculture.

Project / Programme Components and Financing:

Fill in the table presenting the relationships among project components, outcomes, outputs and countries in which activities would be executed, and the corresponding budgets.

For the case of a programme, individual components are likely to refer to specific sub-sets of stakeholders, regions and/or sectors that can be addressed through a set of well-defined interventions / projects.

The following table presents the components, outcomes and outputs of the project including their implementation cost.

Project/Programme Components	Expected Outcomes	Expected Outputs	Amount per Country (1000 USD)	Total amount (1000 USD)
Component 1: Strengthening knowledge and technical capacity through regional and local interactions for the promotion of agriculture practices resilient to the adverse effects of climate change	Outcome 1.1 .: Climate services adapted to the needs of producers are available with the support of national and regional institutions and can be used by producers	Activity 1.1.1. Strengthening agroclimatic and meteorological information Activity 1.1.2. Exchanges with the institutions on agro-meteorological forecasts for agricultural campaigns and provision of information adapted to the level of producers	Benin (84) Burkina Faso (84) Ghana (84) Niger (84) Togo (84) Regional level (for all country) (426)	846
	Outcome 1.2: Knowledge and practices of resilient climate-smart agriculture are strengthened	Activity 1.2.1 .: Capacity building of stakeholders in designing and implementing projects to promote climate-smart agriculture Activity 1.2.2: Strengthening cross-border collaboration for adaptation of agriculture to climate change to strengthen the national capacity of the climate-smart agriculture	Benin (249) Burkina Faso (324) Ghana (324) Niger (249) Togo (249) Regionl level (285)	1 439
Component 2: Scaling up best practices related to climate change adaptation in agriculture and pastoralism at the local and regional level	Result 2.1. Best agricultural and livestock farming practices promoted are climate resilient and help to enhance food security	Activity 2.1.1. Promotion of integrated techniques and activities related to water management, soil rehabilitation and conservation and livestock mobility to enhance the resilience of beneficiary populations Activity 2.1.2: Support for the valuation and management of agricultural sites	Benin (1766,25) Burkina Faso (1800,75) Ghana (1782,00) Niger (1708,75) Togo (1790,25)	8 848
Component 3: Knowledge Sharing on Resilient Agricultural Best Practices Related to Climate-Smart Agriculture	Outcome 3.1: Knowledge about resilient agricultural best practices related to climate-smart agriculture is strengthened and disseminated	Activity 3.1.1: Knowledge Building and Dissemination of Lessons Learned on Climate Resilient Agricultural Best Practices	Benin (88) Burkina Faso (88) Ghana (88) Niger (88) Togo (88)	440
Project/Programme Execution cost				1 331
Total Project/Programme Cost				12 904
Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)				1 096
Total cost Adaptation Fund				14 000

Projected Calendar:

The duration of the project is three (03) years.

Milestones	Expected Dates
Start of Project Implementation	November 2018
Mid-term Review	March 2020
Project Closing	November 2021
Terminal Evaluation	May 2022

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Describe the project / programme components, particularly focusing on the concrete adaptation activities, how these activities would contribute to climate resilience, and how they would build added value through the regional approach, compared to implementing similar activities in each country individually. For the case of a programme, show how the combination of individual projects would contribute to the overall increase in resilience.

In West Africa, climate variability is driving agro-climatic zones towards aridification from north to south. While the phenomenon is regional and affects all the countries in the region, the responses provided by policies and practices are based on national diagnoses. Although in some countries, eg: coastal countries, the analysis of climate disruption shows a trend towards decreasing rainfall and increasing temperatures; a movement of isohyets to the south with a general tendency towards aridication, these phenomena are not widely known and they are poorly studied in these countries. The above-mentioned diagnosis of the climate shows that in countries where the phenomenon is known and also in those where it is poorly controlled, the responses have often remained conventional, unsuitable for reducing the vulnerability of populations to the adverse effects of climate change. Also despite the diversified interventions, the vulnerability of populations to climate change is growing. It is in this context that the ECOWAS Heads of State strongly recommended the promotion of Climate Smart Agriculture as a means of reducing the vulnerability of rural populations.

The High Level Forum of Climate Smart Actors in West Africa held in Bamako (Mali), 15-18 June 2015 in partnership with FAO, CILSS, USAID, etc. Following the conference of Heads of State, stipulates that "ECOWAS now wishes to incorporate a new type of agricultural policy instruments including climate-smart agriculture, to increase sustainable and equitable productivity and farm incomes, strengthen adaptation and resilience to climate variability and change, and sequester and / or reduce greenhouse gas emissions where possible and appropriate[30]".

Thus, the present project wants to strengthen the resilience of vulnerable rural populations through the CSA to allow them achieve activities that strengthen food security and livelihoods at household level while simultaneously increasing capacities in climate risk management, climate change planning at all levels of governance, GHG mitigation by promoting carbon sequestration.

Using participatory rural approaches the project will document, design and implement climate-smart interventions at farm-level and landscape level together with the farmers' groups, families and communities, including agriculture, livestock, agroforestry, and postharvest interventions as well as climate information and services. Farm-level management practices will be demand-driven and take into account gender concerns in order to guarantee project ownership by local farmers and avoid project dis-adoption once funding runs out. At the same time, the project will contribute to strengthen the institutional capacity and inter-sectoral and cross-border coordination between relevant institutions from government and civil society and local actors. The integrated approach for the dissemination of climate-smart agriculture and livestock practices which have proven effective at the farm- and community level will be implemented to achieve the overall objective of the project.

[30] According to FAO who participated this High Level Forum, "climate-smart agriculture" increases productivity, resilience (adaptation), reduces / sequesters greenhouse gases (mitigation) in a sustainable manner, and makes development objectives much easier to achieve food security at the national level.

Through the research and field missions undertaken for the development of the PCN and Full Proposal, two niches for intervention have been identified. These provide for ample justification to go ahead with the development of the planned activities.

1. **Regional climate change and strong sub-regional learning and national / local capacity building opportunities:** Scientists have already provided strong evidence of southward migration of isohyets followed by progressive climatic aridification. There is an expansion of the dry semi-arid climate of the Sahelian zone, characterized by higher temperatures and lower rainfall. This expansion directly affects the area of intervention of the Regional Project: in its North, the climate is semi-arid, while in the South it is sub-humid. As there is a possibility that sub-humid areas will become semi-arid in the future, there is a strong argument for the implementation of the regional learning process among the five countries, particularly to assist farmers, pastoralists, technicians and policymakers to learn from successful approaches to climate change adaptation and productivity improvement in semi-arid regions. This learning and capacity-building process must begin now to prepare farmers and technicians for the present and future climate. At the same time, it is also important to reduce climate risks in semi-arid areas that are increasingly affected by drought and water scarcity. Learning in the project area can then also contribute to regional learning and capacity building. Despite the obvious benefits of learning, this type of knowledge exchange is not sufficiently taken into account in the current development assistance. The expertise of national and other extension services and research institutes will be used for mutual learning processes in the different agro-climatic zones of the project and the alignment of technological choices and access to information and technologies that interest communities. In addition, the project will establish national meteorological services to strengthen climate research and climate data dissemination to AIC interventions..
2. **Building producers capacity to work with CSA technologies and technics through integrated and participatory approaches and implement resilient actions**: While CSA technologies are increasingly well understood, as is their technical implementation in the field, there is a lack of flexibility – i.e., deciding upon technologies through place-based/adequate interventions rather than previously decided upon technologies without community participation – and integrated approaches – i.e., providing a set of integrated interventions rather than piecemeal approaches – which can provide more ample benefits to the communities. Therefore, the project will support strengthening of community participation in project development. Specifically, farmers and their communities will be trained in developing CSA projects, including their participation in the problem definitions, vulnerability assessments, identification of CSA options and required partnerships, and implementation. While the focus is on strengthen particularly efforts to climate adaptation and productivity, mitigation benefits will also be considered in this Project. These activities will be strongly integrated into the regional approach of the Project, including field visits to other agro-climatic zones.

The Project works at different levels of governance: (i) local for reducing vulnerability and increasing knowledge on the effectiveness of climate-smart agriculture (CSA) interventions and possible approaches to best practices; (ii) national for strengthening the capacity of rural extension services and responsible government ministries to design successful CSA strategies and mainstream these into usual development plans and programs; and (iii) regional in order to promote cross-border learning on climate adaptation and CSA, in particular regarding effective options under a southward spread of the Sahel zone.

With this in mind, three interconnected Components have been designed, namely:

- Component 1: Strengthening knowledge and technical capacity through regional and local interactions for the promotion of agriculture practices resilient to the adverse effects of climate change;
- Component 2: Scaling up of best practices related to climate change adaptation in agriculture and pastoralism at local and regional level ;
- Component 3: Knowledge management on resilient agriculture best practices related to climate-smart agriculture.

The Components, Outputs, and Activities are specifically designed to improve or remove gaps with regards to information, capacity, and technology deficits, which were identified during fact finding missions for the Project.

In the following the Project's Components 1 to 3 with their corresponding Outputs and Activities are presented in detail.

Composante 1: Strengthening knowledge and technical capacity through regional and local interactions for the promotion of agriculture practices resilient to the adverse effects of climate change

Although known by some of the population, climate change and its adverse effects are still considered a fatality for which solutions are poorly mastered in rural areas in the project area. The climate-smart agriculture proposed to the people in the context of this project seeks to strenghening their resilience capacities while combining simple technologies of adaptation and agricultural production which also contribute to the mitigation of greenhouse gases. This approach requires new learning and know-how from farmers, pastoralists, government departments, local elected officials and other decision-makers, NGOs / Associations, etc. intervening in the field of agriculture and climate.

It is true that the regional ECOWAP agricultural promotion policy (ECOWAP / CAADP) and the West African Climate Smart Agriculture Alliance of the ECOWAS recommend the promotion of CSA, but the commitment are not binding and participation is voluntary. This project would like to be a practical tool for implementing the ECOWAS Regional Agricultural Policy by contributing to the development of CSA knowledge, instruments and practices in a context of regional, local and transnational exchange.

Through its component 1, the project will: (i) develop regional synergy and complementarity that will strengthen the national capacity to produce agro-climatic and meteorological information in order to understand the current trends in climate change that are spreading from the regional to the local level; (ii) strengthen knowledge on resilience technologies, participatory and integrated design and planning of interventions, etc. as part of a climate-smart agriculture. This, in order to better prevent the adverse effects of climate change on agricultural and livestock production and strengthen the resilience of vulnerable populations.

Outcome 1.1.: Climate services adapted to the needs of producers are available with the support of national and regional institutions and usable by the producers

National data on climate and weather services are insufficient and need to be supported by information produced at the regional and international levels. The formal production of meteorological and agro-climatic information by dedicated national services and its day-to-day use by farmers to strengthen the resilience of agriculture is often very limited. In West Africa, CILSS and the Agrhymet Regional Center are developing very interesting capacities and knowledge on agroclimatic and meteorological services for stakeholders engaged in adapting to the adverse effects of climate change. However, not only the

information produced is not well disseminated at Member State level, but also it does not necessarily cover all needs in the field. In addition, Agrhymet is facing data centralization difficulties in the 15 West African countries to produce baseline data analysis for these countries. To correct these shortcomings, Agrhymet is seeking a mandate from ECOWAS to become its regional climate center for West Africa and the Sahel to promote an integrated regional information system and this, in close collaboration with the services and stakeholders involved in the fight against climate change. In the meantime, information on agroclimatic and meteorological services available at Agrhymet could be improved and made available to this project to strengthen knowledge and support actions.

Output 1.1.1. Strengthening agroclimatic and meteorological information

Through output 1.1.1, the collection of climate and meteorological data will be strengthened at the local level and an analysis will be conducted by national and local institutions with the support of regional institutions dedicated to making agro-climatic information available and adapted to the areas of intervention of the project.

Activity 1.1.1.1. Strengthening weather and climate observation networks for data collection and analysis

Agro-climatic and meteorological data are important in planning climate change adaptation activities. However, despite the efforts of national agrometeorological and environmental institutions and regional institutions such as CILSS and Agrhymet, basic climate and meteorological data are not sufficiently available at the local level, particularly in the project area. This lack of data does not allow for good agricultural planning to strengthen the resilience of the rural population.

The present project seeks to strengthen the meteorological and agro-climatic monitoring network through the acquisition and installation of 600 sets of direct-reading rain gauges, thermometers and anemometer recorders to cover all the communes and prefecture in the project area and densify the existent grid.

The data will be collected by trained farmers and will be compiled at local and regional level by the competent national meteorological and climatological services. Since the technical and physical capacity for the collection and analysis of meteorological data at local level is limited, specific training sessions will be organized by Agrhymet for technicians in the Regional Directorates in charge of agriculture, livestock and environment, water and forests. Computer equipment will be acquired to facilitate data processing, create an online database and facilitate its access via the internet.

To ensure coherence, the synergy of data collection at regional level, Agrhymet, from the data collected in the project area, will complement its agroclimatic information and make it available in real time for farmers in the project area for direct use in the field to better adapt agricultural activities to climate change. The data to be provided by Agrhymet in the project area will be related to seasonal, hydrological and meteorological forecasts, agroclimatic risks, seasonal characteristics - dry sequences at the beginning and end of the season - and advance information on harvests and food crises and cereal balance sheets, etc.

Activity 1.1.1.2. Strengthening knowledge on trends in rainfall and temperature variability in the project area

The improvement of agro-meteorological forecasts related to the phenology of plant and animal productions represents a challenge for the reinforcement of climate adaptation capacities, particularly

at the local level. It is therefore critical for each locality to know the agroclimatic and agro-ecological trends so as not to be surprised by the climate change. Given the limited technical capacity in the project implementation areas, CILSS and Agrhymet will use the data generated by the project to enhance regular monitoring of the North-south movement of the Isohyet, update and improve regional agro-ecological and agro-climatic maps as well as trends in climatic parameters and phenomena (temperature, precipitation, winds, droughts, floods, etc.) and any other relevant agro-climatic information.

These activities will be carried out in connection with the national services responsible for meteorology.

Output 1.1.2. Institutional exchanges on agro-meteorological forecasts for agricultural campaigns and provision of information adapted to the level of producers

Under this output, two activities will be conducted: (i) organization of institutional exchange meetings on agro-meteorological forecasts for agricultural campaigns; (ii) provision of agrometeorological information adapted to the level of producers

Activity 1.1.2.1. Organization of institutional exchange meetings on agro-meteorological forecasts for agricultural seasons

The results of the analysis of meteorological parameters collected and analyzed under Output 1.1.1 will be presented and discussed during sessions that include national and local meteorological institutions, national technical services and producer organizations.These exchanges will strengthen the dialogue between modern climate monitoring and analysis approaches and endogenous knowledge and strategies on climate, and identify and share appropriate responses among actors in the agricultural sector. This approach strengthens national strategies for adapting to climate change in the agricultural sector.

The exchanges will be organized once a year before the beginning of the agricultural campaign. These exchanges should allow a wide dissemination of crop calendars to producers in the zones. These exchanges will be added by Agrhymet.

Activity 1.1.2.2. Provision of agrometeorological information adapted to the level of producers

Access to weather and climate information in real time allows for better programming of agricultural activities, increases agricultural productivity and production. It considerably reduces the risk of agricultural investment losses due to lack of delay and / or irregular rainfall. If information production efforts are to be encouraged, they are not accessible to producers. Also, the project would like to strengthen producers' access to adapted agro-meteorological information. For example, the forecasts of the agro-hydro-climatic characteristics of the 2017 rainy season and the risks in the Sahelo-Sudan zone published by Agrhymet indicated that the project area will be the victim of floods, phytosanitary attacks and especially droughts that will affect plant development at the beginning of the season with implications for productivity, production and food security. Season dates should go from early to normal with dry sequences at the beginning of the season ranging from long to medium. But this information meant to guide farmers' crop year planning was not really available at the farmer level.

In order to eliminate the asymmetry of information, mobile services are becoming an important means of providing farmers with weather forecasts and market data. Compared with traditional extension approaches, it has been shown that ICT, such as mobile phones, which are easily accessible today in farm settings, is a more practical way of providing useful and up-to-date weather and business

information. A summary of the meteorological findings and recommendations will be produced, translated into an accessible language (local languages, sound messages, illustrative images, etc.) to as many people as possible and disseminated. For extension service providers, mobile-based services enable the delivery of content-specific information, increased awareness, and reduced cost of manual information delivery. As television is not accessible to everyone, television broadcasting is not beneficial for farmers. In addition, relying solely on conventional approaches, extension service providers may not be able to adequately respond to the growing demand for information.

Thus, the project will work in collaboration with the national mobile telephony services. In each locality, three to five mobile phone numbers (selected by the beneficiary groups) will be registered and will receive meteorological information in time. The latter will disseminate the information received to the rest of the members of the group. They will also be responsible for collecting meteorological data from installed rain gauges, thermometers and anemometers (activity 1.1.1.1.) in the localities. Their capacities will be strengthened to ensure the dissemination of information in both directions. The dissemination of weather information through mobile phones will be enhanced by radio-phonic broadcasts in local languages.

The project aims to provide agri-meteorological information access to at least 60 000 producers, about 5 000 producers per region concerned.

Outcome 1.2: Climate resilient knowledge and farming practices are strengthened

To meet the challenge of adapting agriculture to climate change and strengthening the resilience of rural populations in West Africa, the promotion and development of a climate-smart agriculture is an opportunity. The availability of climate services and its use by the producers (outcome 1.1) will enhance the resilience of the populations in the context of the promotion of the climate smart agriculture. However, it is very important for all stakeholders to master the CSA's technologies and technics retained for the investment on the field (see component 2) to increase its benefits. The capacity building will concern the problem definition, the planning, and the participatory rural approaches for subproject activities and sites identification, the implementation approach of the intervention. In addition, the project will strengthen the transboundary collaboration for the adaptation of agriculture to climate change to enhance the national capacity for CSA.

A consultant firm will be recruited to hold these capacity building.

Thus, this Outcome will address the key capacity deficits in the provision of the rural extension services and the stakeholders in the project area, and which greatly affect the effectiveness and sustainability of CSA interventions at farm- and community level. These deficits were identified during the project fact finding missions, stakeholder meetings, and research in literature (see PART I).

Output 1.2.1.: Capacity building of stakeholders in charge of designing and implementing of projects to promote climate smart-agriculture

Although the CSA is very good approach to combat the climate disturbances, it is not a common practice in the project area. Some of the technologies are used by the farmers in some localities, but the participative and integrated approach to come with the adaptative, the productivity/income and the mitigation solutions together is not very known by the stakeholders. Thus, new skills are required for the executives and technicians of national and local institutions at the intersection of agriculture, water, livestock, environment conservation, and sustainable development, municipalities representatives, famers groups representatives, NGOs, CSOs working in the field on project formulation and resources

mobilization related to climate-smart agriculture to define and provide new interventions, and also to develop new resources mobilization strategies. In this Output, a key objective is thus to capacitate technical advisory systems (rural extension services, CSOs, other) to help communities identify, select, and implement practices that are climate-smart in their particular context and location, which take into account gender concerns and those of other vulnerable populations, etc.

Activity 1.2.1.1: Training of the executives and technicians of national and regional institutions at the intersection of agriculture, water, livestock, environment conservation, and sustainable development, municipalities representatives, CSO's, NGOs, farmer's organization (FOs) representatives on climate-smart agriculture project formulation and implementation

Since the beneficiaries of the project will be financed on the basis of the small scale proposal call, the stakeholders involved in the local process to support the beneficiaries for designing and implementing the subprojects need to master the technologies and techniques relatives to climate-smart agriculture.

In the framework of the project, the executives and technicians of national and regional institutions at the intersection of agriculture, water, livestock, environment conservation, and sustainable development, municipalities representatives, CSO's, NGOs, farmer's organization (FOs) representatives, working in the field on project formulation and resources mobilization related to climate-smart agriculture will be strenghened on CSA approaches.

Taking into account the results of the activity 1.1.2.1, some of the intervention of the Consultant recruited, to build the capacity of the stakeholders in charge of designing and implementing of projects to promote climate smart-agriculture, could be:

Problem definition: methods from adaptation capacity planning and monitoring and evaluation toolkit prepared, disseminated to the stakeholders in workshops and used to analyse vulnerability and adaptation capacity to climate change.

Planning: Community-based Risk Screening Tool—Adaptation and Livelihoods (CRiSTAL). Used to connect identified climate hazards and impacts on the community's key resources to proposed actions and their : 1) influence on the resources most affected by climate hazards on the one hand; and 2) the influence these actions have on the most relevant resources for adaptation. Vision-Action-Partnership (VAP) to make future projections in a context of climate change. In a participatory manner, community members define the ideal or desired situation in which they would like to be, despite the existence of climate hazards. Identified actions either have to be implemented by the producers themselves or with partners to whom they have made specific request. The capacity building will cover the following dimensions:

- Development of climate-smart technologies and practices;
- Climate information services for improved climate risk management;
- Local development planning; and
- Strengthening local institution and knowledge sharing.

Where initiatives identified and prioritized by the communities appear unsuited mostly because they were not well informed or aware of options available or proven efficient elsewhere, partners will get involved in the discussions and provide guidance. Final decisions will be made by the communities.

Participatory rural approaches for pilot project activity and site identification, including:

- Identification of relevant actors (families, local NGOs, local government, technical assistance agencies, etc.) and building of platform for implementation
- Qualitative and quantitative mapping of climate hazards and vulnerability, including mapping by women.
- Visioning the desired future of living conditions with the community's members and their stakeholders, given the plausible future climate.
- Identification and definition of CSA interventions, including necessary partnerships (technical assistance) and building of committees, where relevant, in accordance with envisioned future by community.

The implementation of interventions:

- Implementation of selected water management and conservation activities at local or landscape level;
- Implementation of selected soil rehabilitation and conservation activities at local or landscape level;
- Implementation of selected livestock mobility and crossborder transhumance activities at local or landscape level;
- Monitoring and evaluation using participatory approaches; includes baseline creation, data collection etc., use of monitoring evidence to correct field interventions if possible
- Feedback of information from monitoring and evaluation into project process in order to promote mutual learning and feedback, for example: information on reported yields, food security and income, experienced weather hazards, etc.
- Feedback of information into existing databases, including CSA existing databases.

Training sessions on these frameworks will be organized at national level for stakeholders of the agricultural resilience sector in the project implementation area. The estimate beneficiaries are presented in the table below:

Entities	Benin	Burkina Faso	Ghana	Niger	Togo	Total
Executives and agents from the Local Community/Municipalities	20	30	30	20	20	120
National Technicians (agriculture, water, livestock, environment, forest, and adaptation)	50	50	50	50	50	250
CSO's and NGOs representatives	10	10	10	10	10	50
Farmer's organization (FOs) representatives	20	20	20	20	20	100
Total	100	110	110	100	100	520

In total, 520 people will benefit from this activity.

This activity may be conducted with the support of the Consultative Group on International Agricultural Research (CGIAR) or any other entity that has demonstrated its capabilities in the field of CSA in West Africa.

*Activity 1.2.1.2: Strengthening the technical capacity of a critical mass of field operators (*producers and breeders organizations (PBOs)) *on CSA integrated approaches, including participatory methods*

The sustainability of the project activities is based on ownership, increased participation, transfer of knowledge and skills and technical capacity building at all levels of intervention, especially for farmers and pastoralists operating in the field. However, in practice, local actors are not very familiar with climate change adaptation.

In fact, adaptation of agriculture to climate change requires new skills and calls for PBOs to increase their knowledge in CSA technologies and technics. However, the current capacity for implementing concrete CSA interventions, especially at local level, remains limited. Capacity strengthening sessions for all relevant stakeholder groups in the Project Implementation area will be organized. They will specifically focus on the need of practitioners – while taking into account local community needs as well – and will analyze the challenges related to water, soil, energy in rural areas, genetic resources, and the dissemination of good agricultural practices along the value chains and practices for the production of: cereals, lowland rice, gardens, agroforestry systems and livestock, all of which affect the three CSA dimensions of adaptation, mitigation, and agronomic and economic productivity differently.

Focus of the training will be on training integrated approaches/village approaches; e.g.: combinations of minimum tillage-crop rotations; organic and inorganic fertilizers (micro-dosing); land reclamation and water conservation techniques (zaï, half-moons, earth or stone bunds); vegetation cover restoration and species diversification (assisted natural tree regeneration also known as Farmers-managed Natural Regeneration (FMNR); protected area/plot to regenerate the vegetation cover; tree planting for different purposes (wood, fruits, nuts, vegetables, and fertilization); crop diversification (sesame, cowpea, sorghum, hibiscus, okra); use of short cycle and drought-tolerant varieties (sorghum, millet, cowpea and groundnut); together with market integration, etc.

Further training will focus on participatory methods, including: use of participatory methods to identify climate hazards and risks for the community by gender; mapping of vulnerability and adaptation capacity of village and individuals, and definition of problem statements for the villages; integration of CSA interventions, including: climate-smart technologies and practices; climate information services for improved climate risk management; local development planning; and strengthening local institution and knowledge sharing; intervention and experimentation of CSA. Villager's information needs for climate services will be considered for this product; evaluation of interventions and experimentation.

Stakeholders, including the subproject review committee, will also be trained on the use of the CSA Programming and Indicator Tool (CCAFS) of the Consultative Group on International Agricultural Research (CGIAR),to better identify and plan actions for climate-smart agriculture. This tool will also help to remember the best sub-projects during selecting.

The training will be provided by an experienced CSA technology and technical consultant provided for example by the CGIAR or any other entity that has demonstrated its capabilities in the field of CSA in Africa.

Capacity building will also focus on the exchange of experience between different climate zones in the project regions.On-site field visits to successful CSA interventions will be organized for technicians (in complementary of the activity 1.2.2.1). These field visits will put together technicians from different agro-climatic zones in order to promote knowledge exchange across different climatic risk zones and agro-ecological contexts.

Training will be organized in the intervention areas. These courses will be in the first year of project start. An evaluation is conducted at the end of training to measure the degree of assimilation of beneficiary groups. These courses should lead to the establishment, in every village or planning area, management committees. The various training courses will be implemented by the Project Team (CSA technology Consultant and Gender Consultant) with support from government and non-governmental actors. Good practice guides or manuals will be designed in the form of box of tools (Component 3). Local languages will be used according to the village, for a better understanding by farmers and for a greater ownership of the different session of the project.

Awareness-raising on CSA will be addressed to agricultural groups in the villages. By estimating that in each region of the project, 60 farmers can be sensitized in 50 villages, the number of farmers benefiting from this activity will be 36 000.

Activity 1.2.1.3: Support for the identification, formulation and selection of sub-projects

The climate-smart agriculture approach promoted in this project is a new approach that requires rigorous identification of beneficiaries, including vulnerable groups, but also farmers who have clearly agreed to work in their own fields by adopting the technologies promoted. Also, the implementation of this approach will require a strong awareness of producers. It should be noted that the development of technologies programmed requires the fields to be known with soil conditions, agricultural ecosystems, water availability, etc. It will be a question of programming the technologies and even the activities of capacity building according to the specificities of the sites of the groups and the beneficiary villages. Although the field demand is strong during the project preparation, the need for thorough knowledge of the condition of each site, prior awareness to the planning of field activities and firm commitment of the producers for such an innovating project, makes the technology development only be approached on a case-by-case basis through sub-projects. In addition, since the financial resources of the project are limited and there is a risk of funding a community that may not strongly adhere to the project or a community that has strongly adhered to the project at the time of its development, but may not be more interested when it is financed, the strategy of call for expressions of interest becomes a condition for the success of the project. This reinforces the idea of proceeding by subprojects.

For this, the various actors trained on the formulation and the mobilization of the resources as well as on the integrated approach of CSA will bring their support to the beneficiaries in the identification and the formulation of sub-projects on the basis of a participative approach and meeting the criteria of intelligent agriculture (adaptation, production and mitigation). The national coordination of the project will appreciate the form of support that each actor could bring.

A consultant will be recruited per country by the project management unit, on a call for applications for the formulation of subproject documents. The project implementation entity will ensure that the consultants to be recruited have the necessary capacity and experiences for the realization of the ODA and the Environmental and Social Impact Assessment necessary for the implementation of the sub-project.

25 subprojects will be implemented through this project as foreseen in component 2. Each sub-project, consisting of several units of at least 5 ha, will cover on average an area of 100 ha to 150 ha. The subproject to be developed are zoned according to agroclimatic zones. As mentioned under the component 2, each subproject can adopt different technologies packages retained after evaluation, namely: (i) technologies package 1 (Spreading threshold, Stone bunds and/or filter dikes, grass strips, Organic manure or Mulching, Zaï or Half-moons, RNA/Agroforestry); (ii) technologies package 2 (BCER, Stone bunds and/or filter dikes, grass strips, Organic manure or Mulching, Zaï or Half-moons,

RNA/Agroforestry); (iii) technologies package 3 (large diameter wells, Stone bunds and/or filter dikes, Organic manure or Mulching, Zaï or Half-moons, RNA/Agroforestry); and (iv) technologies package 4 (solar pumping boreholes/human powered, Stone bunds and/or filter dikes, Organic manure or Mulching, Zaï or Half-moons, RNA/Agroforestry). The development of these technologies packages (component 2) will be supported with the capacity building and agrometeorological services (Component 1) and dissemination of lessons learned (Component 3).

The repartition of subprojects according to agroclimatic zones with the use of different packages of technologies will enable the analysis of the behavior of technologies in agroclimatic zones and draw lessons learned for a replication of packages of technologies on a larger scale. The interventions to be made in fields already cultivated by farmers with a serious consideration of gender and vulnerable and marginalized groups, sub-projects and units of intervention of component 2, will have to be carried by beneficiaries who have demonstrated their strong commitment and ownership of the project to ensure that they continue to use packages of technologies with a climate-smart agriculture approach, even after the project closure. Subprojects can not therefore be the subject of prior identification at the current stage, but rather should be the subject of participatory identification and planning after a strong sensitization of the potential beneficiaries and a miniscule selection of beneficiaries with their sites.

Output 1.2.2: Strengthening the transboundary collaboration for the adaptation of agriculture to climate change to enhance the national capacity for CSA

Over the years, the shift of the isohyets insidiously catches the populations who did not prepare themselves. Appropriate training should prepare people to better understand the behavior and climate trend in their area and better adapt to the adverse effects of climate change that are increasing and diversifying. In addition, in the same climate zone, the nature of the soil and its exposure to degradation push rural populations to resort to various solutions that are often poorly adapted.

In these conditions, the implementation of concrete actions to climate change adaptation in agriculture requires interactions and synergy between regional, national, and local actors in order to improve their collective efficiency. These activities will enable them to contribute more efficiently to adapting agriculture to climate change, especially at local and West Africa region level trough CSA approach which will be extended to all countries.

Therefore, exchanges should be organized between populations located in different climatic zones and between populations located in the same climatic zone in order to share the lessons learned from the best and the bad practices to face the climatic conditions.

Thus the project will: (i) support the organization of tours / exchange visits and on-site learning for field operators who benefited from capacity building activities under Outcome 1.1 and Output 1.2. 1. ; and (ii) establish a platform for exchange of experiences where the different actors in the field can meet and exchange lessons learned from the previous crop years and the arrangements for the next campaign.

Activity 1.2.2.1. Support the organization of exchanges tours and training sessions on climate change adaptation in agriculture

Due to the existence of borders between the states hosting the respective administrative regions of the project area (Central-South, Central-East and East Burkina Faso regions, Tillabéry and Dosso in Niger, Alibori and Atacora in Benin, Savannah and Kara in Togo and North, North-East and North-West Ghana), managers and technicians are very poorly informed about the strategies and interventions implemented from one country to another. However, today's adaptive actions implemented in the South

of Burkina and Niger, for example, will be implemented in northern Togo, Benin and Ghana in the next few years in connection with the shift in isohyets.

Thus, within the framework of the project, on-site learning visits and joint training on climate change adaptation in agriculture will be organized in the different agro-climatic zones to improve the technical and operational dialogue between technicians and producers from these regions who are established in cross-border agroclimatic zones and this, to deepen the knowledge on the various interventions of the CSA. The lessons learned reports of the on-going projects and closed projects which have synergies and complementarity with the current project will be valorized. These activities will contribute to develop a collective awareness, pooling knowledge and strengthening coordination of actions to adapt agriculture to climate change at the local level. These activities will strengthen "regional thinking" on climate change adaptation in agriculture.

An exchange tour will be organized each year during the second and third years of the project. During the two years, the actors will have sufficient understanding of the adaptation issues and will be able to contribute to their diffusion in their own localities.

The number of expected beneficiaries of this activity is 250 representatives of groups. These will popularize the lessons learned from their members. Groupings with a number of at least 40 active members will be favored. The number of group members who will benefit from this activity is therefore at least 10,000.

Activity 1.2.2.2. Establish and operationalize a regular framework of experience exchange and sharing, and consultation on climate change adaptation in agriculture between the neighboring administrative regions of Burkina Faso, Niger, Benin, Togo and Ghana.

On both sides of borders in administrative regions adjacent to the countries of intervention, local actors of climate change adaptation in agriculture and livestock face often very similar realities, constraints and challenges. While adaptation measures have been tested in a similar region and have been successful, other regions are uninformed and continue to repeat the same maladpaption errors.

Although a first step has been taken with the West African Alliance for Climate Smart Agriculture in the ECOWAS region, there is currently no formal exchange framework to allow stakeholders to share their experiences and knowledge at the subregional level in order to develop concrete, effective, coherent and coordinated responses while preserving the specificity of the site.

Thus, a formal exchange framework will be set up with periodic meetings bringing together the senior staff of the national ministries in charge of agriculture, livestock, environment, water and forests, local communities and subnational territorial communities. This framework will address issues related to the effects of climate change on agricultural production systems (value chain, crops, etc.), transhumance in livestock production, sustainable management of water resources, etc. This activity aims to develop intra and inter-agro-climatic connectivity in a broader sense for a more integrated promotion of resilience, productivity and mitigation measures in the context of the CSA. The exchanges will take two forms:

- First, a West-East collaboration and information exchange between the regions of the same agro-climatic zone; ;
- Second, North-South exchanges between agroclimatic zones to reinforce learning between sub-humid regions and semi-arid regions, and this, in connection with the continuous shift of isohyets towards the South.

Activity 1.2.2.3. Support the integration of climate-smart agriculture into local and national development plans in Burkina Faso (3), Niger (2), Benin (2), Togo (2) and Ghana (3).

Although the project promotes a regional learning process on CSA, national and local ownership of the project is extremely important. It is at the national level that CSA approaches can be incorporated in a binding way in the policy and planning processes, thus ensuring long-term sustainability. Through capacity building and planned exchange and learning, stakeholders will be better equipped to propose and / or update local and national development plans for better climate resilient agriculture planning.

The decision of the ECOWAS Heads of State to adopt climate-smart agriculture by all Member States dates from June 2015, at the time of the National Nominal Contribution (NDC) documents being prepared or finalized in the countries. These documents were all adopted by the governments in September 2015. Also, the consideration of the CSA in the NDCs was made differently. Niger has clearly made the CFS option in its NDC but has not translated it into local agriculture policies and plans in the face of climate change. Ghana developed a National Climate-Smart Agriculture and Food Security Action Plan in November 2015 to implement, at the local farmer level, its National Climate Change Policy adopted in 2014. However, the CSA option has not been clearly integrated into Ghana's NDC. Togo wished to engage the country in the implementation of the decision of the Heads of State without translating it into the NDC and into local policies and plans. In Benin and Burkina Faso, although there are some test projects in the field, the CSA has not been clearly taken into account in the NDCs. Therefore, in order to translate into reality the decision of the Heads of State on the CSA in national and local development policies, the project should allow each country: (i) to integrate the CSA into its NDC and other documents national and local planning related to climate change and agriculture; (ii) develop at the local level its CSA Action Plan.

The process of integrating CSA measures into local and communal development plans in the project area will be conducted under the leadership of the local authorities with the support of the regional and prefectoral departments of the State, with a view to better ownership at the local level. Training sessions on creating a development strategy focusing on institutional options, policies, financing, disaster risk reduction and social security, institutional capacity building and monitoring and evaluation will be organized in parallel with the actors who benefited from capacity building activities, above with the support of specialized Consultants. At the national level, other countries can draw inspiration from the NDC of Niger and the National Action Plan of the CSA of Ghana.

Component 2: Scaling up of best practices related to climate change adaptation in agriculture and pastoralism at local level

Component 2 aims to promote climate-smart agriculture techniques and technologies, adapted to the project areas of intervention. As defined above, this agriculture contributes to adaptation, production and mitigation to the possible extent. As part of this project, a certain number of technologies were selected with all the actors of the agricultural sector (farmers, technical agents, NGOs / Associations, regional institutions, etc.).

The techniques and technologies selected, taken individually can not meet the dimensions of the CSA. Reason for which, package of technologies have been formed. These technologies, put together, will make it possible to sustainably reinforce the resilience of communities in the face of the adverse effects of climate change, sustainably improve agricultural production and beneficiary incomes, and contribute to carbon sequestration and thus GHG mitigation.

Outcome 2.1. Agricultural and livestock practices contribute to the resilience of populations to improve productivity, incomes and carbon sequestration

To achieve this Outcome, the techniques and technologies selected are:

- For the development and sustainable management of agricultural land: (i) stone bunds; (ii) permeable rock dams; (iii) grass strips, (iv) zaï - tassa. (iv) half-moons; (v) mulching; (vi) supply of organic matter (manure, compost); and (vii) Assisted Natural regeneration;
- For water conservation and management : (i) runoff water havest basins ; (ii) large diameter wells; (iii) human powered or solar pumping well; and (iv) spreading thresholds;
- For livestock mobility and transhumance: Demarcation of cross-border transhumance corridors, water points, human powered boreholes.

The integrated development approach of the selected techniques and technologies will make it possible to meet the requirements of the 3 dimensions of the CSA (adaptation / resilience, productivity / income and mitigation).

Although these techniques can strengthen the adaptation of populations, contribute to the improvement of agricultural and / or animal production, etc., their application must take into account other factors such as the climate of the region, the nature of the soil, the availability of water, etc. On the basis of these parameters, the evaluation of these technologies and techniques has been carried out.

A rate has been assigned to each technology depending on whether it meets the above approach or not. Rates range from 0 to 3 for each technology.

0	not desired, not interesting for climate-smart agriculture in the context of the region
1	unattractive for climate-smart agriculture in the context of the region
2	can be implemented if cost-effectiveness and sustainability analyzes confirm feasibility
3	highly desired implementation, can be combined with other techniques in a CSA approach (adaptation, productivity / mitigation)

The table below presents the evaluation of these technologies.

Table 2: Evaluation de l'adaptatibilité des technologies en fonction des zones et selon les besoins exprimés

Country		BENIN		BURKINA			GHANA			NIGER		TOGO	
	REGION	Atacora	Alibori	Centre Sud	Centre Est	Est	Upper West	Northern	Upper East	Tilaberi	Dosso	Kara	Savanes
Water management and conservation													
Realization of large diameter wells		1	1	2	2	1	2	1	2	1	1	2	2
Runnoff water harvest basins		2	2	3	3	3	2	3	3	2	2	3	3
human powered/solar pumping boreholes		3	3	2	2	2	2	2	2	3	3	3	3
Rehabilitation / realization of spreading thresholds		3	3	3	3	3	3	3	3	3	3	3	3
Sustainable Management of Agricultural Land													
Stone bunds		3	3	3	3	3	3	3	3	3	3	3	3
Permeable rock dam		3	3	3	3	3	3	3	3	3	3	3	3
Grass strips		3	3	3	3	3	3	3	3	3	3	3	3
zaï		2	2	2	2	2	2	2	2	3	3	2	2
Half-moons		2	2	0	1	1	2	2	2	3	3	2	2
Mulching		3	3	3	3	3	3	3	3	3	3	3	3
Organic manure		3	3	3	3	3	3	3	3	3	3	3	3
Assisted Natural Regeneration (ANR)		3	3	3	3	3	3	3	3	3	3	3	3
Agroforestry		3	3	3	3	3	3	3	3	3	3	3	3
Livestock mobility and transhumance													
Demarcation of cross-border transhumance corridors		3	3	3	3	3	1	1	1	2	2	3	3
Water points		3	3	3	3	3	2	2	2	2	2	3	3
Human powered Boreholes		3	3	3	3	3	2	2	2	2	2	3	3

To ensure that each technology effectively contributes to climate-smart agriculture as defined above, these technologies have been evaluated using the "CCAFS' CSA Programming and Indicator Tool" of CGIAR. The tool allows: (i) to help and examine the scope of a program or intervention (technology) using the three dimensions of smart agriculture (productivity, adaptation and mitigation); (ii) to compare the scope and intentionality of the CSA; and (ii) support the identification and selection of an appropriate set of indicators to measure and monitor the results of smart agriculture.

In this evaluation, the tool has been used for two purposes: (i) the first is to assess the effect of each technology in isolation on the three dimensions of climate-smart agriculture; and (ii) the second is to evaluate the effect of combinations of technologies in a project approach

a) Evaluations of the technologies promoted, if each should be developed alone

The evaluation was made from the CSA Programming Indicators Tool as mentioned below and is based on the intentionality that each technology provides the three dimensions of smart agriculture. The results are presented in the following table.

Table 3: Intentionality of each technology according to CSA dimensions

Technologies	Intentionality's		
	Adaptation	Productivity	Mitigation
Spreading threshold	46%	44%	5%
BCER	46%	44%	5%
large diameter wells	46%	44%	5%
solar pumping boreholes/human powered	46%	44%	15%
Stone bunds	36%	44%	20%
filter dikes	36%	44%	20%
grass strips	36%	44%	25%
Organic manure	32%	44%	25%
Mulching	32%	44%	25%
Zaï	36%	44%	20%
Half-moons	39%	44%	20%
RNA	21%	31%	25%
agroforestry	21%	31%	25%

The table above indicates that in terms of adaptation, intentionality's vary from 21% to 46%. In terms of production, intentionality's vary from 31% to 44%. With regard to mitigation, intentionality's range from 5% to 25%.

The analysis of technology assessment results shows that while each should be developed individually, some contribute better to adaptation, others to productivity, and some to mitigation. A single technology does not truly address the climate-smart dimensions of agriculture, hence the idea of considering their combination. The following paragraph presents the evaluation of the possible combinations between the technologies selected.

b) Evaluation of combinations (packages) of technologies

Combinations, known as Technology Packages, were achieved by combining management technology /water management, sustainable agricultural land management techniques, supported by capacity building activities and knowledge of component 1 and the sharing of lessons learned from the

component 3. The possible combinations (technological packages) of possible technologies that can significantly help achieve the dimensions of the CSA are presented in the following table.

Table 4: Possible combinations for technological packages

Combination 1	Combination 2	Combination 3	Combination 4
Spreading threshold	BCER	large diameter wells	solar pumping boreholes/human powered
- Stone bunds and/or filter dikes - grass strips - Organic manure or Mulching - Zaï or Half-moons - RNA/Agroforestry	- Stone bunds and/or filter dikes - grass strips - Organic manure or Mulching - Zaï or Half-moons - RNA/Agroforestry	- Stone bunds and/or filter dikes - Organic manure or Mulching - Zaï or Half-moons - RNA/Agroforestry	- Stone bunds and/or filter dikes - Organic manure or Mulching - Zaï or Half-moons - RNA/Agroforestry
Support of the combination of technologies with capacity building and knowledge activities (Component 1) and dissemination of lessons learned (Component 3)			

As in the previous case, the above combinations of technologies were evaluated. This evaluation highlighted the combined effect of the technologies promoted. The combination of technologies has the advantage of improving the resilience of populations by 75%, agricultural production by 81% and mitigation by 50 to 60% compared to the situation without a project. The following table presents the evaluation results of possible combinations of technologies.

Table 5:Intentionality of the combinations of technologies according to the dimensions of the CSA

Combinations	Intentionality's		
	Adaptation	Productivity	Mitigation
1	75%	81%	50%
2	75%	81%	50%
3	75%	81%	50%
4	75%	81%	60%

The above table and the results of the evaluations presented in the histograms below, show that the combination of technologies makes it possible to obtain interesting results from the point of view of the adaptation, the productivity and mitigation compared to the scenario in which the technologies are carried out individually or in isolation (see figure below).

The histograms based on these results are presented in Annex 5. The figures below are an example of an evaluation of technologies in Technology Package 2 taken separately or in combination with each other.

Figure 31: Possible results in adaptation, production and mitigation with different technologies, if implemented in isolation

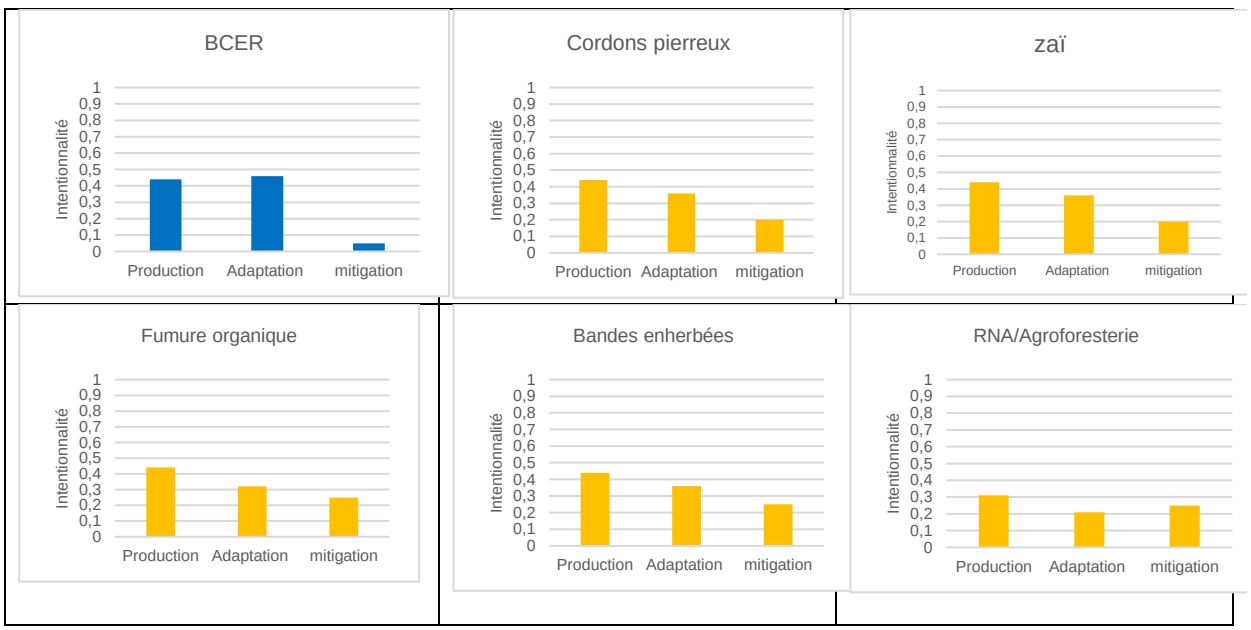
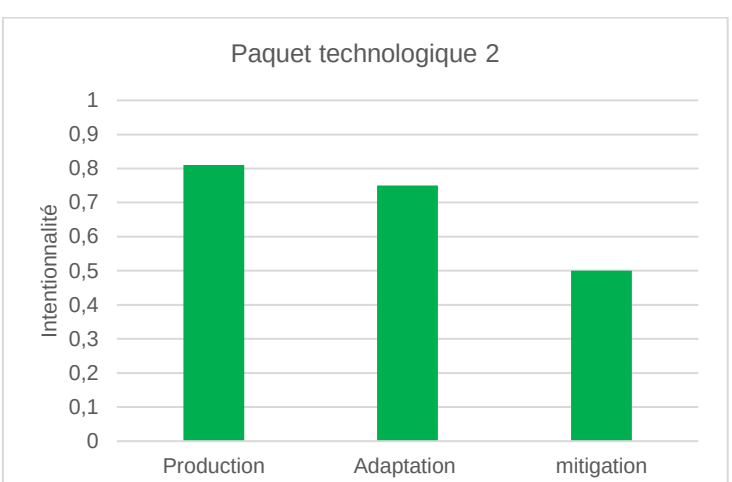


Figure 32: Possible outcomes in adaptation, production and mitigation with a combination of technologies in the project



In this project, this combination approach will be promoted. The combinations or technological packages and the results of their evaluation will help the sub-project selection committee to select the best sub-projects in order to achieve the expected results, in particular: sustainably strengthen the resilience of vulnerable populations to adverse effects of climate change; increase production and incomes including the reduction of agricultural land expansion; and contribute to the mitigation of greenhouse gases.

Output 2.1.1. Promotion of integrated techniques and activities related to water management, soil rehabilitation and conservation and livestock mobility to enhance beneficiaries' resilience

Le present projet compte developper au total 3 000 ha de cultures avec des techniques d'agricultures intelligentes face au climat.

- 2500 ha of cereal crops (excluding rice) including maize, millet and sorghum, which are the main crops in the project area with resilient techniques improving soil quality, production, incomes and carbon sequestration. It will be a better combination, depending on the characteristics of the soils, of techniques: filter bunds, stone bunds, grass strips, za - tassa, half-moons, mulching, organic manure, agroforestry / forest and assisted natural regeneration. 500 runoff water havest basins (BCER) will be collected for this purpose to manage pockets of drought;
- 400 ha of irrigated rice with spreading thresholds (10 thresholds will be achieved under the project with a threshold for a 40ha site);
- 150 ha of market gardening with solar irrigation and Californian network. 30 solar kits (drilling, solar pump, solar panels, water cover) will be installed at the rate of a kit for a unit of 5ha. Speculations such as potato, tomato, onion, carrot will be promoted;
- 50 ha of market gardening with large diameter wells. A well with large diameter will be realized for a unit of 1ha. Speculations such as potato, tomato, onion, carrot will also be promoted.

To ensure the sustainability of investments in the field, the project will intervene on sites operated by the people and their belongings. Beneficiaries will therefore be maintained on their exploitation sites and no population displacement or expropriation of land will take place under the project. Usually grown crops will be maintained. However, they will now be developed with climate resilient technologies that improve production and contribute to carbon sequestration. Beneficiaries will not be forced to adopt crops they were not used to developing. But they will be encouraged to develop off-season vegetable crops that will enable them to fight food insecurity during critical periods and sell surpluses to earn a steady income.

In the event that a group wishes to develop a new site that it does not exploit before the project, it will be required documents showing its ownership, lease or donation.

With regard to transhumance, the project plans to mark 1000 km of transhumance corridors and put along these, 80 water points including BCER and 20 boreholes with human motility.

Activity 2.1.1.1. Soil restoration and conservation

The following techniques will be developed through this activity: (i) permeable rock dam; (ii) stone bunds; (iii) grass strips, (iv) zai - tassa. (iv) half-moons; (v) mulching; (vi) supply of organic matter (manure, compost); (vii) agroforestry / forestry;and (viii) Assisted Natural regeneration.

a) Stone bunds

Stone bunds are anti-erosion arrangements consisting of blocks of rubble/stones assembled in sets of two to three. They are constructed in lines along a contour line after stripping 10 to 15 cm of soil along the line. The tops of stones reach a height of 20-30 cm from the ground. The distance between the stone bunds is 20 to 50 m following the slope of the plot. Stone bunds produce better results when combined

with biological measures (grass strips, agroforestry, Assisted natural regeneration), organic manure inputs and mulching.


b) Permeable rock dam

Permeable rock dam are anti-erosion structures built along contour lines that have a height of 30 to 50 cm and extend over a width equal to two to three times the height. The crest of the bunds is horizontale. They are assembled using rubble stones or stones of different sizes. There are two types of rock dams: rock dam without carpets and flat packs without gully, and dam with carpets recommended for surfaces characterized by heavy runoff. The permeable rock dam is distinguished from a stonebund by its size, the type of construction in different layers of stones and the role it is called to play as a structure for controlling stronger flows. This is why the rock dam is often placed upstream of the bunds to first break the force of the water flowing from the plateaus and slopes. By its construction, the rock dam dissipates the energy of the water and contributes to the sedimentation, which ensures a terracing of the ground. In the same way as stone bunds, it increases the infiltration of surface water into the soil. With a minimum of maintenance, dams have a lifespan of at least 20 years.


c) Grass strips

On shallow slopes plot, grass strips with a width of 0.8 m to 1 m are laid at a spacing of 20 to 80 m. Like stony ridges, grass strips are set along contour lines to curb runoff, increase infiltration and retain sediment.

d) Zaï - Tassa

They are seed pits of about 30 to 40 cm in diameter and 10 to 15 cm deep. The distance between the holes is 70 to 80 cm, which gives about 10,000 holes per ha. These holes are dug perpendicular to the slope and staggered. The removed earth is piled up downstream of the hole, and constitutes a kind of bead that captures the water. Prepared early in the dry season, the holes are traps during the period of strong winds and can capture the organic waste brought by the wind. The holes are regrooved every two years. The technique of zaï makes it possible to concentrate and conserve the nutritive elements and the water near the roots of the cultivated plants. The application of organic manure in the holes helps restore biological activity, improve fertility and loosen the soil.

e) Half-moons

The half moon is compacted earthenware or semi-circle shaped stone with perpendicular openings to the direction water flow and a staggered disposition. The half-moon technique aims to recover degraded, bare and encrusted land for agricultural, pastoral or forestry purposes. According to their vocation, the lands inside half-moons, enriched by organic manure, is used for the cultivation of cereals (half-moons agricultural), the plantation of ligneous species and / or the seeding with herbaceous plants (half-sylvo-pastoral moons). The half-moons are designed for agricultural, pastoral and forest lands. They are carried out on degraded, bare and / or encrusted glaciers and plateaus with low to medium slope.

f) Organic manure

There are two methods of providing organic matter: (i) composting and (ii) using manure. Manure comes from shzd/barns where animals stay on litters. Compost is made either in the dry season or in winter. Quantities of biodegradable materials are treated by an accelerated decomposition by mixing with animal dung or a slow decomposition when only the stalks of millet, sorghum and other plants are used. Both types of compost can be enriched with ash and / or phosphate rock. Biodegradable materials are placed in a pit and - in the dry season - watered regularly until complete decomposition. Then the compost is spread on the field before it is cultivated. Depending on the type of soil, quantities of 6 t/ha every three years (heavy clayey soils), 3 t/ha every two years (sandy-clay soils) or 2 t/ha every year (light soils) are recommended.

g) Mulching

In the mulching technique, stalks of millet, sorghum, etc., are spread on the field after harvesting. Per hectare, a quantity of about 2t per year is recommended, which corresponds to 2 to 3 stems per m2. The technique can be combined with any other anti-erosion techniques such as stone bunds or grass strips.

h) Assisted natural regeneration

Assisted natural regeneration (ANR) is an agro-forestry technique that consists of protecting and maintaining woody species that grow naturally in a plot or silvo-pastoral areas. In the plot, a density of 60 to 80 feet per hectare is recommended. It is important to protect the young shoots from animals grazing in the early years to succeed.

i) Agroforestry and forestry

The choice of the chosen tree species depends on the objectives pursued by the farmers (aerial pasture for animals, sales of fruits or by-products (shea, néré, pharmacopoeia, etc.). The technique does not require investment and can be applied by all farmers.

