ADAPTATION FUND

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I. PROJECT/PROGRAMME INFORMATION

Project/Programme Category:	Regular Project
Country:	Nicaragua
Title of Project/Programme:	Climate Resilience and Livelihoods in the Nicaraguan Dry Corridor
Type of Implementing Entity:	Multilateral Implementing Entity
Implementing Entity:	Food and Agriculture Organization of the United Nations (FAO)
Executing Entity/ies:	Ministry of Environment and Natural Resources (MARENA)
Amount of Financing Requested:	10,000,000 (in U.S Dollars Equivalent)

A. Project / Programme Background and Context

Geography and climate context

1. Nicaragua's surface territory is of 130 373 km^2 and stretches from the Caribbean Sea in the east to the Pacific Ocean in the west, bordering to the north with Honduras and the south with Costa Rica. The country is divided into 15 provinces and two autonomous regions, which in turn are subdivided into 153 municipalities.

2. The territory consists of three large regions with well-defined features as regards soils, topography and climate. The Pacific region takes up 15% of the land and its soils are very fertile, as they contain recent volcanic ash distributed over extensive plains. The mountainous central region covers 35% of the surface and is hilly, with small valleys resting between the mountains and heights ranging from 400 to 1 500 m.a.s.l. The soils in general are originated from tertiary volcanic rocks and have high productive potential. Finally, the Caribbean region is the largest, and comprises approximately 50% of the country. Its topography is gentle and flat, being made up of acidic soils derived from tertiary volcanic rocks and sediments. Their fertility is low.

3. Due to the trade winds and the landscape's geographic features, rainfall varies widely, ranging from 800 mm to over 5 000 mm. In the Pacific region there are a well-defined rainy season (May to October) and a dry season that extends from November to April. Annual average rainfall ranges between 1 000 mm and 2 000 mm, with a dry spell known as the "*canícula*" at about the half-point of the rainy season (MARENA, 2018)[1].

4. In the central region the rainy and dry seasons are also well-defined and take place during the same months as on the Pacific side. However, the mountainous relief significantly reduces average yearly

[1] MARENA (2018). Third National Communication to United Nations Framework Convention on Climate Change

rainfall, which may vary from 800 mm in the valleys to 2 500 mm on the eastern slopes of the mountain range (MARENA, 2018)[2].

5. As a result of its geographic features, Nicaragua's thermal regime also varies. Average annual temperature fluctuates from less than 23°C to over 29°C. Maximum temperatures reach between 30.6°C and 42°C, while the lowest are between 10°C and 18°C (MARENA, 2018)[3]. In the Pacific region, temperatures sometimes reach above 37ºC, but the average temperature is inferior to 35°C. In the central region, the temperatures range from 23°C to 36°C, the mean being 31°C, while on the Caribbean Coast temperatures may reach 34°C, with a mean of 31°C (Rodríguez, J. et. al, 2019)[4].

6. Nicaragua's geographic position means it receives a large amount of incident solar radiation, with relative humidity oscillating between 60% and 90%. The Pacific region is the driest and hottest, with minimum yearly values between 64% and 70%, while on the Caribbean side the maximum values vary from 80% to 90% (MARENA, 2018)[5].

7. Nicaragua has the National Human Development Plan 2018-2021 (PNDH), which defines the priorities for the fight against hunger and poverty. The PNDH defines as one of its axes the sustainable management of natural resources and climate change. The country's policy framework has recently been updated, including the Nationally Determined Contribution (NDC), firstly presented in September 2018. In January 2019, Nicaragua presented the Reference Levels of Emissions from Deforestation and Forest Degradation (NREF) for the period 2005-2015[6] and in February 2019, it approved the National Policy for Mitigation and Adaptation to Climate Change (PNMACC) and Creation of the National System Response to Climate Change (SNRCC).

Socioeconomic and environmental context

8. Data from the 2020 Global Report on the Food Crisis indicate that, by October 2020, some 300 000 Nicaraguans (4.6% of the country's total population) suffered from acute food insecurity related to extreme droughts (FSIN and Global Network Against Food Crises, 2020)[7].

9. The context in 2021 is the result of a double external shock that the country has suffered: the first due to the negative effects of COVID-19, that are reflected in the decline in economic indicators; secondly, the impact of hurricanes ETA and IOTA in November 2020 whose damages add up to a grand total of USD 738.6 million, equivalent to 5.9% of Gross Domestic Product (MHCP 2021)[8].

10. Around 40% of the Nicaraguan population lives in rural areas and depends on a subsistence economy based on agriculture and animal husbandry.

