



ADAPTATION FUND

Title of Project/Programme:	West and Central Africa Small Island Developing States ADAPT - <i>Building resilience of agricultural systems to climate change</i>
Countries:	<i>Cabo Verde, Guinea Bissau, Sao Tome and Principe (STP)</i>
Thematic Focal Area ¹ :	Food Security
Type of Implementing Entity:	Multilateral Implementing Entity
Implementing Entity:	International Fund for Agricultural Development (IFAD)
Executing Entities:	Ministry of Agriculture and Forests of Guinea Bissau, Ministry of Agriculture, Fisheries and Rural Development of STP, Ministry of Agriculture and Environment of Cabo Verde
Amount of Financing Requested:	14,000,000 (in U.S Dollars Equivalent)

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

I. 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.

THE CLIMATE RELATED PROBLEM TO SOLVE

1.1.1 From the countries' perspective

1.1.1.1. Sao Tome climate change and agricultural vulnerability profile

Climate change trend

- The annual average temperature trend of the airport weather station (Figure 1), calculated from the linear trend, indicates an increase of 0.6 ° C between 1960 and 2016, an average increase of about 0,01°C per year. The hottest five years have been in the past 20 years

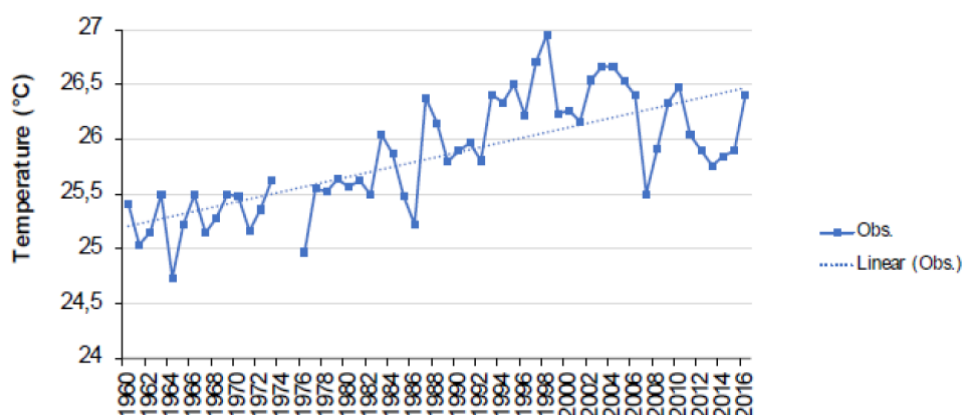


Figure 1: Evolution of the average temperature from 1960 to 2016 (Sao Tome Airport Station)

- Observed rainfall data** do not show a clear trend according to the Third National Communication (2019)². However, according to producers, the length of the rainy season has shortened compared to 4-5 years ago when the duration of the dry season (*gravana*) was normal and allowed two seasons. The historic period of heavy rainfall in the rainy season typically lasted for 2 to 3 months and has now shortened considerably. Heavy winds and rains have become more frequent and intense. Hot nights have become more frequent, as observed by coffee producers. The *Gravanita* (a small dry season between January and March) tends to extend into April causing extend dry conditions for agriculture. Previously, stormy events occurred in April, May and in October. Now thunderstorms almost occur continuously throughout the wet seasons, becoming unpredictable and occurring at any time.
- Precipitation.** In scenario RCP4.5 (Figure 2), the precipitation evolution projections for the two islands indicate a rainier climate from October to May and slightly drier conditions in the other months of the year. The most significant variations in precipitation (+ 150 mm / month) occur in the south-southwest part of the island of São Tomé, where total precipitation is also the highest. In scenario RCP8.5 (Figure

² Democratic Republic of São Tomé and Príncipe. Ministry of Public Works, Infrastructures, Natural Resources And The Environment. 2019. Third National Communication, pp 1122.

2), projections indicate that the reduction in precipitation occurs both in rainy and dry periods. However, by analyzing the changes from month to month, December and January show an increase in precipitation on the island of São Tomé in the RCP8.5 scenario. The reduction in precipitation in this emission scenario is very marked in April on the island of São Tomé, reaching the rate of -100 mm / month.

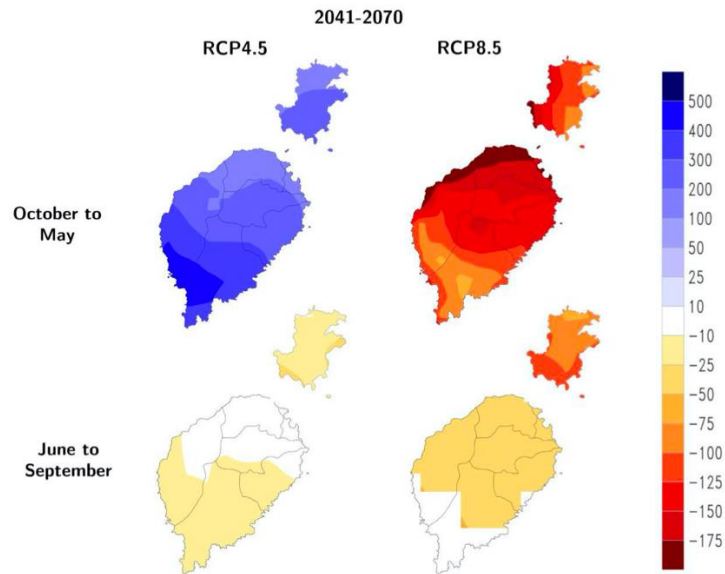


Figure 2: Evolution of accumulated precipitation (mm) from October to March (rainy season) and from June to September (dry season) projected by the Eta-4 km model for the period 2041-2070 in the RCP4.5 and RCP8.5

4. **Projected Temperatures:** Projections indicate global warming, most pronounced between October and May. During the "gravana" period, warming is greatest in the central part of the island of São Tomé where the highest altitudes are found (Figure 3). Note that the warming pattern in the two scenarios (RCP4.5 and RCP8.5) is quite similar, with a more intense temperature increase in the RCP8.5 scenario. Temperature changes in the two islands reach values of around 2.5°C in RCP4.5 and 3°C in RCP8.5 both during the rainy season and during the dry season

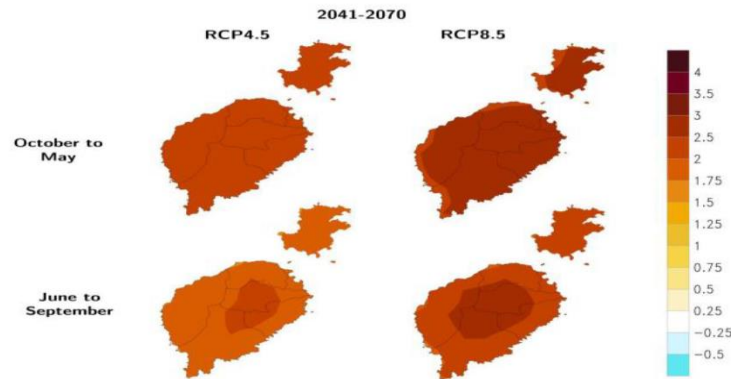


Figure 3: Evolution of the average temperature (° C) from October to March (rainy season) and from June to September (dry season) projected by the Eta-4 km model for the 2041-2070 period of RCP4 .5 and RCP8.5 relating to the period 1971-2000

5. **Weather extremes are predicted to increase** between 2041-2070, and indicate an increase in heavy rains, especially in the southwestern region of Sao Tome Island. This will be complimented by an increase in the observed number of consecutive dry days (days without rain) through out the Gravana. Further, projections of temperature extremes between 2041-2070 in both scenarios indicate warming, with increases in heat waves, hot days, annual maximum temperatures and increasing annual minimum temperatures.

Agricultural sector vulnerability

6. Due to its insular nature, its small size and its low coasts with large human concentration, Sao-Tome and Principe is very vulnerable to climate change. Rising temperatures, rising sea levels and intensifying climatic disturbances are potential risks, some of whose effects have already been observed (case of coastal erosion). Climate change could also have consequences on the specific composition of fishery resources and their distribution. In the agricultural sector, the tendency to lengthen the dry season and intensify torrential rains poses a potential threat to food security and land use. 45. In São Tomé and Príncipe, rising temperatures and coastal erosion are the main apparent manifestations of climate change, although they may have other causes. The variability of rainfall is also a reality; it leads to disruptions in the agricultural calendar and the irregularity of agricultural production. Food insecurity persists despite a climate and soil favorable to agriculture and the variability of agricultural production increases the volatility of food prices. In this context, several trends have already been observed, in particular the increase in temperatures, the decrease in precipitation, the lengthening of the dry season, the decrease in river flows, the rise in the level of the sea and coastal erosion. These trends have negative economic impacts on several sectors, notably agriculture and forestry.
7. **Crop vulnerability.** The erraticity of rainfall, as well as its poor distribution, on the one hand, and the increase in temperature, on the other hand, have negative impacts on crop growth. The significant increase in substantial rainfall results in sheet erosion and top soil loss, leading to the leaching of soil nutrients, which negatively affects crop and pasture development negatively impacting agricultural productivity. Further increases in temperature and moisture levels will result in proliferations of plant pathogens and parasites, such as rust fungus and *spodoptera frugiperda* (American corn moth) that have the potential to greatly reduce crop yields. This could lead to a reduction in the productivity of existing plantations, and consequently to a decrease in farmers' income. Projections in both low (RCP4.5) and high (RCP8.5) emissions scenarios for period from 2041 to 2070 indicate a high or very high risk for taro culture in São Tomé and Príncipe. On the other hand, plots that are located outside the minimum allowable crop precipitation limits (1,500 mm of rain for cocoa) may no longer be viable. If the rainfall decrease trend reaches 1.7 mm per year and the dry season extends beyond the normal period,

the export of the country's main product will be reduced, with cocoa contributing about 18% to the country's GDP (INE, 1999) and the proportion in exports about 95%. It is predicted that by 2040-2060, a decrease of almost 75% would lead to important economic losses for agricultural products particularly on the cocoa sector which contributes significantly to the GDP .

8. For maize crop which has a strategic importance in human and animal feeding in STP, projections in scenario RCP4.5, for the period from 2041 to 2070, considering the 1st and 2nd maize crops of São Tomé and Príncipe islands, show reduction of areas classified as high risk, possibly due to the increase in air temperature. However, in the coastal region and for and 2nd maize crop, risks range from low or very low to moderate to high risk. The RCP8.5 scenario raises the risk rating of the 2nd corn crop to high because of the low productive potential in São Tomé Island, but maintains the high risk classification in the central region of São Tomé and Príncipe.
9. Projections in the RCP4.5 scenario maintain the risk associated to low productive potential and moderate water stress. On the other hand, in the scenario RCP8.5, the risks becomes very high due to water stress. These results are in accordance with those presented in the Second National Communication of São Tomé and Príncipe (2010), which already warned of the risk of reduction of cocoa production areas due to the reduction of precipitation in the future (2040-2060), with lower annual totals to 1,500 mm.
10. **Water resources vulnerability.** During the dry season changes in the water, balance is of increasing concern in STP. The standardized precipitation evapotranspiration index (SPEI), calculated over 12 month periods, captures the cumulative balance between gain and loss of water across the interannual time scale. Data predictions for RCP 8.5 indicate a likelihood for severe drought increase in both frequency and duration over the next 30 years. This is due to the expected increase in mean annual temperature of 1.6 °C (with an upper bounding of 2.6 °C) by 2050³. This average pattern will lead to higher levels of transpiration and evapotranspiration that will lead faster drying soils, (even in wet conditions). This will have a negative impact on agricultural systems, as heat stress combined with reduced water availability in soils (in non-irrigated systems) will decrease agricultural yields.
11. Despite this negative impact, the increased temperatures are also associated with an increase in precipitation, estimated at an annual mean increase of 63.2mm by 2050³. However, although this would indicate a positive trend, this is correlated with an increase in extreme events of heavier rainfall. Under RCP8.5 scenarios, there will be an increase of 5-day precipitation at the 10-year return level of an upper quartile estimate of 238mm and a maximum of 433mm over any 5-day extreme event³. Extensive rainfall on to graduated or compacted soils (as seen in agricultural systems) can result in high levels of increased surface run-off. Water infiltration rates reduce under these conditions resulting in, a lack of ground water recharge, greater soil erosion and downstream flooding as watercourses inundate. Although this indicates an increase of water availability, the reality is that with underdeveloped water infrastructure, flooding results in unpotable stagnated water sources (that increase levels of disease) and a lack of retention of water in terrestrial systems. Therefore, STP, without intervention of modern climate resilient agricultural and water infrastructure technologies will suffer a reduction in useable water availability under current climate predictions.
12. **Fishing vulnerability.** According to the Second National Communication (2010)⁴, the results of FAO/UNDP studies (1999) have shown a close link between deep biomass migration and the increase in the surface temperature of ocean waters. According to these studies, this scenario of increasing of the surface temperature of ocean waters reflects the low level of fish production on the Saotomean coasts. The global temperature increasing projections for Sao Tomé and Príncipe are in the order of 2.25°C by 2040-2060. Given that the temperature at the surface of the ocean in the coastal zone of Sao Tomé and Príncipe will increase by 2.25 °C, the artisanal fisherman would have to descend to the depths of about 60 m to reach the fishing banks located at the depths of the ocean where the water temperature

³ <https://climateknowledgeportal.worldbank.org/country/sao-tome-and-principe/climate-sector-energy>

⁴ The vulnerability of this sector as well as that of the ecosystem and forestry are not included in the Third National Communication.

risers to about 24.5°C. This fact in the medium term would have led to the impoverishment of artisanal fishermen and the reduction in the supply of fishery products to the population.

14. **Ecosystems and biodiversity vulnerability.** The extension of the dry season "gravana" and the increase in temperatures combined with a decrease in projected precipitation will have extremely severe consequences on the ecosystems and biodiversity of Sao Tome. Major consequences include a very high: reduction in water flow in the soil; decrease in agricultural and forestry production and; deficit in photosynthesis activity accompanied by a progressive reduction in the current annual growth (m³/ha/year) of linear species; and a high increase in invasive species. The loss of biodiversity can result in the loss of important ecosystem services, such as vector-based pollination, which can have negative impacts on agricultural crops with flowering reproductive systems. This could have major impacts on cash crops such as cacao, a major export of Sao Tome and Principe. Loss of ecosystem services and biodiversity can therefore negatively impact the economy and well being of local communities.