As part of the project this agroforestry technique will be developed with multi-function plants. The aim is not only to improve soil quality, reduce erosion and create a favorable micro-climate for crop development, but also to support food security through a diversification of crops from the developed plot. The selected plants are those that provide food / fruit during the dry season or during the lean season and which are used by the population. The plants that will be promoted are : *Moringa oleifer*, *Parkia biglobosa*, *Azadirachta Indica*, *Manguifera Indica*, *Citrus sinensis*, *Faidherbia Albida*.

Activity 2.1.1.2. Water management and conservation

The availability of agricultural water for plant productions and livestock production is increasingly difficult due to climate change and variability. The recurrence and length of drought pockets are also greater. The water deficit thus generated considerably affects crop and farmers' productivity in the project zone. To reduce the vulnerability of these farmers, water conservation works will be conducted and water conservation techniques will be disseminated. More specifically, based on the characteristics of the sites, there will be a need to:

- realize 500 runoff water havest basins (BCER);
- realize 50 wells with large diameter;
- realize 30 boreholes with solar pumping;
- realize 10 spreading thresholds.

Motor pumps will be purchased for back-up irrigation as part of the installation of runoff water harvest basins and large diameter wells.

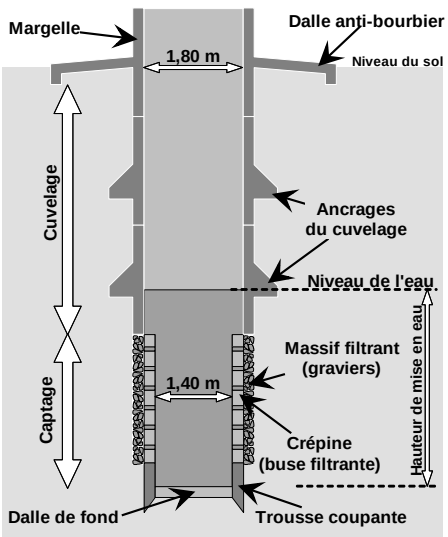
a) Runoff water harvest basin

The Runoff water harvest basins (BCER) are infrastructures designed to collect runoff water. They are an evolution of the Impluviums in the sense that for the same cost of realization of an impluvium of 20 m3, one carries out a runoff water harvest basins of nearly 200 m3 with interesting profit margins. Runoff water havest basin allows producers to adapt to the adverse effects of drought, especially during dry spells.

The runoff water harvest basin makes it possible to secure harvests through complementary irrigation in the event of drought pockets, increased cereal production, the implementation of income-generating activities for women through market gardening and the production of cereals, diversification of the diet and nutrition of children and women. 500 runoff water harvest basin will be realized in the framework of the project.

b) Realization of large diameter wells

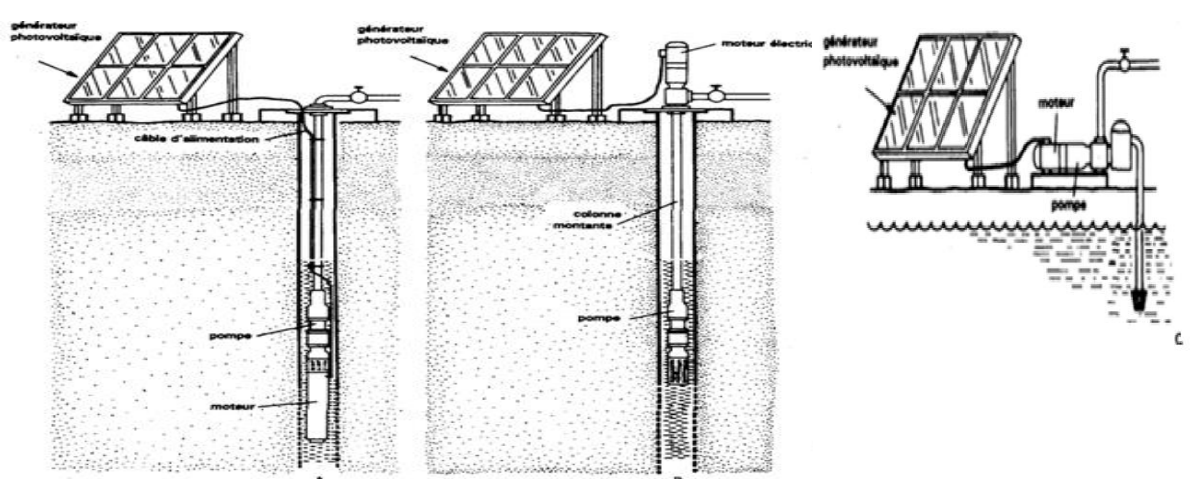
The structure is a large diameter (1 to 2 m). The walls are consolidated with reinforced concrete, cast behind metal formwork. If the required catchment height can vary from 1 to 15 m, depending on the nature of the formations, the depth of the aquifer varies from 0 to 100 m and more, depending on the soil's coast relative to the piezometric level.



The whole communicating directly with the shallow aquifer (the water table) in order to draw directly into it with simple means (ropes and cages or buckets, more rarely a human powered pump or even a motorized pump). Large-diameter wells are infrastructures that also allow a brake on the operation of the well over the entire rain-free period. It is a technology adapted in certain regions but which should be replaced by a more effective one to mobilize water for the agriculture on surfaces of the order of a few hectares (less than 2 ha) with means of water supply essentially. The lack of resource management is also a hindrance to the exploitation of the well over the entire period without rain. It is a technology adapted in certain regions but which should be replaced by a more effective one. 50 Large-diameter wells will be realized in the framework of the project for the developpement of 50ha of crops.

c) Realization of boreholes equipped with solar pumping

The borehole with solar pump is a borehole that is pumped by solar energy through photovoltaic panels to produce electricity that powers an electric pump. The main advantage of this drilling is its ability to supply remote rural areas and reduce the cost of pumping. This technology is very well used in Niger for market gardening on 1 to 5 ha. It is well adapted and could be tested in other regions. The system to be put in place will be composed, among others, of solar panels, inverter, regulator and connection accessories for pumping. Depending on whether the water is at the surface or at depth, three common types of photovoltaic solar generator pumping systems have been identified: (i) submerged solar pump; (ii) solar pump with motor on the surface; and (iii) the motor and pump system installed on the surface. The type of appropriate installation to be carried out will be determined according to the characteristics of the site.



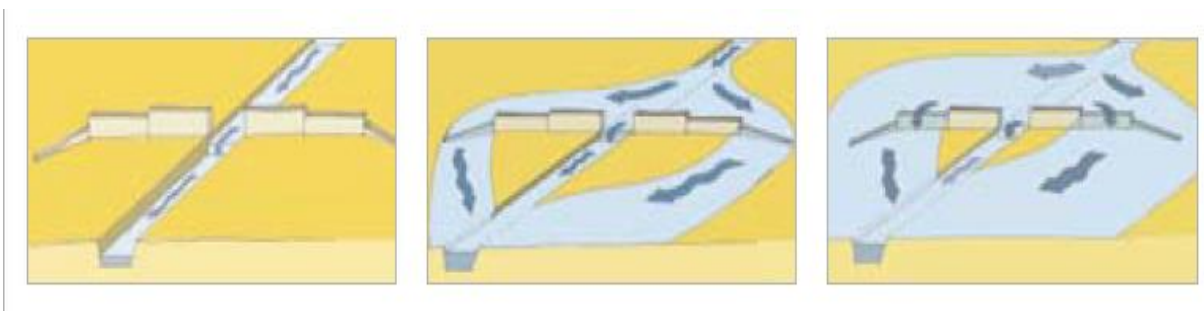
A. submerged pump unit; B. submerged pump with motor on the surface; and C. surface-mounted motor and pump

As part of the project a solar kit consisting of solar panels and solar pump will be provided for a unit of 5ha of gardening. The 5 ha will be developed with a Californian irrigation network. The drilling will be provided with a poltytanck for the storage of water. 30 solar kits will be installed for the developpement of 150 ha irrigated perimeters.

To ensure the quality and performance of the equipment to be acquired under the project, the successful tenderer must necessarily undertake to provide equipment that will have a shelf life of at least 10 and 20 years respectively for solar pumps and solar panels. It will have to provide a certificate of performance of the manufacturer if necessary. Users of the equipment (the beneficiaries) must also undertake to operate and maintain the equipment in accordance with the manufacturer's instructions.

d) Spreading thresholds

The spreading thresholds are flood control structures at the level of medium-sized watercourses and degraded low-lands with a marked minor bed. Thresholds are built with local materials and include a spillway in the middle, buttresses beside the spillway, and wings to spread the water over a large area.



When the flow is low in the valley, all the water passes through the weir. With moderate floods, the water is guided towards the ends and crosses the low outer wings. At the time of the larger floods, the water also crosses the higher wings. Downstream, the waters finally find the major bed to flow. In the framework of the project 10 unity of 30ha will be developed with the spreading thresholds.

Activity 2.1.1.2. Support livestock mobility and crossborder transhumance

By affecting the availability of pastures and water, climate change forces pastoralists to adopt internal and external transhumance as an adaptation and survival strategy. Transhumance practiced in an environment already marked by fierce competition to access resources, generates recurrent and increasing conflicts between pastoralists and farmers. Moreover, in an area characterized by different lifestyles, specific regulations on transhumance and uncoordinated animal health policies, these conflicts often lead to disastrous consequences (loss of livestock and human life, resurgence of zoonoses) especially in the “grey” zones (transboundary areas). To both support livestock producers’ adaptation strategies and facilitate interactions with farming communities installed in the project implementation zone, activities will be implemented to improve livestock mobility and crossborder transhumance. More specifically, there will be a need to:

1. Demarcate, markup and secure 1,000 km of transboundary transhumance corridors or tracks;
2. Produce 100 water points (80 BCER and 20 boreholes) along the secured transhumance corridors.

The International Livestock Research Institute (ILRI) will provide support in the implementation of these activities. In the countries, ILRI will support the institutions and services in charge of livestock to identify

critical areas, subject to conflicts between pastoralists and farmers, in order to undertake the demarcation activities of the transhumance corridors and the establishment of water mobilization infrastructure for livestock.

Given the limited resources in the project, the demarcation of transhumance corridors can be strengthened in countries such as Benin, Togo, Burkina Faso and Niger. For Ghana, delineation of transhumance corridors poses real land problems, given the land use of agriculture. An in-depth study is needed for Ghana to delineate the transhumance corridors. Such a study can not be undertaken in the context of this project given the very limited financial resources. However, to reduce water management conflicts between farmers and herders, the project will provide water points to transhumant herders in project intervention areas.

Output 2.1.2: Support for the fields'valorization

In the project area the access of producers to quality improved seeds, certified fertilizers and pesticides is limited. In addition the practice of the CSA techniques implementation is not common. This has implications for production. To enhance the productivity and the adptation activities, the project will provide support for the fields's valorization trough: access of improved seeds, the acquisition of quality fertilizers, integrated pests and pesticides management trough the alternatives adoption by producers. The project will also provide technical support for famers groups for adaptation actions implementation.

Activity 2.1.2.1. Support to access improved seeds

Adequate access improved seeds increase agriculture yields. The project will disseminate, in collaboration with national and regional institute of research, the improved seeds. To ensure the availability of improved seeds the project will sign a Memorandum of understanding with the research institutions for the provision of the improved seed, at the start of the project. In each country, the institution in charge of agricultural research will support the project in the development of improved seed banks and in the training of the groups on these seeds multiplication techniques while ensuring the ownership of the activities by the producers.

Activity 2.1.2.2 : Support to groups for the acquisition of quality fertilizers

The use of organic fertilizer for agricultural production is strongly promoted as part of the project to improve soil quality, yields and production (Output 2.1.1.). In areas where access to organic fertilizer is limited, the project will provide support for access and use of good quality fertilizers. The support for the acquisition of agricultural inputs will be through a work-for-inputs approach (improved seeds and quality fertilizers, etc.). Each group of producers will work on its own site. Thus, the project will be able to convert into agricultural inputs for the group of farmers, part of the payments for the effort that they provide for the realization of the promoted techniques. The realization of water mobilization infrastructures will be entrusted to private companies operating in the field. The development of other technologies including Zai, half-moons, stone bunds, filter dikes, grass strips, agroforestry, etc. will be entrusted to the beneficiaries who will work on their own plots, supervised by the site animators (see Activity 2.1.2.4). This effort will be rewarded for the acquisition of organic manure and agricultural inputs. It should be recalled that the project targets vulnerable groups, especially women and young people who do not have the financial resources to acquire quality inputs. The funds that will be used to purchase organic fertilizer and inputs will be calculated as follows: Technology Implementation Cost per hectare (F / ha) x number of hectares planted (ha) per beneficiary. The funds earned by each beneficiary through this mechanism will be converted into agricultural inputs. This conversion will be in the first year of

development of technologies for agricultural production at each site. The Project Management Unit will ensure that funds have actually been used for the procurement of inputs as planned.

With the consequent improvement of yields and therefore of production during the first crop year, beneficiaries will be able to start generating substantial income. This will enable them to continue to acquire quality agricultural inputs for future crop years. To ensure that beneficiaries' groups will continue to source quality inputs, the National Project Management Unit will empower, in the framework of the component 1, the relevant public local structures in charge of agriculture, to allow them monitor the beneficiaries CSA activities after the closing of the project.

Activity 2.1.2.3.: Support for the adoption of integrated pest management alternatives to reduce the use of chemical pesticides and the implementation of environmental and social management plans for sub-projects

In practice farmers resort to the use of chemical pesticides in the fight against pests. This method has negative consequences on productivity in the medium term and is a source of water pollution.

This project seeks to significantly reduce chemical pesticide applications at sites that will be retained for the promotion of integrated pest and pesticide management. Alternatives to pesticides including agronomic control, cultural practices, mechanical control and biological control will be disseminated for adoption by producers. Seeds resistant to certain parasitic attacks according to the zones will also be promoted (activity 2.1.2.1). These actions will be integrated at the beginning of site development or during crop development to prevent crop pest attack.

To do this, the project will use, through a call for applications, the expertise of an experienced Consultant to develop an integrated pest and pesticide management toolkit. This toolkit will be made available to extension services (decentralized services of plant protection, agriculture, environment, livestock, water, etc.) and beneficiaries. Vulgarization services and representatives of beneficiaries will benefit from capacity building for the promotion of integrated pest management.

For integrated pest and pesticide management and other sustainable activities under the project, the project will collaborate strongly with regional institutions such as CILSS, Agrhymet, FAO in Accra, Ghana, as well as other institutions that develops capacity in integrated pest and pesticide management.

In the event that all integrated control alternatives, including agronomic control, cultural control, mechanical control and biological control prove to be ineffective in the face of problems, the project will provide support for the acquisition of chemical pesticides, in particular class III WHO. The plant protection service of the country concerned will provide technical support and advice to farmers in the acquisition and application of these pesticides.

During the regional workshop for the validation of the Full proposal and the Environmental and social management framework, the representatives of the 5 countries, in particular the National Environmental and Social Assessment Agencies and Offices, pointed out that these Agencies, the national consultants, National ESIA reports validation committees put in place by decree, the stakeholders involved in the ESIA process in the countries, are not very familiar with the Adaptation Fund ESP. To compensate this gap and help the ESIA stakeholders to overcome the process of formulation of the ESIAs' reports, the implementation and monitoring of the environmental and social management plans in compliance with the Adaptation Fund ESP, a national workshop will be organized by country to enhance the capacity of each stakeholder in particular the National Environment Agency, Project management Unit members (national and regional level), national consultants and NGOs which will be involved in the subproject

formulation and implementation, the 5 National ESIA reports validation committees, the Subproject review committee, Members of national steering committee. This training should allow the different actors mentioned above to perform their tasks in accordance with the provisions of the Adaptation Fund's ES Policy. The workshop should allow the participants to benefit the maximum experiences of many project which discourse on a large range of environmental and social risks in different countries and create a critical capacity to assess environmental and social impacts and risks at national and regional level to comply with AF ESP principles. Thus, this workshop will be conducted by the Environmental Expert of the Adaptation Fund. This activity will be conducted early just after the inception workshop of the project before the recruitment of consultants to realize the environmental and social impact studies of the subprojects.

During the implementation, to ensure effective implementation of environmental and social measures that will result in environmental and social impact studies of the sub-projects, the project will provide on-site support to farmers. This support will concern training of producer representatives and site visits and sensitization of producers on the environmental and social management of the project and the implementation of the environmental and social management measures proposed in the environmental and social management plans (ESMP) of the subprojects. These activities will be conducted by the consultants who conducted the sub-project ESIAs under the supervision of the project management unit and under the supervision of the national agencies of Environmental.

Activity 2.1.2.4 Support for famers groups for adaptation actions implementation

This support concerns: (i) proximity support by site facilitators or animators; and (ii) Supprot by the government technical experts.

a) Proximity support by site facilitators or animators

To ensure efficiency in the implementation of the adaptation actions of the project, daily support will be provided to the farmers by the project through facilitators or animators. These animators who have a good command of the promoted farming practices, will be in constant contact with producers in the field to ensure adequate resilient practices implementation. The site facilitators will support the perimeter management committees that will be set up to ensure better management of the perimeters managed during and after the project. The members of the perimeter management committee are the beneficiaries of the sub-projects designed with their support. The consultants who will be responsible for the participatory designing of the sub-projects, will ensure that those beneficiaries master the sustainability criteria of the sub-projects. This should allow rapid appropriation of the sub-projects by the beneficiaries to ensure the sustainability of the project. The role and composition of these permiter management committees is presented under Item III.A.

In addition, they will help for collecting data of the project on the sites (the actions taken, the problems occurred, the benefits, the needs for the next step, etc.). These data will be transmitted to the national coordination for the regional project management unit for the purposes of the development of quarterly and annual reports. This will allow to measure the degree of adoption practices and progressive appropriation of the promoted resilience techniques during project implementation.

This activity will be entrusted to NGOs / Associations working in the field and who have been trained on the CSA under component 1 and who will participate in the designing of the subproject. It will be recruited 1 to 2 NGOs by project intervention region. With lessons learned and knowledge sharing, these NGOs / Associations will help other communities or groups of farmers to develop CSA micro-projects.

b) Support by the government technical experts

The decentralized technical services of agriculture, water, livestock, environment, plant protection, each according to its expertise, will provide producers with on-site technical support for the implementation and the valuation of sites. The technical services will provide technical support and advice to site management committees at the local level for the proper functioning of these committees. This will involve periodically conducting field missions to monitor and advise producers on the application of the techniques and technologies selected for development. This will provide convincing results and ensure that the recommended measures in agriculture, environment, water management, soil management, integrated management of pests and pesticides, improving transhumance, are correctly implemented.

Component 3: Management of knowledge on resilient agriculture best practices related to climate-smart agriculture

This component will help to develop and operationalize an information system and a knowledge sharing for the adoption of resilient agriculture good practices to support food security, income general, resilience, and environmental sustainability in the Project Region and West Africa.

Outcome 3.1: Knowledge on resilient agriculture best practices related to climate-smart agriculture is strengthened and disseminated

Output 3.1.1: The sharing of experiences and expertise on best practices related to climate-smart agriculture is strengthened

Activity 3.1.1.1 Lessons learned compilation

Lessons learned will be of interest to Government, civil society and vulnerable populations, regional institutions and Donors working in the sector of climate change adaptation. In order to guarantee the project contribution to regional and national adaptation to climate change and improve the practices ongoing, the different reports and studies of the project at the regional, national, local and field level, will be used to formulate a complete lessons learned document. This will contain, among others : (i) the efficiency and weakness of technologies and technics, process, financial management and use at regional, national and level, water, soil, flora, fauna, environment, adaptation, productivity/income and mitigation indicators, etc. ; (ii) the best adaptation practicises recommanded for local,national and regional adaptation project ; (iii) the envisaged solutions to solve the weaknesses discovered during the project identification, planning and implementation. This document will be the main knowledge base for sharing.

Activity 3.1.1.2 Dissemination of lessons learned and knowledge from the project to exchange between stakeholders of climate-smart agriculture, including public agencies, local communities, FOs and NGOs from Niger, Benin, Togo, Ghana and Burkina Faso

The sharing of knowledge and the dissemination of lessons learned will be done through two levels: (i) Dissemination of lessons learned and knowledge from the project to exchange between stakeholders of climate-smart agriculture at national and regional level; (ii) Dissemination of lessons learned and knowledge from the project at the local communities' level.

a. *Dissemination of lessons learned and knowledge from the project to exchange between stakeholders of climate-smart agriculture at national and regional level*

The practices documented and best practices characterized will be fed into a database accessible to all and will be updated every year. Setting up a georeferenced mapping tool showing climate change techniques and practices is an interesting practical and innovative way of presenting information.

To facilitate access to project information by the public, a website dedicated to the project will be created. The results (outputs, outcomes and impacts) and lessons learned from implementation and the various reports will be shared/disseminated on the project website. This website will be animated by a set of actors who will be networked.

The core dissemination product from the project will be a manual of practical and concrete best-practice in climate resilient agriculture. Various versions of the Manual will be produced, both technical and non-technical, in French, English and local languages, as well as smaller summary briefing sheets/tools box/calendars on relevant thematic topics. The manual will be disseminated through the project website and a suite of workshops at the regional, national and local level. In addition dissemination will take place across the West Africa region through workshops and dissemination of hard copies. The project team will further interact with national media outlets (newspaper, internet, radio, etc.) to make the public aware of climate risks and adaptation needs. Scientific publications with regards to impact assessment of components #2 is also planned.

A catalogue of best practices and techniques related to climate change adaptation in agriculture obtained will be disseminated annually in an appropriate format for each of the potential stakeholders (Public administrations and technical services, Producers' organizations, local community, students, etc.). The competent institutions will be supported to produce and disseminate articles in regional newsletters and national journals to capitalize on the climate change adaptation in agriculture activities.

The content of the lessons learned document (including hard copies, electronic form) will be tailored for : (i) project website, (ii) different target groups, alternative communication means such as national and local agriculture, water, environment and forest institutions, national and local sustainable development committees, regional institutions as CEDEAO, UEMOA, BIDC, BOAD, CILSS, Agrhymet, ILRI, ACMAD, and other relevant platforms ; (iii) communication ways like local and national radios, private and public television, theatres, story-telling.

During the project execution, a program of outreach and dissemination of radio and television programs will be established on topics related to climate change, gender, etc. to the rational management of natural resources, strengthening the resilience of populations, etc. Awareness campaigns will be conducted twice per year in each beneficiary village.

A network of exchange between stakeholders of climate-smart agriculture, including public agencies, local communities, FOs and NGOs from Niger, Benin, Togo, Ghana and Burkina Faso will be established and operationalized. The objective of this activity is to make sure that knowledge exchange, joint learning, and sharing of information on CSA occur during the Project and beyond its duration, for the Project Region and beyond. ECOWAS's West African Climate-Smart Agriculture Alliance will be the starting point for this network. RAAF/ECOWAS as regional executing agency will create a working group which will be based on the knowledge gained in this Project. This working group will be built of the relevant public agencies, local communities, FOs, and NGOs from Niger, Benin, Togo, Ghana, and Burkina Faso. It will work particularly on identifying and analyzing the key lessons which can be drawn from the Project across all activities in Components 1 and 2.

b. Dissemination of lessons learned and knowledge from the project at the local communities' level

The beneficiary communities are mostly illiterate and cannot access information published on the website, in newspapers or on television. To ensure efficient sharing of information (knowledge and lessons learned), the project will develop best practices manuals on climate change resilient agriculture in comprehensible formats (images / graphics) that can be easily used by beneficiaries. These manuals will be translated into local languages according to the areas of intervention of the project. The dissemination will be supported by site animators who are in permanent contact with producers, decentralized agricultural, environmental, and meteorological and other extension services such as NGOs / Associations.

B. Describe how the project /programme would promote new and innovative solutions to climate change adaptation, such as new approaches, technologies and mechanisms.

In this project framework, climate-smart agriculture (CSA) differs from adaptation approaches implemented in the countries in that it enhances together adaptation to climate change with mitigation greenhouse gases and improved production, food security and income for the population.

It thus meets the new national objectives of adaptation / mitigation co-benefits set by the NDCs. It is also a response to the new guidelines set by the ECOWAS Heads of State in order to place the fight against climate change at the heart of agricultural development to make the resilience of the populations sustainable and contribute to the mitigation of the greenhouse gas emissions effect.

The climate-smart agriculture approach proposed in this project will promote practical innovations that exploit the synergies between different technologies that together, strengthen resilience, food security and mitigation greenhouse effect in the agriculture sector. The identification and participatory preparation of subprojects, the synergy of locally sustainable resilient practices, the promotion of the use of varieties adapted to climatic disturbances, the adaptation of crop calendars to agro-meteorological forecasts, the promotion of the more efficient use of factors of production such as land, water and other inputs, the change of approaches in the management of agriculture and transhumance, and the mitigation while adapting, are among others , so many innovations in the project area.

The project will organize for farmers and agricultural technicians, field visits and exchanges to reinforce cross-border learning and also for different localities and agro-climatic zones in order to better understand the perverse effects of disturbances and climatic fluctuations such as they present themselves in the different agro-climatic zones and to scale up resilient good practices that have yielded good adaptation, mitigation and production results in the region, while combining them. This is an innovation in the project area.

The promotion of a seasonal adaptation planning method based on updated weather forecasts and agro-climatic projections is an innovative aspect in the project area that will support the conduct of climate change adaptation practices in the short, medium and long terms. Through the provision of local weather information, the project will establish crop calendars adapted to field situations to strengthen adaptation strategies at the farmer level.

The quality of agro-meteorological report prepared jointly by a regional scientific center (Agrhymet) and the National Agro-Meteorological forecasting Directorates will strengthen the national capacities for developing seasonal crop calendars that are better adapted to each producer zone, even beyond the life cycle of the project. The implementation of a georeferenced mapping tool showing climate change techniques and practices according to agroclimatic zones is an interesting and practical approach. Appropriate agro-climatic maps will be available and used by technical services and communities in

agricultural planning. In addition, appropriate means of communicating climatic and meteorological information through mobile telephony and media such as community radios and local televisions with the dissemination of poems and short dramatic programs to raise awareness about the seasonal variability of time and climate change is an innovation of the project.

At the institutional level, the project will strengthen collaboration among stakeholders at regional, national and local levels to better strengthen the capacity of vulnerable farmers and pastoralists to address climate change. The networking of actors in agricultural adaptation to regional, national, local and community is itself an innovation.

The participatory approach of the project in on-site learning will build on the knowledge of farmers and their innovations to develop the capacity of communities to manage their own environment to build resilience and to catalyze long-term innovation. The approach will be based on practical skills in agriculture, observation, personal experience, knowledge sharing and development of local capacities to adapt agriculture and livestock to climate and weather changes. The approach will also promote the combination of local farmers' expertise with scientific knowledge and technological innovations. On-site learning on participatory rural AIC design can provide municipal governments, farmer organizations, community service agencies and rural extension services with new tools for project formulation and development.

In terms of techniques and technologies, the project aims to operationalize innovative responses to climate risks such as drought and floods. In addition, the project plans to implement technologies that complement each other and that concretely and sustainably strengthen the resilience of vulnerable populations to climate change. These include (i) the development of water mobilization infrastructure to cope with drought and pockets of drought and to limit floods; (ii) the implementation of soil fertility improvement and land reclamation techniques; (iii) support for the acquisition of agricultural inputs, including improved drought-resistant seeds; (iv) providing farmers with meteorological information for better agricultural planning. The use of all these techniques and technologies will improve adaptation and resilience in target communities and make a significant contribution to food security. The use of this innovative approach ensures that the project will bring benefits of both adaptation, production improvement and mitigation.

From the point of view of resilient local development, the participation of local populations in the identification and design of sub-projects will avoid interventions with little support from local farmers and ensure the sustainability of the actions that will be undertaken.

Finally, integrating gender issues into sub-project development at all stages, through use and training on gender mainstreaming tools, will reduce the vulnerability of women who are extremely vulnerable to climate change.

With regard to the dissemination of good practices, the project will help capitalize on expertise and experiences. The platforms for exchange and consultation between the various sectors vulnerable to climate change such as agriculture, livestock, environment, water, etc. are an innovation to ensure the appropriation of climate-smart agriculture.

C. Describe how the project / programme would provide 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 would avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.

The project as planned aims to strengthen the resilience of vulnerable populations to the adverse effects of climate change. Le projet générera des bénéfices économiques, sociaux et environnementaux importants.

Economic benefits

The project will generate economic benefits through: (i) improvement of cereal production with soil conservation and sustainable land management techniques; (ii) reducing production losses through better management of drought pockets, (iii) improving farmers' incomes through the development of off-season crops; (iv) the improvement of farmers' incomes.

- Improvement of cereal production with soil conservation and sustainable land management techniques

Over the years, unsustainable practices have degraded soils and their fertility in the project area. This influenced agricultural yields that declined. These yields are sometimes 0.7 t / ha for maize for example against an average of 2 t / ha when the production conditions are met. The best yields are often obtained with a large supply of chemical fertilizers and an improvement in the availability of water for plants. The techniques of Stone bunds, filter dikes, zai, half-moon, organic manure, mulching, grass strips, assisted natural regeneration, agroforestry, etc. promoted under this project will improve and maintain soil quality, improve soil fertility, provide reasonable fertilizer, sustainably manage land and thus improve agricultural production. With the joint implementation of these techniques, the project plans to multiply by at least two, the crop yields promoted. This improvement in yields will not only support food security but generate additional income for farmers through the sale of surpluses.

- Reduction of production losses through better management of drought pockets

The use of agro meteorological information and specific cropping calendar developed coupled with Zai techniques, half-moon, stone bunds, filter dams, grass strips and small water infrastructure, will enable farmers to better plan the cropping season and ensure a minimum of water availability to crops during drought pockets, improve yields, increase production to ensure food security, avoid loss of money for the purchase of food and have additional income through the sale of agricultural products. Farmers will be able to produce more diverse foods to ensure that food is available in farm households until the next harvest. Farmers will be able to generate more revenue through the sale of surplus products.

In addition, improved agricultural planning through access to area-specific meteorological information will reduce the risks of costly mis-adaptation by ensuring that the adaptation options identified for funding are locally appropriate. Improved meteorological information will also enable more efficient use of inputs, thereby reducing economic losses due to the waste of inputs by farmers.

- Improvement of farmers' incomes through the development of off-season crops

The establishment of water mobilization infrastructures (runoff water harvest basins, large-diameter wells, solar pumping wells, etc.) will allow the development of off-season crops, especially market gardening crops. These activities will generate income for producers and improve their living conditions.

- Improvement of farmers' incomes

Better management of transhumance corridors will reduce agricultural losses due to destruction caused by transhumant livestock. The reduction of conflicts between farmers and herders will avoid expenses in hospital care, in funeral management for the deaths of men due to the aggressions and the brutality of the breeders. In addition, the provision of water points for livestock watering in the dry season will reduce livestock losses.

- Improved income of women and young people

If all the output are executed as it is programmed in the project, the incomes will be improved for all the famers. The expected incomes per year is 2,421,512 USD. A part of 50 per cent will be profited to the women and the youth, thier incomes could increase 1,210,756 USD per year.

Social benefits

The implementation of the project will provide social benefits that will result in: (i) improving marginalized and vulnerable groups conditions, gender equity and women's empowerment; (ii) strengthening the involvement of women and youth in decision-making; (iii) improved food security and nutritional health; (iv) strengthening famers resilience and ensuring availability of productive lands, functional ecosystems for future generations; (v) strengthening social cohesion, reduction of the phenomenon of migration and exodus and improving community life.

- Improving marginalized and vulnerable groups conditions, gender equity and women's empowerment

The project will ensure the participation of all stakeholders in the project activities without discrimination and in order to ensure fair and equitable access to the benefits of the project, including for women and men as well as for marginalized groups. Each sub-project funding request will have to comply with the selection criteria that require at least 50% of women, 50% of young people to be direct beneficiaries and that each group of beneficiaries demonstrates how vulnerable groups are taken into account.

Under component 1, capacity building activities will include a module on gender mainstreaming. This training will promote the inclusion of gender in the formulation and selection of sub-projects.

Women and vulnerable groups will have priority in selecting sub-projects (Activity 1.2.1.3) to ensure that benefits from field activities are directly accessible to vulnerable groups. Capacity-building activities provided to local communities for the implementation of climate-smart agriculture technologies and techniques in the field will target both women and vulnerable groups to strengthen their resilience.

- Strengthening the involvement of women and youth in decision-making

Women have been heavily involved in prioritizing support needs when consulting potential beneficiaries. Candidates from women's and youth groups will be strongly encouraged during the selection of the subprojects. The different support for women's groups will enable them to improve their empowerment.Through the partipatory process (Activity 1.2.1.2) in the identificiation and formulation of the subprojects, the project will contribute to the decision-making with concrete commitments to ensure equal rights for women, men and youth. This participatory process concerns the identification, the

selection, the formulation and the execution phases of subprojects. The knowledge sharing will also improve the decision-making at the level of women and youth which was not involved in the project but want to adopt the CSA approach.

- Improved food security and nutritional health

The techniques promoted under the project will help to reduce food and nutrition insecurity due to the availability and accessibility of safe, diverse and adequate food in households. The additional production induced by the projet according to the baseline yield, is 3 524 200 kg per year including 1 429 000 kg of cereals per year and 2 095 200 kg of market gardening products.

Diversification of production and improvement will contribute to improve nutrition among beneficiaries. The additional income from the sale of surplus food will allow beneficiaries to purchase another variety of foods that they do not produce, in order to improve their nutritional security.

- Strengthening famers resilience and ensuring availability of productive lands, functional ecosystems for future generations

Land degradation remains a concern in the project area (see item D.1.2 of PART I). With the dynamics of land degradation, the chance of the present population of the project area to continue to produce enough food for its own needs and that of future generations to benefit from fertile land for its food and nutritional needs is very small. The techniques promoted will not only produce enough for the current population in the project's intervention areas, ie 15,658,772 people with 153,720 farmers and breeders as direct beneficiaries but to conserve the soil and better manage the land for the benefit of future generation.

- Strengthening social cohesion, reduction of the phenomenon of migration and exodus, and improvement of community life

The project will enhance the right of the beneficiaries for development, social cohesion, community life, etc. Support to farmers organization and sharing experiences through exchange visits to master the new technologies will allow them to work together and enhance social cohesion within communities whose common goal will be to strengthen their resilience to the adverse effects of climate change. It will also strengthen collective action that is both a key component of adaptive capacity and resilience. With improved social cohesion, mutual trust and collective action to better adapt to climate change, communities are becoming progressively more resilient to climate shocks, crises and other changes in their agro-ecosystems. The participatory approach will favor bottom-up planning for improved and more sustainable actions to strengthen the resilience of the community as a whole to climate variability and climate change.

Migration and rural exodus represent a measure of adaptation of the population in the project area to food insecurity and poverty accentuated by the adverse effects of climate change. This phenomenon is increasingly important in relation to low production and lack of means to mobilize water and improve the soil to ensure sufficient production and support food security. Thus, the various supports provided by the project will help to curb this phenomenon, restore the economic system in the beneficiary areas and bring about a qualitative and substantial improvement in the standard of living. It will also be a means of combating poverty, controlling migratory flows and preserving family ties. The extra income from the sale of surplus food will allow beneficiaries to be able to maintain their other social obligations such as child rearing, family health, etc.

The current context, characterized by the gradual disengagement of states, the implementation of the decentralization process, the empowerment of civil society, offers the rural world new perspectives and opportunities to participate in the definition of policies, strategies and projects and their

implementation. For this reason, the activities of farmers' organizations are very diverse. They concern the development of agro-pastoral production, market gardening, fruit-growing, marketing and handicrafts, exploitation and processing of forest products, actions to manage natural resources and protect the environment. Thus, the interventions of the project will create a full involvement of farmers' organizations and thus allow the development of community life which is one of the key elements of the sustainability of all the actions planned within the framework of the project.

Environmental benefits

The Climate Smart Agriculture Promotion Project in West Africa seeks to strengthen the resilience of people to the adverse effects of climate change and to increase production while contributing to mitigation through carbon sequestration. This project has environmental benefits that include: (i) sustainable land management and reduction of agricultural land expansion at the expense of forest lands; (ii) contribution to the mitigation of GHG emissions through carbon sequestration; (iii) improving the capacity of actors to implement climate resilient practices; etc.

- Sustainable land management, reduction of agricultural land expansion and conservation of biodiversity

Techniques promoted including zai, half-moons, stone bunds, permeable rock dam, are techniques that restore degraded lands, reduce agriculture land expansion, improve soil fertility and reduce soil erosion and depletion of soil nutrients.

The techniques as, grass strips, assisted natural regeneration, and agroforestry will improve biodiversity and rural ecosystems conservation. The resilient practices promoted should significantly reduce slash-and-burn agriculture, extensive agriculture, wildfires, unsuitable use of fertilizers or agricultural chemicals that are harmful to the biodiversity, ecosystems and soil. Restoring soils and improving their fertility, improving yields at intervention sites will help maintain populations on the same plots for 10 to 20 years and reduce the need to convert ecosystems to farmland. The project does not involve the conversion of natural habitats to other uses.

Natural resources such as soil, water, land will be used more efficiently and sustainably to reduce the impact on the biophysical environment.

- Contribution to the mitigation of GHG emissions

The techniques of grass strips, assisted natural regeneration (ANR), agroforestry, reduced use of chemical fertilizers, reduced pressure on land and different ecosystems as planned under this project will promote carbon sequestration and the reduction of greenhouse gas emissions.

- Development of climate resilient agricultural practices

Capacity building activities will enable beneficiaries to strengthen their resilience to the adverse effects of climate change. Training of actors on the AIC approach and on the use of the CCAFS tool "CSA Programming and Indicator Tool" will contribute to a better identification of local climate problems and a better integration of adaptation and mitigation in agricultural and pastoral production. The exchange of experiences and the dissemination of good practices under components 1 and 3 will help to raise awareness among public sector managers, NGOs / Associations, farmers and breeders to promote agricultural techniques that enhance climate change adaptation, agricultural and animal productivity and protect the environment.

Community adaptation plans and / or local AIC action plans that will be improved or prepared under this project through activity 1.2.2.3., will include aspect of pasture and agroforestry management that offer

benefits in terms of support for climate change adaptation, soil conservation, soil degradation and desertification.

Although the project includes the socio-economic and environmental benefits described above, its implementation will result in negative impacts and risks that should be identified in order to propose mitigation measures or adequate compensation for environmental and social impact assessments studies that will be prepared for the sub-projects in order to comply with the Environmental and Social Policy of the Adaptation Fund (see section L).

D. Describe or provide an analysis of the cost-effectiveness of the proposed project / programme and explain how the regional approach would support cost-effectiveness.

Three alternatives were considered in this analysis:

- Alternative 1: Without project;
- Alternative 2: Development of an adaptation project with a single technology;
- Alternative 3: Development of the current project "Promoting climate-smart agriculture in West Africa" with the combination of technologies for adaptation, mitigation and improvement of agricultural production.

Alternative 1: Without project

The no-plan alternative means doing nothing and leaving things as they are.

At the environmental and climate levels, farmers will remain vulnerable to climate change for as long as possible. But these effects are diversifying and amplifying. Non-resilient farming techniques will continue to be practiced. Improving agricultural production can only be achieved through intensive use of chemical fertilizers, which can be a source of greenhouse gas emissions. No effort will be made to contribute to the sequestration of greenhouse gases in the agricultural practices of the farmers concerned. Agricultural ecosystems will continue to deteriorate profoundly. Farmland needs will be more and more pronounced.

At the social level, given the decrease in rainfall, its poor spatial and temporal distribution and the decline in soil fertility, rainfed crops will become increasingly uncertain and production will remain uncertain and insufficient from year to year to meet the growing food and financial needs of families. The rural exodus and the problems it generates in the reception areas will be accentuated. Without the project, the living conditions of women, young people and the elderly will continue to deteriorate. With regard to livestock, the no-project alternative means the exacerbation of conflicts between farmers and herders during the transhumance period.

On the economic front, producer incomes will remain very low and poverty will increase. Producers will be further impoverished by having to sell some of the already low cereal production to meet their financial needs, which will increase food insecurity. Yields will remain low at the farmer level. The transhumance corridors will remain unmarked and the lack of water for livestock watering in these corridors will increase and may lead to losses of livestock and income.

The no-project alternative is therefore not sustainable in terms of resilience, GHG mitigation and production. By opting for this alternative, countries will be obliged to put in place, in the short or medium term, emergency programs to save people from food insecurity and the adverse effects of climate change, while temperatures will continue to rise and precipitation will be more and more rare. This

option, which is not sustainable from a financial point of view, will be very expensive for recipient countries with very limited resources and for donors who will come to their aid.

Alternative 2: Development of an adaptation project with a single technology

Several climate change adaptation technologies exist and can be implemented to strengthen the resilience of populations. Alternative 2 would involve the exclusive use of one of the following technologies: Zai, Half Moon, Stone bunds, Filter Dams, Grass Strips, Natural Assisted Regeneration, Runoff water harvest basins, Large Diameter Wells, boreholes with solar pumping, etc.

In terms of the climate and the environment, this one-technology-only approach may partly reinforce the resilience of populations to some of the adverse effects of climate change, but will not be sufficient to contribute to the mitigation of greenhouse and increased income of the population. Moreover, this technology alone will not be able to really contribute to solving the recurrent climatic and environmental problems that people face in the project area. According to the results of the fieldwork, it is among others, the slippage of the isohyets, the irregularity of the rains, recurrent pockets of dryness, water deficit, erosion, decline in fertility soil, accelerated land degradation, low production, conflicts between farmers and pastoralists, etc. In addition, the risk of maladjustment of the technology to all areas of intervention and non-adoption by the populations remains high since the beneficiaries are not yet definitively identified. This alternative is limited to adaptation and will not provide as convincing results as in the case of climate-smart agriculture which is the basic idea of this intervention to simultaneously overcome food insecurity, strengthening the resilience of vulnerable populations and combating climate change through reducing emission or carbon sequestration.

In economic terms, this alternative will generate income but these will be low, because a single technology will not be able to increase in a consequent way the yields and the agricultural production and thus the incomes. For example, based on the field results of the Integrated Agricultural Resource Management Project - PASP- executed in Tillaberi in Niger (one of the aridest areas of project intervention), the stone bunds technique only improves grain yields by more than 40% in millet crops, but when a good amount of organic manure is added, the yields of sorghum can double[31]. Similarly, the evaluation made using the CCAFS tool « CSA Programming and Indicator Tool »[32] confirms these field results. Indeed, the evaluation of the technology from this tool indicates that if the technology should be executed individually (without other combinations), productivity improvements (yield) would be around 44% (see Table 3, page 52). The following table 6 presents a comparison of the yield of the different alternans.

At the social level, this alternative will not ensure sufficient food security, the fight against rural exodus and the satisfaction of the social needs of women, young people and men. The production improvements made (40% for example, as mentioned below with stone bunds technology), will be insufficient in view of the severity of food insecurity among vulnerable groups who are targets of the project. Populations will always be vulnerable to a lower climate shock.

[31] GIZ, Bonnes pratiques de conservation des eaux et des sols: Contribution à l'adaptation au changement climatique et à la résilience des producteurs au Sahel. P.35

[32] https://ccafs.cgiar.org/csa-programming-and-indicator-tool#.Ws9N3ojFLIU

Alternative 3: Development of the current project "Promoting climate-smart agriculture in West Africa" with the combination of technologies for adaptation, mitigation and improvement of agricultural production.

This alternative means the implementation of the project as planned with an integrated approach to site development. This alternative is to promote a better combination of techniques and technologies that enhance the resilience of populations, improve production and incomes and contribute to the mitigation of greenhouse gas.

In terms of climate and the environment, the alternative will sustainably strengthen the resilience of populations and agricultural ecosystems. It will help farmers to better plan agricultural campaigns and better manage pockets of drought through the strengthening of agro-meteorological information, the production and availability of crop calendars specific to areas and easily understandable by farmers. It will improve the capacity of actors to implement climate resilient practices; etc. Promoted techniques such as zai, half-moons, stone bunds, filter dams, grass strips, organic manure, mulching, agroforestry and assisted natural regeneration have interesting adaptation potentials. They enable: (i) sustainable land management and reduced expansion of agricultural land at the expense of forest land; (ii) a decrease in the use of chemical fertilizers with the promotion of organic manure; (iii) a contribution to the mitigation of GHG emissions through carbon sequestration in agricultural practices, etc.

At the social level, alternative 3 offers interesting opportunities: (i) local, national and regional learning through on-site exchange visits between different agro-climatic zones; (ii) strengthening local, national and regional capacities in climate change adaptation planning. It will allow: (i) improving marginalized and vulnerable groups conditions, gender equity and women's empowerment; (ii) strengthening the involvement of women and youth in decision-making; (iii) improved food security and nutritional health; (iv) strengthening famers resilience and ensuring availability of productive lands, functional ecosystems for future generations; (v) strengthening social cohesion, reduction of the phenomenon of migration and exodus and improving community life. This alternative will promote better coexistence between agriculture and livestock through good management of water resources and plant resources. This will reduce conflicts between breeders and farmers that sometimes lead to losses in human life.

At the economic level, Alternative 3 will: (i) improve cereal production through soil conservation and sustainable land management techniques; (ii) the reduction of production losses through improved management of drought pockets, (iii) the improvement of farmers' incomes through the development of off-season crops, particularly market gardening; (iv) improving the incomes of pastoralists through the establishment of watering points for livestock for better management of drought that results in losses of livestock and / or weight of livestock. In term of yield, that mentioned above, based on the results of the Integrated Agricultural Resource Management Project –PASP- in Tillaberi, Niger (one of the aridest areas of project intervention), when a good quantity of organic manure is added to the stone bunds, the yields of sorghum can double[33]. In other case, the combination of stone bund with zai Allows for an Increase of 114-124% for sorghum in the Plateau central region of Burkina Faso, a more arid region than the project intervention areas in that country. The evaluation, based on the CCAFS 'CSA Programming and Indicator Tool, indicates that a combination of technologies can improve productivity (yield) by 81% (see Table 5, page 52).

Table 6 below presents the comparisons of crop yields in a non-project situation, in situation with alternative 2 (only one technology) and in situation with project (a combination of technologies).

[33] GIZ, Bonnes pratiques de conservation des eaux et des sols: Contribution à l'adaptation au changement climatique et à la résilience des producteurs au Sahel. P.35

Table 6: Cereal yields Comparison with the various alternatives

Country	Crops	Yield without project (kg/ha)*	Yields with alternative 2, only one technologie (exp: stone bunds) (kg/ha)**	Yields with project (combination of technologies) (kg/ha)***	Difference of yield alernative 2 (exp stone bunds) and with project (combination of technologies) (kg/ha)	Difference of yield a without project and with project (kg/ha)
Benin						
	Maize	700	980	1260	280	560
	Rice	1500	2100	2700	600	1200
	Sorghum	500	700	900	200	400
	Mil	475	665	855	190	380
Burkina Fasso						
	Maize	680	952	1224	272	544
	Rice	1150	1610	2070	460	920
	Mil	400	560	720	160	320
	Sorghum	600	840	1080	240	480
Ghana						
	Maize	900	1260	1620	360	720
	Rice	1250	1750	2250	500	1000
	sorghum	650	910	1170	260	520
	Mil	600	840	1080	240	480
Niger						
	Maize	450	630	810	180	360
	Rice	1000	1400	1800	400	800
	Sorghum	280	392	504	112	224
	Mil	300	420	540	120	240
Togo						
	Maize	700	980	1260	280	560
	Rice	1300	1820	2340	520	1040
	Sorghum	550	770	990	220	440
	Mil	500	700	900	200	400

* *The project without yields are average yields obtained at the farmer level in the intervention area. The data from these yields were collected during fieldwork and consultations with potential beneficiaries in the project area.*

** *The returns if alternative 2 was chosen, ie the realization of a single technology, were calculated considering a 40% improvement in efficiency compared to the situation without a project.*

*** *The returns with project (combination of technologies) were calculated considering an improvement of 80% compared to the situation without project.*

NB. Improvement rates (alternative 2 and project status) were selected by considering the evaluation results of the PASP project actions in Tillabery in Niger by GIZ and the results of the evaluation of technologies taken individually with the CCAFS' CSA Programming and Indicator Tool.

With regard to vegetable crops, the objective is to bring water for the development of the sown areas. Market gardening will be developed with solar kits and large diameter wells. In areas where catchment basins manage to retain water sustainably, farmers can develop market gardening to diversify their source of income. This latter case is not considered in this analysis although it offers income and nutrition benefits. The alternatives considered are: (i) the project-free alternative marked by difficulties of access to water to ensure adequate irrigation and complete agricultural campaigns; and (ii) the project alternative for which water is available to cover a crop year. This improvement in the availability of water will consequently improve the yields and therefore the income of the beneficiaries. For the calculation

of yields, an improvement of at least 80% in returns has been estimated. The following table presents the yields in the non-project situation and the expected returns under the project.

Table 7: Vegetable crops yields comparison without project/with project

Country	Crops	Yield without project (kg/ha)	Yields with project (kg/ha)	Difference of yield a without project and with project (kg/ha)
Benin				
	Potato	7 000	12600	5600
	Tomato	6 000	10800	4800
	Carot	5 200	9360	4160
	Onion	6 500	11700	5200
Burkina Fasso				
	Potato	7 500	13500	6000
	Tomato	6 500	11700	5200
	Carot	5 800	10440	4640
	Onion	6 500	11700	5200
Ghana				
	Potato	7 000	12600	5600
	Tomato	6 400	11520	5120
	Carot	5 300	9540	4240
	Onion	6 500	11700	5200
Niger				
	Potato	7 200	12960	5760
	Tomato	7 000	12600	5600
	Carot	6 700	12060	5360
	Onion	7 000	12600	5600
Togo				
	Potato	6 500	11700	5200
	Tomato	6 000	10800	4800
	Carot	5 100	9180	4080
	Onion	6 000	10800	4800

It should be noted that the permanent availability of water will make it possible to conduct two agricultural campaigns instead of a single campaign in situation without project.

Although the rates used show that the project has an interesting cost-effectiveness, these are conservative rates lower than the national averages obtained under the optimal conditions as presented by the national agricultural statistics.

Synthesis of the analysis of alternatives

The synthesis of the alternatives analysis is presented in the following table. In this synthesis, we proceeded to a quotation evaluation of the different alternatives. The score 0 means no impact or benefit; 1 when the impact is very low, 2 when the impact is low, 3 when the impact is moderate, 4 when the impact is strong and 5 when the impact is very strong.

Table 8: Alternatives Analysis Summary

Rubric	Evaluation criteria	Alternative 1: Without project	Alternative 2: Development of an adaptation project with a single technology	Alternative 3: Development of the current project "Promoting climate-smart agriculture in West Africa".
In terms of the environment and the climate	Strengthening the resilience of communities to climate change	1	3	4
	Sustainable land management	1	3	4
	Improvement and maintenance of soil fertility	1	3	4
	Contribution to the reduction of agricultural land expansion	1	3	4
	Sustainable management of agricultural ecosystems	1	2	3
	Sustainable management of water resources	1	2	3
	Carbon sequestration	1	2	3
On the economic plan	Improving agricultural production in a sustainable way	1	3	4
	Improved producer income	1	3	4
	Reduced financial investment losses of the farmer during the agricultural campaign	1	2	4
On the social plan	Local, national and regional learning opportunities	0	2	4
	Contribution to food security	2	3	4
	Strengthening social cohesion	2	2	4
	Strengthening the resilience capacities of vulnerable groups	2	2	4
	Involvement of women and youth in decision-making	2	3	4
On the financial plan	Contribution to avoiding complementary financial investments of the State and beneficiaries in the medium term to solve the problems of vulnerability of populations to climate change and food insecurity	0	2	4
	Opportunity to set up projects using technologies mastered by farmers to benefit from other financing at local level	1	3	5
Sum of ponderation		19	43	66

Analysis of the operating accounts of the project situation

From the yield data, operating accounts have been prepared by crop by country (see example in appendix 6). The operating account is subdivided into two tables: the amortization table and the table of the operating account in question. The depreciation schedule includes absorption of small operating equipment and support for the development of on-site technologies in the project.