11. Agriculture is the economic sector making the third-highest contribution to GDP at 8.5% in the third quarter of 2020. Cattle-ranching came in fifth at 5.9% and taken together they represent 14.4% of

[2] MARENA (2018). Third National Communication to United Nations Framework Convention on Climate Change
[3] MARENA (2018). Third National Communication to United Nations Framework Convention on Climate Change
[4] Rodríguez, J., Thomas, T. S., Cenacchi, N, Rios, A. R. (2019). Climate Change, Agriculture, and Adaptation Options for Nicaragua
[5] MARENA (2018). Third National Communication to United Nations Framework Convention on Climate Change
[6] See publication of NREF at the following link: https://redd.unfccc.int/files/nref_nacional_vf_170119.pdf
[7] FSIN and Global Network Against Food Crises (2020). Global Report on Food Crises 2020
[8] Ministerio de hacienda y crédito público (MHCP). (2021). Análisis socio-ambiental para la implementación del componente de contingencia para respuesta a emergencias (CERC) / respuesta a los huracanes ETA e IOTA.

GDP (Nicaragua Central Bank, 2020)[9]. These data indicate there is a high degree of dependence on the agriculture and livestock sectors as generators of wealth and employment, which means the economy is exposed to the direct impact of climate change.

12. During the period between 2000 and 2015 the country lost 100 815 hectares of forestland each year. The direct causes of deforestation are related to the expansion of the agricultural frontier. It is estimated that approximately 84% of this change in soil use can be attributed to extensive cattle-ranching (MARENA, 2020)[10].

Climate projections

13. The Fifth IPCC Report (2014) notes it is likely that regional rainfall variability related to the *El Niño* phenomenon will increase. Karmalkar *et al*. (2011[11]), cited by IPCC (2014), project changes in rainfall ranging from between –24% to –48%, accompanied by a rise in temperatures of between +4°C and +5°C for the Central American countries, for a scenario 2 (PRECIS forced with HADCM3). For their part, Campbell *et al.* (2011[12]), using the same scenario and model, project changes in rainfall for Nicaragua at between -25% to -50% and +25% to +50%, with temperatures rising between +3°C and +6°C.

14. In line with the projections made by Campbell *et. al* (2011), a study commissioned by ECLAC the same year pointed out that in a scenario of global emissions inferior to the current tendency and using the HADCM3 model, by the year 2100 (IPCC scenario B2), the average annual temperature in Nicaragua could increase 3.1%. In scenario A2, and at the current level of growth in emissions, the temperature could increase by 4.2%.

15. The expected trajectory as concerns rainfall levels is more uncertain. Under global emissions scenario B2, by the year 2100 rainfall would diminish by 17%, while under scenario A2 the drop may be as high as 35% (ECLAC, 2011)[13].

16. Figures 1 and 2 show the yearly mean temperature and rainfall, respectively, both in the current countrywide scenario, based on average data for the 1970 – 2000 period (Fick, S. *et al.* 2017)[14].

[9] Banco Central de Nicaragua (BCN) (2020). Informe Anual

[10] MARENA (2020). Updated Nationally Determined Contribution (Contribucion nacionalmente determinada, actualizacion 2020)

11 Karmalkar, A.V., Bradley, R.S. & Diaz, H.F. Climate change in Central America and Mexico: regional climate model validation and climate change projections. Clim Dyn 37, 605 (2011). https://doi.org/10.1007/s00382-011-1099-9

12 Campbell, J. D., Taylor, M. A., Stephenson, T. S., Watson, R. A., Whyte, F. S. (2011). Future climate of the Caribbean from a regional climate model. Int. J. Climatol., 31, 1866—1878, https:// doi.org/10.1002/joc.2200.

13 CEPAL (2011). La economía del cambio climático en Centroamérica Reporte técnico 2011.

14 Fick, S.E. and R.J. Hijmans (2017). WorldClim 2: new 1-km spatial resolution climate surfaces for global land areas

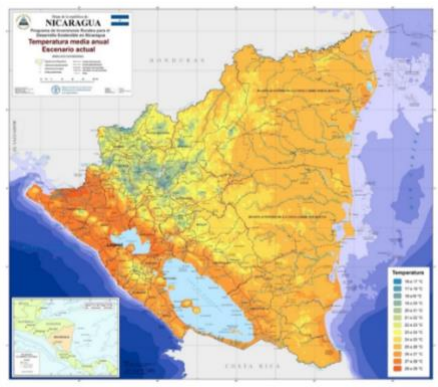


Figure 2. Mean yearly temperature in the current scenario

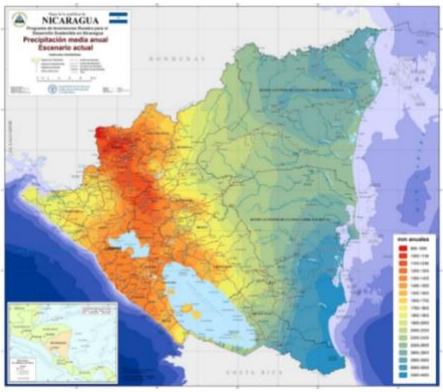


Figure 1. Mean yearly rainfall in the current scenario

17. The regionalized projections[15] for mean air temperature in Nicaragua, made by the Nicaraguan Institute of Territorial Studies (INETER) for scenario RCP4.5 and the 2021 – 2040 period, forecast a mean temperature of between 26°C and 28°C for most of the Caribbean Coast. For the period 2041 – 2060, warming is foreseen throughout the country, with the mean temperature rising from 28°C to 30°C.