1.1.1.2. Cape Verde climate change and agricultural vulnerability profile

Climate change trend

15. **Observed temperature trend.** Current scenario temperature shows that the annual average has increased at 0.6°C since 1960, which represents an average rate of 0.14°C per decade. The growth rate was faster in the rainy season, August September October with an average increase in temperature of 0.23°C per decade. As for rainfall, the annual average for Cabo Verde has not shown any consistent trend since 1960. The existing climatic weather stations network in Cabo Verde indicates that temperatures have warmed up throughout the 20th century with negative impacts on the agricultural sector. The projections of an increase by 0.4^o-0.7°C for the 2020 horizon came about, and it is believed that this growth rate will continue, to a 0.5-1.0-°C increase by 2090 (RCP 8.5). The results obtained for scenarios A2 and B1 generally point to the increase of the average temperature between 0.2°C and 0.4°C in the 2020-2039 time horizon for the Cabo Verde region, with some negative fluctuations (cooling) in a few years.
16. **Observed rainfall trends.** The annual average for Cabo Verde has not shown any consistent trend since 1960. Some abnormally significant rains occurred between November and February, which is unusual for this dry season. Observations on the daily rainfall are also insufficient. For this parameter, from which it would be possible to determine the changes in the extremes of the daily rainfall data⁵. The correlation between temperature and rainfall shown by the assessment and national data, the country will be more humid and subject to heavier rainfall, with drier intermittent periods. The existing weather stations network in Cabo Verde indicates that temperatures have warmed 20th century with periodic droughts occurring in large areas.
17. **Climate Shocks.** The country vulnerability to climate change ranges from sea rise level and ocean acidification, degradation of fish stocks, coastal erosion, floods and droughts. It is increasingly vulnerable to slow and fast-onset events resulting from natural, man-made and climate related hazards such as coastal erosion from sea level rise, tourism activities and industrial development. Extreme events such as devastating floods, droughts, sudden temperature changes have become more frequent and intense.
18. **Previous studies** have revealed increasing of the sea level rise and to the associated increases in tidal surges and sea storms. The sea level rose at 1.7 mm per year during the 20th century.

⁵ Republic of Cabo Verde. 2017. Third National Communication

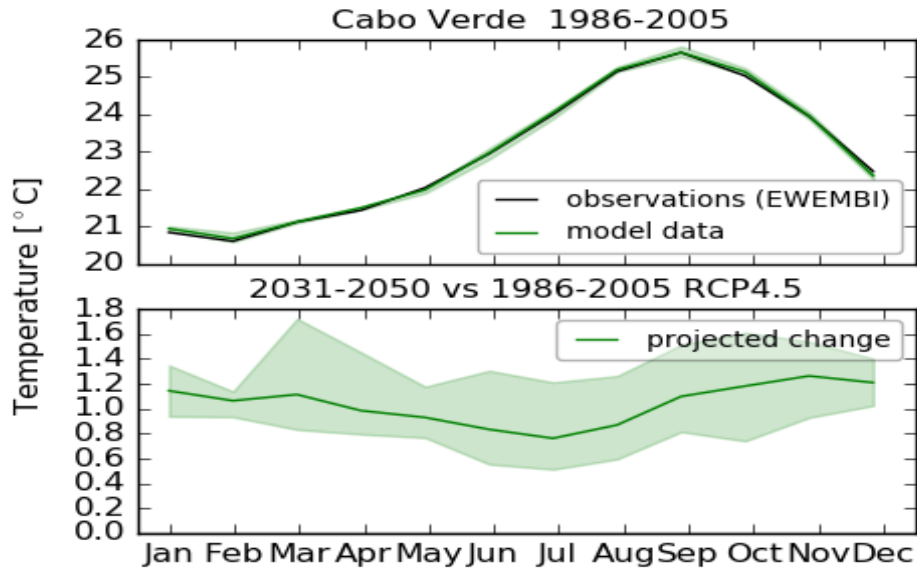


Figure 4: Top Annual cycle of temperature for the period 1986-2005. Bottom: Changes in annual cycle projected for 2031-2050 compared to the reference period 1986-2005. EWEMBI data is shown in black, regional climate model simulations in green. The green line represents the ensemble mean while the shaded area represents the model spread. The projections are based on the emission scenario RCP4.5. (Climate Analytics, 2020)

Projected climate trend.

19. With regard to rainfall, according to the close correlation between temperature and rainfall shown by the assessment and national data, the country will be more humid and and subject to heavier rainfall, with drier intermittent periods. Projections suggest an increase of sea level of at least 0,13 m by 2090 and at maximum of 0,56 m. Temperature, rainfall intensity and irregularity increasing, decreasing in rainfall quantity and in water availability have a significant impact on poor farmers who depend on rain fed agriculture, operating with limited resources in fragile environments that are sensitive to shifts in temperature and rainfall patterns. The irregular and deficient rainfall aggravated phenomena related to poor diversity of species and varieties, steep slopes and high water erosion rate, low fertility and organic matter of the soil

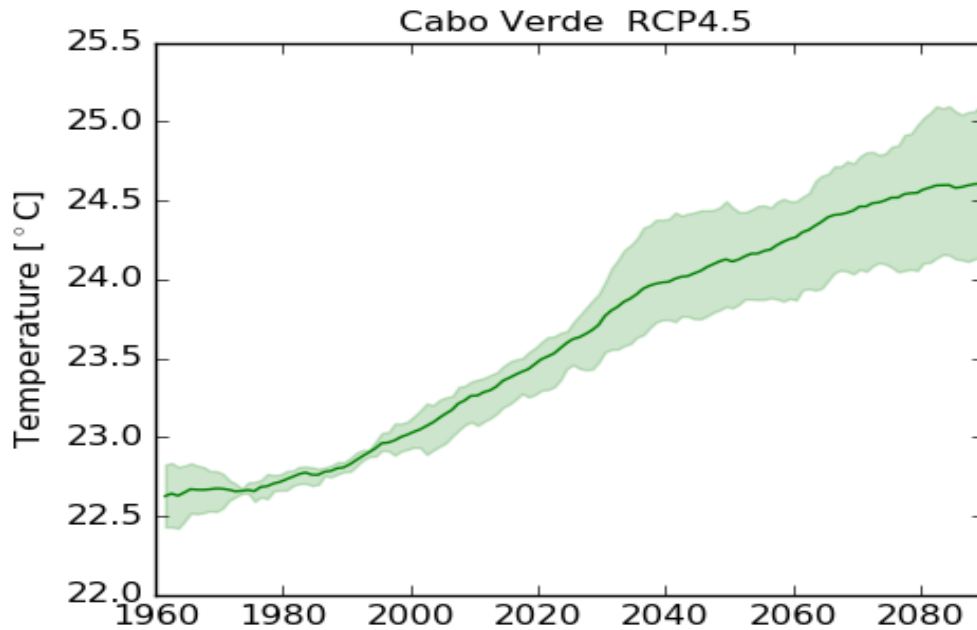


Figure 5: Regional climate model projections for temperature displayed as 20 year running mean. The line represents the ensemble mean while the shaded area represents the model spread. The projections are based on the emission scenario RCP4.5. (Climate Analytics, 2020).

Agricultural sector vulnerability

20. **Current agricultural vulnerability profile.** Cape Verde is one of the most vulnerable Small Island Development States to Climate Change and climate vulnerability with low adaptive capacity in West and Central Africa region. Temperature, torrential rainfall intensity and irregularity increasing, decreasing in rainfall quantity and in water availability and sea level rise have a significant impact on poor farmers who depend on rain fed agriculture, operating with limited resources in fragile environments that are sensitive to shifts in temperature and rainfall patterns. These climate change hazards made species and varieties and cultural techniques not suitable for the rainy season and increased soil salinization. Droughts and floods associated with climate change will lower household yield negatively impacting food security in Cape Verde.
21. The irregular and deficient rainfall are correlated to a reduction in diversity of species and varieties⁶, which can negatively impact the resilience of crop systems to changing climates. Torrential rainfall in the presence of slopes with steep gradients can result in a high sheet erosion rate and a significant loss of agricultural soils. This results in low organic soil content and a loss of soil fertility. Rising sea levels have led to saline intrusion and salinization of water sources (such as low-lying riverbeds) and agricultural systems in coastal areas. These ecological effects have led to reduced agricultural productivity, incomes, and food insecurity because of the dependency of agriculture on rainfall.
22. In this context, Cape Verde is already implementing innovative ways to adapt to climate change in agriculture. This includes water desalination for agriculture, drip irrigation and green houses among others to increase productivity and income of smallholder farmers. Nevertheless, more financing is needed to scale up successful adaptation measures, water and food security interventions while promoting the adoption of modern practices and techniques, addressing information gaps and knowledge, and strengthening institutional capacity to set up mechanisms to leverage innovative climate and environmental finance.

⁶ Republic of Cabo Verde. 2017. Third National Communication

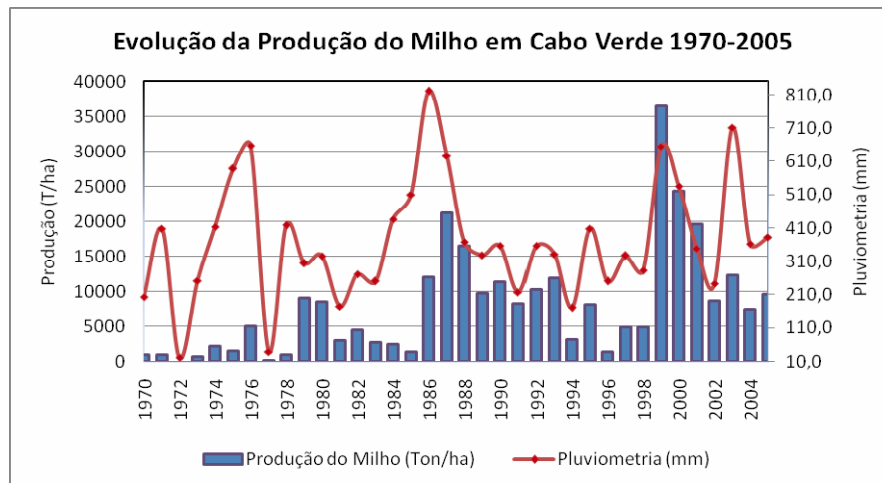


Figure 6: The relationship between annual maize production and rainfall in Cape Verde

23. Extreme events also result in loss of human lives, animals and the destruction of roads and bridges. For certain events, economic losses of agricultural soils have been estimated at about 2,000,000 USD⁷.
24. **Projected agricultural vulnerability profile.** Droughts and floods associated with climate change will lower household yield and negatively impact food security in Cape Verde. It will also decrease agricultural production for irrigated and rain-fed crops, and will lead to agricultural land abandonment.
25. **Water sector vulnerability.** In Cabo Verde, irregular, high-intensity rainfall is poorly distributed in space and time. This affect, coupled with poor infiltration, make water one of the primary limiting factors for climate change resilience in the agricultural sector and, therefore, for the socio-economic development of the country. Rise in temperature and variation in rainfall pattern will lead to siltation of streams, reduction in surface runoff, weak recharge of aquifers, salt-water intrusion, which is a serious problem due to droughts and excessive pumping of groundwater. The projected sea level rise is expected to increase soil and water salinity, reduction water availability for various uses and degradation of water quality.
26. Increased water salinization and drought resulting from climate change has been identified as the greatest constraint on the future prospects of economic development in Cabo Verde. Climate induced changes have so far resulted in seasonal water shortages over the past decade with more storms, floods, droughts, and generally expected to negatively affect agricultural production which may then translate into impacts on agricultural prices, incomes, and food security and social and economic development.

1.1.1.3. Guinea Bissau climate change and agricultural vulnerability profile

Climate change trend

27. **Observed changes in climate.** Guinea Bissau is considered as one of the most vulnerable countries to climate change in the world. Climate change ranges from greater variability in precipitation and late onset to the rainy season to an increase in temperatures of about 1 degree over the past decades and rising sea levels and rising tides. Climate observations show that rainfall in the country has declined in the last twenty years and this is mainly felt during the months of June and October. According to local climatic pattern the rain events are increasingly being accompanied by strong winds and intense rainfall bursts, especially during the months of July, August and September. With decreases experienced in the

⁷ NAPA 2008-2012

duration of the rainy season (now limited to 5 months) and the overall volume of rain having led to a decline in production often associated with water shortage, acute droughts are identified as the most significant risk. However, increased winds and intense rainfall may also lead to loss of production (and stored crops) as well as periodic localized floods, either through destruction of dykes and rice fields or salinity intrusion from the sea. A reduction in the duration of cold periods may exacerbate heat stress on plants and animal.

28. There is a shortening of the cool season during the months of December-February. Trends show an increased irregularity of precipitation, as well as a general downward trend in average and seasonal annual precipitation. Changes in rainfall patterns lead to longer and warmer dry seasons, particularly in the north-eastern interior of the country, resulting in seasonal water shortages that directly affect access to water for population needs, as well as for agriculture and livestock. Flooding is frequent in inland and coastal areas, with serious implications for infrastructure and agriculture. For example, Guinea-Bissau suffered this year from a wind anomaly (the longest Harmattan period) during the flowering of cashew trees, bringing dust - which can have a negative impact on production. Due to the lack of national data, it is difficult to accurately estimate the level of production of raw cashew nuts, but it is estimated that production in 2018 has dropped by 10 to 20% compared to 2017⁸.
29. **Projected trends.** These trends are projected to be exacerbated in the future, as Guinea-Bissau, a low-emission country, is highly vulnerable to the impact of the global crisis on the environment. Climate change, in particular sea-level rise and water salinization. The 2014 Climate Change Vulnerability Index report ranks it second only to Bangladesh. Climate projections to 2100 show a decrease in rainfall of 11.7% and a 2% increase in temperatures. Sea level rise will range from 0.4 m (low emission scenario, RCP2.6) to 0.7 m (high emission scenario, RCP8.5) in 2100. For the 2050 horizon, all models predict an increase in the average temperature of between 1.95°C and 1.77°C, compared to the 1961-1990 average.
30. **The scenarios predict an increase in the mean daily temperature** for the period 2016-2045 of about 1.3°C for the low emissions scenario and 1.5° for the high emissions scenario, compared to the average between 1961 and 1990. The maximum daily temperature rises from 1.2° C in the coastal areas to 1.4° C in the inner regions in the low emission scenario and from 1.3° C in the coastal areas to 1.5° C in the inner regions in the high emission scenario. For the period 2046-2075, the daily maximum temperature increase will be more pronounced. It will be 1.5° C on average (and may reach 1.9° C) compared to 1.3° C on average in 2045 for the low emissions scenario (RCP 4.5), and 2.9° C (up to 3.6° C) compared to 1.4° C on average in 2045 for the high emission scenario (RCP 8.5).

⁸ Marie Caroline Paviot, Edward W. Bresnyan, Jr., Alvaro Diaz, Siddika Mishu. 2019. Guinea Bissau: Unlocking diversification to unleash agriculture growth. 118 pages. International Bank for Reconstruction and Development/ International Bank for Reconstruction and Development/ The World Bank.