Table 9: Depreciation of material farm properties and implementation of resilient techniques

Small farms equipment	Cost	Lifetime	Depreciation per year
cutlasses	2000	4	500
biner	2000	5	400
Dabas	2000	4	500
Hoe	2000	4	500
Wheelbarrow	15000	5	3000
Implementation of resilient techniques *	125000	10	12500

**it is planned 0.25 USD / ha for the implementation of the technologies / techniques promoted on the sites (cf budget, under the line Activity 2.1.1.2). The technologies being realized for a duration of 10 to 20 years.*

The physical effort of producers to implement resilient techniques / technologies will be rewarded by support in the acquisition of small equipment (hoe, machete, dabas, wheelbarrows, etc.), mineral fertilizer, phytosanitary products, and bags for harvested products. With the expected yield improvements in the project, farmers will be able to continue production by supporting the aforementioned elements.

(*) The sowing, weeding, fertilization labor, harvesting and transportation of harvested products, carried out by the producers, is his contribution.

The result / net operating income is the difference between the product and the expenses. The farmer's income is the sum of the net income and the producer's contribution, if that contribution should be paid.

A typical operating account is shown below.

		Unit	Amount	Unit price	Total price
1. PRODUCTS					
Product		kg	1197	200	239400
TOTAL PRODUCT					**239 400**
2. EXPENSES					
2.0. Petitions of farm equipment					
machetes		Amortized values	2	500	1000
Dabas			2	500	1000
Hoe			5	500	2500
Wheelbarrow			1	5000	5000
Total Small operating equipment					*9 500*
2.1. Exploitation					
2.1.1. Manpower setting field					
Implementation of resilient techniques		Amortized value	1	12500	12 500
seedling*		M/D	8	2000	16 000
Sub total labor force setting field					*28 500*
2.1.2. Purchase of semen					
Improved seeds		kg	20	500	10000
Under total seed purchase					*10 000*
2.1.3. Crop maintenance					
Purchase Mineral Fertilizer (NPK)		bag (50kg)	2	11500	23000
Purchase mineral fertilizer maintenance (Urea)		bag (50kg)	1	16000	16000
Labor weeding *		M/D	16	1000	16000
Fertilization labor *		M/D	4	500	2000
Under total maintenance of culture					*57 000*
Total Exploitation					*95 500*
2.2. Harvesting and storage					
Purchase of bags		Unit	24	100	2394
Harvesting labor*		M/D	4	1000	4 000
Transport*		Flat rate	1	10000	10 000
Total harvest and storage					*16 394*
2.3.unexpected (5%)		Flat rate	1	6 070	6 070
Total unforeseen expenses					*6 070*
TOTAL EXPENSES					**127 464**
3. RESULT		**Unit**			**Value**
3.1.Gross product		*Fcfa*			*239 400*
3.2. TOTAL EXPENSES		*Fcfa*			*127 464*
NET PROFIT		**Fcfa**			**111 936**
Farmer contribution					**48 000**
Farmer income					**159 936**

According to the example of the operating account presented above, the development of one hectare of maize in a project situation at Natitingou / Alibori in Benin allows a net result of 111,936 FCFA (223.872 USD). This result should enable the farmer to cope with the cost of exploitation, particularly the supply of agricultural inputs (seeds and fertilizers), the costs of which are estimated at 49,000 FCFA (98 USD) per hectare.

From the operating accounts by crop, an operating account has been prepared by country according to the areas to be developed in this country as part of the project (see table below). This makes it possible to assess the contribution of the project by country of intervention.

Table 10: Repartition of area to develop per crop per country

Crops	Repartition of area developed per crop per country					Total per crop
	Benin	Burkina Faso	Ghana	Niger	Togo	
Maize	200	200	200	200	200	1000
Rice	60	60	60	60	60	300
Sorghum	150	150	150	150	150	750
Mil	150	150	150	150	150	750
Sub-Total cereal	560	560	560	560	560	2800
Potato	15	15	15	15	15	75
Tomato	15	15	15	15	15	75
Carot	5	5	5	5	5	25
Onion	5	5	5	5	5	25
Sub-Total garden market	40	40	40	40	40	200
Total project per country (ha)	600	600	600	600	600	3000

On the basis of the country operating accounts presented in annex 7, a project operating account has been prepared (following table).

Table 11: Expected incomes of the project

Crops promoted by the project	Area to be developed according to crops (ha)	Net result by crops (USD)	Farmer Contribution* (USD)	Farmer income under the project * (USD)
Maize	1 000	214 397	96 000	310 397
Rice	300	159 054	28 800	187 854
Sorghum	750	183 950	72 000	255 950
Mil	750	155 561	72 000	227 561
Potato	75	693 783	39 900	733 683
Tomato	75	374 332	41 100	415 432
Carot	25	163 960	13 700	177 660
Onion	25	99 275	13 700	112 975
TOTAL PROJECT	3 000	2 044 312	377 200	2 421 512

* *The contribution of the farmer here implies, the labor that the farmer will rent to realize his field as established in the operating account. But the farmer will not have to spend for this manpower because he realizes his own field. This explains the addition of this amount to the net income of the normal operating account to find the income of the beneficiary farmer.*

According to the table above the project will be able to realize a gain of 2 421 512 USD per year for the 3000 ha of crop. Considering the investments allocated to the development of the sites and the technical support for site exploitation (component 2), ie 8,848,000 USD, the project will be able to make profitable investments in less than 4 years.

Considering the total investment of the Adaptation Fund, ie USD 14,000,000, the project can make profitable investments in less than 6 years, not to mention the economic benefits linked to the

development of the capacities of regional, national and local actors for better planning for climate change adaptation.

In addition, the regional approach will improve the cost-effectiveness of capacity development and ensure a certain level of generic scope of tools and processes developed for future application beyond sites and target countries. The involvement of weather and climate prediction services (CILSS, Agrymet) and climate-smart agriculture development such as CGIAR, CCAFS will help improve profitability.

E. Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist. If applicable, please refer to relevant regional plans and strategies where they exist.

The National Communications to the UNFCCC, the National Adaptation Programmes of Action (NAPAs) and National Adaptation Plans (NAPs), and the Nationally Determined Contributions (NDC) are the principal development/climate change documents linked to this proposal. The country's Third or Second National Communication on Climate Change all report that both high and low emissions scenarios for climate models downscaled to the national or sub-national level do predict considerable average temperature rise even in the short run, highlighting also the role of current climatic variability for vulnerability, thus calling for the strengthening of current climate risk management strategies and integration of development needs into policy and planning.

In this context, the provision of climate services to farmers, reduction of the vulnerability of agri-cultural systems, reduction of conflicts between farmers and pastoralists, capacity building of local actors, and the production and dissemination of knowledge related to the agriculture and livestock adaptation to climate change will help improve the nutrition and food security of rural populations and contribute to poverty reduction in the Project Areas. These are not only the main goals of this Project, but also those of the main regional and national sustainability policies and strategies of the participating countries of Benin, Burkina Faso, Niger, Ghana, and Togo.

- The five countries of the Project pertain to Non Annex I under the United Nations Framework Convention on Climate Change (UNFCCC) and, with the exception of Ghana, also belong to the United Nations' List of Least Development Country (LDC) (as of June 2017. In this capacity all countries have developed their National Adaptation Pro-grams of Action (NAPA) and NDCs, which provide the frame of reference for building adaptive capacity and resilience, including through climate-smart agriculture or co-benefits adaptation / mitigation measures.
- In its implementation approach the Project develops significant synergies with regional initiatives, including the UEMOA Agricultural Policy (PAU), the ECOWAS ECO-WAP/CAADP Regional Agricultural Investment Plans (RAIPs), the ECOWAS Environ-mental Policy (ECOWEP), and also the actions of the Alliance Globale pour la Resilience (AGIR) for the Sahel and West Africa. It also contributes to the implementation of the re-sults of the ECOWAS High Level Forum of stakeholders of climate-smart agriculture in West Africa, held in Bamako (Mali) in June 2015.
- At national level the project is also in line with the respective national development plans and strategies for poverty reduction, the national agricultural investment plans (NAIPs), the National Adaptation Plans of Action (NAPA), the National Adaptation Plans (NAPs), as well as the COP21 NDCs.

The NAPAs provided early efforts to prioritize the adaptation agenda at country/sub-national level, and mainstreaming adaptation into development planning. They also identified adaptation priorities, however, not always with much specific details, such in the case of Ghana and Togo. The NDCs from 2015 and following provide a more precise picture on each country's adaptation and investment priorities, reflecting also newer and consolidated knowledge on best practices for climate-smart agriculture or co-benefits adaptation / mitigation measures.

Table 6 below lists synergies and potentials for cooperation between the existing national development and adaptation priority lists and this Project. As can be seen, this projects reflects well already identified climate-smart interventions, which is little surprising given the extensive consultation phase for Project Concept Note and Full Proposal development for this Project, to which many specialists contributed which did already participate during NAPA and NDC development. In other words, the present Project can be seen as a consolidation of at least 10 (ten) years of research and policy development in adaptation and climate-smart agriculture in the Region, while also expanding the knowledge frontier by investing heavily into regionally specific transboundary information and knowledge exchange.

Table 12: Key national policies, plans, and strategies aligned with the Project

Level	Name of policy, plan, or strategy	Key objectives	Synergies with Project
Benin			
National	Nationally Determined Contributions (NDC)	• Country's contribution to the COP21 Paris meeting with focus on adaptation, finance technology, and capacity building. • Highlights the need for mainstreaming climate change into development plans and invest in in Benin's northern agro-ecological zones which overlap with this Project, particularly calling for 1) the training of rural development officers, farmers and local authorities on climate issues; and 2) the promotion of local knowledge.	• Outputs 2.1 and 2.3 will invest in consolidating and disseminating of best practices of local sustainability initiatives for adaptation, which directly reflect the NDCs priority list for the Project Region. • The training of extension services and decision-makers addresses the calls for improving knowledge on climate change projects, while also enhancing capacities in project development and participatory approaches which are currently little integrated in national policies and plans.
National, Sub-regional	Strategic Development Plan for Food and Nutrition Security (PSDAN)	• Multi-sectoral plan with the objective to reduce malnutrition which would allow each citizen to fully participate in the development of the emerging economy of Benin. • Diversification of agricultural production and putting value to agricultural products are two key objectives of the plan, with focus on capacity building of producers, technology dissemination, improving of product quality, and organization of the commodity chain, among other.	• There is a two-way relationship: while this Project can give evidence on resilient production systems and advance the experiences made on the ground, the PSDAN and SPASR can support a better integration of the Project's agricultural production to markets, including through professionalization and use of business data (e.g., prices of agricultural products). • Both overlap in their focus on vulnerable populations, including children, women, and elderly. • The PSDAN mentions the Atacora region as the region with highest infant (< 5 years) malnutrition rate of the country, therefore becoming a key intervention area.
National	Strategic Plan for Agricultural Sector Recovery (SPASR) (2011) based on the National Agricultural Investment Program of Benin (NAIP 2010-2015)	• Emergency food programme which aims, among other, to mitigate the effects of climate change on agricultural production and pastoralism as stipulated through NAIP's Program 4 is included, both for agriculture and pastoralism. • Focus on professionalizing family agriculture and strengthening rural entrepreneurship.	

Level	Name of policy, plan, or strategy	Key objectives	Synergies with Project
National	Biodiversity Strategy and Action Plan 2011-2020 and National Strategy and Action Plan for the Conservation of Biological Diversity	• Contribute to sustainable development and poverty reduction in Benin through a better management of ecosystems. • Ecosystems are to be resilient and ecosystem services assured by 2020. • Identifies extensive livestock raising, agricultural expansion, and negative impacts of transhumance as key pressures on biological diversity, with climate change as an additional stressor.	• CSA can contribute to biodiversity and combating desertification targets by reducing environmental impact while assuring development targets. At the same time, CSA emphasizes that development and environmental targets may not be synergetic, but in fact lead to trade-offs between competing objectives. Principally through the Project's monitoring and evaluation component this Project can support the identification of practices which reduce environmental harm, including in forests and in the fight against drought. • Strengthened management capacity, monitoring and impact assessment, and the reduction of degradation patterns as stipulated through the Biodiversity Strategy and Action Plan will support environmentally friendly CSA practices.
National, Regional, Sub-regional	National Forest Policy and linked projects, such as the Forest and Natural Resources Management Project	• Support conservation and rational use of forest resources with local communities with the objective to promote sustainable production of forest goods.	
National	National Action Plan to Combat Desertification	• A key objective is to identify the factors that contribute to desertification and identify concrete measures that reduce desertification and mitigate adverse effects thereof.	
National	National Strategy and Action Plan for the Valorization of Non-Timber Forest Products	• Supports community uptake of and building of institutional framework for non-timber forest products (NTFP) that contribute to food security and poverty reduction in Benin in particular. • Improving the quality of products from the processing of NTFP; develop a marketing mechanism for 10 key NTFPs selected; and facilitate access to financing for the 10 NTFPs by 2020.	• NTFP can be part of CSA. For the intended dissemination and popularization of these products by 2020 and a focus on proving endogenous practices and other modern technologies in the production, processing and marketing this Project can provide useful evidence on the effectiveness and relevance of NTFP based on data from the Project region (Component 2.2).
National	National Action Plan for Integrated Water Resources Management (PANGIRE) with its	• Argues for the promotion of human, organizational, and organizational capacity building for Integrated Water Resources Management (IWRM) and the improving of knowledge on water resources and their	• Three key lines of action of the PANGIRE overlap with this Project: Strengthening of human, organizational and material capacities for water resources management (Action Area 2); conservation and protection of water resources and

Level	Name of policy, plan, or strategy	Key objectives	Synergies with Project
	Operational Strategy (2016-2020)	monitoring, with a specific focus on monitoring climate change impacts and implementation of mitigation/adaptation measures.	the environment (Action Area 6); and implementation of measures to prevent, mitigate and adapt to climate change and other water-related risks (Action Area 7). CSA measures can particularly contribute to the latter area. • The PANGIRE stipulates the development and implementation of a social policy on drinking water and sanitation for the benefit of vulnerable populations. This will contribute to positive outcomes of this Project.
National, Regional	Other environmental management/sustainable natural resources use plans/programs (National Environmental Management Program –NEMP, National Program of Sustainable Management of Natural Resources – NPSNR, other)	• Support for sustainable development in rural regions of Benin, including the Project region. • Integration of rural participatory project design into policies and strategies.	• Support for local environmental management initiatives calls for action on soil fertility and reduction of grazing areas, to which the Project's field interventions (Component 2.3) contribute. • Possibility for knowledge exchange (Component 1) in the implementation of participatory management of sustainable rural spaces in the NPSNR to which this Project also contributes.
National, Sub-regional, Atacora, Alibori		• Plans to develop a productive and resilient agro-sylvo-pastoral, faunal and fisheries sector that is more market-oriented, recommends reversing the trend of environmental degradation and ensuring the sustainable management of natural and environmental resources; among its objectives, the plan also aims to reduce poverty in rural areas; the instrument also aims at inclusive and efficient agricultural and food systems. • Support water and food security by mainstreaming malnutrition into all program	• CSA interventions (Components 2.1, 2.3) overlap clearly with PNDES and DSRP objectives and can support identification of synergies and trade-offs between social, economic, and environmental objectives. This Project can further provide evidence on the effectiveness of small-scale irrigation technologies such as called for in the MPRD. • High poverty levels and food and nutrition insecurity in the Project's intervention regions are highlighted, providing additional justification for development in the region.

Level	Name of policy, plan, or strategy	Key objectives	Synergies with Project
		design and promoting community capacity for food and nutrition security of vulnerable populations. • Supports the management of land and water through the establishment of irrigation schemes adapted in response to climate change	
Burkina Faso			
National, Regional, Sub-regional	National Adaptation Plan to Climate Change (adopted 2015) with NDCs	• Country's contribution to the COP21 Paris meeting with focus on adaptation, finance technology, and capacity building, with the aim to facilitate the integration of climate change adaptation in a coherent manner into new or existing policies, programmes or activities in development planning processes and strategies within relevant sectors and at different levels. • Also highlights the need to enhance long-term capacity of institutional frameworks involved in climate change adaptation, the strengthening of information systems, the implementation of effective and sustainable financial mechanisms, reducing the country's overall vulnerability to climate change.	• The adaptation of the economy in general and the farming systems to climate change in particular can be supporting by CSA. • The NDC, NPRS, and Strategy for Growth and Sustainable Development call for the implementation of conservation techniques of water and soil and through promotion of sustainable land management, as well as improved access to climate information and capacity building for the utilization of meteorological data in planning of actions in the agricultural sector. These interventions are in line with the proposed actions under Component 2.1, 2.2, and 2.3, with the Project supporting the identification of robust interventions that can be integrated in larger adaptation plans of action. • Regions at risk of pastoral conflicts include those in the Centre-South, Centre-East, as they are reception or transit sites for transhumance. The areas most exposed to the forage deficit are also those in the Centre-East. The lessons drawn from
	Strategy for Growth and Sustainable Development (SCADD) and Strategic Framework for Fight against Poverty (CSLP)	• Promote rural poverty reduction through capacity building and localized interventions. • Strengthening adaptation to climate variability and change in the environmental management program and optimal use of natural resources	

Level	Name of policy, plan, or strategy	Key objectives	Synergies with Project
	National Program for the Rural Sector (NPRS) and the Sustainable Development of National Policy (2013)	• Rural development in Burkina Faso. • Particularly relevant is the sub-program on environmental governance and the promotion of sustainable development, which is to contribute to adaptation to climate change and the reduction of the impact of climate change on the production and dissemination of sustainable land management best practices	the transhumance interventions in the Project are therefore important for also for INDC implementation.
National	National Food and Nutrition Security Policy (PNSAN, 2013)	• Focuses on vulnerable populations, aiming to ensure sustainable food and nutrition security by 2025 through enhanced prevention and response capacity to shocks, improved physical and financial access to food, improved nutritional status of populations, and strengthened governance for food and nutrition security.	• There are significant synergies in the intervention design. The interventions identified in the PNSAN seek to improve soil fertility, strengthen the technical and organizational capacity of farmers' organizations, and create an environment conducive to sustainable agricultural investment, therefore improving people's income opportunities, especially for young women. Lessons on resilience building and productivity from this Project (Component 2.2 and 2.3) can directly inform the PNSAN. • There are further synergies regarding capacity building (Component 1) and knowledge management (Component 3). Central and devolved government, local and regional authorities, agricultural professional organizations, farmers' organizations, civil society, the private sector and development partners are to be integrated through a participatory approach to create programs for food security jointly in the PNSAN.
National	Prospective Burkina 2025 and National Program for Sustainable	• Support sustainable development and poverty reduction in Burkina through integrated approaches to poverty reduction and food and	• Development of conservation techniques of water and soil and through promotion of sustainable land management, as well as improved access to climate information and capacity building for the

Level	Name of policy, plan, or strategy	Key objectives	Synergies with Project
	Management of Land (CPP) (first and second phase)	nutrition security, including better management of ecosystems.	utilization of meteorological data in planning of actions in the agricultural sector. • Interventions are in line with the proposed actions under Component 2.1, 2.2, and 2.3.
National	National Strategy for the Promotion of Female Entrepreneurship	• To promote access to women and girls to the means of production. With regard to rural poverty reduction, it intends to support women in setting up projects, among other.	• This Project actively supports the empowerment of women and girls in the project design phase through use of participatory methods and integration of gender concerns. It thus directly supports the objectives of the policy. In addition, lessons on gender management in the Project can support the Strategy's rural poverty reduction approach by giving information on the participatory methods.
Ghana			
National, Regional, Sub-regional	Nationally Determined Contributions (NDC)	• Country's contribution to the COP21 Paris meeting with focus on adaptation, finance technology, and capacity building.	• NDC focus on Contributing to agriculture resilience building in climate vulnerable landscape for Sustainable agriculture in Upper East, Upper West and Northern region. • The National Climate Change Policy complements these efforts by facilitating climate change mainstreaming into development planning and practices, and putting emphasis on governance and coordination, capacity building, knowledge management, and international cooperation for effective climate policy. These objectives are also pursued in this Project. • The longer term focus on planning capacities in the anticipated 40-year plan may provide important ground for CSA scaling up as well as needs to monitor and evaluate interventions at local level.
National	National Climate Change Policy with the National Climate Change Policy's Action Program for the implementation period 2015–2020	• General framework for addressing climate change, with a focus on adaptation and resilience building in rural and agricultural/pastoralist regions. • Promotes the development of climate-smart agriculture and food security systems in agricultural development to increase productivity and production.	
National	40-year socio-economic development plan (anticipated)	• Support transformational development/adaptation and reaching of the universal sustainable development goals, including adaptation and mitigation objectives.	
National	National Climate-Smart Agriculture and	• Provides implementation framework and formulates specific strategies that will contribute developing CSA and food systems for all agro-	• CSA technologies and methods for dissemination can support finding of interventions for this Project, including climate-resilient cropping and livestock

Level	Name of policy, plan, or strategy	Key objectives	Synergies with Project
	Food Security Action Plan (2016-2020)	ecological zones, including those of the Project Region, as well as the human resource capacity required for a climate-resilient agriculture promotion in Ghana.	systems as well as crop varieties and livestock breeds tolerant to flooding, drought and salinity; promote diversified land use practices, including agroforestry, dry-land farming, appropriate technologies for small-scale irrigation, water re-use and water harvesting (e.g. waste/water recycling, rainwater harvesting systems), capacity building within communities for basic maintenance of dugouts and small-scale irrigation systems, and options for livestock and weather information, among other. • Through its knowledge management component (Component 3) the Project can support the design of National CSA action plans in the other four countries, e.g., through the identification of best practices or methods for CSA implementation.
National	National Biodiversity Strategy and Action Plan	• Seeks to minimize the loss of biodiversity in Ghana so that by 2030 ecosystems resilient and continue to provide essential services, thereby securing the country's variety of life, and contribute to human well-being and poverty eradication.	• Among other, identifies the underlying causes for biodiversity loss for which sustainable management of areas under agriculture and forestry is necessary in order to ensure conservation of biodiversity. The CSA interventions (Component 2) and capacity building (Component 1) can contribute to this goal by building knowledge on the synergies and trade-offs between environmental impacts and poverty reduction.
National, Regional, Sub-regional	Nationally Determined Contributions (INDC)	• Country's contribution to the COP21 Paris meeting with focus on adaptation, finance technology, and capacity building.	• Contributing to agricultural resilience building in climate-vulnerable landscapes, including the Upper East, Upper West, and Northern regions (this Project's intervention region).
National, Sub-regional	Ghana Shared Growth Development Agenda II - GSGDA 2	• The current national development framework, with a specific focus on agriculture and food security challenges.	• Climate variability and change are identified as a major threat to national development • The GSGDA identifies the northern and savannah region as areas of interventions for strengthen the

Level	Name of policy, plan, or strategy	Key objectives	Synergies with Project
			potential and economic viability of the northern ecological zone and its capacity to contribute to Ghana's national development. This Project directly contributes to this objective by supporting scaling up of innovative and economically sustainable CSA interventions.
National	Ghana Livestock Development Policy and Strategy	• Promote cross border transhumance harmonization with ECOWAS protocol, including designation of areas for permissible activity and use specific routes or corridors assigned by the state to specific grazing reserves	• Important frame for livestock corridors under Component 2.3.
National, Sub-regional	National Environment Policy	• Support biodiversity conservation and environmental protection, including by building synergies and complementarities between water and soil management and conservation in the Northern and Southern Savannah zones. • Complements the National Climate Change Policy in mainstreaming of environment-climate change linkages into development planning	• CSA can contribute to environmental targets by reducing adverse ecological pressures while assuring development targets. CSA also emphasizes that development and environmental targets may not be synergetic, but in fact lead to trade-offs between competing objectives. Principally through the Project's monitoring and evaluation component (Component 2.1.) this Project can support the identification of practices which reduce environmental harm, including in forests and in the fight against drought. • Ghana's Northern and Southern Savannah zones are key intervention zones for both policies
Sub-national (savannah region)	Advance II project (USAID)	• Funded by USAID's Feed the Future initiative. Aims to increase food security by addressing environmental issues and increasing competitiveness among 113,000 smallholder farmers in the Upper East, Upper West and Northern Regions.	• ADVANCE II focuses on implementing soil management improvements, crop residue burning reduction, alternate wetting and drying, and/or fertilizer and pesticide management in one or all of the maize, soybean, and rice value chains. There are apparent synergies with this Project in terms of participatory rural project design, vulnerability mapping, intervention implementation, and knowledge management (Components 1, 2, and 3).

Level	Name of policy, plan, or strategy	Key objectives	Synergies with Project
Niger			
National	Nationally Determined Contributions (NDC)	• Country's contribution to the COP21 Paris meeting with focus on adaptation, finance technology, and capacity building, and particularly strengthening adaptation measures related to sustainable land management.	• NDC focus on building agriculture resilience building to which the CSA intervention approach can give important contributions. In this the CDN aims to invest in more productive and sustainable agriculture and forestry, particularly by popularizing endogenous adaptation strategies that communities can use to address uncertainties in their production systems caused by climate variability and change, with a focus on local knowledge, including that held by women. These issues overlap with this Project's intervention logic, particularly its approach to strengthen community participation, and particularly women's participation (Components 1 and 2). • There are additional feedback to the Project's knowledge dissemination and networking activities (Component 1.2 and Component 3).
National	National Policy on Climate Change (PNCC)	• Four overall objectives: 1) improve knowledge, promote research and development, generate and disseminate information on climate change; 2) build people's capacity to adapt to, and the resilience of ecological, economic and social systems to climate change; 3) integrate climate change issues into national, regional and, local planning tools; and 4) build stakeholder capacity to engage in climate change, including adaptation.	
National	National Action Program of fight against Desertification (NAP)	• Identification of risks and constraints related to the management of natural resources in the combat against desertification	• CSA can contribute to sustainable management of natural resources, thereby contributing to combating desertification by reducing environmental impact while assuring development targets. In this case the monitoring and evaluation (M&E) component (2.2) will give important evidence to the NAP and the National Forest Plan. The SNPA-DB's integrated approach provides substantial knowledge exchange with this Project's local CSA interventions, including mutual learning on best practices. • Through the Project's monitoring and evaluation component this Project can support the identification of practices which reduce
National, Sub-regional	National Forest Plan (2012-2021) with the National Strategy and Action Plan on Biological Diversity (SNPA-DB 2014, second version)	• Contribute to national economic growth through the improvement of forest resources and their adaptation to climate change, with emphasize on the role conservation of ecosystem services plays in this context. • Specifically, undertake concrete and effective actions to increase the resilience of ecosystems, including the promotion of good agro-sylvo-pastoral and fisheries practices in integrated approaches.	
National, Sub-regional			

Level	Name of policy, plan, or strategy	Key objectives	Synergies with Project
			environmental harm, including in forests and in the fight against drought. • The National Forest Plan identifies key ecological barriers for Tillaberi and Dosso region (Project region), but also a lower risk of land degradation in these areas which can be explained by the density of vegetation cover and low human density. CSA actions need to be developed in a way that land degradation does not become a future problem.
National Sub-regional	National Environmental Plan for Sustainable Development and the Sustainable Development and Inclusive Growth Strategy, the Rural Development Strategy (RSD) "Nigeriens feed Nigeriens" (3N) program, and several other localized resilience building programs (PAC-RC, PROMOVARE, PANA, and PDIPC)	• Principal objective is the promotion of integrated management of natural resources from a sustainable development (including economic and social objectives) perspective. This includes efforts to reduce rural poverty by mitigating stress related to land resources shortage and water and improve resilience of crop-livestock systems vis-à-vis climate variability and change. • Examples of sub-regional interventions (here PANA) seek to develop and scale up best practices to adaptation and resilience building, including the utilization of improved seeds, use of climate information, and promotion of income generation activities.	• The intervention examples seek to disseminate the use of small-scale irrigation, preservation of the environment (especially use of woods for energy production), improve access to drinking water, and promote the rehabilitation of degraded lands through reforestation. CSA with its focus on productivity, mitigation, adaptation, and resilience can give important input to the design of these interventions and support the dissemination of best practice approaches to adaptation (Component 2). • The documents integrate climate change and variability, including the use of renewable energy in irrigation for agricultural production. Components 2.1 and 2.3 will invest in consolidating and disseminating of best practices of local sustainability initiatives for adaptation, which can give lessons learned to both documents.
National	National Strategy on Pastoralism and Water Resources (SNHP, 2014)	• Guide the rules and uses of future pastoral hydraulic installations for effective sustainability of modern investments (large-diameter wells, boreholes, ponds fitted out, demarcated transhumance axes) and maintenance of social peace.	• Sets the guidelines for the interventions in transhumance and livestock under this Project (Component 2.3). Also identifies best practices which may also be relevant for the Project's regions in Togo, Benin, Ghana, and Burkina Faso.

Level	Name of policy, plan, or strategy	Key objectives	Synergies with Project
National	National Seed Policy (2012)	• Aims to ensure the availability in quantity and quality of seeds in order to meet the needs of farmers.	• Clear synergies (thematic and geographical) with this Project. Support to national seed value chains and access to improved quality of seeds may support CSA activities in the Project region, as may the introduction of agricultural input efficiency improving measures, and on-farm natural resources management for environmental sustainability.
Sub-regional	Climate-Smart Agriculture Niger Support Program (since 2016)	• Increase agricultural productivity and enhance drought resilience of agro-pastoral systems in the targeted communities and households in Niger.	
Togo			
National	Nationally Determined Contributions (NDC)	• Country's contribution to the COP21 Paris meeting. Focus is on strengthening the resilience of production systems and ways of agriculture.	• Components 2 and 3 support the consolidating and disseminating of CSA best practices which supports the NDC intervention strategy for adaptation.
National	National Agricultural Investment Program and Food Security (NAIPFS)	• Strengthening the sustainable management of natural resources and improved management of transhumance	• Sets the guidelines for the interventions in transhumance and livestock under this Project (Component 2). Lessons learned from this Component may also feed back into revised versions of the NAIPFS.
National, Sub-regional	National Environment Policy with the National Action Plan for the Environment (PNAE), and the National Forestry Policy and Plan with the National Forestry Action Plan (PAFN, 2011-2019),	• Promote an integrated and rational use of natural resources to improve living conditions of the national population under a sustainable development perspective. • Stabilize agricultural activities by intensifying agriculture and livestock production in peripheral rural areas in order to promote self-sufficiency • Planned to promote the sustainability of agroforestry systems and soil and biodiversity conservation and to maintain their relationship with production systems such as agriculture, livestock and fisheries.	• Global vision of forest management and production systems based on an approach that maintains the balance of ecosystems and respects the ecological, social and economic functions of forests. • Set of policies introduce long-term focus (2011-2035) which integrates climate change, risks, and adaptation concerns. • Identifies Dosso and Tillaberi as areas of strong agricultural and animal pressure with intervention needs which can be supported by CSA through this Project (Component 2). Also identifies partners and project interventions for agro-sylvo-pastoral interventions to which CSA projects planned under

Level	Name of policy, plan, or strategy	Key objectives	Synergies with Project
			this Project can provide lessons learned on best practices.
National	Poverty Reduction Strategy Paper (DSRP) together with Accelerated Growth Strategy for the Promotion of Employment (SCAPE, 2013-2017)	• Sets the medium term development objectives of Togo (2030), with a focus on SDGs. Part of the strategy is the development of agricultural and infrastructure sectors, with sustainable use of natural resources playing a relevant part.	• Vision for 2030 integrates climate change into national level planning, where adaptation of the economy in general and the farming systems to climate change in specific can be supporting by appropriate CSA interventions (Component 2). • Support to infrastructure development through SCAPE and possible future strategies can improve access of participating farmers and pastoralists to markets and other resources.
National	Several localized adaptation/resilience projects (ADAPT, PODV, SORVATO, among other)	• Local adaptation or resilience projects seek mostly to reduce rural poverty by mitigating stress related to access to land, soils, and water, while supporting income generation activities. This includes the development and scaling up of best practices to adaptation and resilience such as the dissemination of adapted seeds, small-scale irrigation, use of climate information, and improving access to markets.	• The CSA interventions in this Project focus on productivity, mitigation, adaptation, and resilience, and can thus support other projects with information on effectiveness and best practices (Component 2).

The NDC stipulate several investments in agriculture, livestock, and conservation, part of which are 'conditional' (especially the case for Benin, Burkina Faso, Niger, but less for Gha-na); this Project therefore mostly contributes to support conditional investments which support the five countries to traverse towards more sustainable development trajectories than in the ab-sence of this project.

- Agroforestry, sustainable management of forests, and short cycle crops which are more appropriate to cultivate under drought conditions can be considered climate-smart technologies for which Benin has identified technology transfer needs in its NDCs. These options are directly included in Output 2.1.1. Climate adaptation interventions foreseen by the NDCs further integrate improving surface water supply (Output 2.1.1), improved climate services for early warning against extreme events (Output 1.1.1), as well as a general focus on food and nutrition security and vulnerability reduction for women and children, all of which are directly supported under this Regional Project.
- For agriculture Burkina Faso foresees large-scale investments in different arrangements of stone bunds and zaï technologies to support restoration or soil or maintaining their fertility, as well as several measures for water management, including support for bas-fonds (integrated with intensive rice production), drip irrigation, and dedicated support for groups of young farmers to engage in potato and melon production with irrigation and integration of forage production for livestock. There are also various interventions proposed to turn livestock more climate-smart (forage, sylvo-pastoral systems, etc.).
- There are important complementarities with Ghana's NDCs, which call for scaling up of climate-smart technologies in livestock with envisaged productivity gains of 10%, more efforts to develop post-harvest storage and processing, which would be supported by the country's Food and Agriculture Sector Development Policy, the Medium-term Agriculture Sector Investment Plan, and Ghana' Agriculture Investment Program. Community-led approaches with a focus on promoting inclusion of women and vulnerable populations are to be promoted by National Climate Policy, particularly with regards to diversifying livelihoods and building adaptive capacities. The Regional Project will benefit from the planned modernizations in the weather information management, particularly regarding to climate services provision.
- Niger's NDCs specifically prioritize climate-smart agriculture; more specifically, CSA approaches that combine field interventions with climate information, early warning systems, weather insurance programs, etc., and which could be supported by technical and financial institutions. Key sectors regarding the NDCs adaptation program are livestock, agriculture, and forests.
- Like the other countries, Togo contributes little to climatic change, but bears much of the consequences given climatic hazards and low resilience of the agricultural-livestock sec-tor, which account primarily for the country's GDP. Focal areas for support to adaptation include integrated water resources management, increasing resilience in crop production, and improving rural livelihoods. Specific options include the use of adapted crops, soil fertility management, and development of transhumance corridors.

Where appropriate, the envisaged national development programs under the NDC will be taken in subproject development, in order to support each country's overall climate-resilient development agenda (which are based on key vulnerability assessments) and support those in their reporting to the Paris process. Furthermore, the connectivities between these projects, programs, and strategies with the Regional Project have been identified, and the Regional Project Management Unit (RPMU) and the National Project Management Units (UNGP) will take care to establish and maintain communications with program managers of these projects – including from ministries, international institutions, and UNFCCC focal points – throughout project duration in order to assure mutual learning and avoid building parallel efforts. The Project's Steering Committee will give helpful advice on possible connectivities.

F. 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 has been preliminary screened by the BOAD for environmental and social risks. The limited adverse impacts that could emanate are mostly through Component 2 of the project which will concerned investments on sites.

This means the project potentially falls within the Category B rating of the Environmental and Social Policy of the Adaptation Fund. The preliminary screening has involved checking for the following factors among others:

- The project will not have any negative impact or risks on the natural habitats or, including those that are (a) legally protected; (b) officially proposed for protection; (c) recognized by authoritative sources for their high conservation value, including as critical habitat; or (d) recognized as protected by traditional or indigenous local communities.
- The project will not have any negative impact or risks on conservation of biodiversity and genetic resources of the target communities ;
- The project will not have any negative impact or risks on Physical and Cultural Heritage (alteration, damage, or removal of any physical cultural resources, cultural sites, and sites with unique natural values recognized as such at the community, national or international level) ;
- That the project will not have a negative effect on water availability and quality in the target areas;
- That the project will not result in the displacement of any people in the project target areas;
- That the project will not negatively affect the tenure rights of individuals, communities or others;
- That the project will foster gender equality and promote equitable access to resources and services;

The project has been found to meet all of these requirements all of which will be continually monitored throughout project implementation to ensure that no negative social or environmental affects emerge as a result of the project.The activities of the proposed project have been validated by the project's national and regional partners to ensure that they comply with the relevant technical standards in each country.

During the implementation of the project, the BOAD (implementation entity of the Adaptation Fund) and the ARAA (project executing entity) as well as the regional and national partners will ensure that the project, which will be implemented through the sub-projects, complies with the procedures described by the Adaptation Fund’s Environmental and Social Policy.

The project implementation team will also ensure that all relevant national technical standards, laws and byelaws for construction and infrastructure are adhered to where such developments are required as part of the project. To support this, all project activities will be implemented in close collaboration with the Minsitries of Agriculture, livestock, environmental so as to ensure compliance with the relevant standards and technical guidelines in each of the target countries.

The entities responsible for monitoring compliance with national standards are presented below.

Table 13: Entities responsible for monitoring compliance with national standards

Standards	**Entity responsible for monitoring the compliance**
Compliance with environmental and social management standards including gender	National environmental agencies
Conformity to the standards of development of agricultural sites, soil conservation, use of agricultural inputs (seeds, organic and / or chemical fertilizers, etc.)	National and Regional Directorates of Rural Engineering
Compliance with standards for the construction and management of hydro-agricultural infrastructure and water mobilization	National and regional directorates of hydro-agricultural infrastructures
Compliance with pest and pesticide management (integrated pest management)	National and regional plant protection directorates in collaboration with the Sahelian Pesticides Committee (CSP)
Compliance with installation standards for transhumance corridor demarcation infrastructures	National and regional Directorates of livestock
Compliance with labor, health and safety standards for workers including beneficiaries, etc.	National and Regional Labor Directorates (Labor Inspectorates)
Compliance with vulnerability to climate change, vulnerable and marginalized groups	Regional directorates of the environment

The Project Implementation Entity (BOAD) will ensure compliance with the Environmental and Social Policy of the Adaptation Fund with the support of the DNAs and National Agencies of Environmental whose technical capacities have been strengthened on the application of the E&S principles and the Adaptation Fund's E&S Policy (Activity 2.1.2.3).

The table below identify the relevant national standards of the concerned countries.

Table 14: Relevant standards which can be applied in the framework of the project

Country	Relevant standards
Benin	• Framework Law on the Environment (Loi n° 98-030 du 12 février 1999 portant Loi-Cadre sur l'environnement en République du Bénin) • Decree N ° 2001-2035 of 12 July 2001 on the organization of environmental impact assessment procedure (Décret N°2001-2035 du 12 juillet 2001 portant organisation de la procédure d'étude d'impact sur l'environnement) • Decree No. 2001-190 of 19 June 2001 on the organization of the Public Hearing process in Benin • Land and Property Law (Loi N° 2013-01 of 14 August 2013 portant code foncier et domanial en République du Bénin) • Law on Prevention and Repression of Violence against Women (Loi N°2011-26 of 9 January 2012 portant prevention et répression des violences faites aux femmes) • Labor Code (Code du travail Loi n°98-004 du 27 janvier 1998) • Law No. 2002-016 of 18 October 2004 on the regime of wildlife in Benin (Loi n° 2002-16 du 18 octobre 2004 portant régime de la faune en République du Bénin); • Law No. 87-013 of 21 September 1987 regulating the grazing vain, for the care of pets and transhumance, with Order No. 12 of 165/MDRAC/DGM/DAFA/SAA (June 1989) and two inter-ministerial orders (1994) • Law No. 2010-44 of 21 October 2010 concerning water management in the Republic of Benin • Law No 87-015 Act of 21 September 1987 on the Code of Public Health of the Republic of Benin with Public Hygiene Law (Loi N O 87-015 of 21 September 1987 portant code de l'hygiene publique) • Forestry Law (Loi n° 93-009 of 2 July 1993 portant régime des forêts en République du Bénin)
Burkina Faso	• Environmental Code (Loi n°006-2013/AN portant Code de l'Environnement du Burkina Faso) • Decree No. 2001-342 / PRES / PM / MEE1 of 17 July 2001 on procedures of Environmental Impact Assessments and Environmental Impact Statements; • Orientation Law on Water Management (Loi nº 002/2001/AN portant loi d'orientation relative à la gestion de l'eau) • Law No. 034-2002 /AN of 14 November 2002 on the framework law on pastoralism in Burkina Faso. • Law N° 006/97 / ADP of 31 January 1997 on the Forestry Code in Burkina Faso • Law on Agrarian and Land (Loi portant Réorganisation Agraire et Foncière (RAF) 034-2012/AN) • Law No. 23/94 / ADP of 19 May 1994 on Public Health Code in Burkina Faso • Law on Cultural Patrimony (Loi n° 024-2007/AN portant protection du patrimoine culturel au Burkina Fas) •
Ghana	• Environmental Assessment Regulations 1999 • The Local Government Act 1993, Labor Act 2003, Act 651 • Environmental Protection Agency Act, 1994 • The Forestry Commission Act, 1999 (Act 571) • Forest Protection Decree 1974

Country	Relevant standards
	• Trees and Timber Act, 1974 • Ghana Meteorological Agency Act 2002 (Act 682) • The Water Resources Commission Act 1996, Act 522 • The Rivers Act, 1903 • Pesticides Control and Management Act, 1996 (Act No. 528); • Community Water and Sanitation Agency Regulations, 2011 (L.I. 2007); • Land Planning and Soil Conservation Act of 1953 with 1957 amendments
Niger	• Law N° 98-56 29 December 1998 framework law for the management of the environment • Order No. 97-01 of 10 January 1997 on the institutionalization of environmental impact studie (Ordonnance n°97-01 du 10 janvier 1997 portant institutionnalisation des études d'impact sur l'environnement); • Order N° 96-067 of 9 November 1996 covering rural cooperatives • Order No. 93-15 March 2, 1993 on the principles of Orientation du Code Rural • Order No. 2010-09 of 1 April 2010 Water Code in Niger • Decree N° 97-006/PRN/MAG/EL from 10 January 1997 • Law 2004 - 040, June 8, 2004, covering the Forestier in Niger • Law N° 98-007 29 April 1998 laying down the rules of hunting and the Protection of wildlife • Law No. 2000-15 of 21 August 2000, establishing the Regional Chambers of Agriculture of Niger
Togo	• Law N° 2008-005 30 May 2008 on framework law on the environment • Decree N°2017-040/PR laying down the procedure for environmental and social impact assessments • Law N° 2008-009 of 19 June 2008 on the forest code • Law N° 2007-011 of 13 March 2007 on decentralization and local freedoms • Order No. 12 on agricultural land reform. • Labor Code of 2006 with National Policy for Equality (Politique nationale pour l'équité et l'égalité de genre du Togo, PNEEG-2011).

The national and international standards related to weather and climate information will be adhered to so as to ensure quality outputs in this regard.

A project grievance mechanism will be introduced in all target communities, so as to ensure that there is a mechanism for stakeholders to communicate and get feedback on any problems regarding project implementation including problems related to environmental and social standards.

The project will also comply with the relevant regional community and international standards and conventions.

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

The project is currently the first integrated approach to scale-up climate-smart agriculture practices and planning in the project zone in Niger, Benin, Togo, Ghana, and Burkina Faso. Experiences with CSA projects' Climate Smart Agriculture in the region project area are very limited. The World Bank's Climate Smart Agriculture Support Project in Niger, whose preparation began in 2016, will be implemented in the same administrative regions as the present regional project., but with a focus on sustainable land use management, the securing and diversification of household incomes, and the building sustainable seed systems. As such the two initiatives do not overlap, but rather offer complementary approaches to reducing climate risk and increasing resilience in the area. Care will be taken to avoid the building of any parallel structures and intervention in the same localities. The PMU will closely cooperate with existing projects and programs where these can support this Project's activities (e.g., through provision of climate and meteorological data or climate services).

The following table presents some projects and programs with which the project can develop synergy and / or complementarity

Table 15: Possible synergy and / or complementarity between the project and national projects / programs.

Countries	Project/ program	Objectives	Strategic axis/Component/ Activities	Activities of the current project which can have possible Synergy and/or complementarity with the project	Process to be undertaken to realize the possible synergies between projects (see activity 1.2.2.1)
Benin	"Programme intégré d'adaptation pour la lutte contre les effets néfastes des Changements Climatiques sur la production agricole et la sécurité alimentaire au Bénin (PANA1) " (2011-2015). A scaling is considered. Budget: USD 4,601,000 Duration: 2010-2015 (phase 1) Implementer/ donor (s) : ministry in charge of Environment/ GEF-UNDP	The overarching goal of the strategy is to strengthen the technical capacity of farmers, pastoralists and fisherfolk to better understand climate change risks and disasters through the knowledge of appropriate technologies and rational use of agro-meteorological information.	• Development of a platform of technological innovations adapted to climate change; • Control of water in agricultural systems; • Integrated soil fertility management (ISFM); • Integrated management of watersheds and lowlands; • Prevention and management of agro-climatic risks • Optimal use of agro-meteorological information • Mechanisms related to the management of agricultural systems • Integration of climate change aspects into technical training tools and methods	- Activity 1.2.2.2. and activity 3.1.1.2 for platform of technologies adapted to climate change - Activity 2.1.1.2. for Water management in agriculture system and Activity 2.1.1.1 for Soil restoration and conservation - Activity 1.1.1.1. and Activity 1.1.1.2. for agro-meteorological information - Activity 1.2.1.1: and Activity 1.2.1.2: for technical training tools and methods on climate change aspects.	Field visits and/or valorization of mid-term and final evaluation reports and lessons learned reports conclusions
	Climate Information Enhancement Project and Early Warning System in Africa for Climate Resilient Development and Climate Change Adaptation Budget: USD 18 511 549 Duration: 2013-2017 Implementer/ donor (s) : ministries in charge of energy, water and development / UNDP	Strengthen monitoring capacities, early warning systems and the availability of information on climate change to cope with climate shocks and plan adaptation to climate change in Benin	• Acquisition and installation or rehabilitation of 30 water level monitoring stations with telemetry, 30 automatic rain gauges at hydrological stations and an automatic Doppler flow meter capable of transmitting data and equipped with water treatment and conservation equipment. data to feed hydrological models • Acquisition / installation of 3 automatic agro-climatic stations, 2 automatic synoptic stations and 25 automatic rain gauges and the rehabilitation of the 6 manual synoptic stations and 20 manual agro-climatic stations, all these stations / gauges will be equipped with	Activity 1.1.1.1. and Activity 1.1.1.2. for agro-meteorological information.	Field visits and/or valorization of mid-term and final evaluation reports and lessons learned reports conclusions

			improved equipment. telemetry and data transmission / processing / storage. • Acquisition of maintenance, communication and data collection / processing equipment (Global Differential Monitoring Positioning System and Doppler Current and Speed Profiling Devices) for water level and monitoring of the water level. coastal erosion. • Training of DNM-ASECNA staff (4 engineers / 4 technicians), DG-Water (2 engineers / 3 technicians) and IRHOB (2 researchers / 2 technicians) on the collection of information, storage / analysis, operation and storage (in English, operation and maintenance: O & M) data and principles of maintenance / monitoring, including the development of Standard Operating Procedures (SOPs) for equipment and capacity building for the preparation of long-term budgets • The technical capacities of DG-Water, DNM-ASECNA to produce and use climate forecasts (according to an hourly, daily and seasonal calendar) are reinforced by the training of 4 forecasters / 4 technicians through the sharing of knowledge at the national, regional and international levels. • Extreme weather and agricultural risk advice that links climate with short-term and seasonal environmental and socio-economic information is developed to meet the needs of end-users, including research and development. a telephone-based consultation platform		
	Project to Strengthen Local Governance in Financing Adaptation to Climate Change Budget: USD 450 000 000	Contribute to closing the financing gap of adaptation to climate change at the level of local communities while developing their	• Strengthening weather and climate change information services to improve decision-making processes and long-term planning; • Acquisition of new climate / weather	Activity 1.1.1.1. and Activity 1.1.1.2. for agro-meteorological information.	Valorization of mid-term and final evaluation reports and lessons learned

	Duration: 2014-2016 Implementer/ donor (s) : ministries in charge of energy, water and development / UNCDF	institutional and technical capacity to face climate risks and challenges in the process of local development.	monitoring equipment and hydrological and rehabilitation of existing infrastructure; • Strengthen national and local capacities to use efficiently and efficiently disseminate hydrometeorological and environmental information / warnings.		reports conclusions
Burkina Faso	NEER-Tamba : Participatory Management Project of Natural Resources and Rural Development Budget: USD 110,200,000 Duration: 2013-2021 Implementer/ donor (s) : ministry in charge of agriculture / IFAD	Improvement of living conditions of the rural poor in the project area	• Small land development aimed mainly at improving the resilience of households / family farms in the face of climate hazards, but also at helping to create or strengthen their financial autonomy; • Intensification of small farms and enhancement of their productions through the dissemination of good practices and the financing of local initiatives and innovations that can sustainably improve the economic autonomy of the target populations; • Administration and monitoring and evaluation.	Output 2.1.2 (including Activities 2.1.1.1. and Activity 2.1.1.2) for improvement of the resilience of households farms in the face of climate hazards and dissemination of dissemination of good practices	Field visits and/or valorization of mid-term evaluation report and lessons learned reports conclusions
	GCP/BKF/054/LDF Integrating Climate Resilience into Agricultural and Pastoral Production for Food Security in Vulnerable Rural Areas through the Farmer Field Approach Budget: 2 223 000 000 FCFA Duration: 2015-2019 Implementer/ donor (s) : ministry in charge of agriculture / FAO	Strengthening the agricultural sectors and pastoral capacities of Burkina Faso to address climate change by signing the practices and strategies to adapt to climate change (ACC) in agricultural development initiatives in progress, agricultural policies, programming and increasing adoption of practices and CCA technologies by farmers through a CEP network already established. "	Capacity building for the agricultural and pastoral sectors to address climate change programming and increasing adoption of practices and CCA technologies by farmers through a CEP network already established. "	Synergy/complementarity with: - Output 1.2.1 for capacity building - Output 2.1.1. for agriculture practices and livestock (pastoral) resilience - Output 1.2.2. for exchange	Field visits and/or valorization of mid-term evaluation reports and lessons learned reports conclusions
	PNGT II : National Program of Land Management II phase 3	Strengthen the capacity of rural communities and decentralized structures for the implementation of local	• Capacity building • Land tenure security in rural areas • Financing local development investments	- Output 1.2.1 for capacity building - Activity 2.1.1.2. for Water management in agriculture system and Activity 2.1.1.1 for Soil restoration	Field visits and/or valorization of mid-term