18. For scenario RCP8.5 in the 2081–2100 time horizon, warming can be observed everywhere. These changes in mean temperature will lead to higher and more frequent extremes than those observed currently.

19. Figure 3 shows a temperature projection to the year 2040 in a pessimistic scenario, while Figure 4 illustrates a pessimistic rainfall projection for that same year.[16]

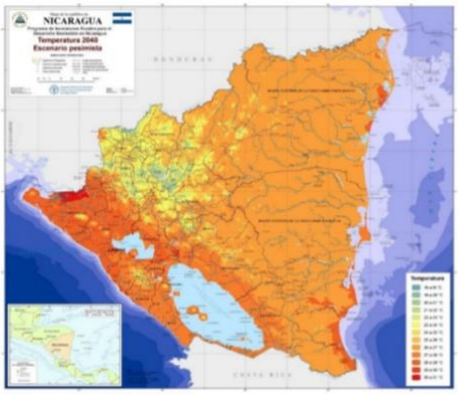


Figure 3. Temperature forecast for the year 2040, pessimistic scenario

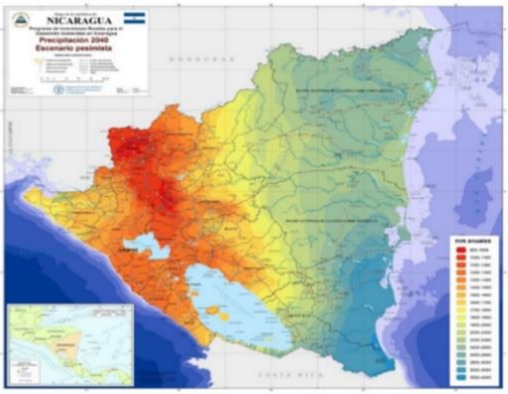


Figure 4. Rainfall forecast for the year 2040, pessimistic scenario

20. The regionalized projections for accumulated rainfall produced by INETER indicate that for scenario RCP4.5 in the period 2021 – 2040 a clear gradient showing less rainfall can be observed, ranging from between 2 500 to 3 000 mm in the South Caribbean Coast Autonomous Region (RACCS) and

[15] Obtained from the regionalization of global GCM or regional RCM models.

[16] Downscaled data of three models (CanESM5, MRI-ESM2-0 and CNRM-CM6-1) derived from the coupling of CMIP6 models. The data were calibrated with the WordClim v 2.1 baseline. The scenario used for the year 2040 is the SSP585.

increasing as it moves south, where current accumulated rainfall is of 5 000 mm. For the period 2081 – 2100 there is an overall decline in rainfall, above all on the northern seaboard of the North Caribbean Coast Autonomous Region (RACCN).

21. In scenario RCP8.5, the period 2021 – 2040 indicates that there will be substantial changes when compared to scenario RCP4.5, especially as regards the seaboard from the southernmost point of the country almost to Los Patos Lagoon, where rainfall are expected to exceed 5 000 mm, while the RCP4.5 scenario shows that the area with the highest accumulated rainfall practically ends in Bluefields.

22. It is foreseen that, during the period 2018 – 2100, there will be a significant drop of between 1 400 mm and 1 800 mm in accumulated rainfall along the entire Caribbean Coast. The areas with rainfall higher than 5 000 mm will be reduced to the Indio-Maíz Biological Reserve, and a limited area south of Bluefields Bay. These declines in rainfall may exert an important influence on the communities that live on the Caribbean seaboard. The Dry Corridor has an average yearly rainfall of 800 mm, which in some parts can be as low as somewhere between 500 and 600 mm. When there are *El Niño* years, for example, rainfall may drop by 30% to 40%, including long heat waves during which there is almost no rain at all. In such years, the Dry Corridor area can grow by as much as 8 000 km^2 and affect approximately 60 municipalities (MEFFCA, 2018)[17]. Figure 5 reflects the intensity of the dry spell (duration in days) for the entire country.