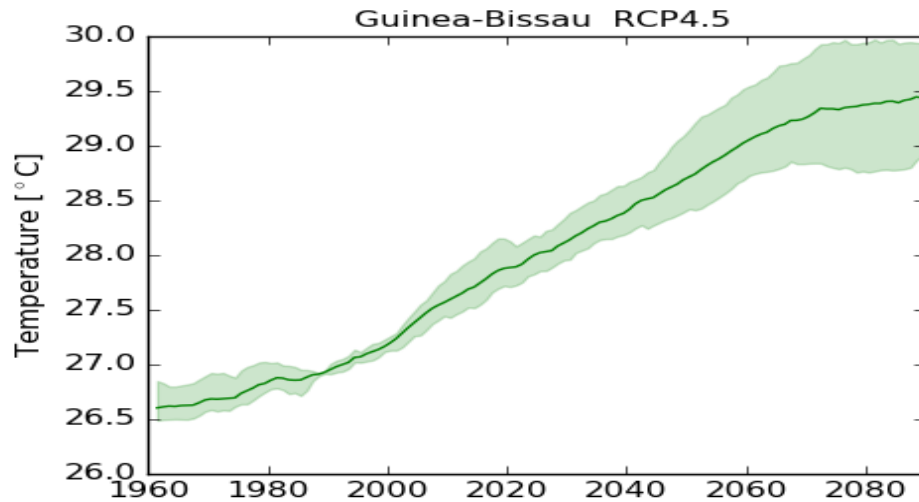


Figure 7: Regional climate model projections for temperature displayed as 20 year running mean. The line represents the ensemble mean while the shaded area represents the model spread. The projections are based on the emission scenario RCP4.5. (Climate Analytics, 2020).

31. **A slight increase in mean daily rainfall** of about +3% is projected under the low emissions scenario over almost the entire national territory, except for the southwestern part of the Bijagós archipelago, where an increase of between +5% and +10% is projected. Under the scenario of high emissions, a rainfall regime similar to that observed between 1961 and 1990 (reference period) is projected for the period 2016-2045, except for the south-western part of the Bijagós archipelago and the southern part of the Tombali region (Cacine sector) where a slight increase in rainfall of between + 2% and + 5% is projected. Trends show an increased irregularity of precipitation, as well as a general downward trend in average and seasonal annual precipitation. Changes in rainfall patterns lead to longer and warmer dry seasons, particularly in the northeastern interior of the country, resulting in seasonal water shortages that directly affect access to water for population needs, as well as for agriculture and livestock.
32. For the period 2046-2075, with the scenario of low emissions, the variability of rainfall will increase, and will result in reductions in the order of -2% to -5% in the northern part of the Cacheu region (Canchungo, Caliquesse and Caió sectors) and increases in rainfall in the order of 5% to 10% in the southern regions. For the same period, but under the high emissions scenario, there will be increased variability in rainfall, with a decrease (-2% to -10%) in the northern coastal areas, but with less coverage than in the previous scenario. Even in this scenario of high emissions, an increase in average daily rainfall of about +2% to +5% is projected in the southwestern regions of the islands and in the south of the country (Caciné Sector of the Tombali Region). Globally, the scenario of high emissions as well as the more distant horizons results in a drier climate than that of low emissions and for the closer time horizons. Flooding is also frequent in inland and coastal areas, with serious implications for infrastructure and agriculture. For example, Guinea-Bissau suffered this year from a wind anomaly (the longest Harmattan period) during the flowering of cashew trees, bringing dust - which can have a negative impact on production.

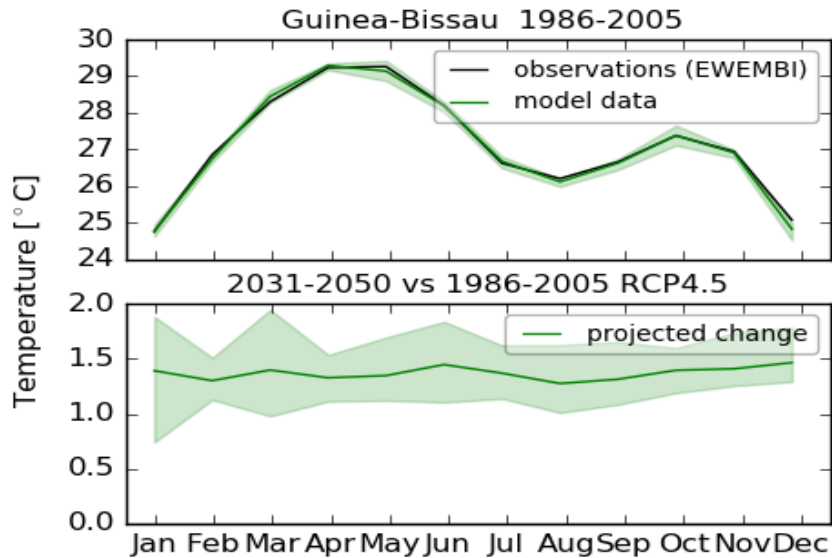


Figure 8: Top - Annual cycle of temperature for the period 1986-2005. Bottom - Changes in annual cycle projected for 2031-2050 compared to the reference period 1986-2005. EWEMBI data is shown in black, regional climate model simulations in green. The green line represents the ensemble mean while the shaded area represents the model spread. The projections are based on the emission scenario RCP4.5. (Climate Analytics, 2020).

Agricultural vulnerability to climate change

33. **Curent climate change vulnerability of agriculture.** Decreased rainfall has led to reduced production of rice especially on small upland areas, in the valleys and of other cereals on different lands in Guinea Bissau. Extreme rainfall events accompanied by strong winds lead to floods that affect the productivity of different crops including rice paddies ("bolanhas") and cereals through flooding phenomena that decimate small plants due to root rot and death at the germination stage. Waterlogging (flooded, swampy, saturated soils) affects a number of biological and chemical processes in plants and soils that can affect crop growth in the short and long term. The main result of waterlogging of crop plants is oxygen deprivation or anoxia, because the excess water itself does not diffuse into plant tissues at a sufficient rate, leading to tissue decay and stunting. Additional, long stemmed crops, such as cereals experience higher levels of lodging (tipping) in water-saturated conditions, leading to poor harvest and reduced yields (Rotter et al, 2018⁹).
34. **On water resources,** the increase of about 0.3°C during the periods 1961-2003 in the temperature in Bafata region and the decrease in rainfall in both Bafata and Gabu during the periods (1961-2007) resulted in a decrease in surface runoff. The construction of water retention infrastructures in the upstream part of the Kaianga-Geba River in Senegal within the framework of the OMVG cross-border project also contributes to the decrease in runoff.
35. **Rising of sea level** has led to frequent coastal flooding, resulting in significant losses of rice production in lowlands (lowlands) and swampy mangrove rice fields. Saltwater dykes built along the banks and parallel to estuaries with sluice gates prevent the intrusion of salt water into the rice fields and retain the freshwater from the rain needed for the rice growing process. With the rise in the average sea level, there has been an excessive invasion of salt water into the mangrove rice fields due to the high and strong tides. As a result, these anti-salt dikes have been destroyed, leading to a substantial loss of

⁹ Rötter, R. P., Appiah, M., Fichtler, E., Kersebaum, K. C., Trnka, M., & Hoffmann, M. P. (2018). Linking modelling and experimentation to better capture crop impacts of agroclimatic extremes—A review. *Field crops research*, 221, 142-156.

productive capacity of the crops and salinization of the soils. The rise in sea level leading to coastal erosion favoured by the low altitude of the country's coastline could have dramatic consequences for the mainland and small islands, particularly affecting the country's economy, especially the people living in coastal areas who depend on coastal resources for their livelihood. In the low rainfall areas in the north of the country, the rise in the average sea level and the decrease in rainfall are leading to an overabundance of saline soils along the riverbanks, where rice fields are located in associated mangroves and need to be polderised to prevent the invasion of saline waters during the growing season. Rice cultivation in these parts of the country is increasingly vulnerable to these climatic events. Rice in the polders is almost always planted on ridges. The ridges play an important role in controlling water and leaching salt and acids from the soil. In high rainfall environments, most mangrove rice is grown in tide-flooded areas, where it is not necessary to polderize (build polders) and dig ridges. However, in wetter areas, salinity downstream along some rivers is high enough to justify stocking during the growing season periods.

36. **In the fishing sector**, declining rainfall, degradation of fisheries ecosystems by polluted run-off from extreme rainfall events, increased prolonged climate-induced drought episodes and sea level rise resulting in increased salinity of fisheries systems are the main climatic factors affecting the fisheries sector. They lead to the migration of wild species from local fishing grounds or submergence to depths unattainable using traditional fishing methods. This has led to a decrease in fish production and therefore a reduction in a primary protein source for the country, effecting nutritional balances in the country.

Projected vulnerability of agriculture to climate change.

37. The country's National Adaptation Programme of Action (NAPA; 2006) identified the agricultural sector as the most vulnerable to climate change for a number of reasons: it is the dominant component of the GDP, the livelihood for a majority of the poor population depends on agriculture, with climatic change potentially causing significant damage to the sector. Projected agricultural vulnerability shows **difficulty in plant fecundation (pollen sterilisation) and crop growth, low productivity and lower agricultural yields, mainly cereals**, which are the staple food of the great majority of the population, food insecurity and episodes of hunger, which contributes to rural exodus, malnutrition, diseases and constant acidity of the mangrove soils making farming difficult in these "bolanhas" for mangrove ecosystems. As for bas-fonds/freshwater ecosystems, the projected climate change effects consist of lack of water that negatively influences the maturation of plants and low productivity and low income in the agricultural sector, malnutrition. Regarding plateaus ecosystems, climate change will lead to lack of water, with crop water deficit developing and negatively impacting productivity. With regard to backyard ecosystems, when rainfall and temperature decrease, water is the limiting factor hindering the normal crop growth translating in crop failure or productivity reduction. The NAPA further estimates that there has been a 20–30% fall in agricultural production with one third of the population of Guinea-Bissau being threatened by food insecurity. The shortfall in national cereal production, predominantly rice, is expected to rise to 75,000 tons per year, which would increase the need for imports.

1.1.2 From the regional perspective

38. The socio-economic contexts and climate change vulnerability analysis of the agricultural sector in Sao Tome and Principe, Cape Verde and Guinea Bissau shows a set of challenges and issues that are common to these three Atlantic African island countries, despite national specificities. From a socio-economic point of view, the three countries are characterized by high poverty, food and nutritional insecurity and significant social inequalities. Inequalities can be noticed through access to basic social services such as health, education, sanitation and access to drinking water. Inequalities generally contrast urban areas with rural areas, which are generally the most disadvantaged. Small populations with developing economies often dependent on imports and climate-sensitive industries, also have less financial and human resources to address these looming threats. Countries vulnerability to climate change ranges from sea rise level and ocean acidification, degradation of fish stocks, coastal erosion, floods and droughts. Water, agriculture are the most vulnerable to climate change. This situation is aggravated by the population growth, industrial development, development of the tourism

sector, and more and more additional pressures on scarce water resources, and increasing demand for food import on a government limited fiscal space. There is therefore potential for reduced agricultural productivity, increased food insecurity, and adverse impact on livelihoods that could drive poverty and accentuate rural-urban and international migration. In the absence of adaptation, climate change may exacerbate these trends.

- 39. Common environmental and climate challenges.** Sao Tome and Principe, Cape Verde and Guinea Bissau are small island developing states (SIDS), all located in the Eastern African Atlantic Ocean. These SIDS have following common and specific circumstances related to the limited size of agricultural land, their geographical sealocked, limited natural resources and the particular fragility of their ecosystems. Another particularity, in terms of vulnerability to climate change, which is common to island countries, is that they are vulnerable to climate-related risks associated with the presence of the sea on all sides. While countries partially bordered by seas and oceans are vulnerable to the effects of climate change from only one part of their borders, namely their coastal margin, island countries are vulnerable to the presence of oceans and seas from all their sides. In fact, most of these countries' population lives on the coastal areas and ecosystems. With 29.3% of the population of SIDS living on land that is less than five meters above sea level, the threat of sea level rise, storm surges, salt water intrusion, and coastal destruction pose critical risks to these countries. These specific natural characteristics make them particularly vulnerable to climate change. For example, the 2014 Climate Change Vulnerability Index report ranked Guinea Bissau second only behind Bangladesh.
- 40. A strengthening of climatic hazards:** In summary, all three countries experienced a generalized increase in temperature. Climate projections in the three countries show a worsening of climatic hazards. Temperatures will increase over a range between 0.5°C and 3°C by 2090, with a greater increase in Guinea Bissau. The number of hot nights has increased while the length of cool seasons has shortened. The analysis of rainfall in the three countries shows a shortening of the length of the rainy season and a lengthening of the dry seasons. This has led to a late onset or early cessation of the rainy season and a decrease in the amount of rainfall per season. Rainfall variability and intensity and frequency of droughts and extreme rains and winds have increased. Flooding of low-lying coastal and inland areas increased in all three countries as a result of extreme rains and resulting torrential runoff. Sea level rise has been observed in the three island countries of the East Atlantic. As for projections, the three countries will experience, depending on climate scenarios, a decrease in rainfall in the scenario of increased fossil emissions and an increase in rainfall in the case of a more low-carbon development. However, this increase in rainfall will generally be accompanied by periods of intermittent drought.
- 41. Overview of the common climate challenges of the three countries.** The major climate change impacts across the three SIDS countries are primarily a water deficit and increases in temperatures across an extended dry seasons resulting in late onset and/or early cessation of rainfall. All these effects lead to a lack of water supply for populations and crops. The increasing temperatures result in, decrease in soil moisture and soil fertility as well as increased of pest proliferation, negatively affecting agricultural yields. Agricultural is also affected by flooding and severe storms that have, to date, led to: desiccation of coffee and cocoa plantations in the three SIDS; the destruction of infrastructure; increased soil erosion and loss of soil fertility; siltation and pollution of river waters by solid matter associated with soil erosion; and reduced aquifer recharge. All these impacts lead to lower agricultural yields, fish catch volumes and lower incomes for communities that increase negative trends in food insecurity and accentuation of poverty.

1.2. SOCIOECONOMIC DEVELOPMENT AND ENVIRONMENTAL CONTEXT

- 42. Cape Verde socioeconomic context.** While a positive step has been made to graduate from least developed country to middle-income country status, Cape Verde still faces the persistence of deep pockets of poverty particularly in rural areas due to its vulnerability to climate change. This situation is aggravated by the population growth and urbanisation, industrial development, development of the tourism sector, and more and more additional pressures on scarce water resources, and increasing demand for food import on a government limited fiscal space. There is therefore potential for reduced agricultural productivity, increased food insecurity, and adverse impact on livelihoods that could drive

poverty and accentuate rural-urban and international migration. In the absence of adaptation, climate change may exacerbate these trends.