	Budget: USD 284,076,000 Duration: 2013-2018 Implementer/ donor (s): GOVERNMENT OF BURKINA FASO / IAD-IFAD-GEF-UNDP	development plans that promote sustainable management of land and natural resources and economic investments in common ...	• Sustainable management of the land and forest • Monitoring and evaluation coordination.	and conservation	evaluation reports and lessons learned reports conclusions
Ghana	Land and Water Management Project Budget: USD 16,900,000 Duration: 2014-2018 Implementer/ donor (s) : Ministry of Environment, Science, Technology and Innovation / word Bank	Support land and water management	• Capacity building for integrated spatial planning • Land and Water management • Project management and coordination	- Activity 1.1.1.2., Activity 1.1.2.1. and Activity 1.1.2.2. for capacity building and planning - Activity 2.1.1.1 for Soil restoration and conservation and Activity 2.1.1.2. for Water management in agriculture system	Field visits and/or valorization of mid-term evaluation reports and lessons learned reports conclusions
	Climate-resilient landscapes for sustainable livelihoods in northern Ghana	Enhancing Climate Resilience for Sustainable Livelihoods in Northern Ghana	• Strengthened institutional capacity to develop, promote, implement and monitor climate change adaptation program in the agricultural sector. • Enhanced climate resilience of smallholder farmers in northern Ghana through implementation of EbA interventions. • Enhanced and diversified income generation of smallholder farming communities through: i) implementation of climate-resilient livelihoods and improved post-harvest crop management; ii) investment in hard, agro-based assets; and iii) strengthening of business and financial management expertise. • Increased knowledge and awareness of climate change adaptation to inform the upscaling of climate change adaptation program in Ghana.	- Activity 1.2.2.2. and activity 3.1.1.2 for platform of technologies adapted to climate change - Activity 2.1.1.2. for Water management in agriculture system and Activity 2.1.1.1 for Soil restoration and conservation - Activity 1.1.1.1. and Activity 1.1.1.2. for agro-meteorological information - Activity 1.2.1.1: and Activity 1.2.1.2: for technical training tools and methods on climate change aspects.	Field visits and/or valorization of mid-term and final evaluation reports and lessons learned reports conclusions
	Adaptation of Agro Eco Systems to Climate Change (AAESCC) Budget: € 3.000.000 Duration: 2012-2017 Implementer/ donor (s) : Ministry in charge of	Promote sustainable agriculture system of production	• Strategy development in cooperation with farming communities with the aim of making their farming systems more adaptable to climate change • Training for local service providers through training program and support for existing networks and learning	- Output 1.2.2: for communities collaboration for the adaptation of agriculture to climate change to enhance the national capacity for CSA - Activity 1.2.1.1: and Activity 1.2.1.2:	Valorization of lessons learned mid-term and final evaluation reports and reports conclusions

	agriculture / German Federal Ministry for Economic		platforms • Support for national decision makers in developing policies and strategies at government level.	for local capacities building - Activity 1.2.1.1: and Activity 1.2.1.2: for technical training tools and methods on climate change aspects to enhance decision making - Activity 1.2.2.3. for local policies to enhance local resilience in agriculture	
	Ghana Agriculture Sector Investment Programme (GASIP) Budget: US$ 113.0 million Duration: 2014 -2020 Implementer/ donor (s): Ministry in charge of agriculture / Government of Ghana-IFAD	Food Security and nutrition	• Value Chain Development • Rural Value Chain Infrastructure • Knowledge Management, Policy Optimization and Coordination	- Activities of the output 2.1.1. and output 3.1.1.	Field visits and/or valorization of mid-term evaluation reports and lessons learned reports conclusions
Niger	Enhancing resilience of agriculture to climate change to support food security in Niger, through modern irrigation techniques Budget: USD 9 911 000 Duration: 5 Years (2018-2022) Implementer/ donor (s): Ministry in charge of agriculture / Banque Ouest Africaine de développement/Adaptation Fund	The main objective is to strengthen the resilience of agriculture to climate change to support food security in Niger, through the promotion of modern irrigation techniques Specific objectives: (i) Strengthen the capacity of stakeholders on resilient irrigation systems to climate change and disseminate lessons learned during the project execution; (ii) Support the development of efficient technologies for sustainable management of water resources, conserve soil of irrigated areas and reduce energy costs associated with pumping of irrigation water; (iii) Support	• Technical and institutional capacity building and dissemination of lessons learned; • Comfort and development of irrigated perimeters; • Support for livelihood diversification and income enhancement for farmers; • Management, Coordination and monitoring project evaluation.	- The output 2.1.1. for development of irrigated perimeters and livelihood diversification and income improvement of the farms	Field visits and/or valorization of periodic reports conclusions

		the diversification of livelihoods to improve the incomes of farmers.			
	Community Action Plan for Climate Resilience (PACRC) Budget: 65,5 million $ US Duration: 2012-2016 Implementer/ donor (s): environment for sustainable development national council (CNEDD), Ministries in charge of hydraulic, agriculture and development/ word bank	Improved protection of populations and production systems	• Capacity Building • Local Investment Fund • Coordination, management, monitoring-evaluation and project communication	- Activity 1.2.1.1: and Activity 1.2.1.2: for local capacities building - Activity 2.1.1.2. for Water management in agriculture system and Activity 2.1.1.1 for Soil restoration and conservation	Field visits and/or valorization of mid-term and final evaluation reports and lessons learned reports conclusions
	Strategic Program for Climate Resilience (PSRC) of Niger Budget: 23, 4 million $US Duration: 2012-2017 Implementer/ donor (s) : Ministries in charge of agriculture / Africa development Bank	significant contribution in foresight and useful climate information	• Integrating climate resilience into poverty reduction and development planning strategies; • Investments in proven or innovative approaches that increase resilience to climate change; • Knowledge Management and Strategic Coordination of the Program	- Activity 1.2.1.1: and Activity 1.2.1.2: for local capacities building - Activity 1.2.2.3. for local policies to enhance local resilience in agriculture - Activity 2.1.1.2. for Water management in agriculture system and Activity 2.1.1.1 for Soil restoration and conservation - Activities 3.1.1.1 and 3.1.1.2. for knowledge management	Field visits and/or valorization of mid-term evaluation reports and lessons learned reports conclusions
	Programme d'Action Communautaire-PAC 2 et 3 Budget: 49.518.000 $ US Duration: 2013-2017 Implementer/ donor (s): Government of Niger/ word Bank -GEF	Improving the capacity of municipalities to design and implement participatory manner communal development plans and annual investment plans Reduction of land degradation and promote sustainable land management	Capacity building of the municipalities to design and implement participatory manner communal development plans and annual investment plans Implementation action to reduce land degradation and promote sustainable land management	- Activity 1.2.1.1: and Activity 1.2.1.2: for local capacities building - Activity 1.2.2.3. for local policies to enhance local resilience in agriculture - Activity 2.1.1.1 for Soil restoration and conservation	Field visits and/or valorization of mid-term and final evaluation reports and lessons learned reports conclusions
	Support Program for Rural Sector (PASR) Budget: 17 500 000 000 FCFA Duration: 2012-2016	Strengthening the capacity of actors to operationalize the 3N Initiative Creating favorable	• Development and implementation of a more coherent policy for the agricultural sector. • Support the transition from subsistence agriculture to more modern production	- Activity 1.2.1.1: and Activity 1.2.1.2: for local capacities building - Output 2.1.1 for modern agriculture production with the CSA approach	Field visits and/or valorization of mid-term and final evaluation

	Implementer/ donor (s): ministry in charge of hydraulic/ Danish kingdom	conditions for a sustainable increase in production and rural incomes	integrated into the local economy		reports and lessons learned reports conclusions
	Climate Risk-Sensitive Agriculture Support Project (PASEC) Budget: USD 171,522,111 Duration: 2010-2015 Implementer/ donor (s) : the Initiative 3 N High Commission, / Word Bank and European union	Adaptation of agricultural practices, food chains and social policies Increasing agricultural productivity and resilience to drought of agro-forestry-pastoral production system in households and target communities Improved capacity to respond promptly and effectively to any crisis or eligible emergency	• Investments for Climate Smart Agriculture (CSA); • Increased effectiveness of CSA support structures; • Emergency response; • Coordination, management and monitoring-evaluation.	- Component 2 and component 1 for the promotion of CSA and support agriculture public services and others stakeholders	Field visits and/or valorization of mid-term and final evaluation reports and lessons learned reports conclusions
Togo	Increasing the resilience of vulnerable communities in the agriculture sector of Mandouri in Northern Togo Budget: USD 10,000,000 Duration: 4 years (Project under evaluation process by Adaptation Fund) Implementer/ donor (s) : Banque Ouest Africaine de Développement (BOAD) /Adaptation Fund	The overall objective of the project is to improve the level of resilience of vulnerable actors in the agricultural sector in Togo, particularly in Mandouri (Savannah Region), by developing water management and irrigation technologies that reduce dependence on rainfall for agricultural production.	• Improved planning and management of water resources and (agricultural) production • Support for the diversification of livelihoods and the improvement of the living conditions of the beneficiaries • Capacity building, environmental and social measures, and knowledge management	Activities 2.1.1.1 and 2.1.1.2. for water and soil conservation to enhance resilience of population Activities of component 1 for capacity building	Field visits and/or valorization of mid-term and final evaluation reports and lessons learned reports conclusions
	Planned areas for agricultural development (ZAAP) Budget: not available Duration: 2011 – on going Implementer/ donor (s) : ministry in charge of agriculture / government of TOGO	Occupation of land all year Avoid pressure on the forest during the dry season	• Facilitating access to modern factors of production; • Value chain development; • Strengthening the resilience of populations • ZAAP management.	Output 2.1.1. Promotion of integrated techniques and activities related to water management, soil rehabilitation and conservation and livestock mobility to enhance beneficiaries' resilience	Field visits and/or valorization of mid-term evaluation reports and lessons learned reports conclusions

	Project to support the agricultural sector (PASA) Budget: USD 53,900,000 Duration: 2011-2016 Implementer/ donor (s) : ministry in charge of agriculture / WORD BANK-	rehabilitate and strengthen the productive capacities of targeted beneficiaries in selected sectors and Promote an institutional environment suitable to the development of the agricultural sector	• Promotion of strategic food crops, export crops and inland fisheries production, • Recovery of the livestock sub-sector • Support for capacity building and sector coordination .	Sy Activity 2.1.1.1. Soil restoration and conservation (for crop production), Activity 2.1.1.2. Water management and conservation (for crop production) and Activity 2.1.1.3. Support livestock mobility and crossborder transhumance (for livestock sector).	Field visits and/or valorization of mid-term and final evaluation reports and lessons learned reports conclusions
	Agricultural Productivity Program in West Africa - Togo Project (PPAAO –Togo) Budget: USD 12,000,000 Duration: 2012-2016 Implementer/ donor (s) : ministry in charge of agriculture / word bank	Generate, adapt and disseminate a range of improved sustainable production technologies of the main plant products (corn, rice, sorghum, cassava, yam, cowpea, groundnut, tomato, pineapple, cashew) and animals (poultry, small ruminants and swine); Enhance the efficiency, performance and sustainability of agricultural extension services	• Conditions conducive to sub regional cooperation in the development, dissemination and adoption of agricultural technologies • National Center of Specialization / Strengthening the Research System • On-demand financing of technology development and adoption • Coordination and project management	Output 2.1.1. Promotion of integrated techniques and activities related to water management, soil rehabilitation and conservation and livestock mobility to enhance beneficiaries' resilience and Output 1.2.2: Strengthening the transboundary collaboration for the adaptation of agriculture to climate change to enhance the national capacity for CSA.	Field visits and/or valorization of mid-term and final evaluation reports and lessons learned reports conclusions

The project team will ensure that all opportunities for synergies of ongoing projects are exploited to strengthen the implementation of this project. For projects that develop or develop technologies or techniques for soil and water conservation and sustainable management of simulated land, on-site learning visits will be organized for the benefit of beneficiaries as planned under activity 1.2. 2.1. This will further assist beneficiaries in the realization of these technologies as well as their rapid appropriation.

In the event that beneficiaries have benefited from capacity-building or dissemination of lessons learned on climate change adaptation, agricultural production and greenhouse gas mitigation by other projects, the subprojects will be take into account in their preparation and implementation.

H. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

Learning and knowledge management play an integral part in all project activities, and are coordinated via Component 3 ("management of knowledge on best practices related to climate-smart agriculture"). The project will develop different knowledge products (manual, toolbox, project website, newspaper media, calendars, conference presentations, scientific publications, etc.) and promote regional and sub-regional communication and knowledge exchange with the objectives to (i) better the understanding on CSA effectiveness and efficiency in the region, primarily with regards to adaptation to climate change, resilience of crop-livestock systems, and productivity/income, but also mitigation; and (ii) to improve multi-level and multi-stakeholder, collaboration and therefore learning, across the countries' agro-climatic zones. The products will be produced for specific target groups (policymakers, field workers, farmers, scientific community, etc.).

In Component 2, activities related to existing best practices for climate-smart agriculture will produce knowledge that will be shared and disseminated through different networks and websites.

For a better assimilation of the lessons learned by the beneficiary communities who are the majority of the analphabets, the documented lessons learned will be translated into local language, according to the regions and countries, and produced in the form of illustrative images easily comprehensible. In addition, a radio program in local languages will be set up. This program will be supported by sensitization of the beneficiary communities by the site animators. Representatives from beneficiary communities will participate in the various workshops or knowledge sharing meetings and lessons learned on the project.

The component on training the technicians (component 1) will support the dissemination of knowledge at field level and will help to learn about feedback from the local actors in climate change adaptation in agriculture. The project monitoring and evaluation (M&E) system including community information will contribute significantly to analyze the efficiency and effectiveness of the technologies at the field, therefore providing additional information for scaling-up CSA in the West African region.

The project team will take great care to disseminate the knowledge gained on technologies, processes, and mainstreaming in West Africa (for example, to ECOWAS's West African Climate-Smart Agriculture Alliance) and the African continent (for example, through NEPAD). Further outreach will also occur at inter-ministerial meetings and COP/UNFCCC meetings. Potential partnerships with key international knowledge management systems like the Climate Technology Centre and Network (CTCN) will be analyzed in lines with communication strategies of the Adaptation Fund to foster the sharing and dissemination of information. International organizations with existing adaptation platforms will be contacted. These will include (i) FAO-adapt platform which provides an umbrella to FAO's adaptation activities including short and long term adaptation activities (http://www.fao.org/climatechange); (ii) the World Bank's knowledge portal on climate change for development practitioners and policy makers (http://sdwebx.worldbank.org/climateportal/); (iii) the UNFCCC Adaptation Knowledge Portal platform (www4.unfccc.int/sites/nwp/Pages/Home.aspx); (iv) the Green Growth Knowledge Platform (www.greengrowthknowledge.org); (v) the Adaptation Learning Mechanism

(www.adaptationlearning.net/); (vi) the Climate Adaptation Knowledge Exchange platform (www.cakex.org); (vii) the weADAPT platform (https://www.weadapt.org); and others. At the regional level, key information and results of the project will be posted on the ECOWAS climate change platform as well websites of other regional organizations (CILSS, Hub Rural, UEMOA, ACMAD).

All communication material on the project will bear the logos of the RAAF/ECOWAS, the participating country's line ministries, other regional institutions, Adaptation Fund, and BOAD.

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

Public consultation during the preparation of the project, were conducted in accordance with the requirements of the Adaptation Fund. This consultation took place in two phases: during the preparation of the project concept note (PCN) and during the preparation of the Full Project

Public consultations during the preparation of the Project concept note

The first consultations on the scope of the project were carried out jointly by WADB and RAAF / ECOWAS with the support of FAO and gave rise, at the level of the five countries involved in the project, to discussions with the institutions and technical services involved in climate change adaptation, agro-meteorological forecasting, agricultural development, livestock, environment, etc. Subsequent regional consultations with regional institutions (Agrymet, CILSS, ILRI, UEMOA, etc.) and national partners were conducted to determine the scope and direction of the project. These missions were facilitated by WADB and RAAF.

During the preparation of the project concept note, interviews with human resources working in different ministries and structures were conducted in the 5 countries involved in the project. Field visits to potential sites and interviews with beneficiaries were conducted. This allowed to establish in a participative way the context of the development of the project, the problems to be solved, the types of adapted solutions, etc. and taking into account the concerns of stakeholders at local, national and regional level.

The process of developing the concept note and identifying the activities to be carried out has been largely consultative and inclusive since most stakeholder groups (producer and pastoralists' organizations, different ministries, local authorities in the field of intervention, etc.) were consulted at both regional and national and local levels. Consultations and interviews were held with different ministries and other stakeholders involved in climate change adaptation in agriculture.

The consultative process has combined different approaches:(i) A review of the relevant literature; (ii) Interviews with resource persons working in the different ministries and organizations involved in climate change adaptation in agriculture in the beneficiary countries; (iii) Field visits and discussion meetings in Burkina Faso (Ouagadougou, Fada Ngourma and Manga), Benin (Cotonou and Malanville), Niger (Niamey and Dosso in Ghana (Accra, Tamale, Bolgatanga and Wa) and in Togo (Kara and Dapaong).

A validation workshop of the concept note involving the designated national authority, the representatives of the Ministry of Agriculture and Livestock of the beneficiary countries and certain regional and international organizations was organized on January 6, 2016 in Lomé (Togo).) at the headquarters of the WADB. This workshop was facilitated by extensive discussions with key stakeholders on the activities to be carried out under the project. The adopted methodology has made it possible to assess the potential of adaptation practices, to identify the constraints related to their deployment and to define appropriate support measures.

Public consultation during the preparation of the Full proposal

During the preparation phase of the Full Proposal, a broad consultation of stakeholders involved in the project was conducted. It took place from 15 to 26 August 2017 in four countries namely, Burkina Faso, Niger, Benin and Togo and from 17 to 23 September 2017 in Ghana. Correspondence was sent to the countries concerned in particular to the services directly involved in the project in order to announce the mission.

During these missions, meetings were organized in each region of intervention with the agents of the technical services of agriculture, environment, livestock, meteorology, etc. as well as civil society organizations (NGOs / Associations).

During these missions, meetings were organized in each region of intervention with the agents of the technical services of agriculture, environment, livestock, meteorology, etc. as well as civil society organizations (NGOs / Associations).

During the meeting, a review of relevant country documents, policies and strategies was conducted to better inform project development. Participants were each time invited to provide information and to present past and ongoing work in their country, including lessons learned, gaps and opportunities related to improving the resilience of populations to adverse effects of climate change.

The following photos illustrate some of the working sessions with technical services and civil society organizations (NGOs / Associations).

Photo 1: Public consultation with technical staff in different countries

Visits were made to potential project sites as well as to vulnerable localities. The purpose of these various public consultation missions during the preparation of the complete project document is to seek the beneficiaries' points of view and to collect the information to allow a better conception of the project with a particular involvement of vulnerable groups, people elderly, women and young people. This

approach of information, communication and stakeholder participation has led to mutually beneficial exchanges, favorable to an open dialogue with the aim of: (i) ownership of the project by the beneficiaries at the stage of preparation and planning; (ii) taking into account the concerns of all stakeholders, including vulnerable groups (women, youth, children, etc.) in the design and implementation of the project; (iii) exchanges on financing and sustainability of the project.

The adopted methodology was a participatory exchange with the potential beneficiaries of the project in local dialects, in order to allow the population to have a clear understanding of the project's ideas and objectives and to share their perspectives, concerns and priorities.

The participatory approach to collecting information helped to identify other future challenges of the project, based on the perception of the population. In addition to the possibilities of adaptation to the effects of climate change and the fight against food insecurity, the following topics were addressed: capacity building through experience exchange trips, training on specific themes related to climate change etc.

The consultation carried out on certain sites made it possible to identify adaptation practices as well as the progress made in the field of food safety, in accordance with the technologies of the concept note (stony cords, runoff mobilization for offsets).). Seasonal crops, water tanks with solar pumping, etc.). These field visits also provided a clear picture of some of the elements under study, and also supplemented the information collected from technical services.

During these site visits, direct observations in the field also made it possible to assess the nature of the areas concerned. These observations have been valuable indicators for the summary characterization of the biophysical and socio-economic environment. They made it possible to identify adaptation practices that are available at the local level but poorly implemented to strengthen the resilience of populations to the adverse effects of climate change. The following photos illustrate some visits to potential sites.

Localities and communities visited and maintained during public consultations are presented in the following table.

Table 16: Sites and communities visited as part of the preparation of the Full proposal

Country	Region	Target / visited area
Burkina-Faso	CENTRE-SUD	Zoundweogo Province (Municipalities of Guiba and Gon Boussougou)
		Nahouri Province (commune of Tiébélé)
	CENTRE EST	Province of Kouritenga (Municipalities of Kando, Baskourey, Gounguin and Andemtenga)
	EST	Province of Gnagna, (Municipalities of Mani, Liptougou and Piela)
Bénin	ALIBORI	Municipalities of Karimaman, Malanville and Banicouara
	ATAKORA	Municipalities of Boukoumbé, Cobly, Matéri and Tanguiéta
Ghana	UPPER EAST	Katanga and Bolgatanga
	UPPER WEST	Wa, Nadowli and Nandom
	NORTHERN	Central Gonja (Kapilpé) and Tamale
Niger	TILABERI	Departement of Aballa (Municipalities of Aballa and Sanam)
		Departement of Tilabéri (Commune of Anzourou)
		Departement of Tera (Municipalities of Tera and Gourouol)
	DOSSO	Departement of Dogondoutchi (Municipalities of Dongonkiria and Soukoukoutane)
Togo	KARA	prefectures of Kozah, Assoli and Bina
	SAVANES	prefectures ofTône, Tandjouaré and Cinkassé

The community exchanges focused on the following points: (i) the main socio-economic activities of the community, especially that of women heads of households; (ii) the perception of climate change and effects on the community; (iii) the agricultural production system (irrigated or rainfed); (iv) adaptation strategies to deal with the adverse effects of climate change; (v) assistance and priority actions to build community resilience.

As mentioned above, during the site visits, public consultations were held with the populations of the localities concerned to collect their perception of climate change, food insecurity and adaptation practices to the locally developed effects of climate change. . Indeed, the group discussion was a qualitative method of data collection during which the different actors met to discuss the advantages and disadvantages of the implementation of the project. During the consultations it was noted a strong mobilization of the women and the elderly (vulnerable people), the heads of localities of person in charge of ditsrict, etc.

The following photos illustrate the discussion sessions with potential project beneficiaries.

Photo 2: Public consultation with potential beneficiaries in the project area

During public consultations, people raised the following concerns: (i) soil degradation and the worrying drop in agricultural yields; (ii) lack of food during a good time of the year; (iii) difficulties of water supply for the development of small irrigation; (iv) lack of financial means to dispose of agricultural inputs (fertilizers, improved and resistant seeds, plant protection products); (v) repetitive attacks of crop enemies with production losses; (vi) lack of support from the technical services, inadequate agricultural equipment; (vii) the loss of sowing and production with the irregularity of the rains, the late arrival of the rains, pockets of drought; (viii) silting of perimeters with water erosion phenomena; (ix) flooding of perimeters with heavy rainfall over a relatively short period; (x) early drying up of water points and conflicts between local and transhumant populations; (xi) the rural exodus of young people during the dry season in search of life and better living conditions.

These concerns have been analyzed and taken into account in the project, as presented in the table below.

Table 17: People Concerns in the public consultations

Concerns	Prise en compte dans le projet
Degradation of soils and decline in crop yields	The project has planned activities of restoration and improvement of the soil fertility through the promotion of techniques and climate resilient technologies and which strengthen the production and contribute to carbon sequestration (see activity 2.1.1 and) in particular the sub-activity 2.1.1.1).
Lack of food	The project will support food security through activity 2.1.1. Promoting market gardening of off-season, the project will make available other food other than cereals to diversify supply and contribute to nutritional health
Difficulties of water supply for the development of small-scale irrigation	The project planned to advocacy of water for the development of market gardening under the activity 2.1.1.2.
Lack of funds for agricultural inputs (fertilizers, improved and resistant seeds, phytosanitary products)	The project will support the acquisition of agricultural inputs (fertilizer, improved and drought-resistant seeds) (Cf. sub-activities 2.1.2.1 and 2.1.2.2). The pests integrated management techniques will be promoted to reduce the use of the pesticides).
Repetitive attack of the enemies of crops with production losses	The project has provided effective solutions to combat the enemies of crops through the promotion of the integrated pests and pesticides management Plan (see sub-activity 2.1.2.3). A strengthening of the technical capacity for the integrated pests and pesticides management is planned in the same activity
Lack of support on the part of the technical services, the lack of agricultural equipment	The project will provide capacity building of technical services to provide on site support to producers (Cf. activity 1.2.1). Support of local facilitators site for better application of the techniques is also planned (see sub-activity 2.1.2.4).
Loss of seedlings and productions with the irregularity of the rains or the late arrival of these	The project will strengthen the collection of local weather data for their treatment and information production, as well as cropping calendars adapted to areas and understandable by the beneficiaries. The dissemination of agro-weather previons will be strengthened as part of the project. (Cf. Activity 1.1.1.)
Perimeters sanding	It is planned anti-erosifs equipment development in watersheds to reduce silting and floods to perimeters (Cf. Activity 2.1.1)
Flooding of areas with heavy rains over a relatively short period	It is expected that the application of thresholds will combact floods (Cf. Activity 2.1.1)
Early drying of water points and conflicts between local and transhumant populations	The project provided to mark transhumance corridors and install inside water points (drilling and basins) (Cf. sub-activity 2.1.1.3)
Rural exodus of young people during the dry season looking for better living conditions	The project planned activities of off season agriculture, not only to occupy youth during dry season but allow them to generate substantial income to improve their living conditions (Cf. sub-activity 2.1.1.1 and 2.1.1.2).

All the concerns of the beneficiaries been taken into account in the preparation of the project.

After the formulation of project documents, meetings of validation at the national level were organized and brought together the various technical services and representatives of the communities. The following photos illustrate validation meetings at the national level, respectively in Benin and Burkina Faso, took in example.

Photo 3: National Workshop to validate the documents of the Full proposal (example of Benin (left) and Burkina Faso (right))

As a result of these national workshops of restitution, a regional workshop was held at the headquarters of the West African Bank of development (BOAD) in Lomé, from 09 to January 10, 2018, to validate the complete proposal of the project and its environmental and social management framework. The overall objective of the workshop was to allow the national authorities designated (AND), officials of the agencies and offices of environmental assessment, Agriculture technical services and to the actors of regional institutions working to the achievement of the objectives of agricultural policies and regional food security to have a good understanding of the regional aspects of the project and, if necessary, to harmonize the views of different stakeholders.

Photo 4 : Regional workshop of validation of project documents

In order to take advantage of this consultative process used in the preparation of the project, a number of follow-up activities will be carried out during the phase of selection of the sub-projects to ensure that the final beneficiaries are vulnerable groups and these concerns are taken into account. The monitoring of the project activities will allow to measure the level of satisfaction of the concerns of the beneficiaries.

J. Justify the funding requested by focusing on the total cost of adaptation reasoning.

Baseline of the project

Climate change affects agriculture in all ECOWAS countries in different ways. CILSS studies have shown that the current climatic variability is marked by a shift of isohyets towards the south. In other words, the populations located in an agroclimatic zone today are already suffering from the aridity observed a few years ago in the agroclimatic zone of the higher latitude.

The southern regions of Burkina Faso and Niger present common climate challenges and the northern regions of Benin, Togo and Ghana also present similar climatic challenges. With the shifting of isohyets, the northern regions of Benin, Togo and Ghana, will suffer the adverse effects of climate change that the southern regions of Burkina Faso and Niger are undergoing today. Over the years, the sliding insidiously catches people who have not prepared. However, agro-meteorological information adapted to the local context is not available. In cases where they are available, they are obsolete and unusable.

While the problem is regional, we note in this baseline: (i) insufficient awareness of the displacement of isohyets to the South, at the regional and national levels, (ii) insufficient trade between countries and regions on the climate trends in West Africa; (iii) insufficient collaboration between sectors and difficulties in sharing approaches for sustainable solutions

Climate disruptions are increasing and affect agricultural yields, hence production and food security. Phenomena such as rainfall irregularities, dry season intensity, pockets of drought, southward migration of isohyets, aridification of agro-climatic zones, etc. are more and more perceptible and act on agricultural yields

In the baseline, the crop yields that will be promoted under this project and that are developed with non-climate resilient techniques are presented in the following table. The crops selected for the project are cereal crops, notably maize, rice, sorghum and millet, which are the main crops in the project area and market gardening crops such as potatoes, tomatoes, onions and the carrot. It should be noted that with the amplification of climatic disturbances and the confusion of cropping calendars, the farmers sometimes record total losses of production of the agricultural campaign and therefore without harvest because of pockets of drought as indicated by the following images. These pockets of drought are more and more recurrent

The low yield and the risk of increasing seasonal production losses have contributed, in part, to the exaggerated expansion of cropland, the reduction of forests and savannas and thus grazing areas exacerbating conflicts between farmers and breeders (see PATR IA, pages 18-25)

Although these phenomena reinforce each other and reinforce the vulnerability of populations to climate change, the current situation is marked by: (i) weak national technical and financial capacity to promote agriculture compatible with climate change; (ii) weak technical capacity of farmers and pastoralists to develop sustainable farming practices; (iii) a lack of information and technology transfer that has demonstrated resilience at the local level

This set of facts at the regional, national and local levels limits the implementation of concrete adaptation actions and a significant proportion of the population is in a situation of food insecurity, poverty and malnutrition (see PART I.A).

Given the complexity and the multitude of challenges, the will to capitalize on common smart agricultural practices to the climate through the implementation of structuring actions for rural areas, while pooling the resources mobilized in a regional approach justifies this application to the Adaptation Fund in the context of the call for proposals for regional projects. It is also an opportunity to gain experience, develop, manage and generate knowledge about concrete actions at the local level to strengthen farmers' resilience.

Thus, the project will develop a regional approach in order to: (i) increase the knowledge base on the effectiveness of climate-smart agriculture (CSA) with respect to its three objectives (mitigation, adaptation and generation of climate change); income); (ii) increase trade, engagement and capacity among actors at all levels, especially regional, national and local; (iii) promote exchanges of experience, knowledge and dialogue between producers in the different agro-climatic zones; (iv) integrate CSA into development planning with coherence and synergy between agricultural and climate change ; (v) support capacity building for resource mobilization.

Analysis of options/alternatives

Two alternatives are considered: (i) Alternative 1: Without project; (ii) Alternative 2: Development of the current project "Promoting climate-smart agriculture in West Africa".

Option 1: Without project

The alternative without project means not implementing the Adaptation Fund project

In terms of climate, farmers will remain vulnerable to climate change for as long as possible. But these effects are diversifying and amplifying. Non-resilient farming techniques will continue to be practiced with greenhouse gas emissions also reinforcing the adverse effects of climate change

In social terms, particularly in terms of food security, agricultural yields will continue to fall and production will remain low compared to needs. People's food insecurity will gain more ground. The rural exodus will be accentuated with the problems that it generates in the reception areas.

At the economic level, producer incomes will remain very low and poverty will increase. This reinforces food insecurity as producers will be in a situation where they will always attempt to belly some of the already low cereal production, thus reducing food availability.

With regard to livestock, the alternative without project means the exacerbation of conflicts between farmers and herders during the transhumance period. Transhumance corridors will remain unplanned and lack of water for livestock watering in these corridors will increase.

The alternative without project is therefore not sustainable in terms of resilience, the mitigation of GHG and the economy. By opting for this alternative, countries will be obliged to put in place, in the short or medium term, emergency programs to save people from food insecurity and the adverse effects of climate change, while temperatures will continue to rise, precipitation will be more and more rare. This option, which is not sustainable from a financial point of view, will be very expensive for donors as well as recipient countries whose resources are very limited.

Option 2: Development of the current project "Promoting climate-smart agriculture in West Africa"

This alternative means the implementation of the project as planned with an integrated approach to site development. This alternative aims to promote a better combination of techniques and technologies that enhance people's resilience, improve production and incomes, and contribute to the mitigation of greenhouse gases. The alternative project offers opportunities: (i) local, national and regional learning through on-site exchange visits between the different agro-climatic zones; (ii) strengthening local, national and regional capacities in climate change adaptation planning. The project will help farmers to better plan agricultural camapans through the strengthening of agro-meteorological information, production and availability of zone-specific and community-understandable crop calendars.

The techniques promoted in the framework of the project (zai, half-moons, stone bunds, filter bunds, grass strips, organic manure, mulching, agroforestry and assisted natural regeneration) have interesting adaptation potentials (see table below).

Tableau 18: Potentiel d'adaptation des techniques et technologies promues

Techniques	Adaptation potential
Stone bunds	The Stone bunds are interesting in terms of adapting to climate change in many ways. The decrease in the flow rate favors the infiltration of water and thus prevents the loss of rainwater. By reducing erosion, cords promote the sedimentation of fine soil particles carried by water and manure. In case of erratic rains, stone bunds help to retain more moisture in the soil for a longer period and reduce water scarcity in pockets of drought. In wet weather, they protect the land in case of heavy rains, this phenomenon tending to increase with climate change. Water infiltration increases the availability of water for crops and secures the harvest. Well vegetated, stone bunds reduce soil temperature and protect against wind erosion.
Permeable rock dam	Permeable rock dam serve to mitigate the adverse effects of rainfall variability. They protect farmland at high risk of wet erosion and heavy or heavy rain and provide better water infiltration into the soil. At the time of pockets of drought, the filter bunds promote a better availability of water for crops for a longer period thanks to their ability to stop and slow down the runoff. In case of good vegetation of the structure by means of herbaceous and ligneous, one notes a decrease of the temperature of the ground and a protection against wind erosion all along the structure.
Grass strips	Like stone bunds, grass strips reduce the harmful effects of heavy or violent rains. They contribute to better recovery of rainwater and better water retention in the soil. This last effect is particularly important when the rainy season is interrupted by pockets of drought. With vegetation, grass strips help reduce soil temperature and also have a positive effect against wind erosion. They slow down the runoff of water during heavy rains and promote a better distribution of rainwater on the ground and its infiltration.
Zaï	The zaï technique is particularly interesting in areas with random rainfall and / or recurrent pockets of drought. It avoids the loss of water and allows the plant to dispose of this water for a number of days. The manure arrangement in the holes prevents it from being washed away during heavy rains. The arrangement of the

Techniques	Adaptation potential
	staggered holes makes it possible to collect the runoff water optimally and slows down the flow of water on the ground.
Halfs-moons	The half-moons, reduce the speed of water runoff, contribute to a better valuation of water. This is especially beneficial in case of low rainfall, as the half-moons direct water to the plants, thus increasing the availability of water. During reforestation, the survival rate of ligneous trees increases. In the case of agricultural half-moons, crops survive temporary drought periods. On the other hand, in case of heavy rain, the half-moons in earth are not appropriate. The non-filtering nature of the structure causes flooding of plants and stagnation of water. This can reduce crop yields sensitive to excess water. In this case, the half-moons in stones are preferable.
Organic manure	Organic manure restores biological activity, improves fertility through the provision of nutrients and ensures better soil structure through increased organic matter. The best soil structure promotes water infiltration.
Mulching	Mulching makes it possible to recover non-fertile areas in the field. Stem remnants also promote water infiltration and moisture retention in the soil during the rainy season and protect against water erosion. The ground cover with straw protects it against wind and water erosion and provides nutrients. It mitigates the effects of strong sunstroke and heavy rain.
Assisted natural regeneration	Assisted Natural Regeneration (ANR) is of particular interest in adapting to climate change. According to climate change projections, the Sahel zone is expected to expect an increase of 3.5 ° C on average, which will also have upward effects on the soil temperature. Trees (especially at giant harbor) reduce soil temperature and thus water stress for plants. In addition, they brake strong winds and protect against water and wind erosion.
Runoff water harvest basin, large diameter well and boreholes	Runoff water harvest basin,large diameter well and boreholes provide additional irrigation for crops in the event of pockets of drought and improve producers' resilience to climate change. They aim to minimize the effects of seasonal variations in water availability due to droughts and arid periods. They make it possible to manage floods of the fields by collecting the surplus of water in this last one. When the water is pumped through a solar pump, the pump operates with clean, abundant and free renewable energy. This technology requires only low maintenance costs (usually limited to cleaning the pump and solar panels) and does not require any external fuel input (oil, electricity).
The spreading thresholds	The spreading thresholds slow floods in valleys and distribute water over a large area where water can seep into. Floods in rivers are thus regulated, which reduces erosion and water loss. At the same time, sediments improve soil fertility and the water table is recharged. Application thresholds contribute to recovery and rehabilitation of degraded lands and restoration of vegetation cover. The water flowing from the valleys is thus put to the benefit of agriculture, livestock farming and forestry. With their distribution effect, the spreading thresholds distribute water from the watershed over a large area at the bottom of the valley. This promotes better water use during periods of low rainfall, drought pockets and early rains. During wet periods and / or periods of heavy rain, the spreading thresholds, through their slowing effect on the flow of water, may help to avoid or reduce gully erosion and erosion, and help protect downstream areas.

The project activities and outcomes are aligned with the NEC and NAPA processes and reflect the total cost of adaptation. The comparison between the reference level and the implementation of the project is made in Table 10 below for the entire project and the specific components of the project. From there, it is clear that the full cost of adaptation principle supports this funding request to the Adaptation Fund. In particular, the project activities will support a transition to transformational adaptation rather than incremental adaptation activities, using participatory and capacity components to improve the sustainability and impact of interventions.

Table 19: comparison of the reference situation / business as usual compared to the interventions planned within the framework of the project

	Reference situation / Business-as-usual	**With the project intervention**
description of the problem	Ghana, Togo, Benin, Niger and Burkina Faso have made considerable efforts to help pastoralists and farmers in the project area to adapt to climate change. This includes improving rural infrastructure, roads, rural electrification, irrigation technologies, etc. There is also investment in extension services (including in partnership with local institutions), agronomic research (for example, the development of drought tolerant varieties and testing of improved cultivation techniques), and strengthening environmental safeguards by adopting legislation to maintain essential ecosystem services for farmers and pastoralists, who are largely natural resource based societies. However, despite these efforts, it is clear that climate change requires urgent and immediate investments in the project area to counter the effects of climate change: rainfall reduction and desertification have already been observed in the West African Sahel in particular through the southward widening of the Sahelian zone, with new altitudes for a "new" drier climate becoming a real challenge. This will put significant new pressure on local pastoralists and farmers in the absence of integrated interventions to improve food security and income generation and start regional learning processes across the agro-climatic zones of the priject region. .	Due to growing and changing climate risks and limited capacity and resources to implement adaptation strategies, the five countries have requested ECOWAS and BOAD to submit a project to the Adaptation Fund. This project should address the reinforcement of integrated approaches and learning processes in climate-smart agriculture and livestock breeding (CSA), linking adaptation capacity building with productivity and mitigation to sustain low carbon savings. This project would help to build the adaptive capacity needed to reduce immediate and long-term climate change adaptation deficits in the project area, while preparing for an ongoing process of mutual learning that supports long-term planning for climate adaptation at regional, national and local levels. This is particularly important due to the dependance of climate-smart agriculture on weather and space: what is now intelligent in the climatic level may not be in the nexte twenty years; therefore, the use of learning processes is important for building adaptive capacity. In the absence of adaptive capacity, potential impacts can exacerbate the vulnerability of pastoralists and farmers with potentially disastrous consequences for communities living in the project area.
Components of the project		
Component 1: Strengthening knowledge and technical capacity through regional and local interactions for	Without Component 1: In the absence of the proposed training activities, capacity building and knowledge-shanring considered, it is expected that future fundraising efforts should be based on superficial knowledge of local needs adaptation and available capacities. This	With Component 1: The Regional Forum will support the identification of alternatives for climate-smart interventions and learning in different agro-climatic zones, while promoting adaptation planning that is goal-oriented and livelihood security in the

	Reference situation / Business-as-usual	With the project intervention
the promotion of agriculture practices resilient to the adverse effects of climate change	situation will increase the risk of developing ineffective adaptation strategies in the field. Because climate change easily crosses national borders, the lack of mutual learning mechanisms in the agro-climatic zones of the project, especially on the livelihoods risks of rural populations related to the spread to the south of the Sahelian zone, will increase the long-term vulnerability of farmers and pastoralists.	longer term, making adaptation a continuous process rather than ad hoc decisions. This will identify effective technologies and processes for climate-smart agricultural and zootechnical interventions that specifically address agro-climatic, economic, food security, cultural and social factors. The risk of engaging in inefficient adaptation, which would increase over time, can be mitigated. As a result, the component will also support the significant integration of adaptation into conventional development planning.
Scaling up best practices related to climate change adaptation in agriculture and pastoralism at the local level	Without component 2: Most climate-smart technologies are not new in some areas of the project, for example, stone bunds and zai are often used for integrated soil and water management. Nevertheless, it is clear that the diffusion of CFS technologies and their practice is still limited to: (i) a relatively small subset of potentially available technologies; and (ii) lack of integration of technology and technology as well as ecosystem services and market development at the village level or for pastoralists. This means that, in the case of the BAU scenario, neither adaptation needs nor community capacities are adequately addressed, which reduces the effectiveness of planned interventions for adaptation. The lack of gender-sensitive approaches is likely to make women more vulnerable over time, for example with unacknowledged and often unpaid family and productive burdens and a greater absence of male family members, thus increasing their burden. Climate services will also continue to be poorly disseminated and used by pastoralists and farmers in the regions, as radio programs are not currently focused on their needs.	With component 2: With the Adaptation Fund project, we can expect a broader integration and diffusion of CSA technologies, also conservation and planning efforts that are more difficult to implement (natural regeneration managed by farmers) that help reduce sensitivity to extreme weather events such as drought or floods, and planning for local adaptation for long-term livelihood security. Through the implementation of participatory rural project design and local institutional capacity building, adaptation interventions at the local level will be more socially and culturally accepted, while creating a basis for investing in future interventions (together component 1). The availability of climate services tailored to the needs of local farmers and pastoralists is additional support to meet impending adaptation needs.
Component 3: Knowledge sharing on Resilient Agricultural Best Practices related to Climate-Smart Agriculture	Without Component 3: Although there is a knowledge base on climate smart agriculture in West Africa, existing knowledge management systems raise two main concerns: (i) lack of knowledge about interventions and processes adapted to the agroclimatic zone subject to rapid aridification, such as the Project area. In reality, planning and integrating climate smart agriculture according to location and timing will only work if interventions are tested and analyzed at	With Component 3: Implementing a Sub-regional Network on Learning, Sharing and Capacity Building will help the five countries to revise their climate change adaptation programs and projects as well as their global strategies on climate change. This will directly contribute to the objectives of the Adaptation Fund. In addition, the sub-regional knowledge gained will be shared with other West African CSA initiatives to promote similar learning

	Reference situation / Business-as-usual	With the project intervention
	appropriate levels to avoid generalizations that are not well adapted; (ii) Lack of detailed knowledge also affects climate change planning capabilities and hence longer-term vulnerabilities. In the BAU scenario, therefore, processes and technologies can not be expected to contribute to CSA objectives.	processes that can contribute to building capacity to address the associated risks and vulnerabilities related to climate change.

With the benefits that will be realized in the project, the beneficiaries will be able to continue their resilience to climate change by the continuation of the activities promoted after the closure of the project, considering that the populations have appropriated the project through the reinforcement activities, learning visits, site support, etc.

Without the project, yields are low and profits low enough. With the project, these returns will be improved as well as the revenues. For market gardening two agriculture compains will be conducted per year instead of one campaign in the situation without project.

Table 20: Contribution of the project adaptation measures

Crops	Area developped per crop (ha)	Income of the producers without project (USD)	Incomes of the producers with project (USD)		Annual contribution of the project with adaptation measures (USD)	
			Optimistic scenario*	Pessimistic scenario	Pessimistic scenario*	Optimistic scenario
Maize	1000	145 793	310 397	279 357	133 565	164 604
Rice	300	96 468	187 854	169 068	72 600	91 385
Sorghum	750	123 662	255 950	230 355	106 694	132 289
Mil	750	99 585	227 561	204 804	105 219	127 976
Potato	75	371 999	733 683	660 315	288 316	361 685
Tomato	75	220 950	415 432	373 889	152 939	194 483
Carot	25	95 699	177 660	159 894	64 194	81 960
Onion	25	59 923	112 975	101 678	41 755	53 053
TOTAL PROJECT	**3000**	**1 214 077**	**2 421 512**	**2 179 361**	**965 283**	**1 207 435**

** the pessimistic scenario assumes a yield reduction of 10% compared to the estimated returns in the project situation, ie a 10% decrease in income in the project situation.*

Support from the Adaptation Fund to strengthen the resilience of vulnerable populations to climate change in the project area will generate benefits ranging from US $ 1,207,435 (Optmist Scenario) per year. Considering the pessimistic scenario, the investments of the Adaptation Fund which amount to 8,848,000 USD for the realizations of field, will be able to be made profitable in 7 years.

Considering the total amount of funding from the Adaptation Fund, ie USD 14,000,000, the project will be able to make this funding profitable in 11 years.

K. Describe how the sustainability of the project / program results was taken into account in the project / program design.

The sustainability of the results of a project is best achieved by ensuring that interventions are integrated with existing institutions and systems at both national and regional levels.

At the national level, the present project has put an emphasis on the involvement of the main institutions concerned by the proposed actions in the process of project identification and preparation. These are services in charge of agriculture, water management for agricultural purposes, livestock, the environment and meteorology. These are institutions or services that have responsibilities for climate change adaptation, provision of climate services, sustainability of agricultural production, and building resilience in farming and livestock systems. A process of appropriation of project actions by these institutions is strongly favored through the development of the technical capacities of intervention on resilience actions in the face of climate change. The improved weather and climate services / information that will be provided by this project are part of the routine services provided by National Meteorological Services / Institutions in the target countries. This will ensure continuity of meteorological actions after the intervention. All of these services and institutions have been involved in the project development process, including consultations from the project design stage and fully understand their responsibilities. The actions that these services / institutions undertake on a daily basis will be improved and supported within the framework of the project.

In terms of agricultural activities, long-term sustainability is further ensured by focusing on capacity building of technical support and extension services, especially field workers, in climate-smart agriculture. This is reinforced by the use or use of institutions that are already in this area so that when the project is closed, activities continue. The capacity of these entities will then be strengthened during project implementation. These entities will be able to take over at the end of the project. Beneficiary countries are committed to supporting the implementation of project activities. This approach is also necessary for sustainability. Departments may allocate resources to continue certain activities. The improved actions proposed on the basis of the local practices will be quickly appropriate by the beneficiaries who will be able to continue the practices after the closure of the project.

The technologies and improved adaptation practices promoted are low cost and can be maintained and expanded by producers after the intervention and beyond the project boundaries. The experience of Niger (Tillaberi, Tahoua, Maradi and Zinder), Burkina Faso (central plateau), Ethiopia and other countries shows that investment in soil regeneration in degraded areas has increased of agricultural production. These farmers have been able to invest in soil conservation themselves when necessary.

At the local level (site development), the techniques and technologies promoted in this project have a lifespan of 10 to 20 years. These techniques and technologies will be realized on flat sites to the beneficiaries and being exploited. The maintenance or operationalization of these different techniques and technologies does not require significant investments and will be carried by the beneficiaries in order to improve expected yields and production. These improvements in yields will encourage recipients to continue to implement these techniques and technologies and ensure their sustainability. For water mobilization infrastructures such as solar drilling, they will be realized for several functions with foreground development of off-season crops to generate income. Considering the operating accounts of the vegetable crops selected for the project (see appendix 6.), the beneficiaries will be in a position to ensure the replacement of the equipment once their life is over.

To ensure the continuity of the works, particularly with regard to the maintenance of water mobilization infrastructures, the acquisition of quality agricultural inputs, the groups will be organized so as to have a perimeter management fund. The permiter management committee members will be elected by their colleagues. They will be preferably the one who have actively participated the subproject designing process. Minimum fees will be introduced depending on the types of technology and techniques

developed on the perimeter in question. These royalties may be in kind, in particular, the harvesting products that will be marketed later at the appropriate time. The funds collected will be placed in a local microfinance institution and managed by the beneficiaries themselves. The structuration, the composition and the functioning of the perimter mangement committe are presented under item III.A. The Perimeter Management Committees will be supported in the performance of their duties by Site Facilitators and Technical Extension Services as planned under Activity 2.1.2.4. The committees will be maintained and supervised by the technical services of agriculture, environment and livestock even after the closure of the project.

At the regional level, the project involves regional institutions that are already carrying out similar activities, each in its own interest. These are regional institutions such as: (i) ACMAD; (ii) the Permanent Inter-State Committee for Drought Control in the Sahel (CILSS); (iii) the Agrhymet Regional Center; (iv) African Union Semi Arid Food Grain Researchand Development (AT SAFGRAD); (v) Department of Food Security, Agriculture, Mines and Environment; (vi) International Livestock Research Institute West Africa Regional Office (ILRI); etc. These institutions will play an important role in the project and will ensure the continuity of actions after the intervention of the project, each according to its mandate at the regional level.

By taking advantage of FAO's modalities for the dissemination of knowledge in the areas of agriculture, food and nutrition security, the scope and dissemination of project results will be strengthened and will benefit a wider range of producers in the West African sub-region.

Furthermore, ECOWAS has already decided to integrate the adaptation of agriculture to climate change in the second phase of the regional and national agricultural investment plan that will be completed in the coming years. Lessons from this project will facilitate advocacy for continued project activities.

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

The project as planned aims to strengthen the resilience of vulnerable populations to the adverse effects of climate change. The project does not involve the conversion of natural habitats to other uses and, in fact, some activities such as agroforestry, improve and restore degraded lands, improve soil fertility, reduce erosion and depletion of soil nutrients and improve carbon storage. Through the climate-smart agriculture approach, the project will improve biodiversity in crop and livestock production as a means to improve the resilience of agro-ecosystems to climate change and climate variability.

Despite the positive impacts that can improve the project results (cf II.C), the subprojects will generate limited potential negative impacts and risks. Thus, the environmental and social principles of the AF will be triggered by the subproject in terms of negative impacts and environmental and social risks. Considering that the subprojects are unidentified, all the ES principles of the AF ESP are supposed to be triggered (see table below).

Table 21: Checklist of Environmental and Social Principles

Checklist of Environmental and Social Principles	No further assessment required for compliance	Potential impacts and risks - additional assessment and management required for compliance
Compliance with the law		x
Access and equity		x
Marginalized and vulnerable groups		x
Human rights		x
Gender equity and women's empowerment		x
Core Labour Rights		x
Indigenous peoples		x
Involuntary resettlement		x
Protection of natural habitats		x
Conservation of biodiversity		x
Climate change		x
Pollution prevention and resource efficiency		x
Public health		x
Physical and cultural heritage		x
Conservation of land and soil		x

When selecting the sub-projects, each sub-project will be subjected to environmental and social screenning based on the 15 ES principles of the Adaptation Fund. However, in order to minimize negative potentially environmental and social impacts and risks that may be significant, widespread and irreversible, sub-project eliminatory criterion have been established. These criterion concerns: (i) Indigenous Peoples, (ii) Involuntary resettlement, (iii) Conservation of land and soil. Considering these eliminatory criterion and taking into account the fact that the intervention sites will be sites in the process of exploitation by the beneficiaries, the impacts of the project will therefore be localized, reversible and controlable.

According to the environmental and social policy of the Adaptation Fund, a project can be categorized as A, B or C. Category A refers to projects "likely to have significant adverse environmental or social impacts, for example diverse, extensive and irreversible". The category C concerns projects "without negative environmental or social impact". Because the negative social and environmental impacts of the project should be localized and minimized - field interventions will be largely "green" and contain minimal physical infrastructure construction - the Category A classification does not apply. Given that the proposed project will undertake activities in the field, some environmental and social impacts are expected, even if they are negligible. Therefore, the proposed project is classified as a Category B project because its potential effects are less unfavorable than Category A projects, because impacts are less numerous, less widespread, reversible or easily mitigated through the use of best practices of environmental and social management.

The environmental and social negative impacts and risks can arise in one or the other phase of the project, namely: subproject selection and ESIA preparation, construction of infrastructures, operationalization of project, and completion of the project.

When the sub-projects and their sites are known, after selection, each sub-project will be subject to an environmental and social impact assessment that will be carried out in accordance with the Environmental and Social Policy of the Adaptation Fund and the national procedures on ESIA. These

studies will identify specific environmental and social risks and impacts according to the principles of the Adaptation Fund.

Table 22: Checklist of environmental and social impacts and risks of the project.

Triggered principles E & S of the FA	Impacts / risks identified	Description of the impact or the risk	Risk/Impact level
Compliance with the law	Low integration of environmental and social issues relative to the Adaptation Fund ESP principles in the subprojects ESIA and ESMP	Given the current practice in ESIAs formulation in the countries in accordance with national regulations, it is possible that, the impacts and risks assessment are not sufficiently take into account the environmental and social principles of the Adaptation Fund ESP in the formulation of the sub-projects ESIAs.	Medium
	Low capacity to producers for the implementation of environmental and social measures, in accordance with national law and the principles of the Adaptation Fund	Environmental and social impact studies or records of environmental and social impact relative to the subprojects will be accompanied by environmental and Social Management Plans according to the environmental and social principles of the Adaptation Fund. The prescribed measures will be implemented on the site during their operating by the producers. However, there is a risk to the low ability of producers to implement environmental and social measures proposed, in accordance with national law and the principles of the Adaptation Fund.	Medium
Access and equity	Risk of increase in inequalities between women, men, children and particularly vulnerable groups	Producers are, in their majority, the poor who are often not integrated into the decision-making process. They are men, women and young people. There is therefore a risk of lack of access to the resources of the project by the producers at the level of the technical and organizational capacity-building, access to the support for implementation of the facilities and techniques, access to quality inputs, etc.	Low
	Risk of not full participation of certain groups members in the preparation and the implementation of the subproject	There is a risk that all members of the beneficiary groups or community are not involved in the preparation and the implementation of their subproject.	Low
Marginalized and vulnerable groups	Risk of no involvement of marginalized and vulnerable groups in	Under the project, it is proposed to reduce the vulnerability of farmers to the harmful consequences of climate change. However, there may be the	Low

Triggered principles E & S of the FA	Impacts / risks identified	Description of the impact or the risk	Risk/Impact level
	the provision of the resources of the project	risk that the vulnerable and marginalized groups are not involved in all of project activities.	
Core labor rights	Risk related to the health and safety of workers	During construction works, and during their operation, workers are exposed to the risk of accident at work that can go from simple death injuries. It is similarly during the realization on the different technologies on the site with agricultural equipment	Medium
	Risk of child labor outside the limits of the law	In rural areas, children help parents in field activities. Under the project, it is not excluded that children are used to difficult tasks	Low
Gender equality and empowerment of women	Insufficient taking into account of gender in the implementation of the project	Although women and youth are the first targets of the project, they may not be sufficiently involved in the development and implementation of subprojects.	Low
Protection of natural habitats	Destruction of vegetation and wildlife habitat	The implementation of water mobilization infrastructures such as catchment collection basins (BCER) large-diameter wells, solar-pumped boreholes can result in the destruction of vegetation and the wildlife habitats of site implantation	Low
Conservation of biodiversity	Biodiversity loss	Project activities may lead to the decline of biodiversity in the project area through the introduction of other species or through the use of pesticides in case of pest crop attack	Low
Pollution prevention and efficient management of resources	Risk of conflict between beneficiaries in the use of water from the infrastructures set up by the project	The water mobilization infrastructures being made for a group of farmers, there may be conflicts between them in the use of water	Low
	Contamination of soils and waters by pollutants	Although the project promotes the use of organic manure, fertilizer supplements made through chemical fertilizers can cause water and soil pollution situations, if they are not rationally used.	Medium
Public health	Risk of poisoning by inhalation or by consumption of water contaminated by fertilizers or pesticides	The project includes a section on the development of vegetable crops that may require the use of chemical pesticides if alternatives to integrated pest management prove to be ineffective in dealing with the problem. In this case, there is a risk of	Medium

Triggered principles E & S of the FA	Impacts / risks identified	Description of the impact or the risk	Risk/Impact level
		intoxication by inhalation or consumption of contaminated water or the use of pesticide containers for other purposes without precautions of pesticides.	
	Risk of drowning in Runoff Collection bassin (BCER)	If the BCERs made are not adequately sized and reported and well protected, there is a risk of falls in these basins by the producers themselves or other individuals walking in the area.	Medium
	Development of water-related diseases	The continued presence of the irrigated water could cause the development of waterborne diseases (malaria, typhoid fever, amoebic dysentery, etc.).	Low
Physical and cultural heritage	Risk of destruction of the physical heritage during incidental findings	Although the identification of sites takes into account the protection of the physical cultural heritage, incidental findings are not excluded during the implementation of the project. It is the risk of destruction of the physical and cultural heritage during incidental findings	Low

In order to comply with the Adaptation Fund's E & S Policy, mitigation and compensation measures have been proposed to minimize or even eliminate negative impacts and environmental and social risks. These measures are presented under section III.C.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project / programme management at the regional and national level, including coordination arrangements within countries and among them. Describe how the potential to partner with national institutions, and when possible, national implementing entities (NIEs), has been considered, and included in the management arrangements.