43. In this context, Cape Verde is already implementing innovative ways to adapt to climate change in the agriculture. Building on ongoing (POSER-C) and past IFAD projects, this programme focuses on financing agricultural and rural interventions that promote water mobilisation and efficient use as well as adoption of innovative climate resilient agricultural practices. This includes water waste treatment and water desalination for agriculture, drip irrigation, vertical agriculture and green houses, hydroponic agriculture among others to increase productivity and income of smallholder farmers. Nevertheless, more financing is needed to scale up successful adaptation measures, water and food security interventions while promoting the adoption of modern practices and techniques, addressing information gaps and knowledge, and strengthening institutional capacity to set up mechanisms to leverage innovative climate and environmental finance.
44. **Guinea Bissau socioeconomic context.** Guinea-Bissau is one of the world's least developed countries and had a GDP per capita of USD 723.34 in 2017. Economic growth is positive, at around 4% in 2018, but not strong enough to significantly reduce poverty. In 2017, growth was mainly driven by food agriculture (up 8% from 5.6% in 2016) and the fishing sector (up 9.5% from 9% in 2016). At the national level, the extreme poverty rate is 69.3%. The rate outside the capital reaches 75.6%. Absolute poverty rates are highest in Gabú (83.5%) and Cacheu (80.5%). Of the 39 districts in the country, 22 have a poverty rate above 80% and are located in rural areas. Socio-economic characteristics of poor households. There is a strong correlation between poverty level and household size. Heads of households living in extreme poverty are generally illiterate. In these households, there is often at least one school-age child who is not in school. Households in extreme poverty have little access to basic services and live in isolated communities a) markets (at least one hour's walk for half of the people in extreme poverty), b) health centres and schools, while c) 95% of them have irregular access to electricity and 50% to drinking water. A proportion of 90% of the people in extreme poverty work in agriculture. There is a strong correlation between extreme poverty and malnutrition, disease incidence and less favourable housing conditions.
45. **Sao Tome and Principe socio-economic conditions.** STP ranks 143rd out of 189 countries on the Human Development Index (HDI) and faces many challenges including poverty and hunger, social inequalities, youth employment, etc. This situation makes Sao Tome and Principe an island State in search of dynamic impulses to boost its development and achieve the SDGs. In terms of poverty, about 66% of the population lives below the poverty line and 11.5% below the extreme poverty line. However, it is important to note that at the national level, inequalities decreased by 49% in 2000 to 32.9% in 2010, reflecting a better distribution of income in favour of the poor. This improvement is observed in rural areas, where there is a worsening of this phenomenon, particularly in the country's capital. This shift from poverty to urban areas reveals the progress made in rural areas, but also the inability of the sector to generate enough economic activity and employment to settle rural assets. In terms of food security, about 24% of households are food insecure. Given the low productivity, the country is forced to import a large part of its foodstuffs. Efforts to diversify food production for domestic consumption have led to an increase in banana, cassava and maize production by small farmers, but volumes remain below what is required to meet national needs.

Target areas and beneficiaries

46. In **Sao Tome e Principe**, The project will have a national scope and its activities will be implemented in the rural areas of the two islands of Sao Tome and Principe by adopting an approach aiming, on the one hand, to intensify production in the current basins which concentrate more than 80% family farms (districts of Me-zochi, Lobata and Cantagalo in Sao Tome) and on the other hand, to develop the agricultural potential in sparsely exploited areas (districts of Caue and Lemba in Sao Tome and autonomous region of Principe). The project will reach 4,350 rural households, corresponding to 17,400 people. They are categorized as follows:
- 3,250 small farmers affiliated to associations, unions or producers' cooperatives, of which around 40% will be women (and 30% of women heads of households) and 50% of young people.

- 750 rural producers not affiliated to associations or cooperatives supported by the project, 60% of which will be headed by women.
- 350 young promoters of economic initiatives (including 20% in principle), who will benefit from professional training, technical and economic advice and start-up funding with a view to their economic integration (300 young people) or the strengthening of their activities in agricultural, related and non-agricultural sectors (50 young people). It is estimated that 40% of these young people will be women.

47. In **Guinea Bissau**, the area of intervention will cover the four regions of Gabú, Cacheu, Bafatá and Oio which are the poorest, largest and most remote regions as well as the most populated regions of the country with 0.9 million inhabitants out of a total population of 1.77 million (51 per cent). The intervention will target around 13,000 rural households, i.e. 143,000 expected individual beneficiaries (15 per cent of the population of the four targeted regions), of which at least 50 per cent are women and at least 30 per cent are young people. People with disabilities and returned migrants are present in three per cent of the targeted households.

48. In **Cabo Verde**, the project will cover 5 sites / watersheds in Brava, Fogo, Santiago and São Nicolau. It will mainly target small family farms and support interventions that affect both crop areas and watersheds in areas of higher vulnerability, as defined above. Within these groups, it will ensure, through well-developed targeting methods, the inclusion of the most vulnerable households, young people and women. The Project will directly reach 600 households, or around 3,000 people of which 50 per cent are women and at least 30 per cent are young people.

Project / Programme Objectives:

49. To address these climate related challenges, the main objective of the proposed programme is to build climate-resilient agricultural systems in the three SIDS in West and Central Africa by securing water resources for agricultural and domestic usages and rehabilitating degraded lands to increase the climate resilience of agrarian ecosystems and enhance agricultural productivity.
50. The specific objectives consist of:
1. Providing permanent access to water for hydro-agricultural works
 2. Increase adoption of climate-resilient varieties tolerant to the major climatic risks.
 3. Restoring agricultural soil fertility through climate-smart water and soil conservation and anti-salt control practices and infrastructures
 4. Increasing fish production through innovative and climate-resilient fish farming practices
 5. Fostering the sharing of good practices and developing learning and exchange platforms on climate-smart agriculture and climate-resilient fish farming among the three West and Central Africa SIDS sharing portuguese as official language
51. **Added value of the regional approach.** The adoption of the regional approach is primarily driven by the similarity in circumstances and challenges in the three island states, which can facilitate sharing of lessons and good practices, and mutual learning. Second, these same challenges and the national languages of Portuguese (in Cabo Verde and Guinea Bissau, and in STP) are not shared with neighbouring states of the Western Atlantic, hence providing a solid foundation for the establishment of a framework for partnerships and exchanges among these SIDS to overcome the challenges they share. While they share common characteristics of insularity and geographical disparity as well as small populations, their vulnerability to climate change is not uniform and they have varied experience of occurrence of climate related events and capacity to address them. Also, Guinea Bissau and Saõ Tome and Principe are both LDCs while Cape Verde has higher levels of development as well as policies and mechanisms in place to better address climate change. Strong knowledge management established across the programme will allow for enhance eperience sharing, enabling improved adaptive management beyond what would be observed in the case of single country projects.
52. Nevertheless, with a unified and strong voice and action, this pathway directly contributed to shaping international agreements that followed, from Agenda 2030, to the Sendai Framework for Disaster Risk Reduction and finally the Paris Agreement. By addressing the three elements above through a regional approach, it is believed that the project would provide benefits that each country taken alone would not be able to achieve through a national single approach.

Project / Programme Components and Financing:

Project/Programme Components	Expected Outcomes	Expected Outputs	Countries	1. Amount (US\$) 2.
1. IMPLEMENTATION OF CLIMATE-RESILIENT AGRICULTURAL PRACTICES	1. Climate-smart agricultural systems implemented in the three SIDS	1.1. Climate-smart farming techniques and fishing practices implemented 1.2. Climate-smart landscapes with increased agricultural water supply from watershed restoration practices 1.3. Increased sustainable use of available water through infrastructure development	Sao Tome and Principe, Cape Verde, Guinea Bissau	8,291,400
2. CAPACITY BUILDING TO SUSTAIN PROJECT INTERVENTIONS	2. Improved climate resilient agriculture governance and management	2.1. Strengthened capacity of climate risk governance structures 2.2. Strengthened organizational capacities of communities in irrigation infrastructure and resource conflict management 2.3. Functional mechanism for coordination and information flow between institutions involved in climate resilient agriculture initiatives in SIDS	Sao Tome and Principe, Cape Verde, Guinea Bissau	2,072,850
3. MONITORING-EVALUATION AND LEARNING	3. Effective project and outreach	1. Project results are documented and disseminated for replication 2. Established knowledge management system to ensure continuous	Sao Tome and Principe, Cabo Verde, Guinea Bissau	1,828,980

		experience sharing across the three SIDS		
4. Programme Execution cost				826,770
5. Total Programme Cost				12,193,230
6. Programme Cycle Management Fee charged by the Implementing Entity (if applicable)				980,000
Amount of Financing Requested				14,000,000

Projected Calendar:

Milestones	Expected Dates
Start of Project/Programme Implementation	January 2021
Mid-term Review (if planned)	June 2023
Project/Programme Closing	December 2026
Terminal Evaluation	January 2027

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.

53. The programme will promote climate-resilient system that combines the absorptive, adaptive and transformative capacities of social-ecological systems of Cabo Verde, Guinea-Bissau and STP. The programme will support agrarian systems to recover from climatic shocks and stresses, while positively withstanding against the effects of climate change. The following three mutually reinforcing components (i) implementation of climate-resilient agricultural practices; (ii) capacity building to sustain project interventions; (iii) monitoring-evaluation and learning.
54. Throughout the planning and implementation of each activity within the components, there will be regular sharing of information and experiences with the different stakeholders that are involved in climate resilience in agriculture in Cabo Verde, Guinea-Bissau and STP. This will ensure that lessons are learned as the programme progresses and that each country builds of the experiences and knowledge of each other.

COMPONENT 1: IMPLEMENTATION OF CLIMATE-RESILIENT AGRICULTURAL PRACTICES

55. **Component 1** of this project consists mainly of agronomic and fisheries practices and technologies at the household farm level and land and water resource degradation control practices at the landscape level. Both sets of techniques are proposed to combat the effects of certain climatic affects on crops, plantations, soil and watersheds. These are, water deficit due to rising temperatures, evaporation of water from the soil and reduced soil fertility, evapotranspiration from crops and plantations, reduced rainfall, and extended dry season. It also includes flooding, surface runoff, pest proliferation and changes in upwelling. These climatic hazards have led to a drop in agricultural yields as well as in the volume of catchments for small-scale fisheries.

Output 1.1.

56. This output is proposed to build a resilient agricultural system at both the farm and landscape scales. To this end, a technology package to increase the crops, plantations, soils and landscapes resilience to climate change is proposed. At the farm level, this involves the adoption of varieties that are more resilient to heat and water stress, fertilization techniques adapted to the water and heat stress of plants and soil, a climate information service, a sustainable supply financing mechanism and a National Fund for Recovery from Climate Disasters. Further, mulching practices, crop combinations, the use of organic matter/fertilizers produced by biodigesters, tillage perpendicular to the slope, and the adoption of biological control techniques to prevent the proliferation of pests on plantations will be implemented. To cope with the negative effects of the change in the upwelling phenomenon, inland and marine fish habitats will be further managed and protected. Lastly, the project will help establish sustainable partnerships for climate information services in Guinea Bissau and STP.

Table 1: list of activities under output 1.1 with indication of which countries the activities will be implemented in. Sao Tome and Principe (STP), Guniea Bissau (GB) and Cape Verde (CV)

Guinea Proposed climate smart agricultural activities under component 1	STP	GB	CV
Adopt more resistant varieties to thermal and water stress and salinization with short growing cycles from seeds to yields	x	x	x
Establish a climate-smart irrigation system	x	x	x

Promote Half moon techniques and crop rotations techniques		x	
Apply fertilization techniques and mulch cropping, which are organic residues from composting, manure, cold ash or household waste, that covers degraded soil surfaces	x	x	x
Improve the management and protection of inland habitats	x	x	x
Establish partnerships for a climate information service to protect plantations from the negative effects of unpredictable weather events on plantations	x	x	x
Establish a sustainable mechanism for financing the supply of agricultural inputs (plant material, phytosanitary products, fertilizers) to cooperatives' producers	x	x	x
Mangrove restoration in coastal communities of Cabo Verde and Guinea-Bissau to protect inland areas against sea level rise and salt water intrusion.		x	x

Output 1.2

57. With regard to the landscape scale, this output is aimed at the restoration of watersheds in order to produce intelligent landscapes in the face of climate change. Thus, terraces and dikes will be built to mitigate the eroding effects of surface run-off, particularly in raised areas, and of saline intrusion and flooding. At the same time, the slopes and catchment areas will be enriched vegetally in order to fight against landslides associated with intense rainfall and torrential runoff, the reduction of the infiltration rate of runoff water, and the reduction and pollution of river water by eroded materials. Wooden barriers against the effects of violent storms on plantations and against soil erosion by torrents will also be installed. Agricultural systems generally include two main geographical scales, the farm scale and the landscape or watershed scale within which the farm is located. These two geographical levels are highly interdependent, which means that any change in one scale inexorably affects the other. Thus, to successfully develop climate-resilient agricultural systems, it is necessary to take these two scales into account when intervening. In other words, resilient watershed and farm practices must be implemented.
- 58.

Table 2: list of activities under output 1.2 with indication of which countries the activities will be implemented in. Sao Tome and Principe (STP), Guinea Bissau (GB) and Cape Verde (CV)

Proposed watershed rehabilitation activities	STP	GB	CV
Establishment of green infrastructure to fight against erosion.	x	x	x
Build-up mechanical works for the recovery of degraded land	x	x	x
Creation of nurseries to assist biological rehabilitation	x	x	x
Terracing and bunding of slopes	x		x
Check dam and gabion construction in degraded rian washed gullies	x	x	x

Output 1.3

59. To sustain farms through the predicted extended dry seasons and increasing temperature, improved improved water harvesting and distribution infrastructure will be initiated. This will utilize the greater water availability that is generated by the watershed level land rehabilitation in Output 1.2. Replacing water harvesting infrastructure in parallel to landscape rehabilitation is key to ensuring

immediate benefit of increased water availability from rehabilitation. Additionally, the addition of water infrastructure will provide an immediate and tangible benefit for communities and will create to visualise, creating greater buy-in and adoption of the mechanisms proposed in output 1.2.

Table 3: list of activities under output 1.3 with indication of which countries the activities will be implemented in. Sao Tome and Principe (STP), Guinea Bissau (GB) and Cape Verde (CV)

Proposed water harvesting and disbursement infrastructure activities	STP	GB	CV
Salt water intrusion barriers, which are positive well barriers used to inject fresh water into the aquifer through recharge wells to raise the water table	x	x	x
Anti-salt dikes, which are physical barriers positioned perpendicularly to the direction of the water flow that are used for protection against coastal erosion and salination agricultural lands. This also allow water storage and water supply used for irrigation;	x	x	x
Wastewater and seawater desalination plants powered by solar photovoltaics	x	x	x
Water harvest basins and retention dikes designed to collect runoff water and allow producers to adapt to the adverse effects of drought;	x	x	x
Storage cisterns and water reservoirs to provide storage capacity and avoid the disruption of activities of the producers in drought seasons;	x	x	x
Boreholes pumped by photovoltaic solar energy to ensure water supply and irrigation;	x	x	x
Solar-powered drip irrigation systems ^{10,11} , which are micro-irrigation systems that drips water at very low rates to the roots of plants instead of the whole soil surface.	x	x	x

COMPONENT 2: CAPACITY BUILDING TO SUSTAIN PROJECT INTERVENTIONS

- 60.** Component 2 is proposed to complement component 1 and ensure its successful implementation. It is aimed at capacity-building activities for Project Management Unit (PMU) staff and the support of supervisory institutions such as government and civil society structures. This component also targets producers, direct users of the infrastructure and beneficiaries of the practices and technologies that the project will implement.
- 61. Output 2.1 :** Strengthened capacity of climate risk governance structures: Under this output , the project will strengthen the technical capacities of government institution officials on climate risk management and coordination (trainings, events), the development of tools and instrument adapted to local contexts, and integration into of climate risks into planning and programming in the agriculture, fishery and water sector as well as into the budgeting and investments
- 62. Output 2.2.** Strengthened organizational capacities of communities in irrigation infrastructure and resource conflict management: The programme will support Women Users Associations UAs to maintain the infrastructures and to adopt new climate resilience practices and technologies. Activities under this

¹⁰ <http://www.fao.org/3/s8684e/s8684e07.htm>

¹¹ <http://www.fao.org/3/s8684e/s8684e07.htm>

component will also include training on farm and landscape sustainable management and maintenance practices

63. Trainings sessions for farmers and fishermen at the community level will focus on sustainable management techniques of agricultural and fish farms and landscapes. Agricultural and fish farming techniques upon which producers will be trained include; management of varieties resilient to water and thermal stress; irrigation systems; increasing soil fertility; coping mechanisms to unpredictable weather events on plantations; and mangrove restoration. Farmers will also be trained on landscapes restoration techniques which will comprise establishment of green infrastructure to fight against erosion, build-up mechanical works for the recovery of degraded land, creation of nurseries to assist biological rehabilitation, terracing and bunding of slopes and construction of check dam and gabions in degraded rian washed gullies. Training will also cover building and management of infrastructure to fight against salt-water intrusion, including anti-salt dikes and water harvesting.
64. **Output 2.3.** Functional mechanisms for coordination and information flow between institutions involved in climate resilient agriculture initiatives in each country. The programme will set up or strengthen existing coordination mechanism between institutions involved in climate resilient agriculture initiatives in each country. These are sector ministries such as the ministry of agriculture, water, environment, forestry, economy and finance; other stakeholders such as civil society, the private sector and local authorities. Key activities will include conducting assessments on institutional and regulatory frameworks, institutional and capacity needs, setting up or enhancing working mechanisms for enhanced climate resilience agriculture in each country

Table 4: list of activities under output 2.3 with indication of which countries the activities will be implemented in. Sao Tome and Principe (STP), Guinea Bissau (GB) and Cape Verde (CV)

Proposed capacity building in the 3 selected countries	STP	GB	CV
Trainings on climate resilient and low emission agriculture Awareness events and sensitization Development of tools and instrument adapted to local contexts, and integration into of climate risks into planning and programming in the agriculture, fishery and water sector as well as into the budgeting and investments	x	x	x
Women Users Associations to maintain the infrastructures and to adopt new climate resilience practices and technologies, support the environment fund in its readiness process to become an instrument for climate and environment resource mobilisation. Trainings on farms and landscape sustainable management and maintenance practices	x	x	x
Conduct assessments on institutional and regulatory frameworks, institutional and capacity needs, setting up or enhancing working mechanisms for enhanced climate resilience agriculture in each country	x	x	x

65. Further activities will be identified during the design stage

COMPONENT 3: MONITORING-EVALUATION AND LEARNING

66. Component 3 aims at collecting, documenting and disseminating through the most appropriate channels the good practices and lessons learned generated from the implementation of the project in each of the participating countries.

Output 3.1

67. Monitoring and evaluation are essential to the smooth running of a programme, ensuring that targets are being met and that interventions are effective. The programme will be monitored and evaluated through the following M & E activities. A first step consisting of the project's start up activities which will comprise a project launching workshop to be held in the first two months of project start-up with project staff, IFAD, other partners. The kick-off workshop is essential to strengthen ownership of project results and plan the first year's annual work plan. A launch workshop report is a key reference document and should be prepared and shared with the participants to formalize the different agreements and plans decided at the meeting. After the kick-off, a periodic follow-up via site visits of the project sites by IFAD according to the agreed schedule in the project's annual start-up / workplan to assess project progress. The second step in the M&E activities will consist of an independent mid-term review at mid-term of project implementation. The mid-term review will identify progress towards the achievement of results and identify corrections where necessary. It will focus on the effectiveness, efficiency and timeliness of the project; highlight issues that require decisions and actions; and present the first lessons learned from project design, implementation and management. The end of the project step will allow carrying out an independent final evaluation, which will take place after closing of the programme activities in accordance with the guidelines of IFAD. The final evaluation will focus on the production of project deliverables as originally planned (and corrected after the mid-term review, if such a correction has occurred). The final evaluation will examine the impact and sustainability of the results, including the contribution to the fund investment criteria.

63. **A regional coordination unit** will be established at the regional level and located in Praia. This **regional coordination unit** will be in charge of the administrative and financial procedures as well as of the monitoring and evaluation (M&E) of the entire programme in coordination with country specific teams.

Output 3.2

64. Under this component, the programme supports the development of learning materials and knowledge products in Portuguese, exchange visits between the three countries for farmers and technical teams in ministries to share experiences, and the establishment of a knowledge platform specific to each country and a regional platform to scale up this initiative to other African SIDS. Beside the country specific knowledge management, the programme will support a knowledge hub on climate change adaptation in the three SIDS in partnership with other donor. Key activities will include: the establishment of a knowledge transfer platform on climate resilient and low emission agriculture, which will serve in connecting virtually various networks at country level. The Knowledge Platform will be a formal collaborative effort coordinated by an existing entity bringing selected countries to build and populate a set of innovative climate resilient agricultural practices at the intersections of food, energy, water and land. A web platform to disseminate these innovations will be established. This component will also document progress, good practices and lessons generated by the country component. A knowledge management system will be developed and implemented. It will then feed the knowledge hub, which will be common to the three SIDS countries.

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

65. The innovative climate change adaptation solutions of this project are related to its regional approach. It also deals with the technologies targeted and the financial mechanisms that will be put in place.
66. The regional approach is new for the three countries for addressing climate change in the agriculture and fisheries sectors. Up to now, the three SIDS climate change initiatives have been undertaken at country level. They did not benefit from the mutual learning opportunity offered by the regional approach.

This approach will create conditions for countries to develop partnerships and to exchange good practices and lessons in their fight against negative climate effects. The combination of the farm scale and the landscape scale approaches is an innovative aspect of the project, as usually projects in the three countries used to adopt only one of these two approaches. The use of some new climate resilient agricultural technologies, infrastructures and practices is another dimension of the innovativeness of the solutions brought by the project. This includes the use of energy for water mobilization to promote low emission and climate resilient agriculture which contribute to the country Nationally Determined Contributions and to achieving the Paris Climate Agreement. The climate information system as well as the financial mechanisms to ensure sustainable supply of agricultural seeds and to recover from climate hazards which are innovative measures in the agricultural sector of the countries. South-South Cooperation through this regional programme will contribute to enforcing the SIDS leadership, innovation and partnership both at regional and global level.

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.

67. The project will benefit smallholders, as coastal communities that live in poverty and depend on marginal and degraded land with inadequate possibilities to withstand flooding and saltwater encroachment in their lands in the three selected countries. Preliminary target groups in each country are presented under the section on target groups and beneficiaries but will be refined during the project design stage. A special attention will be given to men, women, youth and marginalized groups through an inclusive approach. These groups that are more vulnerable to climate change with less capacity to adapt. They are also the most food insecure with high probability to migrate. The most vulnerable populations as determined by the IFAD targeting strategy ¹²will receive significant economic and social benefits from this project. During the design stage, IFAD targeting approach will be applied to define the final targets per country. They will receive capacity building on the implementation of best climate resilience agricultural practices, techniques, climatic good and services. Good and services include: climate resilient infrastructures as described above (technologies, equipment's, water equipments and infrastructures...).
68. Other socio-economic benefits will come from the all activities related to resilient production systems with a potential side benefit of increasing yields, it is expected to have beneficial impacts on local food security and nutrition including through the creation of reserves in case of climate shocks. Sustainable land and water management techniques, along with water access monitoring, are also expected to have benefits for local health, while the diversification and sustainable management fish farming and gardening will also have benefits on overall nutrition and improved income.

Economic benefit

69. The SIDS regional programme will support development of irrigation systems, improvement productivity to ensure better food security that would allow the generation and diversification of income and employment. With the irrigation system, there is a huge opportunity to ensure appropriate doubling of the number of harvests per year. Diversified production in crops and aquaculture will also add to the economic benefits of the programme. The increase in production will indirectly generate activities and transactions that will have a beneficial effect on employment in the programme areas, particularly for young people and women involved in the production and trade of agricultural products. The improvement of production with soil and water conservation techniques and technologies promoted in the programme in Part II, section A will improve and maintain soil health in Cabo Verde, Guinea-Bissau and STP. This will allow the soil to grow both at the surface and at depths and improve water retention. This ultimately will enhance crop production and productivity while generating income for farmers through the sale of surpluses. The restoration of mangrove in coastal communities of Cabo Verde and Guinea-Bissau will ensure that the aesthetic value is retained. This is an important component of the tourist industry that

¹² <https://www.ifad.org/en/document-detail/asset/41397731>

will result in job security and economic gain in the communities. The programme will require that 50% of all incomes will be profited to female and youth farmers.

Social benefit

70. The programme will ensure that vulnerable groups in the programme areas in the three countries will be appropriately taken into account in the activities. For this reason, components and activities are designed to integrate women and youth in order to reduce the inequalities that these groups face. Concretely, the project will ensure that the beneficiaries of the irrigated lands and technologies promoted by the project include enough women and young people. Climate-smart agriculture techniques and technologies promoted in Component 1 will ensure social cohesion with direct economic benefit for the beneficiaries of each country. This will even ensure that future generations can benefit from fertile land for food and nutritional needs.
71. The programme will foster rural community empowerment through capacity building in areas related to organizational development, addressing the impacts of climate change on farms and the landscape, managing irrigation infrastructure and reclaiming degraded land. These skills will lead to better decisions and positive changes in the management of natural resources. Training on climate resilience among staff of national institutions, NGOs and producer organizations will result in appropriate climate change adaptation practices at the household and individual levels. Improved household food and nutrition security through practices that enhance agricultural and fisheries productivity will lead to improved health. The gender approach of ensuring that the interests of youth, women and other vulnerable groups are adequately addressed will reduce social inequalities and strengthen the capacity of vulnerable groups to take action. These gains will be reflected in better school attendance by children from marginalized households whose difficulties in coping with poverty will have been reduced. Coastal communities in the programme will benefit from mangrove restoration, which will add an aesthetic value and recreational values in the intervention sites, thus maintain a social well-being.
72. Component 2 of the programme will improve community life through capacity-building activities and participation of all stakeholders in the project activities, including women and vulnerable groups. This will involve multidisciplinary approaches and teams on the programme's technical side, which encourages farmer organisations to be fully involved. This is one of the key elements of the sustainability of actions planned within the programme. This component will require the Project Management Unit (PMU) to pursue the inclusion of qualified women and youth technical personnel into the programme team. This will reinforce that at least 50% female and 50% of youth are direct beneficiaries of the programme. This will ensure their fair and equitable access to the benefits of the programme, strengthen their resilience, improve gender equity and empower women.
73. The knowledge sharing in Component 3 will also improve the decision-making of women and young people who were not involved in the programme but want to adopt the climate-smart agriculture approach. Social cohesion will also be enhanced under Component 3 because communities that work and share lessons learned together will strengthen mutual trust and collective action of adaptive capacity and resilience.

Environmental benefits

74. Several environmental benefits are expected from this project, including (i) the improved management and protection of fish natural habitats with a positive effect on biodiversity, (ii) groundwater recharge and protection from salt water infiltration, (iii) protection from sea water intrusion in agricultural lands through the construction of anti-salt dikes, (iv) the rehabilitation of degraded land through improved agricultural practices and building green infrastructure, and (v) increased coastal protection through strengthening of natural barriers.
75. Agricultural practices for conservation agriculture, water and soil management, and agricultural residues are not only increasing fertility of soils and enhancing biomass, but are also expected to sequester approximately 155,523 TeqC. The development of biogaz with banana trunks will enable production of organic fertilizer which will enter in the soil amendment. The use of organic manure will decrease the

use of chemical fertilizers, thus lower production costs to the producer and the conservation of soil carbon. The use of solar powered equipments, will also foster access to renewable green energy, then decrease GHG emissions through reduction of the use of woodfire.

76. Further analysis of economic, social and environmental benefits of the programme will be conducted during the full proposal development. As a result, Part III, section C will propose mitigation and compensation measures that will minimise or eliminate negative impacts and risks of the programme related to salt intrusion, ground water extraction, loss of biodiversity and soil fertility, land cover, coastal protection among others in compliance with the Environmental and Social Policy of the Adaptation Fund.

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.

75. The project is viable according to the cost-effectiveness analysis. The biomechanical works built, the production of plant material adapted to the new climatic conditions, the biological fertilization techniques, the development of a system of climate services under **component 1** certainly imply important initial financial investments. However, by taking into account climatic hazards during their design and implementation, their sustainability is enhanced. In this way, their costs are amortised. In terms of efficiency in the face of the effects of change, irrigation and landscape restoration works ensure in an appropriate manner high performance in terms of water control in a context of water stress linked to climate change, and the fight against water erosion respectively. The programme will use a climate-smart crop production approach, which is a more cost-effective approach that aims to achieve food security but through the lens of climate change. Climate-smart agriculture will reduce economic losses due to the waste of agricultural inputs during climate changes, by creating agricultural systems in Cabo Verde, Guinea-Bissau and STP more efficient and resilient. These climate-resilient agricultural systems will be managed through an ecosystem approach proposed in Part II, section A at landscape, national and regional levels as well as in integrated systems. The programme's adaptation measures will use a mixture of best options being tested in the three SIDS countries to revitalise agricultural production systems at best costs.

76. On one hand, cost-effectiveness will be assured in water conservation and management infrastructures by: (i) the construction of positive barriers where freshwater is injected at the toe of the saltwater wedge, although the saltwater wedge is never stationary in real world scenarios; (ii) the construction of anti-salt dikes at a height that minimises the costs along with a homogenous clay that resists to the water flow and infiltration; (iii) locally adapted available renewable energy resources for desalination plants, particularly in remote regions of Cabo Verde, Guinea-Bissau and STP, with low population density and poor infrastructures for fresh water and electricity transmission and distribution¹³; (iv) the construction of water harvest basins and retention dikes with the same homogenous clay component than anti-salt dikes while protecting the slopes and ramps of the intervention sites; (v) locally available materials to build sub-surface cisterns, reduced in size and located so that gravity will be used to collect water with the help of a pipe/tap arrangement; (vi) the implementation of boreholes with solar pumps in small farming activities for cost minimisation while supplying water in remote areas of Cabo Verde, Guinea-Bissau and STP and (vii) drip irrigation powered by solar energy that are planted along the soil's contour lines to avoid changes in water drips as a result of changes in land elevation. To increase effectiveness and sustainability, the rates of water drips will be slower on clay soils to avoid surface water ponding and runoff than on sandy soils, which will need higher rates to ensure adequate soil moisture.

77. On the other hand, the programme is cost effective through the soil rehabilitation and sustainable agriculture land management by: (i) Facilitating the development, official release and registration of well-adapted crop varieties in Cabo Verde, Guinea-Bissau and STP. This will ensure that farmers have access to quality seeds and planting materials. This will require a community-based seeds' distribution systems for delivering the seeds of the most suitable varieties to farmers; (ii) Placing more emphasis on

¹³ Owing to the costs of desalinating water, it was soon realized that available wastewater should be reclaimed and reused as much as possible. Because wastewater has a high load of suspended and dissolved solids, a further tertiary treatment is required and membrane technologies have become essential. <http://www.fao.org/3/a-a0494e.pdf>

nutrient management through crop rotations as well as mulching and half-moons, both enriched by compost and organic manure. The use of organic fertilisers reduces the use of synthetic fertilisers, which emit greenhouse gases (GHGs), and the use of compost improves soil water retention, which strengthens the short-term adaptability of crops to water shortages; and (iii) Placing an emphasis on enrichment planting through the mangrove restoration. This will improve biodiversity and maintain soil carbon stocks and its organic matter content.