PROJECT MANAGEMENT BODIES

The implementation of the project will be carried out at regional, national and local levels. The Ministries in charge of hydroagricultural development are the promoters of projects at the National level. The project will be implemented under the direction of the ECOWAS Regional Agency for Agriculture and Food (RAAF), in close collaboration with ministries and other stakeholders, including the producer organizations involved in the implementation of the project at national and local levels. Since the CSA approach is new in West Africa and its implementation is decided by the Heads of State, the project management arrangements will be made at the regional and national levels for a deep ownership of the project by the national and regional decision-makers. The unit that will be set up to coordinate the implementation of the project at the regional and national levels are:

- A Regional Project Steering Committee (CRPP) will be set up by a Decision of the ECOWAS Commissioner for Agriculture, Environment and Water Resources with the support of the Ministers in charge of hydroagricultural development and the environment of the countries concerned

- A Regional Project Management Unit (URGP) will be set up by a Decision of the Commissioner of Agriculture, Environment and Water Resources of ECOWAS. The members of the URGP will be recruited by call for applications. ; The ECOWAS Commissioner for Agriculture of the Environment and Water Resources will confirm the URGP members through a Decision. The URGP, under the supervision of RAAF / ECOWAS, will be in the premises of RAAF in Lomé, Togo;

- An Inclusive National Platform for Coordination and Concertation (INCCP), serving as National Project Steering Committee will be set up in each country by Interministerial Order (Minister in charge of hydroagricultural development and Minister in charge of the environment),

- A National Project Management Unit (UNGP) will be set up by Ministerial Decree in charge of hydroagricultural development. It will serve as the Secretariat for the National Inclusive Platform for Coordination and Consultation (SINCCP). The UNGP will be housed in the premises of the National Directorate for hydroagricultural development.

All the bodies of the project will be implemented after a BOAD's no-objection.

RESPONSIBILITIES, COMPOSITION AND FUNCTIONING OF PROJECT MANAGEMENT BODIES

At the regional level:

- **The Regional Steering Committee of the project (RSC)**. The RSC is responsible for: (i) providing general guidance for the implementation of the project, (ii) validating the annual Budgeted Work Program (AWPB) of the project, (iii) ensuring that the project activities directions are consistent with those of the full proposal, (iv) provide recommendations and guidance with regard to the next steps in the implementation of the project. The Committee will meet once a year to review the implementation of the project's Annual Work Program and Budget (AWPB).
  The RSC will consist of eleven (11) members, including: (i) A representative of the Ministry in charge of Agricultural Development of each country (the Secretary General of the Ministry, Co-Chair of the National Steering Committee of the project) (5 members)); ; (ii) the Commissioner of Agriculture, Environment and Water Resources of ECOWAS; (iii) the Director of Agriculture and Rural Development of ECOWAS; (iv) the Director of RAAF / ECOWAS; (v) two representatives of regional producer organizations; (vi) a representative of the Network of National Chambers of Agriculture. NGOs and international organizations, institutions, associations and national NGOs involved in agriculture and adaptation to climate change may be invited on an ad hoc basis to contribute to specific questions and analyzes. The Commissioner of Agriculture, Environment and Water Resources of ECOWAS chairs the RSC. Two CNPP Presidents, members of the CRPP provide the Secretariat of the RSC.

- **The Regional Project Management Unit (RPMU).** The Regional Agency for Agriculture and Food of ECOWAS (RAAF / ECOWAS) has significant experience in coordinating regional development projects. It will be the Project Execution Entity. To this end, the RAAF / ECOWAS will set up a Regional Project Management Unit (RPMU) and will receive from BOAD a notice of no objection for the selection of URGP members on call for applications.
  The assignment of the URGP is to: (i) prepare the annual Budgeted Work Program (AWPB) to be submitted to the RSC for approval; (ii) coordinate and facilitate the operational implementation of project results and activities in close collaboration with national coordinators in beneficiary countries; (iii) implement the regional components of the project; (iv) promote synergy between the national and regional levels; (v) award contracts for works and purchase of equipment and service contracts with consultants and specialized technical institutions; (vi) disburse funds to the countries concerned for the implementation of field activities; (vii) ensure the overall quality and timely delivery of project results both at the regional level and within the Partner States; (viii) monitor and evaluate the results and activities of the project and report, in particular to BOAD and the steering committee.
  The URGP will be composed of: (i) a coordinator, specialist in agricultural issues with experience in the field of sustainable agriculture/CSA (agronomist, agro economist, project manager, environmentalist, minimum level master degree) ; (ii) an administrative and financial officer in charge of procurement and administrative management of the project; and (iii) a monitoring and evaluation officer, responsible for monitoring and evaluating the implementation of project activities and sharing results between national coordinators and regional entities.

At national and local level

- **The National Project Steering Committee (NSC).** In each country, an Inclusive National Coordination and Concertation Platform (INCCP) will be established as the National Steering Committee for the project. The NSC will be set up after consultation in each of the 5 countries involved in the project on the basis of inclusive representation, synergies, complementarity, consultation, dialogue and consensus. The NSC will consist of:
  - 1 Representative of the Ministry in charge of hydro-agricultural development (the Secretary General - chair);

- 1 Representative of the Ministry in charge of the environment (Secretary General - Co-Chair)
- 1 Representative of the Designated National Authority of the Adaptation Fund;
- 1 Representative of the General Directorate of Meteorology;
- 1 Representative of the National Directorate of Agricultural Development and Irrigation;
- 1 Representative of the General Directorate of Livestock;
- 1 Representative of the Directorate General of Forests;
- Representatives of local NGOs working in the hydroagricultural development sector (1 per region concerned including one woman);
- Representatives of agricultural groups (2 representatives including one woman per concerned region);
- Representatives of livestock groups (1 per region concerned including one woman).

The NSC, as an inclusive National Platform for Coordination and Consultation, will ensure that all stakeholders participate and contribute to the implementation of the project at the national and local levels. Therefore, the CNPP can invite any project stakeholder to its meetings to gather information and ensure ownership of new approaches.

The NSC's mission is to: (i) support and facilitate inclusive dialogue for the implementation of activities and national development by the development actors involved; (ii) provide general guidance for the implementation of the project; (iii) ensure that decision-makers who influence the orientation of agricultural policies, techniques and technologies in the context of adaptation to climate change in rural areas, follow and appreciate the changes underway in the project; (iv) support the national project management unit in the selection of sub-projects; (v) validate the Program of Work and the Annual Budgeted Work Program (AWPB) for the national project activities;(vi) ensure that the technological, technical and strategic improvements achieved through the project are shared, understood and accepted by national development decision-makers involved in the fight against climate change and food insecurity for the purpose national and local ownership; (vii) Participate in cross-cutting workshops that strengthen sectoral capacities for climate change adaptation, productivity growth and agricultural incomes, carbon sequestration, and disseminate new technological, technical and technological approaches to their respective sectors and strategic.

The NSC will meet every six (6) months, twice a year. A meeting of the NSC will be held for policy issues of project activities at the national level and approval of the annual Budgeted Work Program (AWPB) according to the full proposal guidelines. The conclusions of this meeting will be submitted to the RSC for a compilation at the regional level and an enrichment with the regional orientations of the project. Another meeting of the NSC will be organized to evaluate the implementation of the national AWPB as well as the quality of the interactions in the implementation of the project between the national and the regional level. The NSC Meetings are co-chaired by the Secretary General of the Ministry of Agricultural Development and the General Secretary of the Ministry of Environment (adaptation to climate change).

To ensure control, coherence and synergy of guidance at both national and regional levels, NSC meetings will be held in countries before the RSC. The Secretary General of the Ministry in charge of hydro-agricultural development, Co-President of the NSC, will forward the reports of the NSC to the RSC and defend this report at the level of the RSC.

- **The National Project Management Unit (NPMU).** In each country, an NPMU will be set up. Members of the NPMU will have the title of National representatives of RAAF in each country. The NPMU will be an operational and technical unit based in one of the local project areas in the country. It will be responsible for: (i) providing a technical link with the RPMU for better coordination between the local, national and regional levels; (ii) manage the project at the national / local level; (iii) ensure the quality and timely delivery of project results at the national level and report to the RPMU; (iv) manage the knowledge, communication and awareness of beneficiaries at the national

and local levels in a coordinated and synergistic manner; (v) support the RPMU to select the NGOs that will be involved in the project; (vi) support the RPMU in coordinating the design and implementation of the sub-projects; (vii) support the RPMU in coordinating and facilitating the operational implementation of activities in close collaboration with beneficiaries at the sub-national / local level; (viii) ensure that knowledge management, communications and outreach are effective and appropriate by local actors; (ix) ensure that the funds provided to the countries concerned for the implementation of field activities in the localities are collected by the beneficiaries at the right time for the development of the activities; (x) manage centralized procurement of goods and services for the project; (xi) support the RPMU in managing the overall quality and timely delivery of project results at the local level; (xii) provide support in the monitoring and evaluation of sub-projects and provide consistent reports to the regional project management unit.
The NPMU is the Secretary of the National Inclusive Platform of Coordination and Concertation (SINCCP). In this capacity, it is responsible for: (i) supporting and facilitating inclusive dialogue for the design and implementation of INCCP activities; (ii) support the INCPP in synergizing and aligning the project with local, national and other projects / programs implemented by other stakeholders; (iii) support the President of the INCCP in coordinating and coordinating the members of the INCCP; (iv) prepare the INCCP reports and support the co-chairs for their dissemination; (v) support the president of the INCCP in informing and sensitizing all the actors and decision-makers involved in the implementation of the project.
To facilitate ownership of the project at the national level and ensure its sustainability, in accordance with the exchanges with national stakeholders: (i) the National Directorate for Agricultural Development will designate two executives who are already working on agricultural development issues in Benin, in Burkina Faso, Niger and Togo. (ii) In Ghana, the Food Security (Climate Smart Agriculture) Unit at the Ministry of Food and Agriculture (MOFA) and the Ghana Environment Protection Agency (EPA) will each designate a framework to constitute the NPMU.
Country-level officers will be confirmed by Order of the Minister of Agriculture. The two designated officers will coordinate the project and will be confirmed as the focal point of RAAF, the executing agency in their country. The two executives should have the following profile: (i) one (01) water mobilization specialist and climate change adaptation expert; and (ii) a (01) soil remediation specialist and climate change adaptation expert.

To ensure efficiency in the implementation of the adaptation actions of the project on site, the project has planned to recruit site facilitators. One facilitator will be recruited per region. These facilitators who have a good knowledge on the promoted practices, will be in constant contact with producers in the field to ensure adequate resilient practices implementation. They will support the perimeter management committee at local level and help for collecting data of the project on the sites (the actions taken, the problems occurred, the benefits, the needs for the next step, etc.). These data will be transmitted to the National Project Management Unit (NPMU) for the purposes of the development of periodical reports on project implementation. This will allow to measure the degree of adoption practices and progressive appropriation of the promoted resilience techniques during project implementation (cf. Activity 1.2.1.4 a).

At the subproject level, it is planned to set up management committees for developed perimeters. With the support of the site facilitator, the committee will be responsible for: (i) planning the activities of the crop year; (ii) the collection of agrometeorological information and the dissemination of agricultural calendars to the other beneficiaries (Activity 1.1.2.2); (iii) the collection of a minimum fee for the maintenance of infrastructure; (iv) good management of water and agricultural inputs.

Each perimeter management committee will be composed of five (05) members including two (02) men and three (03) women. Committee members will be beneficiaries elected by their peers. They should preferably be those who have been identified as having actively participated in the

preparation of the project. The committee is composed of :

- committee chairperson;
- secretary ;
- an assistant secretary;
- a treasurer;
- a cashier.

The Committee will meet at least once a quarter to:

- think with the other beneficiaries on the organization of the perimeter development activities, the planning of the acquisition of the inputs as well as the activities of development of the sites and the conduct of the agricultural campaign ;
- evaluate the actions in progress during a campaign, the problems encountered and approaches to solutions for the good continuation of the campaign;
- evaluate, learn lessons and consider approaches for continuous improvement of climate smart agriculture activities.

The committee will be assisted during their meetings by the site facilitator in charge of the region. The results of the discussions are disseminated to other beneficiaries. The Perimeter Management Committees will be supported in the performance of their duties by site facilitators and technical extension services as planned under Activity 2.1.2.4. The committees will be maintained and supervised by the technical services of agriculture, environment and livestock even after the closure of the project.

Note: The members of the committees are the beneficiaries of the project and are not remunerated by the project in the performance of their roles.

IMPLEMENTING ENTITY

The BOAD is the implementing entity for this proposed project.

The details of the services provided by the implementation entity (BOAD) per step are indicated in the table below.

Table 23: Technical services of the implementing entity

Step	Indicatives services
Identification, Sourcing and Screening of ideas	- Provide information on substantive issues in adaptation associated with the purpose of the Adaptation Fund (AF). - Engage in upstream policy dialogue related to a potential application to the AF. - Verify soundness and potential eligibility of identified idea for AF.
Feasibility Assessment / Due Diligence Review	- Provide up-front guidance on converting general idea into a feasible project; - Source technical expertise in line with the scope of the project; - Verify technical reports and project conceptualization; - Provide detailed screening against technical, financial social and risk criteria and provide statement of likely eligibility against AF requirements; - Determination of execution modality and local capacity assessment of the national executing entity; - Assist in identifying technical partners; - Validate partners' technical abilities; - Obtain clearances from AF.
Development & Preparation of project	- Provide technical support, backstopping and troubleshooting to convert the idea into a technically feasible and operationally viable project; - Source technical expertise in line with the scope of the Project needs; - Verify technical reports and project conceptualization; - Verify technical soundness, quality of preparation, and match with AF expectations; - Negotiate and obtain clearances by AF; - Respond to information requests, arrange revisions; - etc.
Selection of the sub-project	- Verify the subproject screening; - Control the preparation of the TOR of subproject environmental and social assessment; - Make no-objection on the TOR; - Supervizes the selection of consultants to prepare subproject ESIA; - Ensure the compliance with the Adaptation Fund's ESP; - Analyzes the ESIA reports and provide the comments to be taking into account by the consultants; - Supervizes the subproject approval.
Implementation of the project	- Technical support in preparing TORs and verifying expertise for technical positions; - Oversee the process of recruiting consultants for the training on each aspect of the project including water management, integrated pests and pesticides management ; - Oversee all training activities and the application of best practice measures in the field ; - Manages the grievance process and ensures that the complainants have been satisfied with the resolution of their complaint ; - Provide technical and operational guidance project teams; - Verification of technical validity / match with AF expectations of inception report;

Step	Indicatives services
	- Provide technical information as needed to facilitate implementation of the project activities; - Provide advisory services as required; - Provide technical support, participation as necessary during project activities; - Ensure the compliance with the Adaptation Fund's ESP durant the project implementation; - Provide troubleshooting support if needed; - Provide support and oversight missions as necessary; - Receipt, allocation and reporting to the AF of financial resources; - Allocate and monitor Annual Spending Limits based on agreed work plans; - Oversight and monitoring of AF funds; - Return unspent funds to AF.
Project monitoring and reporting	- Provide technical support in preparing TOR and verify expertise for technical positions involving in the and reporting; - Provide technical monitoring, progress monitoring, validation and quality assurance; - Conducte field monitoring missions; - Verify the implementation of adptative actions; - Monitor the implementation of the agreement of compliant resolution; - Receive and analyze periodic reports on the subproject ESIA implementation (the frequency of reporting on the ESMP implementation depends on the level of environmental and social risks presented by the sub-projects) - Verify the concrete implementation of the ESMP including integrated pest and pesticides management and recommend specific corrective actions to ensure that the subprojects complies with the E & S principles of the Adaptation Fund; - Submit annually, the reports on the implementation of ESMP to the Adaptation Fund; - Include in the midterm and final evaluation report of the project, the status of implementation of the environmental and social management plan including integrated pest and pesticides management and the implementation of the grievance mecanism
Project evaluation and reporting	- Provide technical support in preparing TOR and verify expertise for technical positions involving evaluation and reporting; - Conduct the evaluation field missions on the differents aspects of the project, namely: technical, environnemental, social, pest and pesticides management, Grievance management, budget, etc.; - Participate in briefing / debriefing; - Verify technical validity / match with AF expectations of all evaluation and other reports; - Undertake technical analysis, validate results, and compile lessons; - Disseminate technical findings.

SELECTION AND FINANCING OF SUB-PROJECTS

The present project will be implemented through subprojects as mentioned under Activity 1.2.1.3, under component 1.

- **Structuration of the subprojects**

L'approche du présent projet est d'exécuter des activités dans les différentes zones agroclimatiques afin de tirer des leçons apprises qui pourront servir à d'autres zones agroclimatiques compte tenu des glissements des isohyètes vers le sud ces dernières décennies. En se référant à la carte agro-climatique présenté à la figure 3 (page 5), quatre (04) zones agroclimatiques sont couvertes par le projet à savoir : la zone humide-subhumide, la zone sec-humide, la zone semi-aride et la zone aride. Les sous-projets et les superficies à développer sont répartis en fonction des zones agroclimatiques afin de faciliter la comparaison des résultats et l'analyse du comportement des technologies dans lesdites zones agroclimatiques. The approach of this project is to carry out activities in the different agro-climatic zones in order to draw lessons learned that can be used for other agroclimatic zones given the isohyets slid towards the south in recent decades. Referring to the agro-climatic map presented in Figure 3 (page 5), four (04) agroclimatic zones are concerned by the project namely: humid-subhumid zone, dry-humid zone, semi-arid zone and the arid zone. The sub-projects and the areas to be developed are divided according to the agroclimatic zones in order to facilitate the comparison of the results and the analysis of the behavior of the technologies in the said agroclimatic zones.

A total of 25 sub-projects will be developed under the curent project. Each sub-project will cover an area ranging from 100 ha to 150 ha (see table below). Each sub-project may combine different technologies in the technology packages and combine different technology packages. This is to enable vulnerable groups and women, who generally do not have enough arable land, to benefit greatly from the funding that the project will provide for units of at least 5 ha. Several intervention units will therefore form a sub-project.

Table 24: Allocation of sub-projects by agro-climatic zone, region and country

Agroclimatic zones	Unity	Countries												Total areas per agroclimatic zone
		BENIN		BURKINA			GHANA			NIGER		TOGO		
		Regions												
		Atacora	Alibori	Centre Sud	Centre Est	Est	Upper West	Northern	Upper East	Tilaberi	Dosso	Kara	Savanes	
Humid – subhumid	ha	2 x 150						2 x 100				2 x 150		800
Dry humid	ha		100	100			100		2 x 150				3 x 100	900
Semi-arid	ha		2 x 100		2 x 100	2 x 150					100			800
Arid	ha									4 x 125				500
Area per region	ha	300	300	100	200	300	100	200	300	500	100	300	300	
Area per country	ha	600		600			600			600		600		3000
Maximum subproject per country	Nber	5		5			5			5		5		
Total subprojets of the project	Nber	25												

- **Eligible activities for sub-projects**

Within the framework of the project implementation, two types of activities can be distinguished: 1) one that will be chosen by the communities for the development of the subprojects, and 2) one that have already been decided in the proposal and which will not be decided by the communities.

Type 1: Activities which will be chosen by the communities for the development of the subprojects

Activities affected by the Call for Interest or subproject proposals are those in Component 2: Scaling up the best practices related to climate change adaptation in agriculture and pastoralism at the local level, especially Activity 2.1.1.: Promotion of integrated techniques and activities related to water management, soil rehabilitation and conservation to enhance resilience of beneficiary populations. These are investments on site including:

- the implementation of techniques and technologies for the sustainable management of agricultural land: (i) stony bunds; (ii) filter dikes; (iii) grass strips, (iv) za - tassa. (iv) half-moons; (v) mulching; (vi) supply of organic matter (manure, compost); and (vii) Assisted Natural regeneration;
- the construction of water mobilization structures: (i) Runoff Water Collection Ponds (BCER); (ii) large diameter wells; (iii) human powered or solar pumping well; and (iv) thresholds.

Type 2: Activities which have already been decided in the proposal

It concern activities planned under: (i) Component 1: Strengthening knowledge and technical capacity through regional and local interactions for the promotion of agriculture practices resilient to the adverse effects of climate change; (ii) component 3: Sharing knowledge and disseminating lessons learned on resilient agricultural best practices related to climate smart agriculture; and (iii) certain activities of component 2, including livestock mobility, support for the valuation and management of agricultural sites, will be applied to all beneficiaries and will not be chosen by the beneficiaries.

- **Criteria for the selection of sub-projects**

Technical guidelines and selection criteria will be made available to producer groups / organizations through the national project coordination units. The sub-projects will be selected on the basis of the general criteria below:

1. The proposal is intended to be developed in a locality recognized as vulnerable to the adverse effects of climate change;
2. Applicant groups are recognized as vulnerable and exposed to the adverse effects of climate change;
3. The techniques and technologies desired by the applicant groups are those selected for this project and adapted for the site characteristics;
4. The proposal addresses the areas or pillars of climate-smart agriculture: adaptation, production and mitigation. In other words, will the sub-project enhance resilience to the adverse impacts of climate change, improve agricultural productivity and incomes, and contribute to the mitigation of greenhouse gases or carbon sequestration? For this criterion, the subproject review committee may refer to the Technology Packages developed under the component 2 (page 52-53) or use the “CSA Programming and Indicator Tool” of Research Program on Climate Change, Agriculture and Food Security (CCAFS) of the Consultative Group on International Agricultural Research (CGIAR).
5. the proposal implies a high participation of women (at least 50%) and young people and the applicant group (s) has a good level of organization;

6. The proposal has no negative impact on protected areas/biodiversity, sites with cultural and physical heritage;
7. the proposal does not involve resettlement of the population or expropriation of land or relocation of producers;
8. The proposed site is already in use by beneficiaries without contestation or has land ownership documents;
9. The degradation or unproductivity of the proposed site is due to climatic disturbances;
10. The commitment of the beneficiary groups to maintain production and to be assisted in applying the techniques, even after the closure of the project.

- **Subprojects review committee**

A subprojects review committee will be set up, at the level of each country, by order of the Minister in charge of hydroagricultural development, for the selection of sub-projects. It will consist of: (i) The 2 representatives of RAAF, responsible for the project coordination at national level (the responsible of Adaptation issues will be the chair); (ii) the General Director of irrigation schemes for Benin, Burkina Faso, Niger, Togo or the Head of the Unit in charge of Food and Climate Smart Agriculture in Ghana (Rapporteur); (iii) one climate change adaptation expert of the National Designated Authority of the Adaptation Fund; (iv) the representative of the National Agency of Environment.

As reminder, this committee will benefit from capacity-building activities on the use of the CCAFS' CSA Programming and Indicator Tool' (cf. Activity 1.2.1.2), to select best suprojects in order to achieve the outcomes of the project. The committee will also benefit form capacity building on the Adaptation Fund's E&S polcy and the application of the 15 E&S principles (cf.Activity 2.1.2.3.).

- **Process for subprojects selection and implementation**

In order to avoid an overload of requests, to eliminate inadequate projects or projects already formulated with resources already acquired and to provide financial support for the best sub-projects proposed, the process of selection and financing of sub-projects will be conducted as follows:

Step 1: Information on the Project approach and call for subproject proposal

A large public consultation is conducted during the project preparation. The information on investment opportunities among target populations, the eligible activities, the intervention strategy of the subproject, the process of formulation of applications, the technical review and the subproject approval process will be disseminated at this step. This, to enable the promoters of subproject express their interest to the project. After that, there will be a call for subproject proposal.

The subprojects formulation template, the deposit addresses of the requests, and the criteria for selection of the sub-project will be made available to potential beneficiaries in the intervention area, regional technical services involved in the project.

Step 2: Formulation of subproject requests

At this step, the expression of interest will be formulated by the applicants with the support of Consultants/NGOs which will be recruited for this propose. The requests will be sent to the Regional directorate of Agriculture in each region or to the National project management unit.

Step 3: Selection of the potential beneficiaries by the review committee

The technical review committee will select the best subprojects ideas on the basis of the subproject selection criterion mentioned above. During the selection phase of the sub-projects to be funded, the

selection committee will ensure the inclusion of vulnerable and marginalized groups. The selection committee will ensure that at least 50% of the direct beneficiaries of the project are women and at least 50% are young.

The request of subproject selected by the review committee will be sent to the project management with the selection report.

Step 4: Formulation of the sub-projects studies

The subprojects whose funding applications have been selected will be submitted to studies, in particular the environmental and social impact study and the APD. The environmental and social impact studies of the subprojects will be carried out as described in the environmental and social due diligence of the subprojects, especially stages 1 to 4 (see pages 151-156). The APD will be carried out by Consultants in the field on call for interest. The realization of these different studies will be supervised by the Project Management Unit. The monitoring of this process wil be undertaken by the BOAD to ensure that the procedures and policy of the Adaptation Fund are respected.

The different instutions mentioned in Table 13, each, according to its attributions, will provide technical support to the sub-project review committee to ensure that the country's national standards or international standards adopted by the country have been sufficiently taken into account in the preparation of sub-project documents.

Step 5: Subprojects approval for financing

The reports of the studies (step 4), namely the APD and ESIA report with the environmental permit of the Minister in charge of the environment (cf step 5 of environmental and social due diligence, pages 151-156), will be submitted to the Project management unit for approval by subproject review committee.

The Project management unit will send the subproject APD approved and the environmental permit to the BOAD for non-objection to receive the financing.

The project management unit can therefore notify the financing agreement to the beficiaries of the subproject. The funding contract will also sign between the recipients and the RAAF. The contract must contain a provision in which the farmers undertake to maintain the sites, technologies and techniques promoted after the closure of the project.

Money transfer channel to beneficiaries: The Bank will use its Real-Time Gross Settlement (RTGS) system to transfer money to the Regional Project Management Unit and service providers in the UEMOA zone (Benin, Burkina Faso, Niger and Togo) and in the non-UEMOA zone (Ghana). This system allows the Bank to monitor the transfer and ensure that the money reaches the beneficiaries in a timely manner.

Step 6: Subprojects implementation

The subprojects will be implemented as described above with the different actors involved in the projet (PART III. A.).

The realization of water mobilization infrastructures will be entrusted to the companies of the domain on call for applicants. The environmental and social management measures relating to the implementation of these infrastructures will be integrated into the DAOs. A control firm will also be recruited, on a call for tenders, for the control of the execution of the works according to the required standards. The Project Management Unit will supervise the works to ensure that they are carried out in accordance with the DAO. The implementation of environmental and social measures will be conducted under the step 7 of the environmental subprojects and social due diligence (page 153).

The different instutions mentioned in Table 13, each, according to its attributions, will intervene to ensure that the country's national standards or the international standards adopted by the country are respected during the sub-projects implementation. These interventions will be done under the activity (Activity 2.1.2.4, (b)).

Step 7: Subproject monitoring and evaluation

The subproject monitoring and evaluation will be conducted as decribed under the item III.D. The environmental and social monitoring will be conducted as described under the step 8 and 9 of the subproject Environnemental and social due diligences.

- **Land management consideration in the subproject selection and implementation**

As mentioned under output 2.1.1 and component 2, to ensure the sustainability of investments in the field, the project will intervene on sites operated by the population. Beneficiaries will therefore be maintained on their exploitation sites and no population displacement or expropriation of land will take place under the project. Usually grown crops will be maintained. However, they will now be developed with climate resilient technologies that improve production and contribute to carbon sequestration. Beneficiaries will not be forced to adopt crops they were not used to developing. In case a group wishes to develop a new site, that it does not exploit, it will be required to prove its property, lease or donation. If a site does not have a tenure security to ensure that it will be exploited by the beneficiaries over a relatively long period, the sub-project of the site concerned will not be retained (selection criteria 8 above).

B. Describe the measures for financial and project / programme risk management.

The financial and project risk and their management is presented below.

Table 25: Project financial and project risk

Type of risque	**Risks**	**Level of risk**	**Risk mitigation measure**
Financial	Instability in currencies, market prices and availability of project inputs	Low	All funds will be maintained in USD to reduce the impact of price and currency fluctuations. Procurements plans to be developed in line with the project work plan so as to ensure timely availability of inputs.
	Delay in disbursements	Low	BOAD and RAAF will commit, through letters or memoranda, agreements that can be used to rapidly disburse funds for project activities while ensuring financial management, procurement and minimizing provisions. the risk of corruption
	Misuse of financial subsidies at the local level	Medium	The sub-projects will be subject to the selection criteria, among other things, the management of the funds at beneficiary level. The services at the local level will support the beneficiaries in the design and implementation of the sub-projects. A transparent channel for making funds available locally will be put in place. Funds will be disbursed to beneficiaries only when the annual work and budget program is established and approved by the national project management unit at the country level.
	Financial risks on the procedural level	Low	The financial rules and guidelines of BOAD, as implementation entity, will be used throughout the implementation of the project to minimize financial risks. This includes the internal and external audit procedures provided for by these rules and guidelines.
Political	Political uncertainties affect project implementation	Low	The project target areas are relatively stable politically and all effort will be made to ensure that project activities are conducted with participation of all relevant stakeholders including government departments and local structures so as to aid conflict resolution should any arise.
	Political influence affects adoption of lessons learned into national and regional adaptation strategies.	Low	The project partners will work together in a consultative manner with all stakeholders, relevant government departments and institutions to ensure that lessons learned from the project are considered and adequately incorporated in national and regional adaptation strategies. Advocacy on

Type of risque	Risks	Level of risk	Risk mitigation measure
			key issues will play an important role in uptake of project learning.
	Sub-national governments prioritise alternative implementation frameworks.	Low	Lobbying and advocacy will take place to ensure that all stakeholders including sub-national governments work in a harmonized and coordinated manner
Mangement and Coordination	Delays in recruitment or appointment of critical staff for the project.	Low	TORs for project staff will be prepared in advance of project commencement and key recruitments will be made as early in the project as possible.
	Different pace of project implementation for each country may delay overall project implementation and affect regional activities.	Low	BOAD with the collaboration of RAAF will establish appropriate project management and coordination structures at both regional and national level to monitor, report on and discuss progress on a regular basis and take corrective action where needed to ensure that the project moves at the required pace in all 5 countries. National level implementation plans on an annual basis will be developed to guide in country activities.
	Uneven speed of implementation and expenditure rate among the three main partners may hamper overall project performance	Medium	The project design ensures a joint management set-up where the three partners will jointly steer and manage the intervention through the Project Management Team. Through these mechanisms it will be possible to spot at an early stage any potential delays among any of the partners, and thus enable early corrective action.
	Irregularities in regards to relationships between executing and implementing bodies	Low	Standard and well proven formats will be used for fund disbursement between BOAD, RAAF respectively, including formats and standards for reporting and financial accounting.
	Limited coordination with other ongoing adaptation initiatives in the target countries.	Low	The project will work with other adaptation projects being implemented in the country to take advantage of the lessons learned and to ensure that this project is developing a real synergy or complementarity with these initiatives.
	Limited awareness and stakeholder involvement on the project	Low	The project partners have experience in undertaking multi-stakeholder initiatives and will aim to ensure that all relevant stakeholders are engaged and involved throughout the project cycle.
Technical	Low capacity of stakeholders to	Medium	The activities of capacity building of stakeholders under the component 1 will help to overcome this obstacle.

Type of risque	Risks	Level of risk	Risk mitigation measure
	implement the project activities		
	The technical practices promoted by the project are confined to the first beneficiaries	Low	The project plans a strong component 3 on dissemination of lessons learned. For more impact of climate-smart activities, it is recommended the replication of the project in the other regions of the country.
Institutional	Overlap of interventions of public institutions	Medium	Clear memorandum of intervention between the project and the different institution involved in project implementation will take care of this
	Movement of trained staff to other sectors or outside the project areas.	Medium	Working both with farmers as well as a wide variety of relevant institutions in the project target areas will aim to ensure that capacity remains within the project target areas even when there is some movement of staff.
Strategical and cultural	Intercommunity differences regarding adaptation planning priorities in each community.	Low	The use of community based approaches to adaptation planning will aim to ultimately ensure that all views are heard and included in the adaptation planning process as well as prioritised based on agreement of the community as a whole.
	Reluctance to apply the knowledge and practices for adaptation to climate change Cultural barriers in accepting new techniques can be expected.	Low	The actions to develop were based on local practices. It is these practices that will be improved in terms of intelligent adaptation to climate change. The project does not therefore include actions that are very different from what is already happening in the zones. This being the case, this risk will be very low. The project is intended to provide opportunities for beneficiaries to submit sub-projects on the basis of their need for adaptation while remaining within the project boundaries. Sensitization actions will be conducted to facilitate the adaptation of the actions proposed by the project.
Climate	New facets of climate risks emerge during the life of the project	Medium	The project will work in collaboration with climate forecast institutions at national and especially regional level, such as CILSS, Agrhymet, etc. These institutions are already doing important work in weather and climate forecasts. Producers will be able to be informed in time through the meteorological information channels set up as part of the project.
	Low integration of climate, environmental and gender issues in the	Low	These issues are taken into account in the sub-project selection criteria.

Type of risque	Risks	Level of risk	Risk mitigation measure
	implementation of the project by the producers		Training and awareness activities are programmed to allow sufficient taking into account of climate, environmental, social and gender issues in the implementation of activities on the sites.

A continuous risk assessment system will be implemented. Risks will be presented annually in the PIR (Program Implementation Report) through a risk assessment matrix, including possible (alternative) mitigation actions. In tri-semester reports risk evaluation matrix will be incorporated, according to type (poltitical, strategical, institutional, financial, climatic), level (low, medium, critical), type of response (emergency actions, change in plans, other) and evolution of risks (stable, declining, increasing, etc.), and date of risk; also using the annual project report to give a more complete picture on risks and their development.

Project monitoring and evaluation will incorporate monitoring and reporting on these risks and any others that may emerge during project implementation. Critical issues and changes to the risk level will be reported in a timely manner so that mitigation action can be taken before risks spiral.

The project shall be subject exclusively to the internal and external auditing procedures laid down in the financial regulations, rules and directives of the BOAD. The internal audit strategy of the BOAD is comprehensive embodying financial, compliance, performance and value for money features and provides assurance that operations in the field and at headquarters are managed in an economical, efficient and effective manner.

C. Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy of the Adaptation Fund.

This project aims to strengthen the resilience of populations to the adverse effects of climate change through the promotion of smart agriculture practices. Despite the positive impacts that it may generate, the implementation of activities, particularly on-site adaptation investments, in particular Component 2, could lead to negative impacts that should be mitigated.

In accordance with the environmental policy, the project has been subject to an environmental and social risk assessment and has been classified in category B. Potential negative impacts resulting from this project are considered to be small scale, limited to the area of the project, reversible and can be avoided, minimized or addressed through the use of recognized good environmental and social management practices. In order to ensure that the project minimizes the risk of negative environmental and social impacts from the project, an analysis was conducted to identify potential generic negative impacts and risks (Cf. section II. L) as well as to propose measures that will be taken to avoid, counteract or minimize their occurrence and impact. The following table presents the generic measures that can be envisaged for the project as a whole.

Table 26: Environmental and Social risks and negative impacts mangement measures

Triggered principles E & S of the FA	Impacts / risks identified	Measure for environmental and social risk management
Compliance with the law	Low integration of environmental and social issues relative to the Adaptation Fund ESP principles in the subprojects ESIA and ESMP	The project will ensure that the ESIAs for subprojects is conducted in accordance to the Adaptation Fund environmental and social policy and national procedures
	Low capacity to producers for the implementation of environmental and social measures, in accordance with national law and the principles of the Adaptation Fund	The project will ensure that the technical and organizational capacities of the beneficiaries are strengthened in order to implement the measures contained in the Environmental and Social Management Plan. The project management unit will ensure that the on-site support by the technical services is effective and beneficial to the perfect implementation of the measures in accordance with the texts in force.
Access and equity	Risk of increase in inequalities between women, men, youth and particularly vulnerable groups	The project should promote equitable access to project resources by potential beneficiaries, with a focus on women's and youth groups The project will ensure the participation of all stakeholders in project activities without discrimination and in order to ensure fair and equitable access to project benefits including for women and men as well as marginalized groups The project team will ensure that project activities do not adversely affect current user rights to shared natural resources including water and ensure equitable benefits of climate-smart agriculture investments.
	Risk of not full participation of certain groups members in the preparation and the implementation of the subproject	The project will ensure that when a group of farmers or a farming community is funded, all members of this group or community can participate fully in the activities and benefit from the benefits generated.
Marginalized and vulnerable groups	Risk of no involvement of marginalized and vulnerable groups in the provision of the resources of the project	The project will specifically target the most vulnerable and food-insecure groups in the targeted communities. To do this, the project will use the following measures: - ensure that project activities target and help the most vulnerable to become more resilient to climate change, including women, households headed by women, children and youth; - Conducting community-wide outreach in target districts, including vulnerable groups, female-headed households and key informants such as traditional foresight providers; - Establish selection criteria that favor the strong involvement of vulnerable groups.

Triggered principles E & S of the FA	Impacts / risks identified	Measure for environmental and social risk management
Gender equality and empowerment of women	Insufficient taking into account of gender in the implementation of the project	The project should promote gender mainstreaming in different activities. Women and youth must be strongly involved in technical and organizational capacity-building activities to equip them for full participation in planning and decision-making activities. The selection criteria for beneficiaries will have to take gender into account. The project management unit will ensure that at least 50% of direct beneficiaries are women and 50% of all beneficiaries are young people.
Core labor rights	Risk related to the health and safety of workers during infrastructures realization	The project management unit will include clear environmental and social clauses in the bidding documents for companies. The project will conduct raise awareness among companies and producers about the provisions of the labour code.
	Risk of child labor outside the limits of the law	The project will raise awareness of beneficiaries on the labor code and children's rights in order to eliminate the worst working conditions of children.
Conservation of biodiversity	Biodiversity loss	The project will strengthen the capacity of farmers in pest management (eg pesticide use) which could be a cause of elimination of certain species. The project recognizes the need to maintain or strengthen biodiversity and ecosystem services and is committed to integrating their sustainable management into climate-smart agriculture practices promoted under this project. Through the climate smart agriculture approach, the project will effectively conserve and enhance biodiversity through assisted natural regulation techniques, grass strips and agroforestry. The project will promote capacity building and farmer-to-farmer learning to strengthen the responsible and efficient management of natural resources, including land, water, soils, pastures and forests. The project will not involve or introduce invasive species or new pests and diseases into project sites and any actions that may result will be properly filtered and subject to relevant national and international laws and guidelines.
Protection of natural habitats	Damage vegetation and wildlife habitat during water infrastructure realization	The management unit will include in the DAO the environmental clauses for the management of vegetation and wildlife habitats that may be found on the sites where water mobilization infrastructures are built. The project will ensure that investments do not encroach on protected areas, buffer zones and natural habitats. Any sub-project having negative interactions

Triggered principles E & S of the FA	Impacts / risks identified	Measure for environmental and social risk management
		with these areas being directly eliminated during the selection phase.
Pollution prevention and efficient management of resources	Risk of misuse of water and risk of conflict between beneficiaries in the use of water from the infrastructures set up by the project	The project will strengthen the technical and organizational capacities of beneficiary groups for the rational use of water. The project management unit will establish in each beneficiary group a water management committee with clear guidelines
	Soil and water pollution	The project will promote integrated pest management (IPM) techniques as a pillar of sustainable agriculture, reduce pesticide dependence and avoid the adverse health effects of chemical use, the safety of farming communities, consumers and the environment.. The project will enroll an experienced pest and pesticide management expert (FAO expert, preferably), to develop and implement a capacity building program for those involved in integrated pest and pesticide management. This Expert will prepare and disseminate an integrated pest management tool box for the use by beneficiaries and technical staff whose technical capacities have been strengthened accordingly. The project promotes the use of organic manure to reduce the use of chemical fertilizers and limit contamination of water in nearby water bodies. Benefits will also be achieved by reducing waste and improving the timing and application of chemical inputs. Climate-smart agricultural practices promoted as part of the project will also reduce soil erosion and thus water pollution.
Public health	Risk of poisoning by inhalation or by consumption of water contaminated by fertilizers or pesticides	The project will implement the above measures to limit water and soil pollution to reduce the risk of harm to the health of populations. Capacity building actions on pesticide application, in the event that integrated pest management alternatives prove ineffective in dealing with the problem. If the use of chemical pesticides is needed, the project will ensure that they are WHO class III or U homologous pesticides that are less hazardous to human health. The project will raise awareness, through extension services and site animators (NGOs), on the use of appropriate equipment during phytosanitary treatments and hygiene measures.
	Risk of drowning in Runoff Collection basin (BCER)	The project management unit will ensure that BCERs are sized to reduce this risk. The surroundings of the

Triggered principles E & S of the FA	Impacts / risks identified	Measure for environmental and social risk management
		BCERs must be fixed by grass strips or reforestation with appropriate species.
	Development of water-related diseases	The project will inform and sensitize the populations on diseases related to the presence of water (malaria, typhoid fever, amoebic dysentery, etc.); The project will take steps to include the area in the intervention program of the epidemiological surveillance system at the national level.
Physical and cultural heritage	Risk of destruction of the physical heritage during incidental findings	Ensure strict compliance with the guidelines for discovering archaeological remains

The proposed measures, above, are generic measures for demonstration purposes. The specific measures will be proposed in the environmental and social management plans of the sub-projects that will be subject to environmental and social impact assessment. Each sub-project will have a specific Environmental and Social Management Plan reflecting the reality of the site, the specific activities to be undertaken and the responsibilities of the stakeholders. The environmental and social management approach in the selection and implementation of sub-projects is presented below.

Environmental and social due diligence of the sub-projects

To enable the integration of environmental and social dimensions in the design and implementation of sub-projects, the process proposed below is in compliance with the national ESIA procedures of the five beneficiairy countries. This process allow to assess the environmental and social impacts of sub-projects, determine and define the actors who will be responsible for their implementation and monitoring. The process is the approach that will determine the level and modalities of taking environmental and social impacts into account in the sub-project cycle. As mentioned above, 25 subprojects (5 subprojects per country) will be implemented through the current project. Each subproject will cover 100 ha to 150 ha. The formulation of the ESIAs and the implementation of the ESMP of the subprojects will be in compliance with the national ESIA's procedures and the environmental and social principles of the Adaptation Fund.

Step 1: the environmental screening and the formulation of the terms of references for the realization of the ESIAs of the subprojects

Beneficiaries through the consultant recruited for the formulation of sub-projects and the completion of environmental and social impact studies, will prepare a sub-project notice. As mentioned under activity 1.2.1.3, one consultant will be recruited for each country by call for applications. The capacities of the consultants recruited will be enhanced on the AF ESP and the ES principles by the Environmental Expert of the AF, as planned under activity 2.1.2.3.

In accordance with the environmental and social policy of the Adaptation Fund, the consultant will carry out the brief presentation of the subproject, an initial identification of environmental and social risks and impacts on the basis of the 15 environmental and social principles of the Adaptation Fund and the ES screening of the subproject to prepare the subproject's notice and justification of the need to conduct the ESIA studies. The consultant then prepare the terms of reference (ToRs), taking into account the environmental and social principles triggered by the Adaptation Fund ESP. The consultant will attach the ToRs to the subproject's notice and transmit it to the Project Management Unit. After verification, the PMU will submit the documents to the BOAD for no-objection opinion for carrying out the ESIA, if all elements are met. As the basic project is classified in category B, BOAD will ensure that no subproject that can be classified as category A in view of these negative impacts and potential environmental and social risks is retained for the rest of the process.

The subproject's notice and ToRs having obtained the no objection of the BOAD are transmitted to the National Agency of the environment.

Step 2: National Environment Agency authorization for the sub-project ESIA studies

The authorization to carry out the sub-project's ESIA studies is granted to the project by the national environment agency after approval of the environmental classification and validation of the ToRs. This will allow the consultants to begin the ESIA studies.
The national environmental agencies in the beneficiary countries are:

- Benin Environmental Agency (ABE) for Benin;
- National Office of Environmental Assessments (BUNEE) for Burkina Faso;
- Environmental Protection Agency (EPA) for Ghana;
- Office of Environmental Assessment and Impact Studies (BÉEÉI) for Niger;
- National Agency for Environmental Management (ANGE) for Togo.

Step 3: Preparation of environmental and social impact studies of sub-projects

The ESIA of the sub-projects will be carried out by the Consultant in accordance with the ToRs validated by the National Environment Agency and the national ESIA procedures and the ES principles triggered by the ESP of the Adaptation Fund. The Project Management Unit will monitor the completion of the study by the Consultant.

It should be noted that a broad consultation was undertaken during the preparation of the project. ESIAs will be sized according to the importance of the potential impacts and risks of the sub-projects. Complementary public consultations will also depend on the importance of environmental and social risks and impact. The consultant will work with the direct beneficiaries to facilitate the ownership of the sub-project and the implementation of the measures proposed by the ESIA.

Each ESIA will be accompanied by an Environmental and Social Management Plan (ESMP) in accordance with the Environmental and Social Policy of the Adaptation Fund. Mitigation, compensation and prevention measures will be determined according to the level of impacts and risks identified in the field taking into account all the 15 environmental and social principles of the Adaptation Fund. ESMPs for sub-projects will take into account integrated pest and pesticide management measures.

Step 4: Dissemination of ESIA results to stakeholders including beneficiaries

The Draft of sub-project ESIA reports will be disseminated by the project management unit with the support of BOAD to the stakeholders to allow them to comment on the content of the ESIA. The summary of each ESIA report as well as the Environmental and Social Management Plan of the sub-project will be translated into official language according to the areas of intervention to enable beneficiaries to better understand the results of the ESIA and the proposed measures. This will not only allow them to comment on the ESIA report but also will facilitate the implementation of the measures proposed in the ESMP during the implementation of the subproject. The comments of all stakeholders will be taken into account in the report by the consultant.

Step 5: Approval of ESIA report for sub-project, deliverance of environmental certificate and diffusion of the final report in compliance with national ESIA procedures

The process of approval of the ESIA reports will be carried out in accordance with the country's ESIA procedures, enacted by the national law on environmental assessment. The project management unit in collaboration with the National Environment Agency and BOAD will organize validation meetings for ESIA reports in each of the intervention countries. To save time and money (the envelope is very limited), the validation of the ESIA reports, which is a requirement of the national procedures, will be organized in a coordinated way and grouped in each country.

The validation committee already set up by decree in each country will have its capcities enhanced in accordance with AF ESP and the 15 ES principles. This will allow the validation committees to validate the ESIA reports. During the meeting, the discussions are translated into local languages for beneficiaries who are sub-project holders and have participated fully in the development of the studies.

The consultant will finalize the ESIA reports taking into account the remarks of the validation committee.

In accordance with the national ESIA procedures, the National Environmental Agency will submit the final ESIA report to the Minister of the Environment who will issue an environmental permit or environmental compliance certificate. The issuance of the Environmental Compliance Certificate or Environmental Permit by the Minister in charge of the environment will therefore attest to compliance

with the national requirements. Compliance with this national procedures is controlled by the National Environment Agency.

BOAD will ensure compliance with the Environmental and Social Policy of the Adaptation Fund with the support of DNAs and National Environmental Agencies whose technical capacities have been strengthened to implement the Adaptation Fund E&S Policy (Activity 2.1.2.3).

All subproject which APD is selected by the review committee and receive an Environmental Permit will be financed by the PMU.

Step 6: Disclosure of the final report

The summary of the final ESIA report prepared by the consultant will be disclose by the Project Management Unit on the project website. BOAD will also publish the ESIA summary on its website.

Step 7: Implementation of Environmental and Social Measures

The implementation of environmental and social management measures is primarily the responsibility of the Project Management Unit. The project management unit will therefore ensure the implementation of the environmental and social management plans of the project.

During the implementation of the water mobilization infrastructures, the project management unit will ensure that the recruited company implements the measures proposed in the environmental and social management plan for the implementation of the project.

During the development of soil improvement and crop production techniques on the sites, the National Project Management Unit with the support of the site facilitator as well as the decentralized technical services of agriculture and environment will ensure that the beneficiaries implement the measures proposed in the environmental and social management plan of the subproject concerned.

The different instutions mentioned in Table 13, each, according to its attributions, will intervene to ensure that the country's national standards or the international standards adopted by the country are respected during the sub-projects implementation. These interventions will be done under the activity (Activity 2.1.2.4, (b)).

Step 8: Grievance management

The grievance management mechanism will be conducted as described under "Grievance mechanism in the framework of the project" at pages 156-158.

Step 9: Environmental and Social Monitoring

Environmental monitoring will be provided by the Project Management Unit which will ensure that the environmental and social management measures proposed in the ESMP are effectively implemented. The PMU will send semestrial reports on the implementation of the ESMP to the National Environment Agency and the BOAD.

The environmental and social monitoring will be the responsibility of the National Environmental agency of each country. They will be supported by the technical services.

The implementing entity (BOAD) will supervise the ESMP implementation in accordance with the Environmental and social policy of the Adaptation Fund. BOAD, on the basis of the periodic reports of the project management unit and the field visits, will produce periodic reports of implementation of the ESMP to the Adaptation Fund, as mentioned in section III.D

Between 1.5 and 2 years after project launch, a mid-term evaluation will be conducted to measure the effectiveness of the implementation of the ESMP. This activity will be conducted by an Independent Consultant.

Step 10: Final evaluation

At the end of the project, a final evaluation will be conducted to measure the level of success in the implementation of the ESMP and to draw lessons.

This activity will be conducted by an independent Consultant, recruited on the basis of terms of reference prepared by the Project Management Unit and submitted to BOAD for non-objection. The final evaluation report for the implementation of the ESMP will be submitted to the Project Management Unit, the Steering Committee and BOAD for validation. It should be noted that this evaluation is conducted at the same time as the final evaluation of the project. On the basis of this report, BOAD will submit to the Adaptation Fund the final report on the implementation of the ESMP.

Responsibility of the actors in the process of environmental selection and implementation of measures

The table below provides a summary of the steps and institutional responsibilities for the selection and preparation of the evaluation, approval and implementation of sub-projects.

Table 27: Summary of environmental and social due diligence of sub-projects

Phase	Step	Action to lead	Responsible actors
Subprojects formulation and approval	Step 1: Subproject environmental and social screening and formulation of the terms of reference for the realization of the sub-projects ESIAs	Preparation of the sub-project notice, the brief presentation of the subproject , the sub-project ES screening from the Adaptation Fund ESP and justification of the need to conduct the ESIA studies Formulation of the Terms of Reference (ToR) of the ESIA taking into account the environmental and social principles triggered by the ESP of the Adaptation Fund Submission of the ToR and the opinion of the sub-project to the BOAD	- Beneficiaries - Project Management Unit / Consultant
		Confirmation of Classification and Notice of No Objection for the Conduct of the Study	- BOAD
		Submission of the ToR and sub-project opinion to the National Environment Agency	- Project Management Unit / Consultant
	Step 2: Authorization for the implementation of the sub-project ESIA by the National Environment Agency	Validation of the ToR	- National Environment Agency
		Approval of the environmental and social classification of the sub-project	
		Authorization for the preparation of the ESIA report	
	Step 3: Preparation of environmental and social impact studies of subprojects	Complementary consultations of the beneficiaries according to the level of ES impacts and risks of the subproject	- Consultant
		Realisation of ESIA in accordance with the national ESIA procedures and the environmental and social principles of Adaptation Fund ESP	- Consultant
		Follow-up of the realization of the study	- Project Management Unit

Phase	Step	Action to lead	Responsible actors
		Submission of the ESIA report to the National Environment Agency	- Project Management Unit / Consultant
	Step 4: Dissemination of ESIA results to stakeholders including beneficiaries	Distribution of preliminary ESIA report to stakeholders	- Project Management Unit - BOAD
	Step 5: Approval of ESIA reports for sub-projects, deliverance of environmental certificate	Organization of meeting for Interim report validation by the committee set up by decree at national level	- National Environmental Agency - Unité de gestion du projet / Consultant - BOAD
		Review and validation of the interim report	- National Environmental Agency with the support of the national committee for ESIA report validation
		Verification of the compliance with the AF ESP	- BOAD
		Finalization of the ESIA report	- Consultant
		Submission of the final report to the National Environment Agency	- Project Management Unit / Consultant
		Issuance of the Environmental Compliance Certificate	- Minister in charge of the environment
	Step 6: Disclosure of the final report	Finalization of the summary of the ESIA	- Consultant
		Disclosure of the final report of the subproject's ESIA	- Project Management Unit - BOAD
Subprojects implementation	Step 7: Implementation of Environmental and Social Measures	Integration of environmental and social measures into DAO	- Project Management Unit
		Execution of environmental and social measures	- Project Management Unit for capacity building activities and supervision of enterprises and beneficiaries for better environmental management - Companies in charge of water mobilization works - Beneficiaries for measures relating to the development of technologies in the fields with the support of the different institutions involved in the project
	Step 8: Grievance management *(please see next page for more detail)*	Disclosure of the grievance mechanism of BOAD	- Project Management Unit - Resident Mission of the BOAD
		Collection of the plaints of the affected populations	- Project Management Unit - BOAD - Adaptation Fund
		Treatment of the plaints and response to the complainant	- Project Management Unit - BOAD
		Disclosure of the case	- Project Management Unit - BOAD
	Step 9: Environmental and Social Monitoring	Monitoring the implementation of environmental and social measures	- Project Management Unit - Works Control Office with regard to water mobilization infrastructures
		Monitoring the implementation of the ESMP	- National Environmental Assessment Agency with the support of technical services (agriculture,

Phase	Step	Action to lead	Responsible actors
			water, livestock, public health, human right, etc.)
		Preparation of the monitoring periodic report on the implementation of environmental and social measures and submission to BOAD	- Project Management Unit
		Supervision and preparation of ESMP implementation periodic report	- BOAD
		Submission of the ESMP implementation periodic report to the Adaptation Fund	- BOAD
		Mid-term evaluation of ESMP implementation	- BOAD with the support of an independent Consultant
		Submission of the Mid-term evaluation of ESMP implementation report to the Adaptation Fund	- BOAD
Project closure	Step 10: Final evaluation of ESMP	Preparation of ToR for the recruitment of independent consultant for the final evaluation of the implementation of the ESMP and submission of ToR to BOAD for the non-objection	- Project Management Unit
		Issuance of BOAD's no objection notice for the realization of the study	- BOAD
		Recruitment of the consultant for the realization of the study	- Project Management Unit
		Final evaluation of the implementation of the Environmental and Social Management Plan	- Consultant / BOAD / Project Management Unit
		Validation of the report	- Project Management Unit / BOAD
		Submission of the final report on the implementation of the ESMP to the Adaptation Fund	- BOAD

Grievance mechanism in the framework of the project

The proposed project will utilize the existing BOAD grievance mechanism to allow affected populations to raise concerns that the proposed project is not complying with its social and environmental policies or commitments.

BOAD has established grievance mechanism through its grievance policy and procedures manual which is an independent mechanism whereby those who have suffered injury, resulting from a project financed or implemented by the BOAD may file a complaint with the Bank. The grievance mechanism, which is made available to stakeholders in each country is a part of the environmental, social and economic sustainability to address compliance and grievance cases that arise from projects implemented by BOAD. This manual defines the complaint resolution mechanism in the implementation of any project financed or implemented by BOAD. It aims to establish an effective dialogue between those affected by the projects it finances and all interested parties, to resolve the problem or problems at the origin of a request, without seeking to assign responsibility or fault to any of these parties.

At the BOAD level, the grievance mechanism is coordinated and managed by the Compliance and Regulatory Division (DCR) with the support of Resident Mission of the BOAD in the BOAD's states

members. Affected communities and other stakeholders which will be affected by the project can submit complaints to the BOAD, the IE of the present proposal, by mail, email, fax or phone at the address:

Banque Ouest Africaine de Développement
62 av. de la Libération,
BP 1172 Lomé, Togo
Tel : +228 22 21 59 06
Fax : +228 22 21 52 67
E-Mail : boadsiege@boad.org
Web : www.boad.org

The complaints can also be submitted to the secretariat of Adaptation Fund at the following address:

Adaptation Fund Board secretariat
Mail stop: MSN P-4-400
1818 H Street NW
Washington DC
20433 USA
Tel: 001-202-478-7347
afbsec@adaptation-fund.org

In the project area level, the National project management is the contact point for any project related complaints from stakeholders in each country. The National project management with the support of the Regional project management unit, the Resident mission of BOAD (Benin, Burkina Faso, Niger and Togo) or the FAO for Ghana and the RAAF/ECOWAS representatives in the countries, should respond promptly and appropriately to a complaint with the support of and a report is made to the DCR which is based in Headquarter of BOAD. Where the complaint cannot be managed at the project level, the Project Coordinator will direct the complainants to complete a complaint form for submission to the DCR of the BOAD. The Project coordinator should advise complainants to provide complete information, so BOAD can properly assess and address the complaint.

It will be the responsibility of the PMU at the national level, under the control of BOAD and the regional PMU, to ensure that all relevant stakeholders are adequately informed of the grievance mechanism. This mechanism will be made available at the region, department, provinces or districts concerned by the project. Copies of the manual of grievance mechanism will be made available at the villages' level. It will also posted on the project website and the implementing entity (BOAD) website and the regional executing entitie (RAAF/CEDEAO). The procedures on how to submit the complaint are available on the website of the BOAD (www.boad.org) or directly at https://www.boad.org/en/policies-procedures-guidelines/ (under item "DOCUMENTS OF CONFORMITY AND GRIEVANCE").

If the DCR finds that a complaint is eligible, the DCR composes internal and/or external experts' team to investigate the case and propose options for the complainant to consider.

The table below show summary information on compliance review and grievance response.

Table 28: Summary of grievance mechanism of the project

	Compliance review	Grievance response
Complainant	Any person or group of persons who may be affected by BOAD-supported activities. While anonymous complaints will not be accepted, requests for confidentiality will be respected.	
Channel	Complainants can contact the Compliance and Regulatory Division (DCR) of BOAD via mail, e-mail, fax or phone. The adresse of the DCR : Banque Ouest Africaine de Développement 62 av. de la Libération, BP 1172 Lomé, Togo Tel : +228 22 21 59 06 Fax : +228 22 21 52 67 E-Mail : boadsiege@boad.org Web : www.boad.org The procedures on how to submit the complaint are available on the website of the BOAD (www.boad.org) or directly at https://www.boad.org/en/policies-procedures-guidelines/ (under item "DOCUMENTS OF CONFORMITY AND GRIEVANCE"). Complaints can also be filed with the secretariat of Adaptation Fund at the following address: Adaptation Fund Board secretariat Mail stop: MSN P-4-400 1818 H Street NW Washington DC 20433 USA Tel: 001-202-478-7347 afbsec@adaptation-fund.org Whether through the BOAD or the Adaptation Fund, the complainant (s) should provide full details on their complaints in order to analyze their elegibilty and traitement. Complaints from third parties may also be lodged at the level of the chiefdom of the beneficiary community who will forward them to the Project Management Unit. The national project management unit will in turn forward complaints to BOAD.	
Eligibility requirements	The complaint is directly related to Environmental, Social and Economic Sustainability issues. The issue concerns a proposed or on-going AF/BOAD project.	
Responsibility within BOAD	Compliance and Regulatory Division (DCR) of BOAD with support of resident Missions in Guinea Bissau and thematic experts	
Response	The DCR investigates the complaint and reports findings and recommendations to the President of the BOAD. The BOAD communicates the decisions and steps that BOAD will take in response to the concerns.	The DCR explores mediation, negotiation, conflict resolution, and/or referral to another dispute resolution mechanism.
Possible results and follow up action	Measures to minimize or mitigate negative impacts from project activities. Revision and disclosure of the project. Permanent suspension of the project.	Proposed measures to address or compensate for negative impacts from project activities. Resolution of issue. Public disclosure of the case.

D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.

A monitoring and evaluation of project activities will be set up to assess progress regarding the objectives and outcomes outlined in the project document. It will allow to identify strengths and weaknesses in order to make informed decisions and in time. Monitoring will focus on the implementation of project activities and will be based on the measurement of progress at each critical stage of the process. The project would introduce a gender disaggregated system of data collection and reporting for each project component, according to the gender integration into climate-smart agriculture of the FAO.

The system of Monitoring and Evaluation would be designed to capture the rate of implementation against planned targets and objectives, as set out by the project design and reflected in the annual work and program budget (AWPB), and would monitor: (i) the financial information of the proposed project;(ii) the regular and systematic recording and reporting of progress against planned project targets; and (iii) the assessment of the impact of project activities on the target group and the environment.

The Monitoring and Evaluation of the project achievements and knowledge management would be the responsibility of the Regional PMU with the support of the project management unit at the national level. Indeed, monitoring and evaluation will be conducted at country level and data compiled at the regional level. The results-based approach will be adopted, involving regular recording of, and accounting for progress against AWPB targets; and routine, periodic assessments of movement towards beneficiary impact. At the beginning of the project, a strong and clearly defined M&E function will be established. The system of M&E will be based on objectives and indicators established in the context of the results framework of the project. The activities of monitoring and evaluation will follow the policies and guidelines of the Adaptation Fund as well as those of the BOAD in the matter. Monitoring and evaluation system will facilitate learning, replication and scale upgrading of the results and lessons from the project.

The progress of the project will be checked through the Project Management Unit monitoring and evaluation, the Annual evaluation, the Mid-term evaluation, the Independent Final Evaluation and the Ex-post evaluation. Beyond this, a programme of monitoring and evaluation (M&E), in accordance with Adaptation Fund and BOAD procedures will be carried out by the BOAD Organizational Unit in charge of M&E in collaboration with its Project team and its Directorates of environment and climate change. The BOAD will report to Adaptation Fund secretariat in accordance with the Policies, Guidelines and procedures of Adaptation Fund.

Several participatory tools will be used to measure project performance. Additional effect/impacts surveys (start, mid-term and completion) and analysis of technical, annual economic and financial performance of farms will measure the project's impact for targets groups (improvement of yields, reduction of their poverty and improvement of their resilience). A computerized database will be developed for the project.

Quantitative targets will be approved by the stakeholders at the start of the project when reviewing the logical framework taking into account the intervention sites. A midterm review and a final evaluation are planned in order to assess the changes observed at baseline[34]. The M & E system will support decision-making for the adoption of actions or activities of resilience for future projects.

The M&E tools will be developed based on existing operational arrangements and the level of ongoing projects (survey sheet, further investigation to assess the effects/impact, monitoring sheets of activities, thematic studies, nominative targeting system, agronomic monitoring system, environmental and social impact, dashboards). A synergy will be developed between the present project and projects/programs in the 12 regions concerned. At the national level, the implementing partners are: (i) for operational

[34] A baseline situation will be specified at project start for each intervention site

monitoring, the technical services of the ministries concerned (agriculture, rural engineering, livestock farming, environment, agricultural hydraulics infrastructures) in each country; (ii) for the dissemination of information on the environment and climate change, NGOs and groups of consultants. At regional level, Agrhymet, ILRI, CGIAR-CCAFS, etc. contribute to strengthening the monitoring and evaluation of the project.

The monitoring and evaluation will be done through:

- Balance sheet and programming meetings with grassroots actors;
- Weekly Points, semestrial and annual reviews at the project team level;
- Field visits.

Monitoring and evaluation by project coordination

For the execution of the project, the Region project management unit (RPMU) will establish a system to monitor the progress of the project. Participatory mechanisms with National project coordination teams will be put in place for the collection and recording of data to support monitoring and evaluation of the results and activities indicators.

Continuous monitoring of the project will be the responsibility of the RPMU through the National project corrination units and will be guided by the preparation and execution of Work Program and Annual Budget (AWPB), supported by a quarterly progress report. The AWPB will indicate the activities proposed for the next year at regaional and national level and will provide the necessary details on the objectives and the quarterly reports that include information on the follow-up to the implementation of activities and the achievement of the objectives of the result. The Project Steering Committee (PSC) will meet twice a year to review the progress of the project. They will assess during the meeting of the end of year, the annual report of management of the project from the previous period and the budgeted annual working plan of the next period. The budgeted annual working plan is established in accordance with the results framework to ensure proper compliance with and monitoring of the results of the project. Reports that are prepared by the RPMU specifically in the context of the monitoring and evaluation plan are as follows: (i) the report of the project launch workshop; (ii) the annual budgeted working plans; (iii) quarterly reports; (iv) the annual management reports; (v) technical reports; and (vii) the final report.

All the reports prepared by the RPMU and approved by the project steering committee will be sent to the BOAD which will send it to Adaptation Fund if required.

Project Inception Workshop

After the approval of the project by the adaptation fund and once that the RPMU and National project coordination units are set up, the project launch workshop will be organized. This workshop will be organized at the regional level by the RAAF with the support of BOAD and will bring together representatives actors involved in the implementation, monitoring and evaluation of the project. A fundamental objective of the Inception Workshop will be to present the modalities of project implementation and execution, and assist the project team to understand and take ownership of the project's goals and objectives. During this workshop, the tasks of monitoring and evaluation will include: (i) the presentation of the project results framework with; (ii) the review of monitoring and evaluation indicators; (iii) the preparation of projects of clauses that should be included in tender documents to ensure compliance with the functions of monitoring and evaluation; and (iv) the clarification of the distribution of the tasks of monitoring and evaluation among different actors.

After the launch workshop, the RPMU will prepare a report of the project incertion in consultation with the CEDEAO/RAAF. The report will include a description of the functions and the institutional

responsibilities and coordination of stakeholders in project activities, start-up activities and an update on any changes in external conditions that may affect the project. It will also include a detailed budgeted annual working plan for the first year and a detailed including indicators monitoring plan.

Work Program and Annual Budget

The RPMU will submit to the PSC a complete Work Program and Annual Budget (AWPB). The AWPB should include detailed activities to be performed for each of the outcomes of the project during the monthly periods and the dates to which the objectives and steps of the performance indicators will be carried out during the year. A detailed budget for the project activities to be undertaken during the year, as well as all monitoring and necessary supervision activities will also be included. The AWPB will be presented at the meeting of the Project Steering Committee for approval.

Field visit

The members of the project coordination units (regional and national units) and BOAD will conduct regular visits to the project sites according to the agreed schedule in the project's annual work plan to evaluate the progress of the project.

Technical reports

Technical reports will be prepared as part of the project results, as well as to document and disseminate lessons learned. The projects of all the technical reports of each country must be submitted by the coordination of the national project. Each national project coordinator will submit the report to the RPMU which will, in turn, be submitted to the RAAF for review and approval and to BOAD for their comments and observations, before they are finalized and published. Copies of the finalized technical reports will be distributed to the indicated actors.

Financial Reporting

In terms of financial monitoring, the RPMU with the support of the National project coordination unit will provide BOAD, with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of funds according to the established procedures.

Semestrial progress report

The RPMU with the support of the National projects coordination unit will submit semestrial progress reports to the RAAF within 15 days of the end of each quarter. Analysis tools will be used to identify constraints, problems or bottlenecks that hinder the execution of the activities of the project in a timely manner in order to take appropriate corrective actions. This report will present the status of implementation of the environmental and social measures of the sub-projects on the sites including the pests and pesticides management. They are assessed on the basis of systematic monitoring of performance indicators and products identified in the framework of the results of the project. The RPMU will forward these reports to the members of the Steering Committee.

A RPMU risk log will be regularly updated in intervals of no less than every six months in which critical risks to the project have been identified.

Annual evaluation

Annual evaluations will be conducted with the project coordination units (regional unit and national coordination units), PSC, IE (BOAD), RAAF/CEDEAO and representatives of the beneficiary communities. The secretariat of Adaptation Fund could be involved in this evaluation. They will be organized in collaboration with the regional coordinator of the project, the preparation of annual progress reports, including recommendations to be submitted for adoption to the PSC. They will take into account the progress toward goals, lessons learned, risks management, status of implementation of

environmental and social management plans of the subprojects including integrated pests and pesticides management, implemented budgets and difficulties. The inspection by the Regional Project Management Unit will be complemented by the financial monitoring by a competent body.

Mid-term evaluation

Eighteen (18) months after the start of the project, a Mid-tern evaluation will be conducted independently with one or more independent consultants. The purpose the Mid-tern evaluation is to review the progress and effectiveness of project execution in terms of the achievement of objectives, outcomes and outputs. The conclusions and recommendations will be crucial to bring about improvements in overall project design and execution strategy, if needed, for the remaining period of the project. The RPMU will make the necessary arrangements for the mid-term evaluation, in consultation with the various regional and national institutions involved in the project.

The Mid-tern evaluation shall include at the least the following elements:

- an analysis of the project's execution in terms of effectiveness, efficiency and compliance with set timeframes;
- an analysis of the effectiveness of the cooperation mechanisms between the parties;
- identifying issues requiring decisions and corrective actions;
- a proposal for interim corrections and/or adjustments to the execution strategy, as necessary;
- status of implementation of environmental and social management plan of the project;
- status of integrated pests and pesticides management;
- a description of the technical achievements and lessons learned arising from design, execution and project management.

Some of the critical elements to which both the Mid-term evaluation must pay particular attention are:

- the degree of acceptance and involvement of the beneficiaries, communities and local organizations in the information and alert systems established;
- the level of incorporation, among the direct beneficiaries, of practices from the agro technology transfer activities;
- the level of understanding and awareness among decision makers and beneficiaries of the need and importance of measures for adapting to climate change;
- the level achieved in terms of preparation, monitoring and adaptation;
- the reduction of negative impacts achieved in different areas (environmental, social, economic);
- the level of incorporation of measures to adapt to climate change in the policies and action plans and territorial development at regional level and their efficient implementation;
- the degree of participation and representation of women in the planning, training, and execution of project activities and the project's effect on the productive activities of the region.

All the institutions involved in the monitoring and the execution of the project will give their support to this independent mid-term evaluation. It is:

- at the national level, among other: General and regional Directorates of Agriculture, General and regional Directorates of Genie rural, General Directorates of water resources management, General Directorates of Livestock, General Directorates of National Meteorology, General Directorates of Forests and Fauna, Local Government, Institute of Women and Children, National Institute in charge of Agrarian Research;
- at the regional level, the CILSS, Agrhymet, ACMAD, ILRI, FAO, etc.

The report of the Mid-term evaluation will be submitted to the Implementing Entity (BOAD).

Independent Final Evaluation

Shortly before the completion of the project an Independent Final Evaluation will be made by one or more independent consultant. The purpose of this evaluation is to describe project impacts, sustainability of results and the degree of achievement of long-term results. The Independent Final Evaluation should also indicate any future actions needed to ensure the sustainability of project results, expand the impact in successive phases, integrate and increase products and practices and disseminate the information obtained amongst the authorities and institutions with competencies in adapting to climate change in rural areas, so as to ensure the continuity of the processes initiated by this project. The independent final evaluation will assess the status of implementation of environmental and social measures including the integrated pests and pesticides management.

Final Report

Within 3 months before the date of completion of the project, the Project coordinator will present the draft of the final report. The main purposes of the Final Report are to provide guidance to ministers and officials on political decisions necessary for following up the project and to present the donor information on the use of funds. As such, the final report will consist of a brief summary of the main products, findings, the global status of implementation of environmental and social measures during the project, lessons learned of the environmental and social management including the integrated pests and pesticides management, conclusions and recommendations for the project, the descriptions or technical details. The final report will include an assessment of activities, a summary of training and recommendations expressed in terms of their practical application. This report shall specifically include the findings of the final evaluation. Prior its finalization, a project evaluation meeting should be held to discuss the Final Report draft with the RAAF and BOAD. The final report will be submitted to the PSC for approval.

Ex-post evaluation

In accordance with BOAD procedures, an ex-post evaluation is conducted two or three years after the end of a project. This activity will therefore conducted by BOAD to measure the impact of the project on beneficiaries.

The M&E framework, including data collection and analysis arrangements, baseline information, and programme of work and budget will be updated at project start-up with the participation of the M&E officer of BOAD as well as other concerned staff of the RPMU, RAAF, NPCs. The updated framework will be submitted to BOAD for approval not later than three months after project effectiveness.

The costs associated with implementing of M&E system are detailed in the table below.

Table 29: Implementation of M&E system costs

Activity	Responsible Party	Timeframe / Frequency	Budgeted Costs (USD)	Budgetary Reference
Monitoring the impact on the ground and evaluating progress	RPMU, SINCCP	Annually	-	included in project management costs (work of the members of the project coordination units (RPMU, SINCCP)
Field visit by Project management unit	RPMU, SINCCP	Periodic	254,1	Included in project management costs (line 4.2.3.)
Semestrial report	RPMU, SINCCP	Semestrial	-	Included in project management costs (work of the members of the PMU)
Annual management reports	RPMU, SINCCP	Annually	-	
Mid-term evaluation	Consultant with the support of the RPMU, the SINCCP, the INCCP, the CPP	After 18 months of implementation of the project	20 000	Included in project management costs (line 4.3.2)
Final evaluation and report	Consultant with the support of the URGP, the SINCCP, the INCCP, the CPP	At the end of the project	24 100	Included in project management costs (line 4.3.3.)
Ex-post evaluation	Consultant with the support of BOAD	At the end of the project	30 000	Included in project management costs (line 4.3.4.)
Audit of accounts	Consultant with the support of the RPMU, SINCCP and BOAD	Annually	30 000	Included in project management costs (line 4.4.)
Total			104 100	

The calendar of the M&E implementation is presented bleow.

	Year 1				Year 2				Year 3				Year 4	Year 5
	1	2	3	4	1	2	3	4	1	2	3	4		
Annual Operating Plan and Budget validation														
Field Impact Monitoring and Progress Evaluation including field visits														
Semestrial reports														
Production of technical reports														
Mid-term evaluation and report														
Final Evaluation														
Audit of accounts														
Ex-post Evaluation														

ENVIRONMENTAL AND SOCIAL MONITORING PROGRAM

Despite the knowledge of certain environmental and social phenomena related to generic impacts of the project activities, it nevertheless remains that there is still a degree of uncertainty in the accuracy of other impacts, particularly regarding diffuse impacts and residual impacts. For this reason, it is necessary to develop an environmental monitoring program. The latter shall verify the correctness of the evaluation of certain impacts, assess the effectiveness of mitigation measures implemented and allow to make proposals for possible corrective action when necessary. The environmental monitoring program will present the indicators to monitor the mitigation and improvement measures. Moreover, the environmental and social monitoring will track the evolution of the state of the environment, including the sensitive elements, using relevant indicators on the environmental components established on a consensual basis by the various stakeholders in the execution. The monitoring indicators as well as some parameters should be redefined and refined following completion of detailed environmental studies

a) Responsabilities of environmental and social risks monitoring

Environmental and social monitoring will be provided by in each countries by the National Environment Agency. This mission will be carried out in collaboration with the National Project Cordination team (SINCCP) and the technical services involved in the project. All the results of the monitoring should also be discussed and shared during the sessions of the Project Steering Committee for validation. At the local level, the monitoring and monitoring system defined at the central level will be based on the Regional Environmental Directorates in collaboration with the Regional Directorates for Agriculture and Livestock, the Directorate of plant protection and other devolved technical services (water, soil, forest, civil protection, etc).

The capacity-building activities to be carried out include training for these different actors in order to ensure appropriation of the content of the Environmental and Social Management Plan. They also cover field missions in the context of the implementation of the monitoring and environmental monitoring program.

b) Responsibilities for monitoring the Integrated Pest Management Plan

In the framework of the present project, the monitoring of the integrated pest and pesticide management plan will be include the following institutions: (i) the Sahelian Pesticides Committee at regional level; (ii) the Regional Directorates for Plant Protection; the Regional Directorates for Environment; (iii) the Regional Directorates of Agriculture; (iv) the National agency Office for ESIA ; (v) the Regional Directorates of Public Health; (vi) the representatives of the Governorate of the region; (vii) the civil protection service; (viii) the National Laboratory for Agrarian Research; (ix) the representatives of NGOs providing support to farmers.

c) Supervision by the project Implementation entity

All environmental and social monitoring activities will be conducted under the supervision of the implementing entity (BOAD), which will send monitoring reports to the Adaptation Fund. In accordance with the ES policy of the Adaptation Fund, project monitoring and evaluation by the implementing entity must take into account all identified environmental and social risks and impacts. The implementing entity will assess the implementation of the integrated pests and pesticides management plan measures through the periodic reports submitted by the RPMU and its field verification missions. To this end, the BOAD will oversee the process of recruiting FAO integrated pest and pesticides management Expert for the training of actors involved in the project on integrated management of pests and pesticides. It will oversee all training activities and the application of best practice measures in the field.

The RPMU will submit to the BOAD the report on the Environmental and social management plan. This report will take into account the management of the 15 principles of the Adaptation Fund. This report should included the pest and pesticides managements and the grievance management. The BOAD will evaluate the content of the monthly reports of the RPMU and give to the PMU its comments on environmental and social management. The IE will verify in each next report if the comments on the previous reports are taken into account and the shortcomings corrected.

In addition, the BOAD will organize every three months a field missions to verify the level of implementation of the ESMP and recommend specific corrective actions that ensure that the project complies with the E&S principles of the Adaptation Fund.

The BOAD may receive the support of external consultants for a second opinion on the performance of the environmental and social measures implementation and the monitoring system. In the event of a grievance, the Environmental, Social and Legal Offices of the BOAD will clarify the situation and find the appropriate solutions to the problems posed. The annual reports to be submitted by the BOAD to the Adaptation Fund on the project implementation will include a section on the status of implementation of the environmental and social management plan and how the environmental and social risks/impacts are avoided, minimized or mitigated. The reports shall also include a description of the shortcomings corrections. The Implementation Entity's annual report will also include a section on the on the pests and pesticides management in the framework of the implementation of the Project Environmental and Social Management Plan. The mid-term and final evaluation reports will also include an assessment of the project's performance in relation to environmental and social risks inclinding pest and pesticides management and grievance management.

BOAD as the implementation entity will receive project implementation reports. It will carry out monitoring and evaluation missions and will ensure the proper execution of the project according to the project schedule and that the funds are allocated for activities planned. BOAD will collect data and information in order to draw up its various reports to the Adaptation Fund. The table below shows the monitoring and evaluation function of the implementation entity and cost associated.

Table 30: Monitoring and Evaluation Cost of the Implementing Entity

Specialized Technical Services	**Responsible Parties at BOAD**	**Budget US$**	**Time frame**
Semestrial reports	Programme manager and Monitoring and Evaluation Unit	30 000	Semestrial
Visits to field sites	Programme manager and Internal audit unit Monitoring and Evaluation Unit External consultants Government representatives	40,000	biannual
Monitoring and Annual progress reports	Programme manager and Monitoring and Evaluation Unit	30,000	At the end of each year
Mid-term Evaluation	Programme manager and Monitoring and Evaluation Unit External Consultants	20,000	At the mid-point of programme implementation
Final Evaluation	Programme manager and Monitoring and Evaluation Unit External Consultants	20,000	At least three months before the end of programme implementation
Project terminal Report	Programme manager and Monitoring and Evaluation Unit External Consultants	10,000	At least three months before the end of the programme
Audit	Programme manager and internal audit unit External Consultants	30,000	Yearly
TOTAL INDICATIVE COST		**US$180,000**	

E. Include a results framework for the project / programme proposal, including milestones, targets and indicators.

The logical framework of the project is presented in Table 16 below.

Table 31: Project Logframe

Intervention logic	**indicators**	**Baseline**	**targets**	**Means of verification**	**Assumptions / Risks**
Objective: To reduce the vulnerability of farmers and pastoralists to climate risk, which is already affecting the level of food security, income generation and ecosystem services of poor communities	Number of people who improve their resilience skills and living conditions	0	7,600 households, that to say 53,200 of which 26,600 women (ie. 50%) are direct beneficiaries of site development activities 3,000 breeders are beneficiaries of activities to improve the mobility of transhumant livestock	Project monitoring and evaluation reports	Availability of financial resources Political will of national and local governments Selection of vulnerable and very active people who have shown interest in the project
Component 1: Strengthening knowledge and technical capacity through regional and local interactions for the promotion of resilient agriculture practices to the adverse effects of changements climatiques	Number of beneficiaries informed about climate risk issues through the actions of meteorological services Level of technical capacity of regional, national and local institutions to promote climate resilient best practices in an CSA approach Number of beneficiaries at the local level whose	Low regional synergy and complementarity in the production of agro-climatic and meteorological information	At least 60 000 farmers including 50% of women have access to agro-meteorological information for agricultural planning 120 Managerial staff and officers of local communities/municipalities (including at least 30% of women) are trained on the CSA approach and the formulation of micro-projects 250 national technicians (agriculture, water, livestock, environment, forests, and adaptation) including at least 30% of women are trained to promote CSA 50 NGOs / Associations are trained on	Annual reports Reports of Capacity Building Workshops Monitoring and evaluation report	Participation of national technical services, regional institutions, local and regional technical services, NGOs / Associations, producer groups

Intervention logic	indicators	Baseline	targets	Means of verification	Assumptions / Risks
	capacities are enhanced to cope with climate risk with appropriate responses Percentage of beneficiaries adopting climate-smart farming practices Number of community plans or policies improved or implemented that incorporate the CSA approach		the CSA approach and the identification, formulation on climate smart agriculture projects on climate change 100 representatives of farmers' organizations including at least 50% of women are trained on the CSA approach 36,000 people, includin 50% of women, benefited from CSA sensitization in villages / communities 250 representatives of groups including 125 women (ie. 50%) who have participated in on-site learning visits for approximately 10,000 members of producer groups 12 community development plans were strengthened for the promotion of CSA in Burkina Faso, Niger, Benin, Togo and Ghana		
Result 1.1. Climate services adapted to the needs of producers are available with the support of national and regional institutions and can be used by producers	Number of beneficiaries informed about climate risk issues through the actions of meteorological services	Low access to agro-meteorological information for planning agricultural seasons	At least 60 000 producers including 50% of women have access to agro-meteorological information adapted for agricultural planning Adapted agro climatic maps are produced and disseminated	Annual reports Monitoring and evaluation report	Effective involvement of regional and national institutions in charge of agrometeorology

Intervention logic	indicators	Baseline	targets	Means of verification	Assumptions / Risks
Activity 1.1.1. Strengthening agroclimatic and meteorological information	Number kits comprising direct reading rain gauges, thermometers and air recorders acquired	Low local weather monitoring network Old or defective equipment Obsolete data and unsuitable for agricultural planning The information on available maps is out of date	600 kits comprising direct reading rain gauges, thermometers and air recorders are installed Local data is collected and processed Adapted agro climatic maps are produced and disseminated Local geo-referenced maps on agro-ecological zones and land uses are local and produced	Annual reports Monitoring and evaluation report	Effective involvement of regional and national institutions in charge of agrometeorology Effective involvement of beneficiaries
Activity 1.1.2. Exchanges with the institutions on agro-meteorological forecasts for agricultural campaigns and provision of information adapted to the level of producers	Number of producers with access to adapted weather information	No exchange between interstate institutions on agro-meteorological information Low access to adapted agro-meteorological information	1 exchange meeting is organized per year between the institutions of the countries concerned on agro-meteorological forecasts for agricultural seasons At least 60 000 producers, including 50% of women have access to suitable agro-meteorological information	Reports of the meetings of exchanges Annual reports Monitoring and evaluation report	Effective involvement of regional and national institutions in charge of agrometeorology Strong participation of services in charge of agriculture, water, agriculture and livestock, water, environment, forests, etc. Efficiency of mobile telephony services
Result 1.2. Knowledge and practices of climate-smart agriculture are reinforced	Number of farmers' groups, technical agents, development organizations, associations that have improved their knowledge of the CSA	Lack of CSA training for rural extension services and stakeholders in the project area	At least 400 actors with 50% of women have seen their technical capacity and knowledge strengthened to promote climate resilient CSA practices 1 exchange visit and learning in the field is organized per year for the benefit of farmers groups and technical	Capacity building reports Annual reports Monitoring and evaluation reports	Effective involvement of technical services Strong involvement of beneficiaries

Intervention logic	indicators	Baseline	targets	Means of verification	Assumptions / Risks
	approach and climate resilient best practices		services between the different regions of the different intervention countries to strengthen regional technical collaboration for the promotion of climate smart agriculture		
Activity 1.2.1. Strengthening capacity of stakeholders responsible for the design and project implementation to promote a climate smart agriculture	Number of managers and technicians from national and regional institutions trained Number of people and organizations / institutions with enhanced capacity to promote climate smart agriculture	Lack of CSA training for managers and technicians of national and regional institutions Low technical capacity to support producer groups for the development of CSA micro-projects and the development of climate resilient practices	120 Managerial staff and officers of local communities/municipalities (including at least 30% of women) are trained on the CSA approach and the formulation of micro-projects 250 national technicians (agriculture, water, livestock, environment, forests, and adaptation) including 30% of women are trained to promote CSA 50 NGOs / Associations are trained on the CSA approach and the identification, formulation on climate smart agriculture projects on climate change 100 representatives of farmers' organizations including 50% of women are trained on the CSA approach 36,000 people, whose 50% of women, benefited from CSA sensitization in villages / communities Subprojects have been identified and formulated with the support of Consultants and at least 50% of the beneficiaries are women.	Reports of Capacity Building Workshops Monitoring and evaluation report Annual reports	Strong involvement of managers and agents of local communities / municipalities, national technicians (agriculture, water, livestock, environment, forests, and adaptation), NGOs / Associations, farmers' organizations

Intervention logic	indicators	Baseline	targets	Means of verification	Assumptions / Risks
Activity 1.2.2. Strengthening cross-border collaboration to adapt agriculture to climate change to strengthen CSA's national capacity	Number of exchange visits organized and number of people trained	Lack of exchange visits and training on adaptation to climate change in agriculture Framework for exchange and sharing of experience Low integration of climate-smart agriculture into local and national development plans	1 exchange visit and learning in the field is organized annually for the benefit of groups of farmers and technical services between regions and countries involved in the project 250 representatives of groups including 125 women (ie 50%) who have participated in on-site learning visits for approximately 10,000 members of producer groups Operationalization of a framework for exchange and sharing of experiences, and consultation on resilience techniques to climate change in agriculture between the neighboring administrative regions of Burkina Faso, Niger, Benin, Togo and Ghana. 12 community development plans were strengthened for the promotion of CSA in Burkina Faso, Niger, Benin, Togo and Ghana.	Reports of exchange visits and on-site learning Monitoring and evaluation report Exchange and experience sharing reports Community Plan Documents	Actors are willing to learn Strong stakeholder involvement Good choice of exchange and learning visit sites Effective involvement of regional and national institutions and producer groups Good political will to change the approach
Component 2: Scaling up best practices related to climate change adaptation in agriculture and pastoralism at the local level	Number of small-scale irrigation facilities set up to maintain agricultural production, fight floods and cope with pockets of drought Number of hectares developed using the best techniques and technologies	Absence of mobilization infrastructure at the intervention sites réilientes practices scattered, non-integrated and not known by the majority of farmers in the zoe project	500 runoff collection basins, 30 boreholes with solar pumping, 50 large diameter wells and 10 spreading treshold are used to maintain agricultural production, fight against floods and cope with pockets of drought 3000 ha have been developed with the best techniques and technologies	Quarterly report Annual reports Monitoring and evaluation report	Selection of the best sub-projects Beneficiaries are willing to implement the techniques and technologies promoted Support of producers in the implementation of

Intervention logic	indicators	Baseline	targets	Means of verification	Assumptions / Risks
	Effectiveness of scaled techniques and technologies to enhance resilience of populations	Low yield	resilient to the climate and adapted to each zone At least 80% increase in agricultural yields		the techniques and technologies promoted
Result 2.1. Promoted best farming and livestock practices are climate resilient and contribute to increased food security	Number of agricultural areas developed with climate resilient technologies Percentage of adoption of CSA practices Level of improvement of agricultural productivity Delimited transhumance corridors in order to reduce conflicts between farmers and pastoralists	réilientes practices scattered, non-integrated and not known by the majority of farmers in the zoe project 0 Low agricultural yield	3000 ha of crops have been developed using the best techniques and technologies that are climate resilient and adapted to each area: - 2500 ha of cereal crops (maize, sorghum and millet); - 300ha of rice growing; - 200 ha of market gardening At least 80% of direct beneficiaries have adopted CSA practices At least 80% increase in agricultural yields 1,000 km of corridors or cross-border transhumance tracks have been demarcated	Visit of sites Quarterly report Annual reports Monitoring and evaluation report Work execution report Visit of sites	Land conflicts Implications of local authorities Better choice of sites Beneficiaries are willing to implement the techniques and technologies promoted Effective involvement of national services and regional institutions in charge of livestock
Activity 2.1.1. Promotion of integrated techniques and activities related to water management,	Number of hectares of restored soil	Low soil productivity Lack of integrated soil conservation, carbon	2 500 ha of restored soil with the techniques of: filter bunds, stone bunds, grass strips, zaï-tassa techniques, half-moons, mulching, organic manure and Natural Assisted regeneration for maize, sorghum and millet developpement	Visit of sites Quarterly report	Better choice of sites Level of organization of beneficiaries

Intervention logic	indicators	Baseline	targets	Means of verification	Assumptions / Risks
rehabilitation and conservation	Number of water mobilization infrastructures completed	sequestration and water mobilization practices	300 ha of irrigation developed 500 runoff collection basins were set up to mobilize water for back-up irrigation 30 solar irrigation kits were provided for the development of 150 ha of market gardening (1kit for a unit of 5ha) 50 large diameter wells are made for the development of 50ha of market gardening 10 spreading thresholds are realized	Annual reports Work execution report Monitoring and evaluation report	Effective involvement of rural extension services Good combination of promoted techniques Beneficiaries are willing to implement the techniques and technologies promoted
	Rate of improvement of yields to support food security and improve the living conditions of beneficiaries	Low agricultural yield	At least 80% improvement of agricultural yields at project intervention sites to support food security and improve the living conditions of beneficiaries		
	Kilometer of secure cross-border transhumance corridors Number of water points and boreholes constructed	Recurrent conflicts between farmers and pastoralists Insufficient water points for livestock	1,000 km of corridors or cross-border transhumance tracks have been demarcated 100 water points (80 BCER and 20 human-powered boreholes) were installed along secure transhumance corridors Reduction of conflicts between breeders and agricultures		

Intervention logic	indicators	Baseline	targets	Means of verification	Assumptions / Risks
Activity 2.1.2: Support for the valorization and management of sites	Percentage of beneficiaries with access to quality agricultural inputs	Low access to quality agricultural inputs.	At least 100% of benficiaries (which 50% are women) have access to improved seeds At least 80% of beneficiary producers have access to organic fertilizer and / or quality fertilizers A box of integrated pest and pesticide management tools is developed and disseminated in the project area At least 75% of beneficiary producers make use of alternatives to integrated pest management through on-site support and sensitization 100% of producers benefit from technical support and advice for the implementation of resilient and sustainable measures related to agriculture, environment, water, pest management, livestock, etc.	Visit of sites Integrated pest management tools Annual reports Monitoring and evaluation report	Effective involvement of national and regional institutions of agrarian research Effective involvement of plant protection services, the environment and agriculture, irrigation, forests
Component 3: Knowledge Sharing on Resilient Agricultural Best Practices Related to Climate-Smart Agriculture	Number of people accessing information and lessons learned on best climate resilience techniques	Low access to information on climate resilient agricultural best practices	At least 300,000 people of which 50% women benefited from dissemination activities of lessons learned and project knowledge.	Monitoring and evaluation report	Channels for disseminating lessons learned are effective
Outcome 3.1 Knowledge of resilient agricultural best practices related to climate-smart agriculture is	Number of knowledge documents and lessons disseminated in an appropriate format for each stakeholder	Types of documents learned on lessons learned	A good practice manual, a lessons learned document, A catalog of best practices and techniques related to climate change adaptation in agriculture are disseminated	Annual reports Monitoring and evaluation report	Channels for disseminating lessons learned are effective

Intervention logic	indicators	Baseline	targets	Means of verification	Assumptions / Risks
strengthened and disseminated					
Activity 3.1.1: Knowledge Building and Dissemination of Lessons Learned on Climate Resilient Agricultural Best Practices	Number of knowledge documents and lessons disseminated in an appropriate format for each stakeholder Effectiveness of dissemination channels of lessons learned	Low access to information on climate resilient agricultural best practices in a suitable format	Lessons learned are documented A website created and operational A manual of good practices on climat smart agriculture developed and disseminated in an understandable format at local, national and regional Regional newsletters and national newspapers are produced and disseminated for the general public A catalog of best practices and techniques related to climate change adaptation in agriculture is disseminated in an appropriate format for each of the potential stakeholders (government and technical services, producer organizations, local community, students, etc.). A radio and television broadcast program is established and implemented At least 300,000 people of which 50% women benefited from dissemination activities of lessons learned and project knowledge	Annual reports Monitoring and evaluation report	Channels of dissemination of lessons learned are effective Strong involvement of all stakeholders

F. Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund

Project Objective(s) 19	**Project Objective Indicator(s)**	Fund Outcome	Fund Outcome Indicator	Grant Amount (X 1000 USD)
OS1. Strengthen knowledge and technical capacity and knowledge of parties through regional and local interactions for the promotion of agriculture practices resilient to the adverse effects of climate change	Number of beneficiaries informed about climate risk issues through the actions of meteorological services Level of technical capacity of regional, national and local institutions to promote climate resilient best practices in an CSA approach Number of beneficiaries at the local level whose capacities are enhanced to cope with climate risk with appropriate responses Percentage of beneficiaries adopting climate-smart farming practicest Number of community plans or policies improved or implemented that incorporate the CSA approach	Outcome 1: Reduced exposure at national level to climate-related hazards and threats Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level Outcome 7: Improvement of policies and regulations that promote and enforce resilience measures	1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis 2.1. Number and type of targeted institutions with increased capacity to minimize exposure to climate variability hazards 3.1. Percentage of the target population aware of the negative impacts of climate change and appropriate responses 3.2. Modification in behavior of targeted population 7. Climate change priorities are integrated into national development strategy	2 285
OS2. Scaling up best practices	Number of small-scale irrigation facilities set up	Outcome 4: Increase of	4.2. Physical infrastructure	8 848

related to climate change adaptation in agriculture and pastoralism at the local level (water mobilization infrastructure, soil management technique)	to maintain agricultural production, fight floods and cope with pockets of drought Nombre d'hectare développés avec les meilleures techniques et technologies Rate of improvement of yields to support food security and improve the living conditions of beneficiaries	capacity to adapt to climate change within development areas and regarding the relevant natural resources Outcome 6: Diversify and strengthen livelihoods and sources of income for vulnerable people in targeted areas	improved to withstandclimate change and variability-induced stress 6.2. Percentage of the target population by means of resilient livelihoods to climate change suffered	
OS3. Share knowledge and disseminate lessons learned on best resilient agricultural practices related to climate smart agriculture	Number of documents of knowledge and lessons disseminated in an appropriate format for each of the stakeholders to strengthen the resilience of a larger number of producers and actors facing the climate	Outcome 1: Reduced exposure to climate-related hazards and threats	1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis	440
Project Outcome(s)	Project Outcome Indicator(s)	Fund Output	Fund Output Indicator	Grant amount (USD)
Outcome 1.1 .: Climate services adapted to the needs of producers are available with the support of national and regional institutions and can be used by producers	Number of executives and staff of local communities / municipalities, national technicians (agriculture, water, livestock, environment, forests and adaptation), NGOs / associations of paysanes organizations whose capacities are strengthened to promote the resilient agricultural approach to climate change.	Output 2.1: Capacity building of centers and national and regional networks to respond quickly to extreme weather events Output 7: Improved integration of	2.1.1. Number of staff/agent trained to respond to and mitigate the impacts of climate-related events 2.1.2. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased 7.2. No. or targeted development strategies with	950

		climate-resilience strategies into country development plans	incorporated climate change priorities enforced	
Outcome 1.2: Knowledge and practices of resilient climate-smart agriculture are strengthened	Number of farmers' groups, technical agents, development organizations, associations that have improved their knowledge of the CSA approach and climate resilient best practices	Output 3 : Targeted population groups involved in sensitization activities for the adaptation and risk reduction	3.1.1 Number and type of risk reduction actions or strategies introduced at local level	1335
The best farming practices and livestock are promoted climate-resilient and help strengthen food security	Number of small-scale irrigation facilities set up to maintain agricultural production, fight floods and cope with pockets of drought Number of hectares developed using the best techniques and technologies Rate of performance improvement to support food security and improve the living conditions of beneficiaries	Ouput 4: Physical, natural and social vulnerable assets strengthened in response to the impacts of climate change, including climate variability Output 6: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	4.1.2. Number of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by type of assets) 6.2.1. Type of income sources for households generated under climate change scenario	8848
Outcome 3.1: Knowledge about resilient agricultural best practices related to climate-smart agriculture is strengthened and disseminated	Number of knowledge documents and lessons disseminated in a format appropriate for each stakeholder	Output 3 : Targeted population groups involved in sensitization activities for the adaptation and risk reduction	3.1.1 Number and type of risk reduction actions or strategies introduced at local level	440
Total				**11 573**

Adaptation Fund Core indicators for the project

Three Adaption Fund Core Indicators will be monitored for the project as per the table 16 below.

Table 32: Core indicators for the project

Adaptation Fund Core Indicator	Indicative Project Targets	Comments
Number of beneficiaries	• 153,720 direct beneficiaries whose: - 7,600 households, that to say 53,200 of which 26,600 women (ie. 50%) are direct beneficiaries of site development activities; - 3,000 breeders are beneficiaries of activities to improve the mobility of transhumant livestock - 120 Managerial staff and officers of local communities/municipalities (including at least 30% of women) are trained on the CSA approach and the formulation of micro-projects - 250 national technicians (agriculture, water, livestock, environment, forests, and adaptation) including at least 30% of women are trained to promote CSA - 50 NGOs / Associations are trained on the CSA approach and the identification, formulation on climate smart agriculture projects on climate change - 100 representatives of farmers' organizations including at least 50% of women are trained on the CSA approach - 36,000 people, includin 50% of women, benefited from CSA sensitization in villages / communities - 250 representatives of groups including 125 women (ie. 50%) who have participated in on-site learning visits for approximately 10,000 members of producer groups - At least 60 000 farmers including 50% of women have access to agro-meteorological information for agricultural planning • 300,000 indirect beneficiaries with at least 50% Women, as part of dissemination activities of lessons learned and project knowledge;	This will be the main core indicator used for monitoring and reporting on the project.

Adaptation Fund Core Indicator	Indicative Project Targets	Comments
Assets produced, developed, improved or strengthened	- 3000 ha of crops have been developed using the best techniques and technologies that are climate resilient and adapted to each area: (i) 2500 ha of cereal crops (maize, sorghum and millet); (ii) 300ha of rice growing; (iii) 200 ha of market gardening (potatoes, onions, tomatoes and carrots); - 1,000 km of corridors or cross-border transhumance tracks have been demarcated with realization of 80 water points (BCER) and 20 human-powered boreholes along secure transhumance corridors.	Assets will include improvements and enhanced quality of land, water and natural resources, application of climate adaptation technologies/practices
Increased income, or avoided decrease in income	- At least 80% improvement in yield at project intervention sites - 20 to 50 % increase in beneficiaries' income	The project baseline will provide information on income sources and levels against which this will be measured.

G. Include a detailed budget with budget notes, broken down by country as applicable, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

The total cost of the project is shown in the following table.

Table 33: Overall budget of the project

COMPONENTS / OUTCOMES		Total Adaptation Fund HT (X 1000 USD)
Component 1: Strengthening knowledge and technical capacity through regional and local interactions for the promotion of agriculture practices resilient to the adverse effects of climate change		**2285**
	Outcome 1.1 .: Climate services adapted to the needs of producers are available with the support of national and regional institutions and can be used by producers	846
	Outcome 1.2: Knowledge and practices of resilient climate-smart agriculture are strengthened	1 439
Component 2: Scaling up best practices related to climate change adaptation in agriculture and pastoralism at the local level		**8848**
	Outcome 2.1. Promoted best farming and livestock practices are climate resilient and contribute to increased food security	8848
Component 3: Knowledge sharing on resilient agricultural best practices related to climate-smart agriculture		**440**
	Outcome 3.1: Knowledge about resilient agricultural best practices related to climate-smart agriculture is strengthened and disseminated	440
Basic cost (components)		**11 573**
Cost of project implementation		**1 331**
Total cost of the project		**12 904**
Management fee of the project implementation entity		1096
Total cost of the Adaptation Fund		**14 000**

The detailed costs of project activities are presented in the following tables.