78. The project is also cost effective in that through the **component 2** on capacity building and **component 3** on M&E and knowledge documenting and dissemination, there will be various additional effects and impacts for the Eastern Atlantic SIDS as a whole. Climate smart agricultural systems also rely on the social, institutional and political support of the beneficiaries of the programme to be cost-effective. Therefore, Component 2 and 3 of the programme proposes local, national and regional partnerships, capacity building and knowledge dissemination of stakeholders, especially farmers and their local expertise, as well as a strong government commitment to jointly develop and/or adapt climate-resilient agricultural policies and network. Additionally, national investments to reinforce cost-effectiveness in the environmental are proposed in the programme for building adaptive capacity, livelihood resilience and reinforce employment for vulnerable groups.
79. Lastly, the regional approach is a major aspect of ensuring the cost-effectiveness of the project, through the sharing of experience, knowledge and lessons learned, but also through economies of scale during the procurement of equipment and services.
80. A more thorough cost effectiveness analysis will be carried out during the formulation of the programme to compare the costs, benefits and effectiveness of the proposed resource allocation with measurable outcomes to other options.

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.

81. The proposed project is fully consistent with the national development policies, plans and strategies of Cape Verde, Guinea-Bissau and STP as well as with relevant regional strategies and agreements. The Guinea Bissau and STP belong to the UN Least-Developed Countries (LDC) and have developed their National Development Plan while Cap Verde is a lower MIC. These describe each country's macroeconomic, policies in support of growth and poverty reduction, associated external financing needs and major sources of financing. In this context, Poverty reduction strategic programs ()National Development Plans integrate the agricultural sector's strategies to fight against poverty. Similarly, the project will contribute to poverty reduction and improve food security in the most vulnerable communities of Cabo Verde, Guinea-Bissau and STP through climate information and practices to help producers and governments make climate smart decisions, reduce the vulnerability of agricultural systems and conflicts between producers and through capacity building of local actors, and regional knowledge dissemination related to adaptation to climate change in agriculture.
82. The project will contribute to progress towards the Third National Communication on Climate Change to the United Nations Framework Convention on Climate Change (UNFCCC) of Cape Verde, Guinea-Bissau and STP¹⁴. These National Communications predict that both high and low emissions scenarios

¹⁴ STP: https://unfccc.int/sites/default/files/resource/TCN_Vers%C3%A3o_Final_EN_v11.pdf

Cape Verde:

https://www4.unfccc.int/sites/SubmissionsStaging/NationalReports/Documents/0136895_Cabo%20Verde-NC3-1-Cabo%20Verde%20-%20Third%20National%20Communication%20on%20Climate%20Change.pdf

from climate models at national levels will have significant increase in the average temperature. These reports emphasise the need to strengthen climate risk management strategies and integrate development needs into policy and planning, which is one of the objectives of this project.

83. The project will also support the implementation of the National Adaptation Programmes of Action (NAPA) in each country, with an emphasis on preparing for adaptation in line with the recommendations of the UNFCCC and the Kyoto Protocol¹⁵. The NAPA for each country aims at identifying priority adaptation needs in order to better reduce and/or mitigate climate change, implement early warnings and forecast measures to adverse impacts of climate change. The programme will support and respond to these through climate-smart agricultural practices proposed in Component 1, partnerships and capacity-buildings proposed in Component 2 of the programme as well as the knowledge sharing in Component 3.
84. The programme is also consistent with the Intended Nationally Determined Contributions (INDC) of each country, which are reference documents for actions in the field of climate resilience¹⁶. NDCs describe each country's adaptation and investment priorities, analyse knowledge on best practices for climate-smart agriculture and/or co-benefits adaptation and mitigation measures. The implementation of climate-resilient measures in the three SIDS proposed in the programme addresses the NDCs.

Consistency with Sao Tome e Principe, Cap Verde, Guinea Bissau strategies

85. **With SDGs.** Implementation of SDG's is a huge challenge for many developing countries, especially for SIDS like STP, Guinea Bissau, Cabo Verde, because of the number of objectives (17), the number of targets (169), the number of indicators (231) and their overall complexity. This leads these countries Sao Tome and Principe, Cap Verde, Guinea Bissau to prioritize the SDGs to be implemented. This project is aligned with SDG13, which is "*Take urgent action to combat climate change and its impacts*" and the SDG 14 "*Protecting, restoring and promoting the sustainable use of terrestrial ecosystems, sustainably managing forests, combating desertification, halting and reversing degradation and to prevent loss of biodiversity, but also SDG 1 (no poverty) and SDG 2 (zero hunger) to reduce poverty and food insecurity*". Through mastering water and adoption of resilient crops activities this project will be contributing to STP, GB and CV efforts to meet targets related to the aforementioned SDGs and assist countries in meeting their nationally determined contributions (NDCs) and the Paris Climate agreement ..
86. **With the National Development Plan.** This Program is in line with the priorities of the National Development Plans of Sao Tome and Principe, Cabo Verde, and Guinea Bissau. In the selected countries, the diversification of the economy and broadening its productive base is at the center of the national policies to cope with climate shocks. It is planned to increase the productivity of traditional sectors such as agriculture and fisheries with a view to improving food security and reducing imports. In the same framework, two programmes are planned which will be reinforced by the SIDS programme. These are the "Integrated Rural Development" Programme, which targets capacity building for rural communities most exposed to the effects of climate change, and the "Sustainable Management of Natural Resources" Programme, which provides for a set of measures to promote the preservation of a healthy environment and the rational use of forest resources, including non-timber resources, the improvement of water management and the fight against soil erosion and deforestation. This presented SIDS Programme will contribute to the objectives of the following programmes: "Promotion of Climate

Guinea-Bissau: https://unfccc.int/sites/default/files/resource/TCN_Guinea_Bissau.pdf

¹⁵ <https://unfccc.int/topics/resilience/workstreams/national-adaptation-programmes-of-action/napa-background>

¹⁶Guinea-Bissau:

[https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Guinea%20Bissau%20First/GUINEA-BISSAU_INDC_Version%20to%20the%20UNFCCC%20\(eng\).pdf](https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Guinea%20Bissau%20First/GUINEA-BISSAU_INDC_Version%20to%20the%20UNFCCC%20(eng).pdf)

STP:

https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Sao%20Tome%20and%20Principe%20First/STP_INDC%20_Ingles_30.09.pdf

Resilient Agriculture", "Improvement of the Meteorological Monitoring, Prediction and Vigilance Network" and the "Project for Adaptation to the Effects of Climate Change in at the local level

87. The participating countries are parties to the United Nations Framework Convention on Climate Change (UNFCCC) and have signed and ratified the Kyoto Protocol. By ratifying the UNFCCC, these countries have committed to implementing measures to adapt to climate change and reporting on their NDCs.
88. The programme will contribute to the implementation of objectives of the three Rio conventions ratified by all countries, including the UNFCCC, as well as the Paris Climate Agreement, the SDGs and the Sendai Framework for Disaster Risk Reduction.
89. This programme is fully aligned with the countries' national development plans and their national commitments on climate mitigation and adaptation included in their NAPAs, National Climate Change Policies and Strategies, NDCs, National Communications (NCs), Agricultural sector policies, agricultural investment plans, SDGs and National Strategies for Disaster Risk Reduction in the selected countries .

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.

90. All IFAD supported donor funded projects are required to follow the mandatory requirements outlined in the IFAD manual of implementation. This includes the requirement that all IFAD development solutions must always reflect local circumstances and aspirations and draw upon national actors and capabilities as mentioned in the COSOPs. The project will comply with the Environmental and Social Policy of the Adaptation Fund as described in Section L, and IFAD's environmental and social safeguards standards that are aligned with international standards. IFAD has an internal ESIA's quality control procedure, namely its Social, Environmental and Climate Assessment Procedures (SECAP) which is applied to all projects. During preparation of the full proposal, the individual interventions will be assessed and adapted where necessary to ensure full compliance.
91. In addition, all IFAD supported donor funded projects are appraised before approval. During appraisal, appropriate IFAD representatives and stakeholders ensure that the project has been designed with a clear focus on agreed results. The appraisal is conducted through the formal IFAD review quality process. Appraisal is based on a detailed quality-programming checklist, which ensures, amongst other issues, that necessary safeguards have been addressed and incorporated into the project design.
92. In addition, regional technical standards will be developed for the establishment of the selected activities, and the selection of the locations of these activities will be guided by criteria developed through the project which will take account of zoning, IFAD targeting strategy regulations and other relevant requirements in each country. Where required, EIAs will be conducted prior to implementation of activities.
93. During the full proposal development, assessment against the national standards for each country will be further developed.

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

94. The project will build on the experience of completed and ongoing projects. More specifically, it will be implemented in synergy and complementarity with existing IFAD projects such as the REDE in Guinea Bissau and the COMPRAN in Sao Tome and Principe. It will also build on the experience from the POSER Climat project in Cabo verde.
95. There is no duplication of the project compared with other funding sources. However, opportunities for mutual exchanges or synergies exist with respect to initiatives already existing or under implementation

including PAPAC project to support agricultural development in **Sao Tome and Principe** co-financed by AFD and ILO. The project will work in synergy with the AfDB/GEF project “Strengthening Resilience and Adaptive Capacity to Climate Change in São Tomé and Príncipe’s Agricultural and Fisheries Sectors”, especially in the areas of Rural infrastructure development, building capacities of fishermen. It will also learn from the FAO/GEF project “Landscape Restoration for Ecosystem Functionality and Climate Change Mitigation in the Republic of Sao Tome e Principe” on issues related to climate change adaptation and land degradation. Other experience from previous projects funded by the GEF/LDCF will be also collected.

96. In **Guinea Bissau**, the project will capitalize on the experiences of other technical and financial partners as well as the knowledge acquired from IFAD in similar projects (eg ProDAF and PASADEM in Niger as well as the experiences of the farmer organization MVIWATA in Tanzania with funding from AFD and the European Union). The project will seek to develop synergies with national and international partners present in the four regions of intervention to ensure the relevance and consistency of the targeting strategy and interventions with beneficiaries. Consultations with farmers' organizations have already taken place and this close collaboration will continue. Coordination meetings were held with the World Bank, the Food and Agriculture Organization of the United Nations (FAO), WFP, UNICEF, the African Development Bank and BOAD (which is implementing the “Scaling up climate-smart agriculture in East Guinea Bissau” project funded by the Adaptation Fund and covering the Gabu region, among others, which itself is building from the UNDP/GEF “Strengthening adaptive capacity and resilience to Climate Change in the Agrarian and Water Resources Sectors in Guinea-Bissau” project).

97. In **Cabo Verde**, the project will build on the experience of the POSER-Climat project implemented by IFAD and completed POSER project in 2019. It will also learn from the lessons of the UNDP/GEF project “Building Adaptive Capacity and Resilience to Climate Change in the Water Sector in Cabo Verde”.

98. Further analysis of existing and completed initiatives relevant to the project in the three countries will be undertaken during the preparation of the full proposal.

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

99. The project component 3 focuses on knowledge management in the project. This component will consist of i) designing a knowledge management plan (KMP), and ii) implementing the KMP. Concretely, this will consist of capturing, documenting and disseminating lessons learnt from the projects activities both at the local and institutional levels, to target and improve adaptive capacities for resilience in the farming systems in the project area. Monitoring and evaluation activities will also be implemented under Component 3 in order to inform long term policies and strategies for climate adaptation practices for on-going resilience in the farming systems. The knowledge acquired in the project will be shared on the IFAD’s website.

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.

100. Addressing adequately the climate change risks in Sao Tome, Cap Verde, Guinea Bissau requires action both at local and national levels. This is why at this concept note stage, stakeholders have been consulted during field missions which were carried out during the IFAD new design phase in 2019 and gaps in IFAD investments have been identified and aligned with National Action Plans. Following the consultations held with all three National Focal Points, government authorities between in 2019 during the designs of IFAD new investments, supervisions and the scoping mission for the Reimbursable Technical Assistance (RTA) for Cap Verde, and design mission in STP, the concept for this regional programme was endorsed by all Adaptation Fund focal points from participating countries.

101. A more elaborated stakeholders' consultations will be carried out during the project full proposal development. Consultations with local stakeholders consisted of meetings with leaders of farmers' organisations. At the national level, consultations included institutions of the Ministry of Agriculture, Fishery and rural development, Ministry of Environment, Ministry of Livestock, Ministry of economy and finance, NGOs working in the agricultural, sector as well as in the environment sector. The list of stakeholders met in the selected countries is as follows:

102. At National level

- The services of the Ministries of Agriculture with their relevant Directorates and Departments
- The services of the Ministries of Environment, Forestry with their relevant Directorates and Departments
- The services of the Ministries of Water with their relevant Directorates and Departments
- The Regional Services for Agriculture and local authorities.
- Extension, training and research institutions under the Ministries of Agriculture
- Producers organized in formal groups including
- Civil society through several NGOs.
- Donors (UNDP, World Bank, FAO, AFD, AfDB, IsDB)

103. At local level

- Direct beneficiaries particularly smallholder farmers, youth and women living in the most vulnerable areas to climate change were met around focus groups and direct interactions, the total number of male farmers met was more than the number of females. Key issues were raised and related to their need to better understand climate change specific impacts and associated adaptation options, water access and management, soil degradation (loss of fertility, erosion and salinization), resilience building against floods and violent rainfall and winds among others.

104. In order to complete and validate the identified preliminary set of activities, additional consultation workshops will be organized in the three countries during the design process, including one regional workshop targeting participants from the three countries. This includes consultation of farmers, open dialogues with, smallholder farmers, fishermen, local and national governments, private sector and CSOs, youth and women on possibilities of adaptation to the effects of climate change, the fight against food insecurity, capacity building and knowledge exchanges.

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

105. Without the programme, lasting periods of drought and floods especially in arid and semi-arid agricultural regions in Cabo Verde, Guinea-Bissau and STP are going to be more severe due to climate change. On top of that, saline water intrusion is going to amplify due to sea level rise resulting from climate change as well. This will significantly affect existing crops and cause losses or declines in production and productivity. Poor soil health can lead to abandonment of agriculture areas, displacement of producers and non-resilient farming techniques such as mangrove destruction to create new paddies. Thus, climate variability is one of the drivers for unsustainable land uses, which reduce the quantity and quality of water, degrade soils, pollute, and reduce forest cover and other ecosystem services. This increases poverty and hunger, in particular in vulnerable communities whose livelihoods depend on crop, livestock, fish, trees and other natural resources. This also creates diseases and conflicts among different beneficiaries of such natural resources. The continued practice of unsustainable land uses is going to reinforce the adverse effects of climate change and emit more GHGs.

106. In this context, there is a need to find an approach that promotes a sustainable combination of techniques and technologies that better control and manage water as well as rehabilitate and manage soil in order to enhance the beneficiaries' resilience, improve their productions and incomes, and contribute to the mitigation of GHGs. The programme proposes to build climate-resilient agricultural systems in the three SIDS by securing water resources for agricultural and domestic uses and rehabilitating degraded lands. This alternative offers opportunities to provide permanent access to

water and climate-resilient plant material for farmers through implementation of hydro-agricultural works and massive adoption of varieties tolerant to the major climatic hazards observed in SIDS as well as to restore agricultural soil fertility through water and soil conservation and anti-salt control practices and infrastructures. The programme will help beneficiaries to better plan agricultural crops through the strengthening of agro-meteorological information, a community early warning system and local, national and regional learning through capacity building, partnerships, knowledge exchange and lessons learned. The programme will improve yields and production and reduce food insecurity, malnutrition and poverty.

107. The cost-effectiveness of this regional programme can best be appraised through the expected short-, medium- and long-term results and the co-benefits of the climate change adaptation practices that the project will implement. **Component 1** will provide water security, build agricultural and fishery resilient systems to increase productivity and reliability through innovative technologies for higher levels of efficiency, mainstreaming of renewable energy in agriculture and plant material tolerant to thermal and water stress. This component will also provide land management practices at landscape scale by the end of year two and with longer term benefits from built resilience in ecosystem services and improved adaptive capacities within the farming population to respond to climate change and climate variability. This is expected to increase productivity in the local food supply chain, and to generate productive value chains in agroprocessing, diversification in aquaculture activities. **Component 2** is strongly focused on building adaptive capacities for climate change and climate variability based on established baselines in the project area. The Component will assess climate change adaptation and resilience capacities of major stakeholders at local and national institutions. It will then improve their adaptive capacities for resilience in farming and fishing systems in the programme areas. **Component 3** will implement a monitoring and evaluation (M&E) system as well as a knowledge management (KM) plan. The M&E and KM plans will benefit policies and strategies but also on farm and traditional fishing practices of other regions in the three SIDS. These benefits will lead to upscaling and sustainability of climate adaptation and resilience practices, of income generation and employment for the farming households including those most vulnerable.

108. During the full proposal development, the full cost of adaptation reasoning will be deepened through 1) assessing the baseline of adaptive capacities of farming and fishing systems, ii) appraising residual or net benefits from the proposed programme activities, and iii) funding requested from the Adaptation Fund. This analysis will be carried out for each of the regional programme components.

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

109. The sustainability of the Regional Programme's outcomes in the Eastern Atlantic Ocean SIDS has been addressed in the design of the programme through various activities. By enhancing crop production and productivity while generating income for farmers through the sale of surpluses, the project will ensure that beneficiaries in the target sites sustain their livelihoods. The restoration of mangrove in coastal communities of Cabo Verde and Guinea-Bissau which will also benefit the tourism industry will also ensure job security and economic gain in the communities. Training sessions for farmers on farm-level techniques for agricultural and fisheries productivity enhancement and landscape-level land restoration practices will contribute to ownership by farmers and fishermen. In fact, producers will be trained in the design and implementation of agricultural and fish farming productivity techniques and in the design, construction and maintenance of works to combat land degradation. The documentation and dissemination of the good practices and lessons generated by the programme will help sustaining the programme's outcomes. The fact that opinions and needs of stakeholders in the fishery and crops subsectors are fully taken into account during the design of activities will ensure appropriate ownership by actors, enhanced capacity, then sustainability.

110. This sustainability analysis will be furthered during the full proposal development.

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

111. The programme geographic target areas in the three SIDS countries are located in the most vulnerable regions to climate change impacts. Those areas are among the most affected by poverty as households have weak incomes, high sensitivity and low adaptive capacities to climate shocks. Small farming and fishing systems in these areas are exposed to climate hazards and impacts from intense rainfall and extended drought conditions, upwelling modification, soil erosion, low fertility and salinization. The project is proposed to build resilience of farming systems through interventions for water security coupled with solar energy, soil fertility conservation, land restoration, capacity building on climate resilience and knowledge management activities.
112. The social and environmental impacts and risks of the regional programme have been identified and analysed according to the AF's Environmental and Social Policy, as well as the IFAD Social, Environmental and Climatic Assessment Principles (SECAP).

Table 5: Environmental impacts and management measures

Impact	Management measure / commitment
General	
<ul style="list-style-type: none"> Noise, traffic, etc. disturbance to residents 	<ul style="list-style-type: none"> Develop, communicate and implement a conflict management procedure
<ul style="list-style-type: none"> Local capacity building 	<ul style="list-style-type: none"> Ensure that contractors hire local staff whenever possible (e.g., for unskilled positions).
<ul style="list-style-type: none"> Health and safety at work 	<ul style="list-style-type: none"> Developing an HSE policy and health, safety and environmental rules for construction sites Ensuring the use of PPE by construction workers
<ul style="list-style-type: none"> Impacts on biodiversity 	<ul style="list-style-type: none"> Incorporate a reforestation program into the project, in consultation with the Ministry of the Environment. Species must include endangered species and species with habitat/nesting value/food for animals.
Use of agricultural inputs	
<ul style="list-style-type: none"> Risk of water and soil pollution 	<ul style="list-style-type: none"> Provide training on the rational use of agrochemicals (dosage, etc.), the use of organic compost and manure, crop rotation/ crop combination techniques and other techniques to minimize the use of agricultural inputs
<ul style="list-style-type: none"> Risks to the health and safety of the community 	<ul style="list-style-type: none"> Provide training in application methods and appropriate personal protective equipment (gloves, mask, etc.)
General Agricultural Activities	
<ul style="list-style-type: none"> Loss of biodiversity through the introduction of cash crops 	<ul style="list-style-type: none"> Promote mixed / intercropping crops, including planting subsistence species / crops alongside species of ecological value
<ul style="list-style-type: none"> Soil erosion and leaching due to rainfed agriculture developments 	<ul style="list-style-type: none"> Identify areas at risk of erosion and erect physical and / or biological structures to minimize the risk of soil erosion in the target area Identify and mapping of areas of risks and install physical infrastructures to reduce soil erosion
<ul style="list-style-type: none"> Low productivity upstream of production chains due to climate change and variability 	<ul style="list-style-type: none"> Extension of climate-intelligent farming techniques. Information, education and environmental communication. Ecological monitoring and climate change adaptation measure.

Impact	Management measure / commitment
Irrigated areas	
<ul style="list-style-type: none"> Land deforestation for hydro-agricultural development and soil erosion risk. 	<ul style="list-style-type: none"> Restrict the development of irrigated perimeters to land that is already under food and seasonal crops. Train beneficiaries on erosion control
<ul style="list-style-type: none"> Lowering of the water table 	<ul style="list-style-type: none"> Train the beneficiaries in water use and saving management. Develop water management plan
<ul style="list-style-type: none"> Conflicting competition for access to developed areas and water 	<ul style="list-style-type: none"> Raise awareness of the programme's objectives and explain the selection criteria and procedures, which will be transparent. Intervene only in areas where land status is clarified and use is consensual and in accordance with the principle of free, prior and informed consent of all stakeholders. Train the beneficiaries on water distribution techniques and the efficient application of water to the plot as well as on conflict management techniques.
<ul style="list-style-type: none"> Environmental Imbalance in downstream streambeds at water intake works 	<ul style="list-style-type: none"> Implement measures to ensure the maintenance of aquatic ecosystems downstream of water intake structures.
Preparation / Land clearing	
<ul style="list-style-type: none"> Loss of trees 	<ul style="list-style-type: none"> Clearly demarcate work sites prior to work; ensure that disturbance occurs only within marked boundaries Preserve trees as much as possible Integrate tree planting into store design, prioritizing endangered species and/or trees with nutritional value
<ul style="list-style-type: none"> Risk of soil erosion 	<ul style="list-style-type: none"> Planning work in the dry season Install silt fences down from the bare soil to catch any runoff, if any
<ul style="list-style-type: none"> Risk of physical/economic displacement 	<ul style="list-style-type: none"> Select uninhabited and unused sites
<ul style="list-style-type: none"> Disturbance of watercourses and borrow pits 	<ul style="list-style-type: none"> Collecting aggregate material from existing borrow sites Rehabilitate borrowed areas
Heavy machinery and equipment used for construction purposes	
<ul style="list-style-type: none"> Risk of soil contamination (hazardous material spill) 	<ul style="list-style-type: none"> All hazardous materials will be stored appropriately (covered, etc.) with secondary containment of sufficient capacity (> 110% of volume). Use spill prevention equipment such as bundles, sorbent booms, etc..
<ul style="list-style-type: none"> Dust generation 	<ul style="list-style-type: none"> Cover all loads during transport Cover all stocks (of sand, etc.) during storage
Waste generation	
<ul style="list-style-type: none"> Generation of construction waste, including hazardous waste 	<ul style="list-style-type: none"> Designate a suitable disposal site at least 200 m from drainage lines and residences, preferably in a previously disturbed area

113. The environmental and social assessment carried out classifies this program in Category B as its activities are not expected to result in significant negative environmental and social impacts. The irrigated areas will not exceed 100 contiguous hectares, in one block. The sustainable land management works at landscape scale as well as the productivity enhancement techniques at farm scale will not bring major modification on soil, water and forest resources as well as in biodiversity. The programme is environmentally sustainable positive, given the many positive effects in terms of strengthening the resilience of production systems, improving the economy of rural households, the strategy of inclusion of young people, women and people with reduced mobility and special needs. All the planned productive investments (hydro-agricultural developments; construction of antierosive works; solar pumpings; dissemination of improved varieties) are based on simple and proven technologies that have already demonstrated positive impacts for households and the environment with minimal risk to the climate. The regional programme's scaling up strategy is based on the ownership and empowerment of local actors and the strengthening of their capacities for effective ownership of project activities during and after its implementation. The Table below presents results of the assessment against each of the AF Environmental and social principles is described below and summarised.

Table 6: Environmental risk assessment

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
<i>Compliance with the Law</i>		The regional programme activities will comply with three SIDS national laws and with international agreements on environment when national standards are lacking, However, an update of the existing ESIA will be carried out at the full proposal stage and this will ensure relevant national permit requirements and international laws are respected
<i>Access and Equity</i>		The regional programme activities will not prevent or affect access to basic health services, clean water and sanitation, energy, education, housing, safe and decent working conditions to any group of the population in the programme areas. The programme management units will ensure a fair and equitable access to the project benefits. Further assessment will be carried out in order to mitigate discrimination and inequalities regarding access to the project's assets. However, a gender inequalities study in order to identify potential inequalities will be carried out as part of the ESIA update at the full proposal.
<i>Marginalized and Vulnerable Groups</i>		The regional programme will not negatively affect marginalized and vulnerable groups including children, women and girls, the elderly and people living with disabilities. The regional programme will ensure that poor people, women, young, old have the opportunity to improve their

		income and living conditions. This will be further assessed during the development of the full proposal.
<i>Human Rights</i>	X	The project has no aspect which will minimize any of human rights. Particular attention will be given during the designing and implementation of the project on the management of potential conflicts.
<i>Gender Equity and Women's Empowerment</i>		<p>Women and men will be able to participate fully and equitably in the programme activities and both will receive proportional social and economic benefits. Women and vulnerables people's access to financial services will be strengthened notably through a financial mechanism support that the programme will provide.</p> <p>However, a gender inequalities study in order to identify potential inequalities will be included in the ESIA update at the full proposal development</p>
<i>Core Labour Rights</i>	X	This concept note for the SIDS regional programme has been developed taking into account Santomese laws on labour which forbids forced labour, children's labour and discrimination.
<i>Indigenous Peoples</i>	X	No indigenous peoples' presence in the project implementation areas in the three countries has been reported to us to date.
<i>Involuntary Resettlement</i>	X	No resettlement is foreseen in the undertaking of any of the project activities
<i>Protection of Natural Habitats</i>		<p>The potential of the regional programme to impact natural habitats is low, as the project areas in the three countries are not located in protected areas or natural forests</p> <p>However, the ESIA update will deepen analysis of potential environmental and social impacts of the programme on natural habitat and biodiversity in the target areas. Mitigation measures of these environmental and social potential impacts will be proposed as well as the possible contribution of the programme to local GHG offset.</p>
<i>Conservation of Biological Diversity</i>		<p>The potential of the regional programme covering Sao Tome e Principe, Guinea Bissau and Cape Verde to impact natural habitats is low, as the project areas in the three countries are not located in protected areas or natural forests</p> <p>However, the ESIA update will deepen analysis of potential environmental and social impacts of the programme on natural habitat and biodiversity in the target areas. Mitigation measures of these environmental and social potential impacts will be proposed as well as</p>

		the possible contribution of the programme to local GHG offset.
<i>Climate Change</i>		<p>The objective of the project is to build resilience of farming and fishing systems to climate change in Sao Tome e Principe, Guinea Bissau and Cape verde. The practices will include i) the integration of renewable energy water mobilization, thus contributing to reduce GHG emissions, ii) increase farms soil fertility and productivity, iii) restore degraded lands. Those planned activities, especially reforestation will capture CO2 and capture surplus of greenhouse gases.</p> <p>A futher study to assess the quantity of GHG avoided or reduced will be carried out during the full proposal stage.</p>
<i>Pollution Prevention and Resource Efficiency</i>		<p>The programme will contribute to reduce pollution in soil and water, through practices that reduce sedimentation and soil erosion, and the expected shift from agrichemicals to biological inputs, especially with the use of biodigestors. This irrigation system that will be adopted in this programme will minimize the use of water. Inorganic amendments can be precisely distributed in the irrigation system, thus limiting to the quantities that are strictly needed.</p> <p>3.</p> <p>However, a pesticide management plan will be developed to better manage pollution risks. Building local capacity to use organic manure and microdose of inorganic of products will limit the use of chemical products and reduce pollutio risks.</p>
<i>Public Health</i>		<p>The regional programme will contribute to a healthier environment and safer food through organic practices for soil building and landscape restoration techniques. Thus, itwill not use any practices that impact negatively on health.</p> <p>However an additional study will be performed to identify some potential health impacts of the programme activities, mainly during the construction phase.</p>
<i>Physical and Cultural Heritage</i>		<p>As no physical and cultural heritage areas has been reported to us up to now, the regional programme activities are not expected to alter, damage or remove any of these categories of sites.</p> <p>The analysis during the full proposal development will ensure that any physical and cultural sites is involved in the programme areas of intervention.</p>
<i>Lands and Soil Conservation</i>	X	The SIDS regional programme is proposed to conserve land and soil through implementation of measures to combat lands degradation and soil fertility loss.

114. Risks associated with the regional programme activities in all phases and in all the three countries include:
- work-related accidents (use of vehicles and trucks);
 - contamination of water and soil by waste from the construction site during the construction phase and;
 - transmission of STIs, HIV-AIDS and other communicable diseases, due to the arrival of workers.

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.