Budget of **Component 1** : Strengthening knowledge and technical capacity through regional and local interactions for the promotion of agriculture practices resilient to the adverse effects of climate change

Including budget repartition per country and regional level (ie activities of regional capacities building)

Component 1: Strengthening knowledge and technical capacity through regional and local interactions for the promotion of agriculture practices resilient to the adverse

Topics	Unit	Quantity				National level					Regional level (common action)	Cost per unit HT (X1000 USD)	Basic cost (1000 USD)			TOTAL ADAPTATION FUND (X 1000 USD)	Total amount per country for the 3 years of the project (1000 USD)					Regional level (common action)
		Year 1	Year 2	Year 3	Total	Benin	Burkina Faso	Ghana	Niger	Togo			Year 1	Year 2	Year 3		Benin	Burkina Faso	Ghana	Niger	Togo	
Outcome 1.1 .: Climate services adapted to the needs of producers are available with the support of national and regional institutions and can be used by producers	_																					
Output 1.1.1. Strengthening agroclimatic and meteorological information	_																					
Activity 1.1.1.1. Strengthening weather and climate observation networks for data collection and analysis	_																					
Acquisition and installation of 600 packages or kits of direct reading rain gauges, thermometers and air recorders	Nbre de kits	600			600	120	120	120	120	120		0	120	0	0	120	24	24	24	24	24	
Support for local data collection	FF/country		5	5	10	2	2	2	2	2		10	0	50	50	100	20	20	20	20	20	
Activity 1.1.1.2. Strengthening knowledge on trends in rainfall and temperature variability in the project area	_																					
Support for updating and / or producing agro-climatic and agro-ecological regional maps as well as trends in climatic parameters and phenomena	FF		1	1	2						2	60	0	60	60	120	0	0	0	0	0	120
Support for the production of georeferenced maps for the monitoring of agro-ecological zones, changes in vegetation cover and land capability	FF		1	1	2						2	63	0	63	63	126	0	0	0	0	0	126
Output 1.1.2. Exchanges with the institutions on agro-meteorological forecasts for agricultural campaigns and provision of information adapted to the level of producers	_																					
Activity 1.1.2.1. Organization of exchange meetings with institutions on agro-meteorological forecasts for agricultural seasons	Nb	1	1	1	3						3	60	60	60	60	180	0	0	0	0	0	180
Activity 1.1.2.2. Provision of agrometeorological information adapted to the level of producers	FF/year		1	1	2	0,4	0,4	0,4	0,4	0,4		100	0	100	100	200	40	40	40	40	40	0
Sub-Total 1.1.													180	333	333	846	84	84	84	84	84	426
Outcome 1.2: Knowledge and practices of resilient climate-smart agriculture are strengthened	_																					
Output 1.2.1 .: Strengthening of stakeholders capacities in designing and implementing projects to promote climate-smart agriculture	_																					
Activity 1.2.1.1: Training of managers and technicians of national and regional institutions in the sectors of agriculture, water, livestock, environmental conservation and sustainable development, representatives of municipalities, CSOs, NGOs, representatives of farmers' organizations on the formulation and implementation of climate-smart agricultural projects	_																					
Organization of national workshops	Nber	12			12	2	3	3	2	2		12,50	150	0	0	150	25	38	38	25	25	0
Development of planning methods, monitoring and assessment tools for vulnerability and climate change adaptive capacity, community-level risk assessment tools	FF	1			1						1	35,00	35	0	0	35	0	0	0	0	0	35
Activity 1.2.1.2: Technical capacity building of a critical mass of field operators (producer organizations and breeders) on integrated approaches to CSA, including participatory methods	_																					
Organization of training workshops on integrated approaches / village approaches	Nber	12			12	2	3	3	2	2		22,00	264	0	0	264	44	66	66	44	44	0
Production of good practice guides resilient to climate change	FF	1			1						1	40,00	40	0	0	40	0	0	0	0	0	40
Activity 1.2.1.3: Support for the identification, formulation of sub-projects (ESIAs and APD)	Nber	5			5	1	1	1	1	1		100,00	500	0	0	500	100	100	100	100	100	0
Output 1.2.2: Strengthening cross-border cooperation for the adaptation of agriculture to climate change in order to strengthen the national capacity of the CSA	_																					
Activity 1.2.2.1. Support for the organization of the exchange rounds and training sessions on adaptation to climate change in agriculture	Nber	1	1		2						2	45,00	45	45	0	90	0	0	0	0	0	90
Activity 1.2.2.2. Establishment and operationalization of a framework for exchange and sharing of experiences, and consultation on adaptation to climate change in agriculture between the neighboring administrative regions of Burkina Faso, Niger, Benin, Togo and Ghana.	FF	1	1	1	3						3	40,00	40	40	40	120	0	0	0	0	0	120
Activity 1.2.2.3. Support the integration of climate-smart agriculture into local and national development plans in Benin, Burkina Faso, Ghana, Niger and Togo	Nber		6	6	12	4	6	6	4	4		20,00	0	120	120	240	80	120	120	80	80	0
Sub-Total 1.2.													1074	205	160	1439	249	324	324	249	249	285
TOTAL 1													1254	538	493	2285	333	408	408	333	333	711

Budget of **Component 2 : Scaling up of best practices related to climate change adaptation in agriculture and pastoralism at local level**

Including budget repartition per country

Component 2: Scaling up best practices related to climate change adaptation in agriculture and pastoralism at the local level

Topics	Unit	Quantity				Repartition of project realisation per country (total of the 3 years)					Cost per unit HT (X1000 USD)	Basic cost (1000 USD)			Adaptation Fund (x 1000 USD)	Tota amount per country for the 3 years of the project (X 1000 USD)				
		Year 1	Year 2	Year 3	Total	Benin	Burkina Faso	Ghana	Niger	Togo		Year 1	Year 2	Year 3		Benin	Burkina Faso	Ghana	Niger	Togo
															HT	HT	HT	HT	HT	HT
Outcome 2.1. Promoted best farming and livestock practices are climate resilient and contribute to increased food security																				
Output 2.1.1. Promotion of technical and integrated activities related to water management, rehabilitation and soil conservation and livestock mobility to strengthen the resilience of the beneficiaries																				
Activity 2.1.1.1. Water management and conservation																				
a) Realization of Runoff Water Collection Ponds (BCER)	Nber	100	400		500	100	100	100	100	100	3,5	350	1400	0	1 750	350	350	350	350	350
Motor pump acquisition for supplementary irrigation with BCERs	Nber	200	800		1000	200	200	200	200	200	0,8	160	640	0	800	160	160	160	160	160
b) Realization of large diameter wells with motor pumps	Nber	10	40		50	0	20	15	0	15	8,0	80	320	0	400	-	160	120	-	120
C) Drilling with solar pumping	Nbrer of kit	10	20		30	8	4	5	8	5	32,0	320	640	0	960	256	128	160	256	160
d) Realization of spreading thresholds with downstream development	Nber	4	6		10	2	2	2	2	2	80,0	320	480	0	800	160	160	160	160	160
Control of implementation of water mobilization infrastructure work	FF/country	5	5		10	2	2	2	2	2	30,0	150	150	0	300	60	60	60	60	60
Activity 2.1.1.2. Restoration and conservation of soil for agricultural development																				
a) Site development with integration / association of techniques of restoration and soil fertility improvement. **NB**: This cost will be converted to fertilizers for beneficiairies (activity 2.1.2.2)	ha	500	2000		2500	500	500	500	500	500	0,25	125	500	0	625	125	125	125	125	125
b) Site development for market gardening with large diameter wells	ha	10	40		50		20	15	0	15	2	20	80	0	100	-	40	30	-	30
c) Site development for market gardening with solar irrigation and a Californian network	ha	50	100		150	40	20	25	40	25	2	100	200	0	300	80	40	50	80	50
d) Development of irrigation sites with spreading thresholds	ha		300		300	60	60	60	60	60	2	0	600	0	600	120	120	120	120	120
Activity 2.1.1.3. Support livestock mobility and crossborder transhumance																				
Marking of cross-border transhumance corridors	Km	300	700		1000	300	200	0	200	300	0,2	60	140	0	200	60	40	-	40	60
Realization of water points (runoff collection basins)	Nber		80		80	20	15	10	15	20	3,5	0	280	0	280	70	53	35	53	70
Drilling with human motility	Nber		20		20	5	3	4	3	5	10	0	200	0	200	50	30	40	30	50
ILRI support for the management aspects of transhumance in the projec	FF	1	1		2	0,25	0,25	1	0,25	0,25	49	49	49	0	98	12	12	49	12	12
Output 2.1.2: Support for the valuation and management of agricultural sites																				
Activity 2.1.2.1. Support to access improved seeds	FF/countr	5			5	1	1	1	1	1	20	100	0	0	100	20	20	20	20	20
Activity 2.1.2.2 : Support to groups for the acquisition of quality fertilizers. NB: This cost corresponds to the cost of seting up the technologies by the beneficiaries (activity 2.1.1.2. a) and which is converted into support for the acquisition of agricultural inputs	FF/countr y	5			5	1	1	1	1	1					625	125	125	125	125	125
~~Activity 2.1.2.3 : Support for the adoption of integrated pest management~~ alternatives and the implementation of environmental and social management plans for subprojects																				
Development of integrated pest and pesticide management toolbox and good environmental management practice and capacity building of agentspour leur utilisation	FF	5			5	1	1	1	1	1	10	50	0	0	50,00	10,00	10,00	10,00	10,00	10,00
National workshops for familiarization with the Adaptation Fund ESP implementation	FF/countr y	5			5	1	1	1	1	1	20	100	0	0	100,00	20,00	20,00	20,00	20,00	20,00
Support for the implementation of ESMPs for subprojects and discussion of integrated pest management alternatives to producers	FF/countr y	5	5	5	15	3	3	3	3	3	15	75	75	75	225,00	45,00	45,00	45,00	45,00	45,00
Activity 2.1.2.4 Support to farmers' groups for the implementation of adaptation actions and environmental management measures																				
Proximity support by site animators (1 NGO per region)	FF/region	12	12	12	36	6	9	9	6	6	20	240	240	240	720,00	120,00	180,00	180,00	120,00	120,00
Support farmers on site by the public technical agents	FF/countr y	5	5	5	15	3	3	3	3	3	10	50	50	50	150,00	30,00	30,00	30,00	30,00	30,00
Management of the DNA in the implementation of climate change adaptation actions within the framework of the project		5	5	5	15	3	3	3	3	3	6	30	30	30	90,00	18,00	18,00	18,00	18,00	18,00
TOTAL 2.												2379	6074	395	8 848,00	1 766,25	1 800,75	1 782,00	1 708,75	1 790,25

Budget of **Component 3 : Knowledge sharing on resilient agricultural best practices related to climate-smart agriculture**

Including budget repartition per country

Component 3: Knowledge sharing on resilient agricultural best practices related to climate-smart agriculture

Topics				Unit	Quantity				Cost per unit HT (x 1000 USD)	Basic cost (1000 USD)			TOTAL ADAPTATION FUND (x 1000 USD)	Tota amount per country for the 3 years of the project (X 1000 USD)				
					Year 1	Year 2	Year 3	Total		Year 1	Year 2	Year 3		Benin	Burkina Faso	Ghana	Niger	Togo
Outcome 3.1: Knowledge about resilient agricultural best practices related to climate-smart agriculture is strengthened and disseminated																		
	Output 3.1.1: Strengthening knowledge and dissemination of lessons learned on best																	
		Activity 3.1.1.1 Compilation of lessons learned		FF	1	1	1	3	20	20	20	20	60	12	12	12	12	12
		Activity 3.1.1.2 Dissemination of lessons learned and project knowledge																
			Setup and operationalization of a website, production of manuals, catalogs of good practices, publication of newspapers, dissemination of programs	FF	1	1	1	3	60	60	60	60	180	36	36	36	36	36
			Setting up and operationalization of a network of exchange between the actors of climate smart agriculture and sharing lessons learned	FF		1	1	2	100	0	100	100	200	40	40	40	40	40
TOTAL 3										80	180	180	440	88	88	88	88	88

Breakdown of the use of the Implementing Entity Management Fee

Step	Indicatives services	Indicatives costs (USD)
Identification, Sourcing and Screening of ideas	- Provide information on substantive issues in adaptation associated with the purpose of the Adaptation Fund (AF). - Engage in upstream policy dialogue related to a potential application to the AF. - Verify soundness and potential eligibility of identified idea for AF.	50 000
Feasibility Assessment / Due Diligence Review	- Provide up-front guidance on converting general idea into a feasible project; - Source technical expertise in line with the scope of the project; - Verify technical reports and project conceptualization; - Provide detailed screening against technical, financial social and risk criteria and provide statement of likely eligibility against AF requirements; - Determination of execution modality and local capacity assessment of the national executing entity; - Assist in identifying technical partners; - Validate partners' technical abilities; - Obtain clearances from AF.	100 000
Development & Preparation of project	- Provide technical support, backstopping and troubleshooting to convert the idea into a technically feasible and operationally viable project; - Source technical expertise in line with the scope of the Project needs; - Verify technical reports and project conceptualization; - Verify technical soundness, quality of preparation, and match with AF expectations; - Negotiate and obtain clearances by AF; - Respond to information requests, arrange revisions; - etc.	316 000
Selection of the sub-project	- Verify the subproject screening; - Control the preparation of the TOR of subproject environmental and social assessment; - Make no-objection on the TOR; - Supervizes the selection of consultants to prepare subproject ESIA; - Ensure the compliance with the Adaptation Fund's ESP; - Analyzes the ESIA reports and provide the comments to be taking into account by the consultants; - Supervizes the subproject approval.	100 000
Implementation of the project	- Technical support in preparing TORs and verifying expertise for technical positions; - Oversee the process of recruiting consultants for the training on each aspect of the project including water management, integrated pests and pesticides management ; - Oversee all training activities and the application of best practice measures in the field ; - Manages the grievance process and ensures that the complainants have been satisfied with the resolution of their complaint ; - Provide technical and operational guidance project teams; - Verification of technical validity / match with AF expectations of inception report; - Provide technical information as needed to facilitate implementation of the project activities; - Provide advisory services as required;	350 000

Step	Indicatives services	Indicatives costs (USD)
	- Provide technical support, participation as necessary during project activities; - Ensure the compliance with the Adaptation Fund's ESP durant the project implementation; - Provide troubleshooting support if needed; - Provide support and oversight missions as necessary; - Receipt, allocation and reporting to the AF of financial resources; - Allocate and monitor Annual Spending Limits based on agreed work plans; - Oversight and monitoring of AF funds; - Return unspent funds to AF.	
Project monitoring and reporting	- Provide technical support in preparing TOR and verify expertise for technical positions involving in the and reporting; - Provide technical monitoring, progress monitoring, validation and quality assurance; - Conducte field monitoring missions; - Verify the implementation of adptative actions; - Monitor the implementation of the agreement of compliant resolution; - Receive and analyze periodic reports on the subproject ESIA implementation (the frequency of reporting on the ESMP implementation depends on the level of environmental and social risks presented by the sub-projects) - Verify the concrete implementation of the ESMP including integrated pest and pesticides management and recommend specific corrective actions to ensure that the subprojects complies with the E & S principles of the Adaptation Fund; - Submit annually, the reports on the implementation of ESMP to the Adaptation Fund; - Include in the midterm and final evaluation report of the project, the status of implementation of the environmental and social management plan including integrated pest and pesticides management and the implementation of the grievance mecanism	100 000
Project evaluation and reporting	- Provide technical support in preparing TOR and verify expertise for technical positions involving evaluation and reporting; - Conduct the evaluation field missions on the differents aspects of the project, namely: technical, environnemental, social, pest and pesticides management, Grievance management, budget, etc.; - Participate in briefing / debriefing; - Verify technical validity / match with AF expectations of all evaluation and other reports; - Undertake technical analysis, validate results, and compile lessons; - Disseminate technical findings.	80 000
TOTAL COST (USD)		**1096 000**

Project execution cost

Project management cost

Topics			Unit	Quantity				Cost per unit HT (x 1000 USD)	Basic cost (1000 USD)			Total (X 1000 USD)	Repartition per country					Regional level
				Year 1	Year 2	Year 3	Total		Year 1	Year 2	Year 3	HT Adaptation Fund	Benin	Burkina Faso	Ghana	Niger	Togo	
4.1.Eequipment, office furnishings																		
Functioning of the offices of the Regional Project Management Unit (RPM			Month	12	12	12	36	0,30	3,60	3,60	3,60	10,80						10,8000
Regional office equipment of the URGP			FF	1			1	14,00	14,00	0,00	0,00	14,00						14,0000
Office supplies (regional and national)			Number	6	6	6	18	1,20	7,20	7,20	7,20	21,60	3,60	3,60	3,60	3,60	3,60	3,60
Computers for RAAF National Representatives (National Project Manag			Number	10			10	0,80	8,00	0,00	0,00	8,00	1,60	1,60	1,60	1,60	1,60	
Audio-visual equipment			equipment packag	6			6	1,40	8,40	0,00	0,00	8,40	1,40	1,40	1,40	1,40	1,40	1,40
Acquisition of project management software and capacity building for the			FF	1			1	20,00	20,00	0,00	0,00	20,00						20,00
Sub-total 4.1.									**356,00**	**14,40**	**14,40**	**82,80**	**6,60**	**6,60**	**6,60**	**6,60**	**6,60**	**49,80**
4.2.Functioning of the coordination and project management unit																		
4.2.1 At the regional level																		
4.2.1.1	**Regional project steering committee**																	
		Organization of meetings of the regional project steering committee	FF/year	1	1	1	3	12,00	12,00	12,00	12,00	36,00						36,00
4.2.1.2	**Regional Project Management Unit (URGP)**																	
		Regional Coordinator	H/month	12	12	12	36	5,50	66,00	66,00	66,00	198,00						198,00
		Administrative and Financial Officer, Procurement Officer (National Framework)	H/month	12	12	12	36	2,50	30,00	30,00	30,00	90,00						90,00
		Monitoring and Evaluation Manager	H/month	12	12	12	36	3,50	42,00	42,00	42,00	126,00						126,00
4.2.2 At the national level																		
4.2.2.1	**5 National Inclusive Coordination and Concertation Platforms (INCCP) serving as National Project Steering Committees**																	
		Organization of meetings (2 meetings per country, ie 10 meetings per year)	Number/year	10	10	10	30	2,00	20,00	20,00	20,00	60,00	12,00	12,00	12,00	12,00	12,00	
4.2.2.2	**5 National Project Coordination Units**																	
		5 ARAA national representatives (1 per country), water wobilization specialists and climate change adaptation experts	allowances (H/month)	60	60	60	180	1,00	60,00	60,00	60,00	180,00	36,00	36,00	36,00	36,00	36,00	
		5 ARAA national representatives (1 per country), soil Restoration specialists and climate change adaptation experts (1 per country)	allowances (H/month)	60	60	60	180	1,00	60,00	60,00	60,00	180,00	36,00	36,00	36,00	36,00	36,00	
4.2.3. Missions																		
	Regional	Mission fee of the regional coordinator	H/jour	50	50	50	150	0,20	10,00	10,00	10,00	30,00						30,00
		Mission fee of monitoring and evaluation Head	H/jour	50	60	60	170	0,20	10,00	12,00	12,00	34,00						34,00
		Vehicle hiring for the URGP missions	H/jour	50	60	60	170	0,40	20,00	24,00	24,00	68,00						68,00
		Airline tickets for URGP exchange missions	Number of trip/	4	4	4	12	0,80	3,20	3,20	3,20	9,60						9,60
	National	Fuel for Field Missions of National Project Management Units	FF/year/country	5	5	5	15	7,50	37,50	37,50	37,50	112,50	22,50	22,50	22,50	22,50	22,50	
Sub-total 4.2.									**370,70**	**376,70**	**376,70**	**1 124,10**	**106,50**	**106,50**	**106,50**	**106,50**	**106,50**	**591,60**

4.3. Project planning, monitoring and evaluation																				
4.3.1	Project Inception Workshop				FF	1			1	20,00	20,00	0,00	0,00	20,00						20,00
4.3.2	Mid-term evaluation of the project				FF		1		1	20,00	0,00	20,00	0,00	20,00						20,00
4.3.3	Final evaluation of the project				FF			1	1	24,10	0,00	0,00	24,10	24,10						24,10
4.3.4	Evaluation ex-post				FF			1	1	30,00	0,00	0,00	30,00	30,00						30,00
4.4. Financial audit of the project					FF	1	1	1	3	10,00	10,00	10,00	10,00	30,00						30,00
Sub-total 4.3.											**30,00**	**30,00**	**64,10**	**124,10**						**124,10**
Total											**659,90**	**318,30**	**352,80**	**1 331,00**	**113,10**	**113,10**	**113,10**	**113,10**	**113,10**	**765,50**

I. Include a disbursement schedule with time-bound milestones.

The following table presents the disbursement plan.

Table 34: Projected Disbursement Plan for Funds by the Adaptation Fund

COMPONENT	TOTAL HT (1000 USD)	At the signing of Agreement 2018	Year 2 2019	Year 2020
Component 1: Strengthening knowledge and technical capacity through regional and local interactions for the promotion of agriculture practices resilient to the adverse effects of climate change	2285	1254	538	493
Outcome 1.1 .: Climate services adapted to the needs of producers are available with the support of national and regional institutions and can be used by producers	846	180	333	333
Outcome 1.2: Knowledge and practices of resilient climate-smart agriculture are strengthened	1439	1074	205	160
Component 2: Scaling up best practices related to climate change adaptation in agriculture and pastoralism at the local level	8848	2379	6074	395
Outcome 2.1. Promoted best farming and livestock practices are climate resilient and contribute to increased food security	8848	2379	6074	395
Component 3: Knowledge sharing on resilient agricultural best practices related to climate-smart agriculture	440	80	180	180
Outcome 3.1: Knowledge about resilient agricultural best practices related to climate-smart agriculture is strengthened and disseminated	440	80	180	180
Project component cost	**11573**	**3713**	**6792**	**1068**
Cost of project implementation	1331	660	318	353
Total cost of the project	12904	5214	6268	1422
Management fee of the project implementation entity	1096	450	350	296
Total cost of the Adaptation Fund	**14000**	**5 664**	**6 618**	**1 718**

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

A. **Record of endorsement on behalf of the government[35]** ***Record of endorsement on behalf of the government[36]*** *Provide the name and position of the government official and indicate date of endorsement for each country participating in the proposed project / programme. Add more lines as necessary. The endorsement letters should be attached as an annex to the project/programme proposal. Please attach the endorsement letters with this template; add as many participating governments if a regional project/programme:*

Bénin	**Euloge Lima** Adaptation Fund National Designated Autority Directeur de la Gestion des risques et de l'Adaptation aux Changements climatiques Ministère du Cadre de vie et du développement durable 01 BP 35 02, Cotonou Tél: +229 95 93 77 00 / 97 89 54 15 Email: limeloge@gmail.com	Date: May, 10th 2018
Burkina Faso	**Ambroise KAFANDO** Adaptation Fund National Designated Autority Directeur Général de la Coopération Ministère de l'économie, des finances et du développement 03 BP 7067, Ouagadougou 03 Tél: +226 25 31 25 50 / 70 41 98 41 Email: ambkafando@gmail.com	Date: May, 10th 2018
Ghana	**FREDUA AGYEMAN** Adaptation Fund National Designated Autority Director for environment Ministry of environment, science, technology & innovation Tel: 0302 - 665781 Fax : 0302 - 688 913/ 665785	Date: May, 10th 2018
Niger	**Dr. KAMAYE Maâzou** Adaptation Fund National Designated Autority Sécretaire exécutif du Conseil national de l'environnement pour un développement durable Cabinet du Premier Ministre Tél: +227 20 72 25 59 Email: kamayemaazou@yahoo.fr	Date: May, 10th 2018
Togo	**Thiyu Kohoga ESSOBIYOU** Adaptation Fund National Designated Autority Directeur de l'environnement Ministère de l'environnement et des ressources forestières Tél: +228 90 02 19 35 Email: essobiyou@hotmail.com	Date: May, 10th 2017

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

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

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

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans, listed in the item II.E of the current project and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.
Yacoubou Bio Bio SAWE Director of climate Finance and Environment BOAD  Implementing Entity Coordinator
Date: *May, 14th 2018* — Tel. +228 99 86 86 00 Email:ybiosawe@boad.org
Project Contact Person: Yacoubou Bio Bio SAWE
Tel. +228 99 86 86 00 Email: ybiosawe@boad.org

Annex

Appendix 1: Endorsement letters of the project

Endorsement letter of Benin

MINISTERE DU CADRE DE VIE
ET DU DEVELOPPEMENT DURABLE
REPUBLIQUE DU BENIN

01 BP 3502 - 01 BP 3621
Cotonou
Tél. : + 229 21 31 80 45
dgecmcvdd@gmail.com

N° 04/MCVDD/AND-FA

Cotonou, 10th May, 2018

Letter of Endorsement by Government of Benin

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 « Promoting Climate-Smart Agriculture in West Africa ".

In my capacity as designated authority for the Adaptation Fund in Republic of Benin, I confirm that the above regional 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 North-East and the North-West which are the most vulnerable regions to climate change in Benin.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by Banque Ouest Africaine de Développement (BOAD) and executed by Regional Agency for Agriculture and Food (RAAF) which is a specialized technical delegate structure for the operationalization of the agricultural policy of the Economic Community of West African States (ECOWAS) in collaboration with Ministry of Agriculture, Livestock and Fishing of Benin at national level.

Sincerely,

Euloge Lima
Adaptation Fund National Designated Authority
Directeur de la Gestion des Risques et de l'Adaptation aux Changements Climatiques
Téléphones : +229 95 93 77 00 / 229 97 89 54 15
Email: limeloge@gmail.com

Endorsement letter of Burkina Faso

BURKINA FASO

Unité – Progrès - Justice

Ministère de l'Economie, des Finances et du Développement

Direction Générale de la Coopération

ADAPTATION FUND

Letter of Endorsement by Government

Ouagadougou,

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 « Promoting Climate-Smart Agriculture in West Africa ".

In my capacity as Designated Authority for the Adaptation Fund in Burkina Faso, I confirm that the above project proposal is in accordance with the Government's national priorities in implementing adaptation activities to reduce adverse impacts, and risks, posed by climate change in Burkina Faso.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by Banque Ouest Africaine de Développement (BOAD) and executed by ECOWAS Regional Agency for Agriculture and Food (RAAF) in collaboration with Directorates in Charge of Irrigation, Environment, and Livestock at national level.

Sincerely.

Le Directeur Général D.G.COOP Burkina Faso

Ambroise KAFANDO
Adaptation Fund National Designated Authority
03 BP 7067 Ouagadougou 03
Tel: +226 25 31 25 50/+226 70 41 98 41
Email: ambkafando@gmail.com

Endorsement letter of Ghana

MINISTRY OF ENVIRONMENT, SCIENCE, TECHNOLOGY & INNOVATION

Our Ref: MESTI/IA/006/02/v.2

Tel: 0302 - 665781
Fax: 0302 – 688 913/ 665785

E-mail: info@mest.gov.gh
Website: www.mest.gov.gh

Republic of Ghana

Post Office Box M232
Ministries Post Office
Accra. Ghana.

Private Mail Bag
Ministries Post Office
Accra, Ghana.

February 05, 2018

THE ADAPTATION FUND BOARD
C/O ADAPTATION FUND BOARD SECRETARIAT
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Dear Sir/Madam,

ENDORSEMENT FOR PROJECT 'PROMOTING CLIMATE-SMART AGRICULTURE IN WEST AFRICA"

In my capacity, as Designated Authority for the Adaptation Fund in Ghana, I confirm that the above project proposal is in accordance with the Government's national priorities in implementing adaptation activities to reduce adverse impacts, and risks, posed by climate change in Chana.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented through Banque Ouest Africaine de Developpement (BOAD) and executed by ECOWAS Regional Agency for Agriculture and Food (RAAF) with the support of the Environmental Protection Agency of Ghana and the Ministry of Food and Agriculture of Ghana.

Yours sincerely,

FREDUA AGYEMAN
ADAPTATION FUND NATIONAL DESIGNATED AUTHORITY
DIRECTOR FOR ENVIRONMENT

Endorsement letter of Niger

REPUBLIQUE DU NIGER
FRATERNITÉ-TRAVAIL-PROGRÈS

Cabinet du Premier Ministre

Conseil National de l'Environnement pour un Développement Durable

ADAPTATION FUND

Letter of Endorsement by Government

Niamey, 10th May, 2018

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 « Promoting Climate-Smart Agriculture in West Africa ".

In my capacity as Designated Authority for the Adaptation Fund in Niger, I confirm that the above project proposal is in accordance with the Government's national priorities in implementing adaptation activities to reduce adverse impacts, and risks, posed by climate change in Niger.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by Banque Ouest Africaine de Développement (BOAD) and executed by ECOWAS Regional Agency for Agriculture and Food (RAAF) in collaboration with Directorates in Charge of Irrigation, Agriculture, Environment, and Livestock at national level.

Sincerely.

Dr KAMAYE Maâzou
Adaptation Fund National Designated Authority
BP 10193, Niamey, Niger.
Tel: +227 20722559
E-mail: kamayemaazou@yahoo.fr

Endorsement letter of Togo

REPUBLIQUE TOGOLAISE

TRAVAIL-LIBERTE-PATRIE

Ministère de l'Environnement et des Ressources Forestières

ADAPTATION FUND

N. 008 DNA/AF/tg

Letter of Endorsement by Government

Lomé, 10th May 2018

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 « Promoting Climate-Smart Agriculture in West Africa ".

In my capacity as Designated Authority for the Adaptation Fund in Togo, I confirm that the above project proposal is in accordance with the Government's national priorities in implementing adaptation activities to reduce adverse impacts, and risks, posed by climate change in Togo.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by Banque Ouest Africaine de Développement (BOAD) and executed by ECOWAS Regional Agency for Agriculture and Food (RAAF) in collaboration with Directorates in Charge of Irrigation, Agriculture, Environment, and Livestock in Togo.

Sincerely.

Direction de l'Environnement Le Directeur

Thiyu Kohoga ESSOBIYOU

Adaptation Fund National Designated Authority

Appendix 2: Regional Workshop report on the validation of the Full proposal and the environmental and Social Management Framework

Lomé, 09th to 10th January, 2018

PROJET REGIONAL DE PROMOTION DE L'AGRICULTURE CLIMATO-INTELLIGENTE EN AFRIQUE DE L'OUEST

BENIN – BURKINA FASO – GHANA – NIGER – TOGO

Atelier régional de validation de la Proposition Complète et du Cadre de Gestion environnementale et Sociale (CGES)

Lomé, les 09 et 10 janvier 2018

RAPPORT FINAL

Janvier 2018

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INTRODUCTION

Du 09 au 10 janvier 2018, s'est déroulé au siège de la Banque ouest africaine de développement (BOAD) à Lomé au Togo, l'atelier régional de validation de la proposition complète du projet de promotion de l'agriculture climato-intelligente en Afrique de l'ouest et de son Cadre de gestion environnementale et sociale (CGES).

Lesdits documents ont été élaborés sous la direction de la BOAD, entité d'implémentation du Fonds pour l'Adaptation, et de l'Agence Régionale pour l'Agriculture et l'Alimentation (ARAA) de la CEDEAO, entité d'exécution du projet, par le Cabinet Global Lead, avec l'appui des parties prenantes nationales des cinq (05) pays bénéficiaires le : Bénin, Burkina Faso, Ghana, Niger, et Togo. Le présent document rend compte du déroulement dudit atelier régional de validation et des recommandations issues des échanges sur la proposition complète et le CGES, tout en rappelant en liminaire le contexte de la formulation et du développement du projet.

1. RAPPEL DU CONTEXTE

Lors du premier appel à projet régional du Fonds pour l'Adaptation (FA), la BOAD, en collaboration avec l'ARAA, avait préparé et soumis les notes pré conceptuelle et conceptuelle du *Projet de promotion d'une agriculture climato-intelligente en Afrique de l'Ouest* audit fonds, qui les a respectivement approuvées les 20 octobre 2015 et le 7 Octobre 2016, recommandant ainsi la formulation d'une proposition complète dudit projet.

2. OBJECTIFS ET RESULTATS DE L'ATELIER

2.1. Objectifs

L'objectif global de l'atelier était de permettre aux Autorités Nationales Désignées (AND), aux responsables des Agences et Bureaux d'évaluation environnementale, et aux acteurs des institutions régionales œuvrant à l'atteinte des objectifs fixés par les politiques agricoles et de sécurité alimentaire régionale d'avoir une bonne compréhension des aspects régionaux du projet et, le cas échéant, d'harmoniser les points de vue des différentes parties prenantes, subséquemment aux phases nationales de validation.

De manière spécifique, il s'agissait de procéder à : (i) la mise en cohérence de la proposition complète (Full proposal) ; et à (ii) la validation du Cadre de gestion environnementale et sociale (CGES) du projet.

2.2. Résultats attendus

Les résultats attendus de l'atelier étaient définis comme suit :

- les participants ont formulé des suggestions et recommandations pertinentes pour enrichir les documents de proposition complète du projet et du CGES;
- le CGES est validé par l'ensemble des participants ;
- les dispositions sont enclenchées pour la délivrance des Certificats de conformité environnementale par les institutions compétentes dans chacun des pays;
- le document de la proposition complète et le CGES sont mis en cohérence au niveau régional.

3. PARTIES PRENANTES A L'ATELIER

L'atelier a regroupé :

- des participants venant des cinq pays (Bénin, Burkina Faso, Ghana, Niger, et Togo) bénéficiaires du projet, à savoir :
    - l'AND de chaque pays ou son représentant ;

- le Directeur de l'Agence ou du Bureau national en charge des évaluations environnementales et sociales ou son représentant ;
- des représentants de chacune des institutions régionales impliquées dans le projet (la BOAD ARAA, FAO);
- les experts du cabinet Global Lead en charge de l'élaboration des études de faisabilité et du CGES.

Au total, une vingtaine de participants étaient présent (voir liste en annexe 1).

4. DEROULEMENT DE L'ATELIER

4.1. La cérémonie d'ouverture

La cérémonie d'ouverture a été marquée par la présence de Monsieur André JOHNSON, Ministre de l'Environnement et des Ressources Forestières du Togo, et de Monsieur Salifou OUSSEINI, Directeur Exécutif de l'ARAA qui a présenté une allocution. Les travaux ont été lancés par Monsieur Maxime AKPACA, Directeur du Département de la Stratégie et des Etudes, Représentant Monsieur le Président de la BOAD.

Dans son intervention, Monsieur le Directeur Exécutif de l'ARAA a remercié toutes les parties prenantes ayant contribué à la formulation du projet. Il a présenté sa reconnaissance aux AND du Fonds pour l'Adaptation, qui, par leur engagement à la cause de la lutte contre les changements climatiques et l'insécurité alimentaire, ont procédé à l'endossement de la proposition complète du projet. Il a rappelé le rôle de son institution en tant qu'entité d'exécution du projet et a plaidé pour la mise en place d'un cadre de collaboration solide avec les différents acteurs à l'étape de mise en œuvre afin de garantir le succès du projet.

Dans son mot d'ouverture, Monsieur Maxime AKPACA, représentant Monsieur le Président de la BOAD, entité d'implémentation du projet auprès du FA, n'a pas manqué de signaler que le projet de promotion de l'agriculture climato-intelligente en Afrique de l'Ouest est en cohérence avec le plan stratégique et la stratégie Environnement et Climat 2015-2019 de la Banque. Il a rappelé que le présent projet est le premier projet d'envergure régionale qui met en œuvre la décision des chefs d'Etats de l'UEMOA et de la CEDEAO de : (i) renforcer les capacités des acteurs nationaux et régionaux en vue d'un meilleur accès aux informations agro-météorologiques; (ii) apporter une assistance technique aux groupements de producteurs pour la mise en œuvre de sous-projets ayant un coût-efficacité avéré ; et (iii) réaliser des ouvrages de maitrise de l'eau et de gestion des pâturages. Enfin, il a indiqué l'engagement de la BOAD à soutenir ce projet avec lequel des synergies pourront être développées dans le cadre de ses opérations futures.

4.2. Déroulement des travaux

Les travaux ont démarré par une présentation des participants, suivie d'une présentation de l'agenda de l'atelier. Après validation du programme des deux jours de travaux, Monsieur AMEGADJE, Directeur Général du Cabinet Global Lead a fait une présentation de la proposition complète du projet à soumettre au Fonds pour l'Adaptation**.**

Le deuxième jour de l'atelier a été marqué par la présentation du document de Cadre de gestion environnementale et sociale (CGES).

A l'issue de chaque présentation, les échanges et discussions qui s'en sont suivis ont permis aux participants de formuler des observations, des préoccupations et des recommandations.

4.2.1. Présentation du projet

La présentation du projet a porté sur les points suivants :

a. Justification du projet

Le projet s'inscrit en droite ligne de la mise en œuvre de la politique agricole de la CEDEAO et de l'UEMOA et de la déclaration de Malabo en 2014 où les Chefs d'Etats se sont engagés à soutenir l'intensification de l'agriculture pour assurer la sécurité alimentaire dans un contexte de changements globaux. Cet engagement a été confirmé en juin 2015, à Bamako au Mali, par les Chefs d'Etat de la CEDEAO et de l'UEMOA et les partenaires techniques et financiers qui ont décidé de promouvoir une agriculture intelligente face au Climat (AIC) en Afrique de l'Ouest.

b. Objet et objectifs du projet

Le projet a pour objet la promotion d'une agriculture intelligente face aux effets néfastes des changements climatiques dans cinq pays en Afrique de l'ouest (Bénin, Burkina Faso, Ghana, Niger et Togo).

L'objectif global du projet est de réduire la vulnérabilité des agriculteurs et des pasteurs aux risques climatiques, qui affectent le niveau de sécurité alimentaire, les activités génératrices de revenus et les services écosystémiques des communautés pauvres.

c. Composantes du projet

Le projet est structuré en trois (03) principales composantes :

- Composante 1: Renforcement des connaissances et des capacités techniques à travers des interactions régionales et locales pour la promotion des pratiques d'agriculture résiliente aux effets néfastes des changements climatiques ;

- Composante 2: Mise à l'échelle des meilleures pratiques liées à l'adaptation au changement climatique dans l'agriculture et le pastoralisme au niveau local et régional ;

- Composante 3: Partage de connaissances et diffusion des leçons apprises sur les meilleures pratiques agricoles résilientes liées à l'agriculture intelligente face au climat.

d. Bénéficiaires

Le nombre total de bénéficiaires direct est estimé à 9 600 ménages, soit 67 200 personnes dont 34 000 femmes. En outre, au moins 300 000 bénéficiaires indirects seront touchés par les séances de sensibilisation à travers la diffusion des leçons apprises.

La durée du projet est de trois (03) ans.

e. Arrangements institutionnels

L'entité d'implémentation du projet est la BOAD. L'entité d'exécution est l'ARAA.

Au niveau régional, un Comité régional de Pilotage du Projet (CPP) et une Unité Régionale de Gestion de Projet (URGP) seront mis en place.

Au niveau national dans chacun des pays bénéficiaires, une Plateforme Nationale Inclusive de Coordination et de Concertation (INCCP) servant de comité de pilotage du projet et une Unité Nationale de Gestion de Projet (UNGP) servant de Secrétariat à l'INCCP seront mises en place.

4.2.2. Présentation du Cadre de gestion environnementale et sociale du projet

La présentation a porté sur :

- le rappel des activités du projet ;
- les Consultations publiques ;
- le Cadre légal, politique et institutionnel ;
- le Cadre biophysique et socio-économique ;
- les bénéfices environnementaux et socio-économiques ;
- les Impacts et risques environnementaux et sociaux du projet ;
- les mesures d'atténuation des impacts négatifs et des risques ;
- le Plan cadre de gestion environnementale et sociale ;
- les due-diligences environnementales des sous-projets ;
- le cadre organisationnel de mise en œuvre du CGES ;

L'évaluation environnementale et sociale du projet a été effectuée conformément aux 15 principes en la matière du Fonds pour l'Adaptation (FA).

Ces principes soutiennent, entre autres, le respect des législations nationales des pays bénéficiaires du projet. Conformément auxdites législations, il a été retenu de mettre en place un cadre de gestion environnementale et sociale (CGES), les sites spécifiques des ouvrages à réaliser n'étant pas connus à cette étape du développement du projet. A la phase de mise en œuvre, des études ou notices d'impact environnemental et social seront réalisées pour chaque sous projet dans le cadre des procédures nationales.

Des consultations publiques ont été conduites auprès des autorités administratives nationales et des populations dans chacun des pays bénéficiaires du projet.

Par ailleurs, le processus de sélection des sous-projets tiendra compte des aspects environnementaux, sociaux, y compris la vulnérabilité des populations, et un suivi environnemental desdits sous-projets sera réalisé par les autorités administratives nationales en charge des évaluations environnementales et sociales. La supervision globale de la mise en œuvre des mesures du CGES sera assurée par l'ARAA et la BOAD.

5. RESULTATS DES TRAVAUX ET SYNTHESE DES DISCUSSIONS

La qualité des documents a été appréciée par l'ensemble des participants. Quelques points spécifiques ont néanmoins fait l'objet d'échanges.

5.1. La proposition complète de projet

5.1.1. Observations sur le document de la proposition complète de projet

Les échanges ont porté sur les principaux points suivants : (i) la gestion du projet, notamment la composition des organes de gestion du projet au niveau national et leurs besoins en matière d'appui institutionnel ainsi que le recrutement du coordonnateur régional ; (ii) le positionnement de l'AND par rapport au comité de pilotage ; (iii) l'insuffisance des ressources allouées pour couvrir la gestion du projet par chaque pays ; (iv) les critères de choix des sites d'intervention du projet et des bénéficiaires ; et v) les risques de conflits entre les éleveurs et les agriculteurs ; etc.

5.1.2. Résumé des réponses apportées aux observations et préoccupations sur la proposition complète du projet

- **Gestion du projet** : il a été proposé de mieux financer la coordination nationale pour qu'elle soit maintenue jusqu'à la fin du projet. Malheureusement avec le FA, les frais de gestion sont plafonnés donc limités.

- **Insuffisance des ressources allouées** : il est noté que le présent projet vise la mise en œuvre d'actions pilotes qui pourront faire l'objet de réplication dans d'autres localités de chaque pays. Le plus important c'est de montrer qu'en changeant d'approche, il est possible de pratiquer une agriculture capable de nourrir les populations. Les 7 milliards de francs CFA attribués au projet ne peuvent pas résoudre tous les problèmes tels qu'ils se posent dans les pays, mais permettent d'initier des actions dans une logique de durabilité.

- **Critères de choix des zones d'intervention du projet :** il a été souligné que certaines régions sont plus affectées que celles choisies. Toutefois, chacune des régions est fortement affectée par les dérèglements climatiques. L'action conduira donc à faire des comparaisons et tirer des leçons pour la mise à l'échelle.

- **Choix des bénéficiaires :** il a été clarifié qu'ils peuvent être des groupements de producteurs, des associations actives, des communautés locales, etc.

- **Conflits entre éleveurs et bénéficiaires du projet :** il est proposé la mise en place des points d'eau dans les couloirs proches des zones des sous-projets pour éviter que les animaux causent des dégâts dans les sites d'exploitation.

5.1.3. Conclusion sur le Full proposal

En conclusion le consultant a rassuré tous les participants que toutes les observations et remarques seront prises en compte.

Le Full proposal a été adopté par tous les pays sous réserve de la prise en compte des amendements apportés.

5.2. Cadre de Gestion Environnementale et Sociale

5.2.1. Observations sur le CGES

Les échanges ont porté sur les principaux points suivants : (i) l'actualisation de certaines données (références des textes règlementaires, etc.) au niveau des pays ; (ii) la procédure de délivrance de certificat de conformité environnementale pour le projet qui est à l'échelle régionale ; (iii) l'évaluation environnementale des sous-projets conformément aux principes du Fonds pour l'Adaptation, lors de l'élaboration des EIES ; (iv) la nécessité de réalisation des études d'impact environnemental et social dans le cadre des procédures nationales en vigueur ; (v) les moyens affectés pour le suivi des mesures environnementales et sociales ; (vi) les mesures relatives à la gestion des griefs ; etc.

5.2.2. Résumé des réponses apportées aux observations et préoccupations sur le CGES

- **Actualisation des données** : il a été relevé que certaines données méritent d'être actualisées. A ce sujet, les participants ont convenu avec le Consultant de fournir les récentes informations à leur disposition dans les pays.

- **Politiques nationales environnementales :** Il est noté que les pays disposent des réglementations en matière de gestion environnementale. Toutefois les précisions n'ont pas été fournies par rapport aux pays qui disposent de Plans Nationaux d'Adaptation. L'atelier a recommandé d'apporter les précisions.

- **Respect des critères du cadre de gestion environnementale et sociale prévus par le Fonds pour l'Adaptation** : Il est noté que pour le projet mère, le respect des 15 principes est requis.

Les participants ont reconnus que ces critères sont indispensables. Pour les sous projets, un élargissement des critères afin de prendre en compte les préoccupations nationales spécifiques pourraient se faire lors de la préparation des EIES des sous-projets.

- **Réalisation des études d'impact environnemental et social** : Il a été souligné la nécessité de faire une démarcation entre ONG et consultants. Pour les pays seuls les consultants sont qualifiés pour la réalisation des EIES.

- **Moyens pour le suivi des mesures environnementales** : Il a été clarifié que les coûts des activités des sous projets intègrent les coûts liés au suivi des mesures environnementales et sociales. Les unités de gestion de projet veilleront à ce que les coûts des sous projets soient désagrégés, afin de dégager les coûts affectés au cadre de gestion environnementale et ceux liés aux activités proprement dites.

- **Réinstallation des populations** : Il est convenu que conformément aux dispositions qui seront prises pour la sélection des sous projets, les sous projets qui feront intervenir la réinstallation des populations ne seront pas éligibles.

- **Impacts du projet** : Les participants ont noté avec satisfaction les impacts attendus du projet aux quatre (04) niveaux classiques notamment le niveau environnemental, amélioration de vie des populations, renforcement de capacités et coordination et information des cadres légaux et politiques.

- **Délivrance de certificat de conformité environnementale** : Il est relevé que les procédures de délivrance de certificat de conformité environnementale varient d'un pays à l'autre. La BOAD prendra donc attache avec chacun des pays pour solliciter un document tenant lieu de certificat de conformité environnementale.

En conclusion le consultant a rassuré tous les participants que toutes les observations et remarques seront prises en compte.

5.2.3. Conclusion sur le CGES

Le Cadre de gestion environnementale et sociale a été validé par tous les pays sous réserve de la prise en compte des amendements apportés.

Les représentants des 5 Pays en particulier des Agences et Bureaux nationaux d'évaluation environnementale et sociale ont fait remarquer qu'il n'existe pas de procédures régionales d'évaluation environnementale et sociale en Afrique de l'Ouest et que certains des cinq (05) pays ne disposent pas de procédures nationales relatives au développement des Cadres de gestion environnementale et sociale. Aussi, ont-ils souhaité que la présente validation régionale permette au Fonds pour l'Adaptation d'évaluer et d'approuver le financement du projet de promotion de l'agriculture intelligente face au climat en Afrique de l'Ouest. Les procédures nationales seront suivies lors de la préparation des EIES des sous projets pour la délivrance de Certificats de Conformité Environnementale desdits sous projets. De plus, ils ont émis le souhait que la BOAD et les institutions sous régionales prennent les dispositions pour aider l'Afrique de l'Ouest à se doter de procédures d'évaluations environnementales et sociales stratégiques.

6. RECOMMANDATIONS

Pour les représentants des cinq (05) Pays en particulier des Agences et Bureaux nationaux d'évaluation environnementale et sociale, certains des pays impliqués ne disposent pas encore de procédures qui encadrent le développement des Cadres de Gestion Environnementale et Sociale. Aussi l'atelier régional recommande-t-il :

A l'endroit du Fonds pour l'adaptation :

- de prendre en considération le présent rapport de validation régionale dans le cadre de l'examen du projet de promotion de l'agriculture intelligente face au climat en Afrique de l'Ouest. Dans cette dynamique, les procédures nationales seront suivies lors de la préparation des EIES des sous projets en vue de la délivrance des certificats de conformité environnementale.

A l'endroit des Agences et Bureaux nationaux chargés des évaluations environnementales et sociales :

- le cas échéant, chaque pays prendra les dispositions au cours des semaines à venir pour fournir à la BOAD un document qui tient lieu de Certificat de conformité environnementale.

A l'endroit de la BOAD :

- prendre les dispositions, dans le cadre des prochains projets régionaux, pour aider les pays de l'Afrique de l'Ouest à se doter de directives relatives à l'évaluation environnementale et sociale stratégique.

CONCLUSION GENERALE

A la fin des travaux, les participants ont exprimé leur gratitude et leurs remerciements à l'endroit de la BOAD et de l'ARAA pour la qualité des documents qui répondent aux préoccupations des populations des pays. Ils ont unanimement marqué leur entière adhésion à la proposition complète et au CGES qu'ils ont validé sous réserve de la prise en compte des observations et recommandations formulées lors de l'atelier.

Ont signé :

Pour le BENIN

M. LIMA EULOGE
Direction Générale de
l'Environnement et du Climat.

M. CAPO CHICHI RODRIGUE MAGLOIRE
Agence Béninoise pour l'Environnement
(ABE)

Pour le BURKINA FASO

Mme SY BARRY SALIMATA
Ministère de l'Economie, des
Finances et du Développement

M. ZOUGOURI TIDIANE
Bureau National des Evaluations
Environnementales (BUNEE)

Pour le GHANA

Mr. GIBRILLA AHMED
Regional Directorate of
Environmental Protection Agency

Mr. KWABENA BADU YEBOAH
Environmental Protection Agency (EPA)

Pour le NIGER

Dr. MAAZOU KAMAYE
Conseil National de l'Environnement
pour un Développement Durable

M. IDRISSA YAOU ADAMOU
Bureau des Evaluations Environnementales et
des Etudes d'Impact (BEEEI)

Pour le TOGO

M. TAHONTAN BAMALI
Direction de l'Environnement

M. SEBABE AGORO
Agence Nationale de Gestion de
l'Environnement (ANGE)

Pour l'ARAA/CEDEAO

M. M. KANFITIN KONLANI
CP / ARAA

Pour la FAO

M. ADAMA TAOKO
Chargé de Politique

Pour la BOAD

M. BIO-SAWE YACOUBOU
Directeur de l'Environnement et de la Finance Climat

Pour Global Lead

M. AMEGADJE MAWULI KOMI
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ANNEXE 1. LISTE DES PARTICIPANTS

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ANNEXE 2. AGENDA DE L'ATELIER

Programme du jour 1 : Mise en cohérence du Full proposal

Heure	Activités
Cérémonie d'ouverture	
08 : 30 - 08 :45	Accueil et installation des participants
08 : 45 – 09 : 00	Installation de Messieurs et Mesdames les membres du Conseil Présidentiel de la BOAD. Accueil et installation de Messieurs les Ministres en charge de l'Environnement et de l'Agriculture du Togo
09 : 15 – 09 : 40	Allocution de Monsieur le Directeur Exécutif de l'ARAA Mot d'ouverture de Monsieur le Président de la BOAD ou de son Représentant
09 : 45 - 10 : 15	**PHOTO DE GROUPE** **PAUSE-CAFE**
10 : 15 – 12 : 30	Présentation des participants Présentation de l'Agenda de l'Atelier Présentation du Full proposal Echanges sur le document de Full proposal
12 : 30 - 13 : 45	**PAUSE DEJEUNER**
14 : 00 – 16 : 00	Poursuite des échanges
16 : 00 – 16 : 30	Pause-café
16 : 30	Adoption des aspects régionaux du Full proposal discutés Fin de la journée

Programme du jour 2 : Analyse du CGES

Heure	Activités
08 : 30 - 09 : 00	Accueil et installation des participants

09 : 00 – 10 : 00	Présentation du CGES
10 : 00 - 10 : 30	**PAUSE-CAFE**
10 : 30 – 12 : 30	Echanges sur le CGES
13 : 00 - 14 : 00	**PAUSE DEJEUNER**
14 : 00 – 16 : 00	Echanges sur le CGES
16 : 00 – 16 : 30	**PAUSE-CAFE**
16 : 30 -	Validation du Cadre de gestion environnemental et social du projet Adoption du Rapport de l'atelier Clôture de l'Atelier

ANNEXE 3 : RECUEIL DES ECHANGES ET PREOCCUPATIONS DES PARTICIPANTS

1. Echanges sur la proposition complète

Pays	***Questions et Propositions***	***Réponses***
TOGO	Comment le projet compte-t-il résoudre le problème de transhumance et les conflits entre agriculteurs et éleveurs?	Dans certains pays, les couloirs sont aménagés en partie mais dans d'autres non. Au Bénin par exemple, l'aménagement des couloirs de transhumance est réglé en partie ; au Ghana, ce n'est pas le cas. Certains possèdent des points d'eau mais d'autres non. Le projet ne dispose pas de beaucoup de ressources financières. 100 points d'eau au total seront implantés par le projet. Ces derniers seront mis dans les couloirs à proximité des sites du projet. Le projet n'a pas pour objectif de travailler à la résolution de la problématique de la transhumance qui est en elle-même un autre projet en soi.
	Quelles sont les actions prévues pour la mise à niveau des agents d'observation du climat ?	Renforcement des réseaux d'observation sur le climat : c'est pris en compte dans le document mais tout le problème ne sera pas résolu. Ce projet certainement permet d'identifier beaucoup de problèmes sans forcément pouvoir les résoudre tous.
	Le coût du projet (7 milliards FCFA) permettra-t-il vraiment de réduire la vulnérabilité face aux changements climatiques dans les 5 pays ?	Le but du projet est de prendre une zone pour faire une démonstration et la répliquer après sur d'autres zones. Le plus important c'est de montrer qu'en changeant d'approche, il est possible de pratiquer une agriculture capable de nourrir les populations. Les 7 milliards attribués au projet ne peuvent pas résoudre tous les problèmes tels qu'ils se posent sur le terrain. Ils ne peuvent même pas résoudre les problèmes de vulnérabilité dans un seul pays.
BENIN	Organes de gestion du projet au niveau national : Non identification des membres de la plateforme nationale inclusive de coordination du projet et pourquoi avoir laissé la possibilité aux Etats de le faire ?	Les membres sont identifiés, il suffit juste de les compléter

	La prise en compte du volet environnemental et social dans la mise en œuvre du projet : associer les agences et bureaux en charge des EE (renforcement des capacités, appui institutionnel pour ces agences qui devront actualiser leurs directives et guides techniques prenant en compte par exemple les aspects liés aux CC)	La coordination nationale va suivre les procédures nationales et confier les EIES des sous-projets aux consultants en association avec les agences nationales en charge de l'environnement. Un accompagnement pourrait se faire en fonction des termes de référence des consultants ; ce qui servira de renforcement de capacité pour les structures nationales.
BURKINA FASO	Qu'est ce qui justifie le choix des régions ? le mentionner dans le document.	Il est vrai que dans les pays, certaines régions sont plus affectées que celles qui ont été choisies. Toutefois, les analyses démontrent que toutes les régions choisies dans les pays concernées sont très affectées par les dérèglements climatiques. De plus, il s'agit d'avoir une zone continue dont les sites de sous projets appartiendront à des zones agro climatiques différents. Ceci permettra de promouvoir les échanges entre les bénéficiaires des différentes zones agro climatiques, de comparer différentes approches et technologies dans différentes zones agro climatiques, lors de la mise en œuvre du projet, de tirer et diffuser les leçons apprises.
	Quelques textes du cadre réglementaire présenté ont été actualisés du Burkina	Cette question sera prise en compte dans le document final
	Besoin de renforcement des acteurs à travers des formations diplômantes	Compte tenu du fait que les fonds sont limités, voir la possibilité du financement d'une telle action dans le cadre d'autres projets. La question n'a pas non plus été abordée dans le PCN.
	Pourquoi le nombre des membres du comité de pilotage est passé de 13 à 9 ?	Dans le premier document, l'AND était dans le comité de pilotage. Après analyse, il a été retenu que les AND ne pourront pas être dans les Comités de pilotage de tous les projets. Ils ne seront pas efficaces. Par contre, il est proposé dans le document de projet, un suivi des aspects adaptation par les AND sur sur le terrain. Des provisions ont été faites à cet effet.

NIGER	Coordination du projet et coûts des activités au sein des coordinations nationales : ces coûts varient en fonction des activités et des pays d'où le besoin de révision des coûts Besoin de budget de fonctionnement pour la coordination : Coûts au niveau pays sont dérisoires par rapport au niveau régional. Besoin de personnel d'appui et leur rémunération (secrétaire, manœuvres, gardien, etc.)	Il a été proposé de recruter par appel à candidature les membres de la coordination régionale du projet. Avec le FA, les frais de gestion sont plafonnés donc limités. La coordination nationale sera composée de fonctionnaires qui recevront des indemnités au niveau national.
GHANA	Sur le plan financier le focus a beaucoup plus été mis sur les banques Pour des raisons de durabilité, les bénéficiaires doivent pouvoir lever des ressources à leur propre niveau et recourir à d'autre source de financement tel que les micro-fermes ?	Dans le PCN, il a été dit que les bénéficiaires participeraient à la mobilisation des ressources. Les micro-FEM pouvaient être une possibilité mais ils ne disposent plus en réalité d'assez de budget dans les pays. Ils sont débordés par les demandes déjà existantes. Il faudratrouver d'autres mécanismes comme le Fonds Vert pour le climatClimat qui a des lignes pour le financement de micro-projets (en moyenne US $ 5 milliards)
	Le rôle des ONG: elles ne pourront sûrement pas bien jouer le rôle de formation attendue pour les producteurs. Il vaudra mieux faire appel à des consultants professionnels, expérimentés pour cela.	Dans certains pays, on parle d'ONG mais il s'agit bien de consultants expérimentés. Travailler avec les ONG est conseillé mais il revient à la coordination nationale de choisir ceux qui seront en charge des activités. Les EIESseront toutes soumises à l'agence en charge de l'environnement.
	Vu la précarité des bénéficiaires, pourront-ils eux mêmes avoir la capacité d'identifier ces sous-projets ? Il est suggéré de mettre en place une orientation bien définie pour aider les bénéficiaires dans l'identification des sous projets.	Il est plutôt prévu dans le full proposal un appui des ONG/Consultants spécialisés aux bénéficiaires en vue de l'identification et de la préparation des documents de sous projets.