At the regional level,

115. A Regional Steering Committee of the project (RSC), which will provide general guidance for the implementation of the project, will be established. The RSC will also be responsible for validating the Annual Work Program (AWP) of the project. yearThe RSC management structure and functioning will be further define during the design stage .

At the national level

116. The programme will be supervised in each country by the Ministry of Agriculture (Ministry of Agriculture and Forests of Guinea Bissau, Ministry of Agriculture, Fisheries and Rural Development of STP, Ministry of Agriculture and Environment of Cabo Verde), which will chair the National Steering Committee (NSC). This Committee will include the ministries of strategic interest within which focal points will be designated; the Producers organisations and the banks. The NSC will define the orientations for the operational steering of the regional programme, ensuring its alignment with sectoral strategies and priorities. It will integrate the programme's action in complementarity and synergy with development partners in the agricultural sector in order to optimize its interventions and maximize its impact on the beneficiaries. In addition to approving work programmes and activity reports, the NSC will monitor implementation and make any recommendations it may make during its monitoring missions in the field. This will be further developed in the full proposal document.

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

117. The governments of Guinea Bissau, Sao Tome e Principe and of Cape Verde have well-established procedures for reporting on funds. Those procedures, as well as that of the Adaptation Fund and that of IFAD will govern the financial and procurement operations of the executing entities of this Programme. Moreover, financial and project risk management measures will be assessed throughout the implementation of the project. A comprehensive and detailed risk management framework will be developed in the full proposal document. This framework will take into account the fiduciary procedures of IFAD and the Adaptation Fund.

Table 7: Potential financial and other risks of the project are:

Risk Class/Category	Level	Mitigation measures/comments
Financial: Inflation leading to increased costs of goods and services	Weak	<ul style="list-style-type: none"> • Hiring Finance and Procurement officers in the Programme Management Units in each of the three countries. They will ensure appropriate management of funds and make timely alerts to Project Managers to make adjustments

<p>Concentration of the Programme activities on traditional intervention areas to the detriment of other vulnerable segments facing food deficits and nutritional problems.</p>	<p>Weak</p>	<ul style="list-style-type: none"> • Optimize and intensify production in traditional areas where IFAD has supported the promotion of export value chains. • Diversify production areas that are poorly developed, areas suitable for mixed farming, production areas that can be extended by means of development, etc. • Characterisation of areas allowing geographical targeting taking into account development potential. • Criteria-based targeting approach taking into account the socio-economic profiles of the beneficiaries
<p>Marginalisation of women, young people and people with disabilities</p>	<p>Weak</p>	<ul style="list-style-type: none"> • Discriminatory targeting strategy in favour of women and young people in the promotion of income-generating activities (microprojects) on the one hand and in the process of economic integration of young people on the other hand. • A positive approach to the integration of people with disabilities
<p>Traditional farming methods and techniques not adapted to the context of climate change and affecting yield, self-sufficiency and farm incomes</p>	<p>Weak</p>	<ul style="list-style-type: none"> • Farmer Field Schools (FFS) approach for learning and adoption of improved practices • Promotion of high-performance and resilient varieties in partnership with Research (CIAT) • Financing (on demand) of micro-projects of income-generating activities in the production of food crops. • Deployment of Operations Advisors • Strengthening biological control
<p>Pressure on fisheries resources</p>	<p>Moderate</p>	<ul style="list-style-type: none"> • Strategic support for the implementation of precautionary measures regulating fish catches • Support for activities to mitigate the risks of overfishing • Actions to reduce post-harvest losses and increase the value of catches • Institutional strengthening of the Fisheries Directorate
<p>Adverse effects related to irrigation development schemes</p>	<p>Moderate to low</p>	<ul style="list-style-type: none"> • Raising community awareness of the objectives of COMPRAN and the need to ensure ecosystem integrity • Development restricted to land under food and seasonal crops • Training of users on erosion control, water saving management, water distribution techniques and efficient application of water to the plot, conflict management techniques and management of organic fertilizers to minimize their impact on water resources • Measures will be put in place to ensure an ecological flow equal to at least one-third of the low-water flow of the watercourses in order to

		<p>ensure the maintenance of aquatic ecosystems downstream of the water intake structures.</p> <ul style="list-style-type: none"> • Promotion of organic production systems • Strengthening of the Irrigation Department
Severity of climate change and variability	Weak	<ul style="list-style-type: none"> • Climate change adaptation measures • Sustainable water and soil management • Environmental and Social Management Plan • Extension of climate-intelligent farming techniques • Environmental information, education and communication • Ecological monitoring and climate change adaptation measures
Lack of institutional capacity to take ownership of the achievements of the programme and their sustainability	Weak	<ul style="list-style-type: none"> • Institutional strengthening of technical services with the aim of making them capable of performing their regalian functions. • Partnerships in the form of an agreement with the technical departments concerned • Support to the Regional Delegations (Districts) of Agriculture and Rural Development Support Offices (CADR)
Weak consultation with stakeholders	Moderate	<ul style="list-style-type: none"> • Develop and implement a stakeholders' engagement plan
Environmental: Natural hazards (high winds and floods, droughts, and storm	Moderate	<ul style="list-style-type: none"> • Implementation of techniques to reduce impacts of heavy rainfall on soil, crops and plantations
Weak buy-in from the population	Weak	<ul style="list-style-type: none"> • Capacity building for a understanding and awareness of climate change and the potential benefits of climate resilience for income generation and food security • Practices with short-term psotive effects such as improved water security • Youth and women participation
Lack of collaboration of the technical institutions	Weak	<p>4.</p> <ul style="list-style-type: none"> • Collaboration and cooperation of the technical institutions involved

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

This part will be developed in the full proposal document, especially during the development environmental ans social management plan.

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

This part will be developed in the full proposal document.

E. Include a results framework for the project / programme proposal, including milestones, targets and indicators.

This part will be developed in the full proposal document.

F. Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund

This part will be developed in the full proposal document.

Project Objective(s) ¹⁷	Project Indicator(s)	Objec	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
5.	6.	7.	8.	9.	
10.	12.	13.	14.	15.	
11.					
16.	18.	19.	20.	21.	
17.					
Project Outcome(s)	Project Outcome Indicator(s)	Fund Output	Fund Output Indicator	Grant Amount (USD)	
22.	24.	25.	26.	28.	
23.			27.		
29.	30.	31.	32.	34.	
			33.		
35.	36.	37.	38.	40.	
			39.		

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.

This part will be developed in the full proposal document.

H. Include a disbursement schedule with time-bound milestones.

This part will be developed in the full proposal document.

¹⁷ The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

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

- A. Record of endorsement on behalf of the government¹⁸** *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:*

República Democrática  de S. Tomé e Príncipe

(Unidade – Disciplina – Trabalho)

Ministério das Obras Públicas, Infraestruturas, Recursos Naturais e Ambiente

Letter of Endorsement by Government

Sao Tome, November 11, 2019

Ref. :Nº. 01/2019

To: The Adaptation Fund Board

c/o Adaption Fund Board Secretariat

Email: Secretariat @Adaptation- Fund.org

Fax: 202 522 3240/5

Subject: Endorsement for “West and Central Africa Small Island Developing States (SIDS) ADAPT”

In my capacity as designated authority for the Adaptation Fund in São Tomé and Príncipe, I confirm that the above regional programme 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 region particularly in São Tomé and Príncipe.

Accordingly, I’m pleased to endorse the above programme proposal with support from the Adaptation Fund. If approved, the programme will be implemented by the International Fund for Agricultural (IFAD) and executed by Ministry of Agriculture, Fisheries and Rural Development (MAPDR). The amount requested for São Tomé and Príncipe is USD 3 500 000.

Sincerely,

Victor Manuel do Sacramento Bonfim

Director of Nature Conservation, Rehabilitation and the Quality of Environment

AF National Designated Authority,

Largo das Alfândegas – VC.P-nº 1030 – São Tomé

Phone number: + 239 990 74 70

Email address: victorbonfim2@hotmail.com

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.



GOVERNO DA
GUINÉ-BISSAU

SECRETARIA DE ESTADO DO AMBIENTE E BIODIVERSIDADE
Direcção Geral do Ambiente

To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5
G-Tower, 24-4 Songdo-dong, Yeonsu-gu
Incheon City, Republic of Korea

Bissau, October 25th 2019

Subject: Endorsement for the "West and Central Africa Small Islands Developing States ADAPT" proposal

In my capacity as Designated Authority for the Adaptation Fund in Guinea-Bissau, I confirm that the above national «West and Central Africa Small Islands Developing States ADAPT» 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 Guinea-Bissau (Gabú, Bafatá, Oio and Cacheu regions).

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project/programme will be implemented by International Fund for Agricultural and Development (IFAD) and executed by the Ministry of Agriculture and Forestry (MAF).

Kind regards,

Mr. Viriato Luis Soares Cassamá

GCF Focal Point



Ministério da Agricultura
e Ambiente

INSTITUTO NACIONAL DE METEOROLOGIA
E GEOFÍSICA

República de Cabo Verde



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

N.Rep^o 002/GP.INMG/2020

Ilha do Sal, January 9, 2020

Subject: Endorsement for West and Central Africa Small Island Developing States (SIDS) ADAPT proposal*

In my capacity as designated authority for the Adaptation Fund in Cabo Verde, I confirm that the above West and Central Africa Small Island Developing States (SIDS) ADAPT* 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 Cabo Verde.

Accordingly, I am pleased to endorse the above programme proposal with support from the Adaptation Fund. If approved, the programme will be implemented by International Fund for Agricultural and Development (IFAD) and executed by the Ministry of Agriculture and Environment.

Sincerely,

Maria da Cruz Gomes Soares



President of the National Institute of Meteorology and Geophysics


<i>Victor Manuel Sacramento Bonfim, Director of Nature Conservation and the Quality of Environment, Ministry of Public Works, Infrastructure, natural Resources and the Environment, Sao Tome and Principe</i>	Date: November 11 2019
<i>Viriato Luis Soares Cassama, General Director of the Environment, Ministry of Environment and Sustainable Development, Guinea Bissau</i>	Date: October 25 2019
<i>Maria da Cruz Gomes Soares, President of the National Institute of Meteorology and Geophysics, National Institute of Meteorology and Geophysics, Cape Verde</i>	Date: January 9 2020

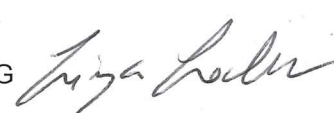
B. Implementing Entity certification *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

I certify that this Concept Note has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
<i>Margarita Astralaga, Director Environment, Climate and Social Inclusion Division, IFAD</i>	
Date: (Month, Day, Year)	Tel. and email: a.astralaga@ifad.org
Project Contact Person: Liza Leclerc , Environment and Climate Coordinator, IFAD HQ Amath Pathe SENE, Lead Environment and Climate Specialist, West and Central Africa	
Tel. And Email: l.leclerc@ifad.org; amath.sene@ifad.org +393346629228 +22509190249	

DECISION MEMO

TO: Donal Brown
Associate Vice-President, PMD

THROUGH: Paul Winters 
Associate Vice-President, SKD

FROM: Margarita Astralaga Director, ECG 

DATE: 16 January 2019

SUBJECT: Submission of the West and Central Africa Small Island Developing States (SIDS) Programme Concept Note "ADAPT - Building resilience of agricultural systems to climate change" to the Adaptation Fund (AF). Targeting Cabo Verde, Guinea Bissau, Sao Tome and Principe.

Attached for your approval for submission to the Adaptation Fund (AF), please find the Concept Note for the West and Central Africa Small Island Developing States Programme "ADAPT - Building resilience of agricultural systems to climate change" to be financed through an AF grant of US\$ 14,000,000. The Concept Note has been cleared by ECG and the technical design team.

The deadline for submission is Monday, 20th January 2020 in order for this Concept Note to be reviewed to be approved at the next Adaptation Fund Board meeting in March 2020.

I look forward to receiving your approval to submit the Concept Note to the AF Secretariat.

Clearance:



Lisandro Martin, Director, WCA

DECISION BY DONAL BROWN (AVP, PMD):

Approve: 

Not approved:

Discuss with me:

Date: 20/01/2020

cc: Martin, Lisandro <lisandro.martin@ifad.org>; Astralaga, Margarita <m.astralaga@ifad.org>; Leclerc, Liza <l.leclerc@ifad.org>; Guedez, Pierre Yves <p.guedez@ifad.org>; Mazzoni, Matteo <m.mazzoni@ifad.org>; Damianov, Radu <r.damianov@ifad.org>; Buonanno, Vittorio <v.buonanno@ifad.org>; David, May <m.david@ifad.org>; Sene, Amath Pathe <amath.sene@ifad.org>; Cameron, Virginia <v.cameron@ifad.org>



Project Formulation Grant (PFG)

Submission Date: 20 January 2020

Adaptation Fund Project ID:
 Country/ies: Cabo Verde, Guinea Bissau, Sao Tome y Principe (STP)
 Title of Project/Programme: Building resilience of agricultural systems to climate change in three SIDS in West and Central Africa
 Type of IE (NIE/MIE): MIE
 Implementing Entity: International Fund for Agricultural Development (IFAD)
 Executing Entity/ies: Ministry of Agriculture and Forests of Guinea Bissau, Ministry of Agriculture, Fisheries and Rural Development of STP, Ministry of Agriculture and Environment of Cabo Verde

A. Project Preparation Timeframe

Start date of PFG	15 May 2020
Completion date of PFG	1 August 2020

B. Proposed Project Preparation Activities (\$)

Describe the PFG activities and justifications:

List of Proposed Project Preparation Activities	Output of the PFG Activities	USD Amount
Consultation of stakeholders	In order to complete and validate the identified activities, consultation workshops will be organized in the three countries, including one regional workshop targeting participants from the three countries. This includes consultation of farmers, fishermen, local and national governments, private sector and CSOs	45,000
Stakeholder analysis and socio-economic vulnerability assessment	Assess the institutional arrangements and extent of stakeholder involvement in the project interventions, and assess the social and economic context of the communities (small-scale farmers and fishermen)	10,500
Environmental Impact Studies/Reviews	Environmental Impact Studies and or Review of project interventions identified. This will include environmental studies on proposed project adaptation actions e.g. water reservoirs, water harvest basins and retention dikes, boreholes, irrigation systems...	15,000
Gender analysis	Gender review of agriculture, water and soil management related policies and legal frameworks in Cabo Verde, Guinea Bissau and Sao Tome e Principe	10,000

	Analyze gender inequalities in opportunities in agriculture and fisheries, as well as nature tourism in the three countries	
Design of the full project proposal	Finalize document including cost effectiveness analysis, assessment of national technical standards, and compliance with the environmental and social policy of the Fund	12,000
Implementing Entity Fees	Project Quality Assurance	8,500
Total Project Formulation Grant		100,000

C. Implementing Entity

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

Implementing Entity Coordinator, IE Name	Signature	Date (Month, day, year)	Project Contact Persons	Telephone	Email Address
Margarita Astralaga, Director Environment, Climate and Social Inclusion Division a.astralaga@ifad.org		08/01/2020	Liza Leclerc Amath Pathe SENE	+22509190 249	l.leclerc@ifad.org amath.sene@ifad.org