2. Echanges sur le Cadre de Gestion Environnementale et Sociale (CGES) du projet

Pays	***Questions et Propositions***	***Réponses***
BURKINA FASO	Mettre en cohérence le développement de la présentation des textes par pays. On remarque une disproportion dans la documentation présentée pour certains pays au détriment des autres.	Les observations seront prises en compte. Il est demandé aux pays de transmettre les informations actualisées au Bureau d'étude
	Absence d'aperçu sur les questions sanitaires.	Les aspects sanitaires pertinents relatifs au présent projet sont dans le document. Une relecture sera faite pour les renforcer si besoin.
	Absence du volet risques environnementaux majeurs	
	Les procédures et les délais de délivrance des certificats de conformité environnementale étant différents par pays, comment procèdera-t-on pour harmoniser les démarches et gagner du temps?	La réalisation des EIES des sous projets suivra la procédure nationale du pays hôte.
NIGER	Etant donné que ce sont les principes du FA qui seront appliqués, comment se conformer parallèlement aux textes règlementaires nationaux ?	Le FA n'occulte pas la mise en œuvre des textes nationaux. Au contraire, le FA demande de les prendre en compte. Toutefois, L'évaluation environnementale d'un projet soumis au financement du FA doit se faire en tenant compte de la politique environnementale du FA, notamment de ses 15 principes E&S.
	Pourquoi la norme sur la réinstallation n'est pas applicable ? En cas de restriction à l'utilisation des terres, quel cadre politique appliquer ?	Un des critères de sélection des sous projets est de ne pas installer un sous projet sur un site où, il y aura de la réinstallation des populations. Les ressources disponibles ne suffiront pas pour résoudre ces problèmes. De plus, il est question d'a pporter un appui aux groupements et populations sur les sites qu'ils exploitent déjà tout en les aidant à améliorer les technologies. Il n'y aura donc pas de restriction à l'utilisation des terres

TOGO	Comment mettre en œuvre la procédure de délivrance du Certificat de conformité environnementale étant donné que pour les Cadres de gestion environnementale et social, il n'y a pas, dans la plupart des pays une règlementation (comme c'est le cas pour le Togo). Le rapport de cet atelier ne suffit-il pas pour l'approbation du projet par le FA en attendant la réalisation des EIES des sous projets pour la délivrance des Certificats de conformité environnementale ?	En réalité, le Certificat de conformité environnementale sera délivré pour chaque sous projet dans le contexte de la procédure nationale. Toutefois, Chaque pays, en considérant ses procédures EIES et CGES délivrera pour le projet le document qui lui semble approprié. Si les Agences de l'environnement l'autorisent, le rapport de l'atelier le consignera à l'attention du Fonds pour l'adaptation.
	Comment le suivi environnemental sera-t-il financé au niveau des sous-projets ?	Le coût est inclus dans les coûts des activités des sous projets. C'est à l'étape sous-projet que le comité de gestion du projet veillera à ce que les coûts détaillés soient reflétés dans le PGES
	Face aux risques de prolifération des produits chimiques et pesticides, quelles sont les actions envisagées?	Dans le cadre du présent projet, ce sont des alternatives qui sont privilégiées pour une gestion intégrée des pestes et pesticides.
GHANA	Il existe des textes pour tous les outils d'évaluation environnementale	Le Ghana suivra ses procédures nationales en la matière.
	Apporter plus de précisions au rapport des consultations publiques	La recommandation sera prise en compte
BENIN	Remarques sur les premières pages du document à rectifier (pagination, tableaux annoncés,…)	Les recommandations seront toutes prises en compte
	Besoin d'actualisation des données (références des textes cités, chiffre du recensement au Bénin, nombre de zones d'implémentation (2 départements au lieu de 3, au Bénin), absence de PAN, nombre de POP (22), loi sur l'eau, cadre d'action de Shanghai, l'audience publique…). Nécessité d'hiérarchiser le cadre institutionnel. TDR à annexer dans la version finale	Les recommandations seront toutes prises en compte

	Les textes existent pour tous les outils d'évaluation mais le Bénin ne délivre pas de Certificat de conformité environnementale pour les CGES. Une lettre pourra être signée par l'Agence Béninoise de l'Environnement pour approuver le CGE.	Le Bénin suivra ses procédures nationales en vue de la délivrance de ladite lettre.
	Les ONG ne sont pas habiletés à mener des évaluations environnementales mais seuls les bureaux agréés.	Les textes du Bénin seront ceux applicables le moment venu.
	Le coût de la mise en œuvre du PCGES n'est pas perceptible dans le document Mécanisme de gestion des plaintes ?	Les coûts sont intégrés dans les activités du projet. Le Mécanisme de Gestion des plaintes de la BOAD a été pris en compte.

Appendix 4: List of persons meet during the public consultation

List of regional institutions meet

Projet de promotion de l'agriculture climato-intelligente en Afrique de l'Ouest

Rencontre avec les institutions régionales

Date 2/11/2017

Lieu Ouagadougou

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Projet de promotion de l'agriculture climato-intelligente en Afrique de l'Ouest

Rencontre avec les institutions régionales

Date .....

Lieu .....

N°	Noms et Prénoms	Structures	Fonction	Contact		Emargement
				Téléphone	E-mail	
	.	.		.	+226 70006053 Skamadou@uemoa.int	.
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Projet de promotion de l'agriculture climato-intelligente en Afrique de l'Ouest

Rencontre avec les institutions régionales

Date 03/11/2017

Lieu AGRHYMET Niamey Niger

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Listes des institutions techniques et personnes rencontrées au Bénin

MINISTERE DE L'AGRICULTURE, DE L'ELEVAGE ET DE LA PECHE

LISTE DE PRESENCE

OBJET : Courtoisie Live mission de Global Lead à la SGM dans le Cadre du Projet de Promotion de l'Agriculture Climato Intelligente

DATE : 25 octobre 2017

LIEU : Bureau de la SGM

N°	Nom et Prénoms	Structure	Fonction	Contact		Emargement
				Téléphone	E-mail	
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03	LOKONHOUNDE Maxime	SGM/MAEP	A/SGM	97510144	lopalmax@yahoo.fr	
04	AMEGADZE Mawuli Komi	DG Global Lead	DG	90046254	mawulikomi@yahoo.fr	
05	DJABARE Komla	Global Lead	spécialiste de l'adaptation	91433976	benjcnrs@ymail.com	

MINISTERE DU CADRE DE VIE
ET DU DEVELOPPEMENT DURABLE
REPUBLIQUE DU BENIN

01 BP 3502 - 01 BP 3621
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Tél. : + 229 21 31 80 45
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Date : 25/10/2017

Objet Séance de travail relative au projet de Promotion de l'Agriculture climato intelligente en Afrique de l'Ouest

Lieu : Bureau DGRACC

Durée : 12 H45 à

LISTE DE PRESENCE

N°	NOM ET PRENOMS	QUALIFICATION	CONTACTS	EMARGEMENT
1.	LIMA Eulogé	PF/CCNUCC Bénin	95937700	
2.	WABi Moudjahid	PFS/CCNUCC Bénin	61001564	
3.	AMEGASSE Mawuli Komi	DG Global Lead	+22890746254	
4.	DJABARE Komna	Global Lead	+22891433378	
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7.				
8.				
9.				
10.				
11.				

NATITINGOU le 23/8/2017

Rencontre avec les acteurs dans le cadre du Projet de promotion de l'agriculture intelligente en Afrique de l'ouest.

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7 TCHABODE DAOUDA Moutakirnou	DDAEP ATACORA	97888902 / 96446206	tchabodeakim@yahoo.fr	
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9- DOSSA E. Ferdinand	PROFI / UFR AD	96429442	essedagnon.bte@tb.org dosgnon1@gmail.com	

KANDI le 22/8/2017

Rencontre avec les services techniques du département pour le projet Agriculture intelligente

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Liste des institutions et personnes rencontrées au Burkina Faso

N°	NOM ET PRENOM (S)	STRUCTURE	LOCALITE	TELEPHONE ET ADRESSE ELECTRONIQUE	SIGNATURE
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02	BERE B. Théodore	MAAH/DGAHDI	Ouaga	bertheo75@gmail.com 70.23.00.39	
03	COULIBALY Aboubacar	MAAH/DGAHDI	Ouaga	coulouby@yahoo.fr 71 68 41 04	
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06	CHOBA Oumyoguinla	Conseil régional	Manga	72 40 20 14 oumyoug@gmail.com	
07	OUEDRAOGO Jean-Baptiste	SREEG-Agriculture	Manga	76612675 ouedistemanga@yahoo.fr	
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10	SOME T. Lucien	DREA-CSD	Manga	70699242 tomtarasem@gmail.com	
11	BLAGNA Seydou	DRAAH-CSD	Manga	73523083 seydou-blagna@gmail.com	
12	IL BOUDO François	DRFSNF-CSD	Manga	78-20-02-63 ilboudofrancois2002@yahoo.com	
13	ASSOUOA Awoubakogané	CRA/CSD	Manga	76370802 assouoa@gmail.com	
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16	OUEDRAOGO Homère	Global lead	Ouaga	64 48 68 68 homereouedraogo@gmail.com	
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MINISTERE DE L'AGRICULTURE ET DES AMENAGEMENTS HYDRAULIQUES

REGION DU CENTRE-EST

DIRECTION REGIONALE

B.P. 123 – Tenkodogo
Tél. : 24 71 00 66 Fax : 24 71 00 92

BURKINA FASO

UNITE – PROGRES - JUSTICE

Tenkodogo, le 17 août 2017

LISTE DE PRESENCE DES PARTICIPANTS A LA RENCONTRE DE PREPARATION DU PROJET « PROMOTING CLIMATE-SMART AGRICULTURE IN WEST AFRICA » OU « PROMOUVOIR UNE AGRICULTURE INTELLIGENTE FACE AU CLIMAT EN AFRIQUE DE L'OUEST »

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N° d'ordre	Nom et Prénoms	Structure	Localité	N° Téléphone E-mail	Signature
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08	CONGO Mahamadi	Mairie Tenkodogo	Tenkodogo	70-26-32-76 congomar@hotmail.a	
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15	SOUBEIGA Pascal	DRAAH-CES	Tenkodogo	70125995 pasoub@yahoo.fr	

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18	Sawadogo Moumini	Global land	[illegible]	[illegible]@yahoo.fr 70265305	
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MINISTERE DE L'AGRICULTURE ET DES
AMENAGEMENTS HYDRAULIQUES

REGION DE L'EST

DIRECTION REGIONALE DE L'AGRICULTURE
ET DES AMENAGEMENTS HYDRAULIQUES

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BURKINA FASO

UNITE - PROGRES - JUSTICE

Fada N'Gourma, le 18 Août 2017

LISTE DES PARTICIPANTS A LA RENCONTRE DE PREPARATION DU PROJET "PROMOTING CLIMATE-SMART AGRICULTURE IN WEST AFRICA" OU "PROMOUVOIR UNE AGRICULTURE INTELLIGENTE FACE AU CLIMAT EN AFRIQUE DE L'OUEST"

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19					
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Liste des institutions et personnes rencontrées dans les régions d'intervention au Ghana

ECOWAS CLIMATE SMART AGRICULTURE STAKEHOLDER ENGAGEMENT AT BOLGATANGA IN THE UPPER EAST REGIONON 22ND SEPTEMBER 2017

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6	Sebil D. Allan bums	Mun. Agric	Mun. Ext	0247414440	sebilallank@yahoo.com
7	Nsoh Samuel	Meteo Dept	T.O	0208906583	asangure samuel@yahoo.com
8	DJABARE Komna	Global Lead	Climate Change Adaptation	+228 91453998	benji.enw@gmail.com
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Promoting Climate-Smart Agriculture in West Africa

Stakeholders' consultation in Ghana

Region ..UPPER WEST....., ~~Department/province of~~ ..Technical Services WIA

Date: ..18/09/2017.....

N°	Name and surname	Position	Adress	Signature
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3.	Josephine Yuora Terkpeng	Project officer ProNet North	ProNet North Box 360, Wa	
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N°	Name and surname	Position	Adress	Signature
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9	DJABARE Komla	Consultant Global Lead		
10	BIO-SAWE Ashwa	Consultant Global Lead		

ECOWAS CLIMATE SMART AGRICULTURE STAKEHOLDER ENGAGEMENT HELD ON 20TH SEPTEMBER 2017 AT DEPARTMENT OF AGRIC CONFERENCE HALL-TAMALE

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Liste des personnes rencontrées au Niger

Reunion d'échange sur le projet de promotion de l'agriculture climato-intelligente

TILLABERI le 19/8/17

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~~Ayouba Gara~~	~~D.R.El~~		
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DOSSO le 21/8/17

Rencontre avec les services techniques sur le projet agriculture intelligente

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9	Benee Solomon	Farmer (Crops/Animals)	0542313286	
10	Mminyele Benee	Farmer (Crops/Animals)		
11	Vincent Zenanyur	Farmer (Crops/Animals)		
12	Sammuel Kyenpuo	Farmer (Crops/Animals)		
13	Blaise Aagure	Farmer (Crops/Animals)		
14	James Be-ir-nyeme	Farmer (Crops/Animals)		
15	Aafaateng Thomas	Farmer (Crops/Animals)	0241587341	
16	Nebebaar Zaober	Farmer (Crops/Animals)		
17	Tierokang zaober	Business/farmer		
18	Dogsang Nonmebaar	Farmer (Crops/Animals)		
19	Noyoro Siegaoyir	Farmer (Crops/Animals)		
20	Tuoriyele Atharisius	Farmer (Crops/Animals)		
21	Bomekuu Bibir	Farmer (Crops/Animals)		
22	Faabezaa Saabe	Farmer (Crops/Animals)		
23	Malinabato Bawonuor	Crops and livestock Farmer		
24	Ayee Tenbrole	Crops Farmer		
25	Asante Bouta	Crops Farmer		
26	Kuuceyra John	Crops Farmer		
27	Brudaua Bakyen	Crops and Livestock Farmer		
28	Yari Puosuah	Crops Farmer		
29	Tabie Nweri	Crops and Livestock Farmer		
30	Adam Daapila	Crops and Livestock Farmer		
31	Pontia David	Crops and Livestock Farmer	0507450292	

32	Sungmta Viere	Crops and Livestock Farmer		
33	Kuukabanwona Dafaa	Crops and Livestock Farmer		
34	Bamatura Yesongni	Crops and Livestock Farmer		
35	Biezong Amuthus	Crops and Livestock Farmer		
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40	Imono Shanku	Crops and Livestock Farmer		
41	Diena-umma Bayor	Crops and Livestock Farmer		
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43	Nawaer Isaac	Crops and Livestock Farmer	0502364626	
44	Banyenko Dafaa	Crops and Livestock Farmer		
45	Babatunako Dakura	Crops and Livestock Farmer		
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47	Mosie Dakura	Crops and Livestock Farmer		
48	Bavir Daakyie			
49	Bayor Bavuyrie	Chief		
50	Kulaniye Charles	Crops and Livestock Farmer		
51	Zinnaa Dafaa			
52	Bonsun Isaac	Crops and Livestock Farmer	0265821726	
53	Iddrisu Dakura	Crops Farmer		
54	Issah Vibaari	Crops and Livestock Farmer	0206735781	
55	Anastasier Bayor	Crops and Livestock Farmer		
56	Batoye Sungpuo	Crops Farmer		
57	Ignatius Dabaubong	Crops and Livestock Farmer	0203535807	
58	Nasian Dabaubong	Crops Farmer		
59	Mary Niyebeehese	Corps Farmer		
60	Haafir Mohhamed Jawaw	Regional Seed coordinator/PPRSD/MOFA		
61	Sammuel Amaning Gyekye	Regional Meteo officer, Wa		

62	Tiereke Nicholas	District Agric. Officer-climate change	0208389211 nicholastereke@yahoo.com	
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66	Sovi Bibir	Farmer (crops/animals)		
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69	Actavius Vuoteh	Farmer (crops/animals)		
70	Nibeerzume Tierukang	Farmer (crops/animals)		
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72	Tomedoo Mwiniavangre	Farmer (crops/animals)		
73	Nuoevzlizvz Kuube-oor	Farmer (crops/animals)		
74	Gladys Mhauyini	Farmer (crops/animals)		
75	Kpintuo Joyce	Farmer (crops/animals)		
76	Dome Chrisentia	Farmer (crops/animals)		
77	Yaayi Bo-ib	Farmer (crops/animals)		
78	Done Macianu	Hair dresser		
79	Soyri Felix	Farmer (crops/animals)		
80	Besig Beatrice	Farmer (crops/animals)		
81	Baayel George	Farmer (crops/animals)		
82	Takadaar Asbakpierbog	Farmer (crops/animals)		
83	Auyuptina Nebemayir	Farmer (crops/animals)		
84	Saabedaa Dome	Farmer (crops/animals)		
85	Paonee Arnyin	Farmer (crops/animals)		
86	Wulko Thomas	Farmer (crops/animals)	0240600930	
87	So-Eru Yiryele	Farmer (crops/animals)		
88	Emmanuel Kpintu	Farmer (crops/animals)	0248356686	
89	Kodaar Robert	Farmer (crops/animals)	0209807916	
90	Baayagr Zolaokuu	Farmer (crops/animals)		
91	Beduor Kyiiru	Farmer (crops/animals)	0208782187	
92	Baawuo Cynthia	Weaver		
93	Kuole Fedelia	Business(Brewer)		
94	Kuusoyor Zenesuo	Farmer (crops)		
95	Kuusaonuo Tuodeb	Farmer (crops/Animals)	0505419553	
96	Dong Augustine	Farmer (crops/animals)	0240525093	
97	Der Philibet	Farmer (crops/animals)		
98	Etuo Be-ikuu	Farmer (crops/animals)		
99	Sebob Justina	Farmer (crops)		
100	Deepoor Placis	Farmer (crops/animals)		
101	Yowaa Anoyang	Farmer (crops/animals)	0246395470	
102	Godfied Nebenaa	Farmer (crops/animals)		
103	Domegyile Gyeber	Farmer (crops/animals)		
104	Isdol Nebenaa	Farmer (crops/animals)		
105	Ibkang Bin-nyin	Farmer (crops/animals)		

106	Hypolite Doneh	Farmer (crops/animals)		
107	Yayuor Lepo	Farmer (crops/animals)		
108	Tampula Yirbaar	Farmer (crops/animals)		
109	Zenanyuor Tasinus	Farmer (crops/animals)		
110	Tome Doo	Farmer (crops/animals)		
111	Kpintuo Andrews	Farmer (crops/animals)	0200476224	
112	Needem Sabastian	Farmer (crops/animals)	0502357060	
113	Bore Cosmas	Farmer (crops/animals)		
114	Lenus Yayeh	Farmer (crops/animals)	0209344836	
115	Beboorepuo Besigriguu	Farmer (crops/animals)		
116	Kpipien Mathew	Farmer (crops/animals)		
117	Kyieder	Farmer (crops/animals)		
118	Kpipie Kog	Farmer (crops/animals)		
119	Zubetegr Aasuorfaar	Farmer (crops/animals)		
120	Aasoteng Sampson	Farmer (crops/animals)		
121	Dognekpeng Eric	Farmer (crops/animals)	0245330291	
122	Nuorbeliebe Naduoder	Farmer (crops/animals)		
123	Christopher Naa-ile	Farmer (crops/animals)		
	Guu Agnes	Weaver		
	Baayel Philip	Farmer (crops/animals)	0249149683	
	Joseph Baakyise	Farmer (crops/animals)	0547035225	
	Der Aakyele	Farmer (crops/animals)		
	Mwinyele Erena	Farmer (crops/animals)		
	Aasagr Jane-Francis	Farmer (crops/animals)	0203095610	
	So-eru Nuobekabe	Farmer (crops/animals)		
	Florence Yelfaadem	Farmer (crops/animals)		
	Kuunyereme Engsoglinyir	Farmer (crops/animals)		
	Ewiir Aasuodong	Farmer (crops/animals)		
	Netuona Ernestina	Farmer (crops/animals)		
	Sastaa Faustina	Farmer (crops/animals)		
	Aasoyri Francis	Farmer (crops/animals)		
	Kuusofaa Kogdieo	Farmer (crops/animals)		
	Polmz Nee-Esu	Farmer (crops/animals)		
	Yowaa Esther	Farmer (crops/animals)		
	Diadem Sidonia	Farmer (crops/animals)		

	Maasotuo Beboor	Farmer (crops/animals)		
	Aaponetuu Nomebaar	Farmer (crops/animals)		
	Charles Kuubewere	Farmer (crops/animals)		
	Ekpaa Niffaayele	Farmer (crops/animals)		
	Cecelia Mwinianaa	Farmer (crops/animals)		

N°	Name and surname	Position	Address	Female/M
1	Abuadaana Apogyanc	Farmer		F
2	Ayambila Adugbire	Farmer/weaver		F
3	Abenyoo Victoria	Farmer	0248501211	F
4	Adongo Doris	Farmer	0558424325	F
5	Agurisabiga Elizabeth	Farmer	0200501269	F
6	Akanmear Anabire	Farmer		F
7	Aguriku Ayinfaare	Farmer		F
8	Ayinzilko Atipoka	Farmer		F
9	Agonga Easther	Farmer	0245844820	F
10	Nyaaba Victoria	Farmer	0546587118	F
11	Atibila Erica	Farmer	0209318657	F
12	Aberemah Milicent	Farmer	0503110169	F
13	Azopuhiko Lariba	Hair dresser	0249785613	F
14	Atinbire Matilda	Hair dresser	0551484910	F
15	Atibila Elizabeth	Weaver/Farmer	0541598759	F
16	Anabire Lamisi	Dress maker/Farmer	0204070674	F
17	Ayedaanbire Akupoka	Weaver/Farmer		F
18	Ayedaanpika adugpoka	Weaver/Farmer	0558426665	F
19	Ayamga Lamisi	Farmer/Weaver	0542745626	F
20	Akelitara Azumah	Farmer		F
21	Ayine Jennifer	Weaver/Farmer		F
22	Akugbire Jennifer	Farmer	0541219546	F
23	Ayinbila Gladys	Hair dresser	0200120035	F
24	Ayinbila Akolpoka	Farmer	0507888399	F
25	Ayindoo Rita	Farmer/hair dresser	024766081	F
26	Nmabila Abene	Farmer/Weaver	0247940493	F
27	Azumah Alika	Weaver	0248220395	F
28	Ndagen Abisiyine	Farmer/weaver	0243959142	F
29	Atuah Collins	Farmer/DVCC Secr.	0245111635	M
30	Atinga Nyaaba	Mason/Farmer	0507583568	M
31	Abugbire Lydia	Weaver	0547965789	F
32	Anegdane Rosina	Hair dresser/Farmer	0204136318	F
33	Adabira Nicholas	Driver/Farmer	0208484873	M
34	Akangange Ayinpoka	Trading/Farmer		F
35	Atindaana Ayanpoka	Farmer		F
36	Nsobila Npabinga	Farmer		F
37	Nsoh Baby	Farmer	0204221372	F
38	Abugre Adugpoka	Farmer	0248297498	F
39	Agana Apanpoka	Farmer		F
40	Apurliba Ndentoa	Farmer		F
41	Atogyene Akolgo	Farmer	0243802556	M

42	Nsoh Sarbarstin	Mason/Farmer	0507797736	F
43	Azubite Asake	Farmer	0551949733	M
44	Adengo Abayeta	Driver/Farmer	0506230976	M
45	Azenga Ndadi	Farmer		
46	Anafo Prince	Student	0201116626	F
47	Adongo Albert	Dress marker	0547924226	M
48	Abenga Veron	Student	0243802592	M
49	Abugre Peter	Student	0541320877	M
50	Adambire Apusiyine	Student	0241455551	M
51	Asumbasila Salomon	Student	0500520308	M
52	Ayinbire A. Lawrence	Student	0508856170	M
53	Anafo Azanmah	Farmer	0243806539	F
54	Pual Lamisi	Trading		F
55	Aduka Amietiko	Weaver/Farmer	0207733581	F
56	Atubire Asakpulika	Weaver/Life sock		F
57	Ayinba Rose	Weaver	0240417406	F
58	Ayine Grace	Weaver		F
59	Adongo Mary	Farmer		F
60	Naba Adagremah	Farmer/local oil	0541126782	F
61	Atogyene Mary	Farmer		F
62	Aangogo Akalka	Local oil		F
63	Ayambire Victoria	Weaver		F
64	Atapaka Apalu	Farmer		F
65	Nsomah Amamo	Weaver		F
66	Felicia Nsoh	Weaver		F
67	Apu Patan	Weaver		F
68	Adula	Weaver		F
69	Atareboga Mama	Weaver		F
70	Arangba Felicia	Farmer/trading		F
71	Lama Yabubu	Weaver		F
72	Azanyine Atinampresilla	Farmer		F
73	Akosum Gau	Hair dresser	0505929067	F

NO	NAME OF PARTICIPANT	GENDER	CONTACT NUMBER
1	Dramani Gbankulso	M chief	0540584751
2	Lansah Techie	M chief	
3	Nsuasowura Nuhu	M chief	
4	Kechamwura Jawula	M chief	
5	Dramani Razack	M chief	0244933701
6	Haruna Dawuni	M	
7	Sophia Gbankulso	F Hon	0246083821
8	Moro Alimani	M Immam	
9	Biawurbi Ibrahim	M	
10	Awudu Bundia	M	0205419875
11	Alimani Musah	M	
12	Mahama Jedu	M	
13	Nyalaba Iddi	M	
14	Mariama Mahama	F	
15	Razack Suweiba	F	
16	Dramani Hawa	F	
17	Damata Salifu	F	
18	Muniru Rabi	F	

19	Iddrisu Amina	F	
20	Barchisu Muniru	F	
21	Mariama Gbedesi	F	
22	Ayisha Barakinso	F	
23	Essahaku Latifa	F	
24	Alimatu Haruna	F	
25	Sode Hawa	F	
26	Awodima Dramani	F	
27	Dramani Hawa	F	
28	Tahiro Fatima		
29	Gbankulso Azara	F	
30	Nuhu Ayishatu	F	
31	Dramani Yawa	F	
32	Iddrisu Asibi	F	
33	Akuah Kaborobi	F	
34	Abudulai Asana	F	
35	Bintu Rufai	F	
36	Adam Rukaya	F	
37	Jamula Salamatu	F	
38	Alhassan Azara	F	
39	Abina Awuni	F	
40	Saidu Lawura	F	
41	Mohammed Kanyibi	F	
42	Soale Zarawu	F	
43	Dramani Sahada	F	
44	Awudu Ramatu	F	
45	Abiba Abie	F	
46	Francis Azumah	F	
47	Nuhu wurche	F	
48	Attah Hawawu	F	
49	Fuseini Gumpaga	F	
50	Abudu amide	F	
51	Amama Mahama	F	
52	Adam Sanatu	F	
53	Ibrahim Zana	F	
54	Mahama Zaida	F	
55	Mohammed Rafiah	F	
56	Changa Techira	F	
57	Moro Mariah	F	
58	Mansah Akwasi	F	
59	Ibrahima Makuya	F	
60	Sadia Mahama	F	
61	Nuhu Memuna	F	
62	Issahaku Bonbu	F	
63	Amina Lansah	F	
64	Adam Azara	F	
65	Awudu Nafisah	F	
66	Hawa Adam	F	
67	Rafiu Alimatu	F	
68	Adam Atawa	F	
69	Alhassan Fildose	F	
70	Abudulai Asia	F	
71	Zainabu Musah	F	

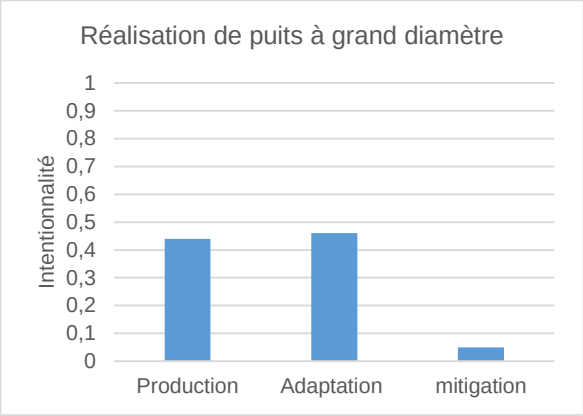
72	Fati Basiru	F	
73	Zackaria Alimatu	F	
74	Achulo Fati	F	
75	Jenet Banyie	F	
76	Ayishetu abdurazack	F	
77	Adama Mohammed	F	
78	Dramani Iddrisu	M	
79	Gbankulso Gafaru	M	0208444367
80	Awura Karim	M	
81	Kanyage Shaibu	M	
82	Awudu Jedu	M	
83	Francis Atizim	M	
84	Sulemana Adam	M	
85	Ndebil Akubile	M	
86	Yakubu Mohammed	M	
87	Fuseini Karim	M	
88	Gbankulso S Sadat	M	0505944994
89	Kwajo Jiman	M	
90	Aliu Sankara	M	0206716281
91	Issah Tahiru	M	
92	Musah Tahiru	M	
93	Dramani Munkaila	M	
94	Mohammed Almine	M	
95	Gbankulso Darison	M	
96	Razack Hamdia	F	
97	Soale Faruza	F	0503752713
98	Ibrahim Anyass	M	
99	Alhassa Kofi	M	
100	Osman Alhassan	M	
101	Tahiru Adam	M	
102	Haruna Alhassan	M	
103	Mahammed Tahiru	M	
104	Sulemana Alhassan	M	
105	Adam Abukari	M	
106	Mohammed Yussif	M	
107	Ibrahim Yakubu	M	
108	Adam Amadu	M	
109	Bundia Awudu	M	
110	Akwasi Nuhu	M	
111	Dutera Adam	M	
112	Awushi Nyimdo	M	
113	Yaw Baow	M	
114	Fuseini Partey	M	
115	Issahaku Mutakim	M	
116	Dramani Aminu	M	
117	Mumuni Mohammed	M	
118	Sankara Salifu	M	
119	Sulemana Zeinabu	F	
120	Yakubu Mohammed	M	
121	Yussif Munira	F	
122	Kadijatu Yussif	F	
123	Wassila Yakubu	F	
124	Hekmah Yakubu	F	

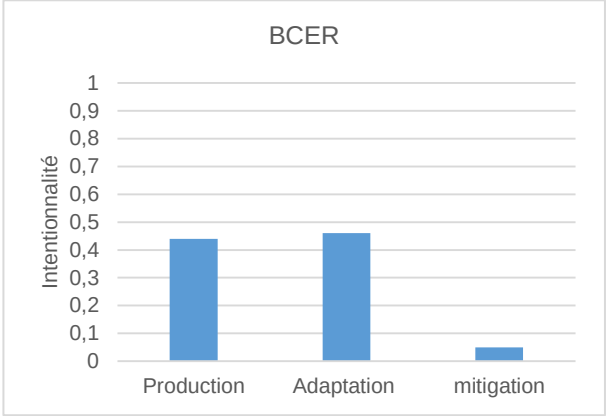
125	Mohammed Zakaria	M	
126	Dramani Mumuni	M	
127	Gbankulso Yekurwuche	F	
128	Mohammed Musah	M	
129	Tiduro Tanko	M	
130	Sankara Azara	F	
131	Musah Zeinab	F	
132	Yahaya Hamdia	F	
133	Dramani Kassim	M	0240349995
134	Muniru Soalo	M	
135	Achulo Abdulai	M	
136	Bormaga A Razack	M	
137	Yakubu Issah	M	0207240429
138	Alhassan Mahama	M	
139	Dari Nyindo	M	
140	Adam Nyindo	M	
141	Alhassa Gawowdo	M	
142	Husein Amadu	M	
143	Mohammed Amadu	M	
144	Alhassan Gbedese	M	
145	Sule Zuleha	F	
146	Sulemana Sadia	F	
147	Razack Kipo	M	
148	Alhassan Tharu	M	
149	Achanso Yahaya	M	
150	Mohammed Osman	M	
151	Stephen Kuka	M	
152	Alhassan Inussah	M	
153	Alhassan Musah	M	
154	Mantan Mukaila	M	
155	Issahaku Sakara	M	0502217413
156	Tanko Batito	M	
157	Achintir Babowura	M	
158	Abdulai Nuhu	M	0500441946
159	Dramani Koshua		
160	Wassila Shaibu		
161	Mukeila Ayishetu		
162	Akwasi Jamila		
163	Kande Mohammed		
164	Haruna Barchise		
165	Awushi Fatimah		
166	Memunatu Yaw		
167	Awushi Adjuah		
168	Muniru Sala		
169	Asana Sulena		
170	Osman Memuna		
171	Latifa Mohammed		
172	Hudu Salima		
173	Hudu Amina		
174	Salmata Tahiro		
175	Abulai Hawa		
176	Musah Fatima		
177	Sanah Musah		

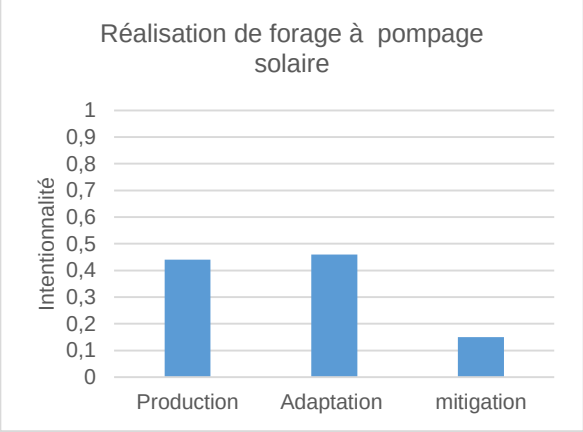
178	Alhassan Adizah		
179	Fuseini Mariama		
180	Mohammed Asana		
181	Abukari Sharatu		
182	Sulemane Panah		
183	Fati Alhassan		
184	Ibrahim Latifa		
185	Sulemana Sherifa		
186	Abdul-razack Sumaya		
187	Wahabu Latifa		
188	Sulemana Sadia		
189	Sulemana Suleha		
190	Fati Chenga		
191	Seid Attah		
192	Esther Shaibu		
193	Sulemana Razack		
194	Hudu Razack		
195	Muniru Sibdo		
196	Abdulai Adam	F	
197	Moro Sala	F	
198	Musah Latifa	F	
199	Josef Erah	M	
200	S. S. Gbankulso chief	M	
201	Mohammed Salifu	M	
202	Abiba Adam	F	
203	Amadu Wasila	F	
204	Amadu Jamila	F	
205	Ibrahim Lawusa	F	
206	Nafinu Ibrahim	F	
207	Zackariah Khadija	F	
208	Rafiu Mahama	F	
209	Awudu Adjuah	F	

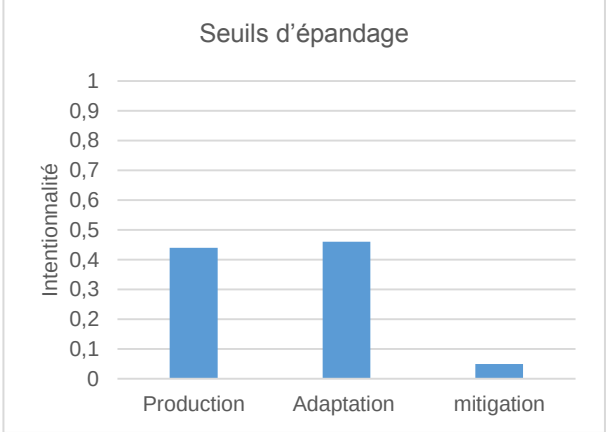
Annex 5: Histogrammes des intentionnalités issues de l’évaluation des technologies promues

Technologie de maîtrise de l'eau si chacune devrait être développée seule

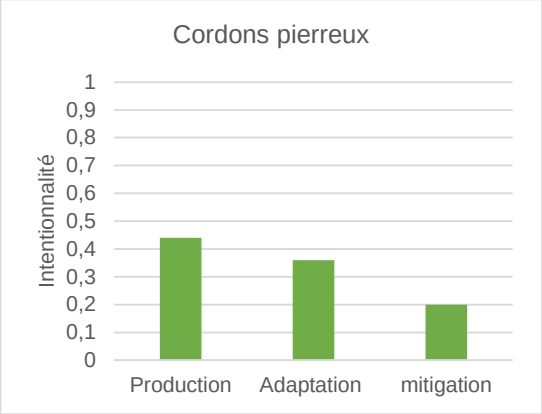


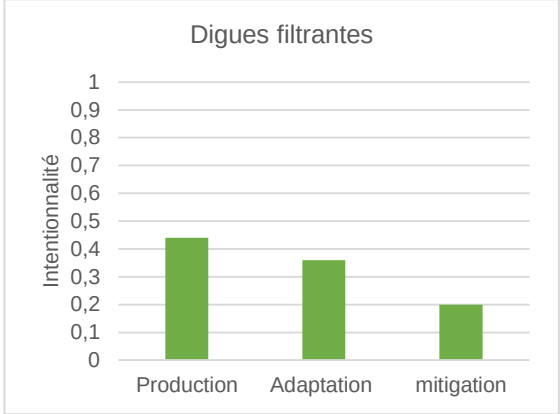


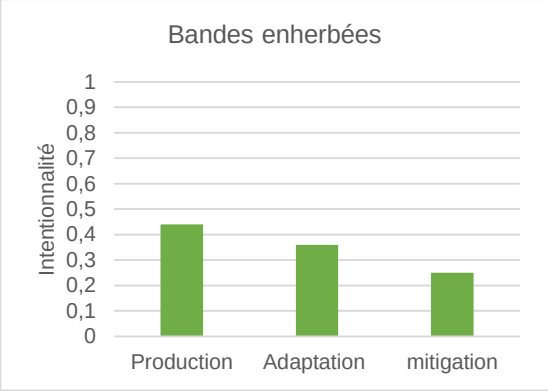


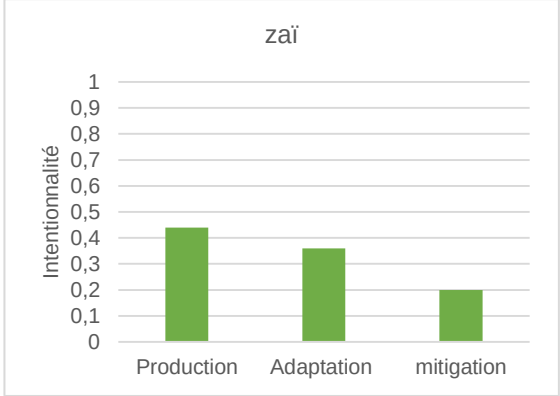


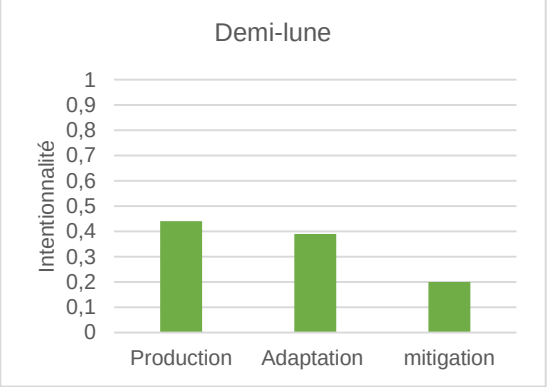
Technologies de gestion durable des terres agricoles si chacune devrait être développée seule

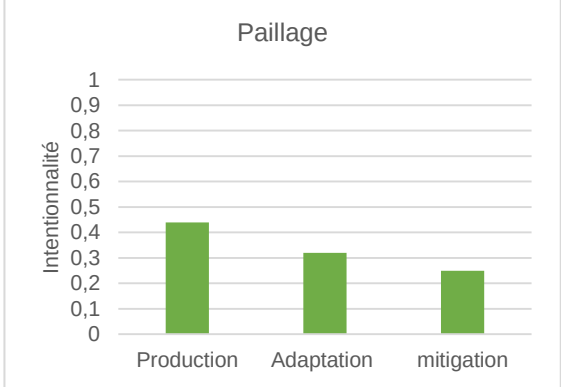


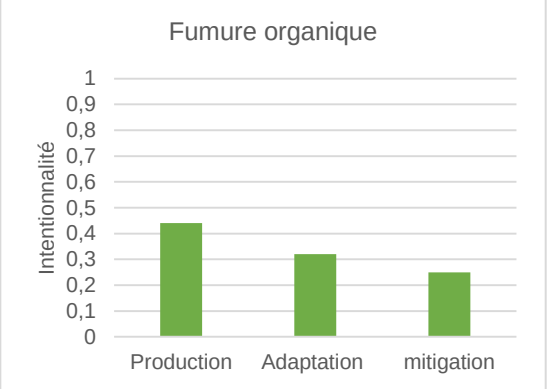


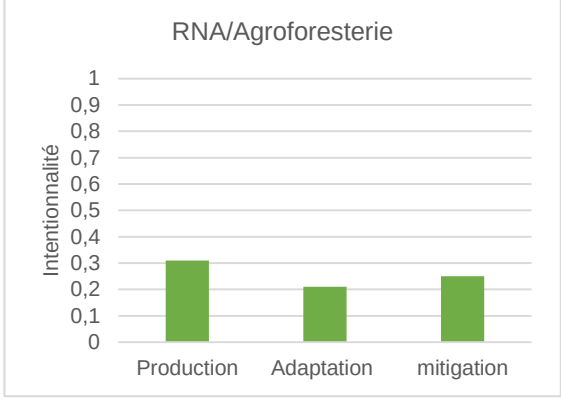




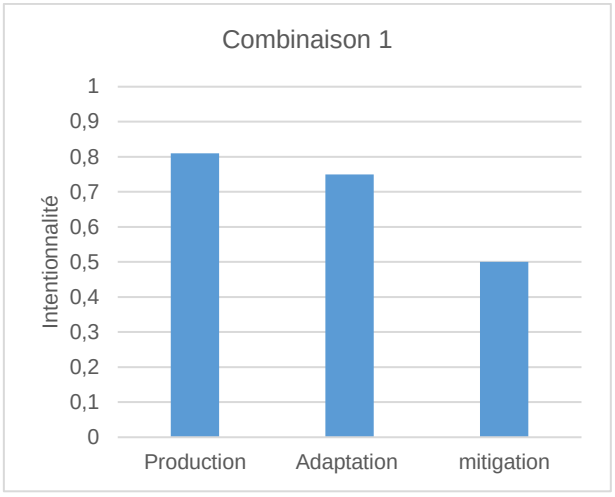


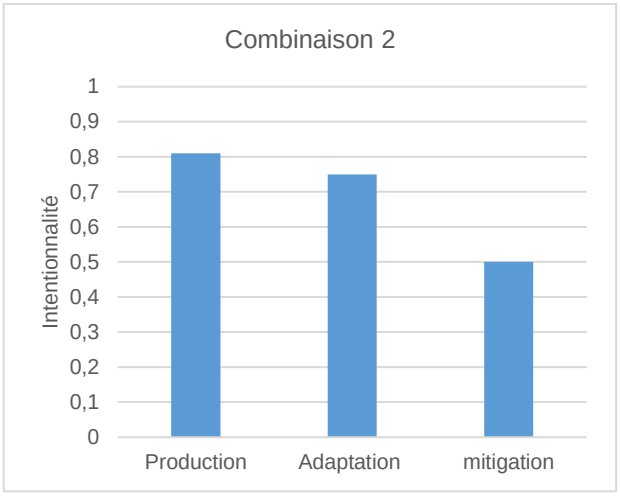


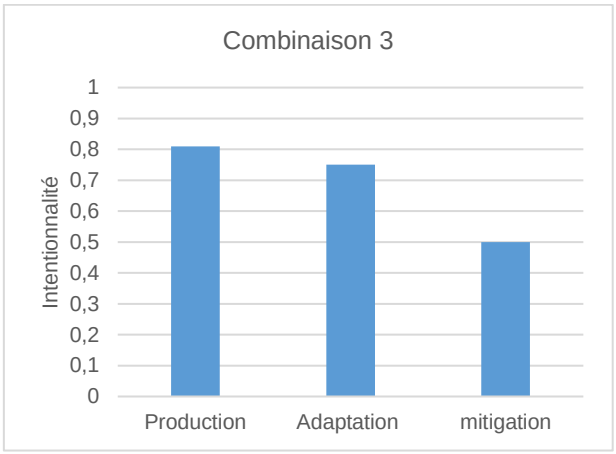


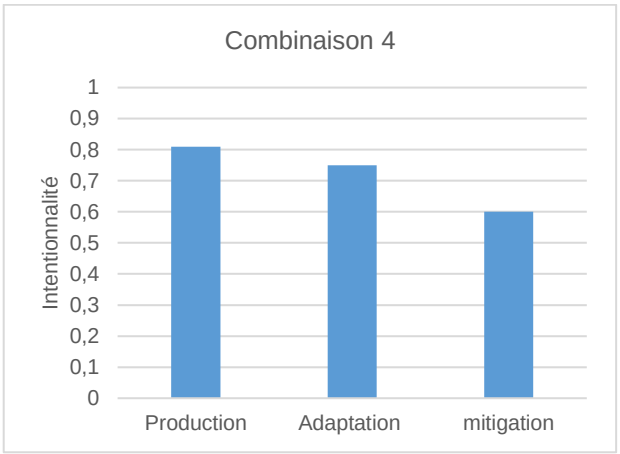


Evaluation des combinaisons de technologies en les combinant entre elles et en les accompagnant des actions de renforcement de capacités et de diffusion des leçons apprises









Appendix 6: Examples of operating accounts

Maize – Benin

		Unit	Amount	Unit price	Total price
1. PRODUCTS					
Product		kg	1197	200	239400
TOTAL PRODUCT					**239 400**
2. EXPENSES					
2.0. Petitions of farm equipment					
machetes		Amortized values	2	500	1000
Dabas			2	500	1000
Hoe			5	500	2500
Wheelbarrow			1	5000	5000
Total Small operating equipment					*9 500*
2.1. Exploitation					
2.1.1. Manpower setting field					
Implementation of resilient techniques		Amortized value	1	12500	12 500
seedling*		M/D	8	2000	16 000
Sub total labor force setting field					*28 500*
2.1.2. Purchase of semen					
Improved seeds		kg	20	500	10000
Under total seed purchase					*10 000*
2.1.3. Crop maintenance					
Purchase Mineral Fertilizer (NPK)		bag (50kg)	2	11500	23000
Purchase mineral fertilizer maintenance (Urea)		bag (50kg)	1	16000	16000
Labor weeding *		M/D	16	1000	16000
Fertilization labor *		M/D	4	500	2000
Under total maintenance of culture					*57 000*
Total Exploitation					*95 500*
2.2. Harvesting and storage					
Purchase of bags		Unit	24	100	2394
Harvesting labor*		M/D	4	1000	4 000
Transport*		Flat rate	1	10000	10 000
Total harvest and storage					*16 394*
2.3.unexpected (5%)		Flat rate	1	6 070	6 070
Total unforeseen expenses					*6 070*
TOTAL EXPENSES					**127 464**
3. RESULT		**Unit**			**Value**
3.1.Gross product		*Fcfa*			*239 400*
3.2. TOTAL EXPENSES		*Fcfa*			*127 464*
NET PROFIT		**Fcfa**			**111 936**
Farmer contribution					**48 000**
Farmer income					**159 936**

Potato -Benin

		Unit	Amount	Unit price	Total price
1. PRODUCTS					
Product		kg	11340	325	3 685 500
TOTAL PRODUCT					**3 685 500**
2. CHARGES					
2.0. Pétits matériels d'exploitation					
machetes		Amortized values	2	500	1 000
phiz			4	400	1 600
Dabas			2	500	1 000
Hoe			5	500	2 500
Wheelbarrow			1	3000	3 000
Total Pétits matériels d'exploitation					*9 100*
2.1. Exploitation					
2.1.1. Manpower setting field :					
Implementation of resilient techniques		Amortized value	1	12500	12 500
Sowing bed preparation*		M/D	4	1000	4 000
seedling*		M/D	16	1000	16 000
Sub total labor force setting field					*32 500*
2.1.2. Purchase of semen					
Improved seeds		kg	2000	500	1 000 000
Under total seed purchase					*1 000 000*
2.1.3. Crop maintenance					
Purchase Mineral Fertilizer (NPK)		sac (50kg)	2	11500	23 000
Purchase mineral fertilizer maintenance (Urea)		sac (50kg)	1	16000	16 000
Purchase phytosanitary product		Flat rate	1	50000	50 000
Organic fertilizer purchase		sac (50kg)	150	1000	150 000
Labor Weeding / Butting*		M/D	60	1000	60 000
Labor Phytosanitary Treatment*		M/D	3	1000	3 000
Fertilization labor*		M/D	4	1000	4 000
Under total maintenance of culture					*306 000*
Total Exploitation					*1 338 500*
2.2. Harvesting and storage					
Purchase of bags		Unit	227	100	22 680
Harvesting labor*		M/D	10	1000	10 000
Transport*		Flat rate	1	40000	40 000
Total harvest and storage					*72 680*
2.3.unexpected (5%)		Flat rate	1	142 028	142 028
Total unforeseen expenses					*142 028*
TOTAL EXPENSES					**1 562 308**
3. RESULT		**Unit**			**Value**
3.1.Gross product		*Fcfa*			*3 685 500*
3.2. TOTAL EXPENSES		*Fcfa*			*1 562 308*
NET PROFIT		**Fcfa**			**2 123 192**
Farmer contribution					**133 000**
Farmer income					**2 256 192**

Annex 7: Operating account per country

BENIN

Crop	Total production (USD)	Total Charge (USD)	Net result (USD)	Number of campaigns per year	Area developped per crop (ha)	Result of total area per crop (USD)	Contribution of producers (USD)	Income of the producers (USD)
Maize	479	255	224	1	200	44 775	19 200	63 975
Rice	1 170	475	695	1	60	41 677	5 760	47 437
Sorghum	524	254	270	1	150	40 535	14 400	54 935
Mil	442	253	189	1	150	28 341	14 400	42 741
Potato	7 371	3 125	4 246	2	15	127 392	3 990	131 382
Tomato	3 667	1 449	2 218	2	15	66 548	4 110	70 658
Carot	4 342	1 411	2 932	2	5	29 318	1 370	30 688
Onion	3 405	1 420	1 986	2	5	19 855	1 370	21 225
Total country per yea					**600**	**398 440**	**64 600**	**463 040**

BURKINA FASO

Crop	Total production (USD)	Total Charge (USD)	Net result (USD)	Number of campaigns per year	Area developped per crop (ha)	Result of total area per crop (USD)	Contribution of producers (USD)	Income of the producers (USD)
Maize	465	255	210	1	200	42 067	19 200	61 267
Rice	897	424	473	1	60	28 395	5 760	34 155
Sorghum	419	253	166	1	150	24 931	14 400	39 331
Mil	559	254	304	1	150	45 663	14 400	60 063
Potato	8 775	3 134	5 641	2	15	169 226	3 990	173 216
Tomato	4 095	1 454	2 641	2	15	79 224	4 110	83 334
Carot	4 843	1 415	3 428	2	5	34 281	1 370	35 651
Onion	3 405	1 420	1 986	2	5	19 855	1 370	21 225
Total country per year					**600**	**443 643**	**64 600**	**508 243**

GHANA

Crop	Total production (USD)	Total Charge (USD)	Net result (USD)	Number of campaigns	Area developped per crop (ha)	Result of total area per crop (USD)	Contribution of producers (USD)	Income of the producers (USD)
Maize	616	256	359	1	200	71 847	19 200	91 047
Rice	975	438	537	1	60	32 190	5 760	37 950
Sorghum	681	255	426	1	150	63 941	14 400	78 341
Mil	559	254	304	1	150	45 663	14 400	60 063
Potato	8 190	3 130	5 060	2	15	151 795	3 990	155 785
Tomato	4 032	1 453	2 579	2	15	77 358	4 110	81 468
Carot	4 426	1 411	3 014	2	5	30 145	1 370	31 515
Onion	3 405	1 420	1 986	2	5	19 855	1 370	21 225
Total country per yea					**600**	**492 794**	**64 600**	**557 394**

NIGER

Crop	Total production (USD)	Total Charge (USD)	Net result (USD)	Number of campaigns	Area developped per crop (ha)	Result of total area per crop (USD)	Contribution of producers (USD)	Income of the producers (USD)
Maize	308	253	55	1	200	10 934	19 200	30 134
Rice	780	401	378	1	60	22 703	5 760	28 463
Sorghum	293	252	41	1	150	6 206	14 400	20 606
Mil	279	252	27	1	150	4 089	14 400	18 489
Potato	7 582	3 126	4 456	2	15	133 667	3 990	137 657
Tomato	4 278	1 457	2 822	2	15	84 654	4 110	88 764
Carot	5 595	1 422	4 173	2	5	41 726	1 370	43 096
Onion	3 667	1 424	2 244	2	5	22 436	1 370	23 806
Total country per yea					**600**	**326 414**	**64 600**	**391 014**

TOGO

Crop	Total production (USD)	Total Charge (USD)	Net result (USD)	Number of campaigns per year	Area developped per crop (ha)	Result of total area per crop (USD)	Contribution of producers (USD)	Income of the producers (USD)
Maize	479	255	224	1	200	44 775	19 200	63 975
Rice	1 014	446	568	1	60	34 088	5 760	39 848
Sorghum	576	254	322	1	150	48 337	14 400	62 737
Mil	466	254	212	1	150	31 805	14 400	46 205
Potato	6 845	3 121	3 723	2	15	111 703	7 980	119 683
Tomato	3 667	1 449	2 218	2	15	66 548	8 220	74 768
Carot	4 259	1 410	2 849	2	5	28 490	2 740	31 230
Onion	3 143	1 416	1 727	2	5	17 274	2 740	20 014
Total country per yea					**600**	**383 021**	**75 440**	**458 461**