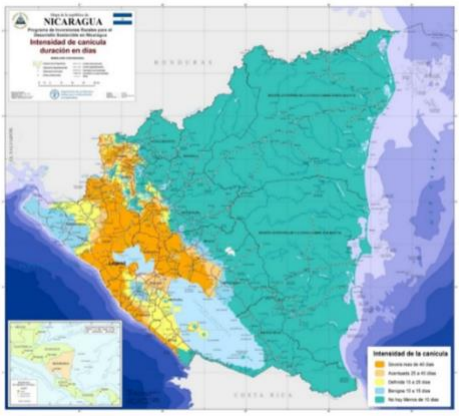


Figure 5. Intensity of the dry spell nationwide (duration in days)

Country vulnerability to climate change

23. Nicaragua is considered the sixth most vulnerable country to climate change in Latin America and the Caribbean and has been classified in the “extreme risk” category (CAF, 2014)[18]. The main phenomena that modulate climate variability and extreme events are *El Niño* and *La Niña*, which translate into severe impacts caused by droughts during the former and flooding and landslides when the latter occurs.

24. According to the Third National Communication (MARENA, 2018)[19], the future scenarios shown in the Fifth IPCC Reports, adjusted to the country’s conditions, indicate that of 153 municipalities in the country, 48 are exposed to drought, 33 to flooding and 21 to hurricanes.

[17] Ministerio de economía familiar, comunitaria, cooperativa y asociativa (MEFCCA). (2018). Agricultura Resiliente al Clima en el Corredor Seco de Nicaragua
[18] CAF (2014). Vulnerability Index to climate change in the Latin American and Caribbean Region
[19] MARENA (2018). Third National Communication to United Nations Framework Convention on Climate Change

25. Meteorological events such as hurricanes, floods and droughts have increased in frequency and intensity, due to climate change. It is calculated that in Nicaragua 1.6 million persons are exposed to hurricanes, while severe droughts may affect some 300 000 persons, a number which may grow during *El Niño* years. To the rainfall patterns, events such as floods and mudslides must be added, both of which have a high probability of affecting rural populations. The levels of exposure of rural populations to these phenomena and their limited response capacity mean that Nicaragua is a highly vulnerable country (INETER, 2018)[20].

Losses and damages

26. Between 1980 and 2013 a total of forty climate-related events were recorded. Taken together, they caused economic losses in excess of USD 3 265 billon, equivalent to an annual loss of 1.2% of GDP, with over 2.7 million persons affected (CAF, 2014)[21].

27. Two hurricanes struck Nicaragua in 2020. The first of these was Hurricane Eta, a category 4 storm that hit the North Caribbean Coast Autonomous Region (RACCN) on 3 November. Ten days later, Hurricane Iota, even stronger at category 5, slammed into the same region, affecting more than three million people nationwide. It was estimated that taken together these events caused losses and damages worth over USD 738 million, equivalent to 6.2% of GDP (MARENA, 2020)[22]. The losses associated with Hurricane Felix in 2007 were calculated at USD 883 million (CEPAL, 2011)[23].

Impacts of climate change on the agriculture sector

28. A study on the vulnerability to climate change and its economic impact on the agricultural sector in Latin America and the Caribbean (Prager *et. al*., 2020)[24], evaluated future climate impacts, using nine general circulation models[25] selected for their robust performance in the region. It is foreseen that temperatures will increase by between 1°C and 4°C in the region. In Nicaragua, projected changes in rainfall will vary considerably, depending on the season and part the country. A strong decrease in rainfall is projected for the summer months of June to August, with a less pronounced drop in September to November (see Figure 6).

29. High temperatures early in the rainy season, when farmers sow their seeds for the first agricultural cycle, tend to limit yields, a situation that may worsen as temperatures climb due to climate change. Further, the high temperatures found at less than 300 m.a.s.l. limit the sowing and harvesting of red beans (a staple food in Nicaragua). For its part, maize is notoriously sensitive to heat, and the temperatures in low-lying areas, which are already sufficiently high to cause a drop in yields, will no doubt exacerbate the situation as they continue to rise because of climate change (Rodríguez, J. *et. al,* 2019)[26].

[20] Instituto Nicaragüense de Estudios Territoriales (INETER)(2018). Datos Geográficos de Nicaragua. Dirección de Geodesia y Cartografía.

[21] CAF (2014). Vulnerability Index to climate change in the Latin American and Caribbean Region

[22] MARENA (2020). Updated Nationally Determined Contribution

[23] CEPAL (2011). La economía del cambio climático en Centroamérica Reporte técnico 2011.

[24] Prager, S., Rios, A.R., Schiek, B., Almeida, J.S., Gonzalez, C.E. (2020). Vulnerability to climate change and economic impacts in the agriculture sector in Latin America and the Caribbean

[25] The nine general circulation models are as follows: BCC-CSM1, BNU_ESM, CCCMA_CANESM2, GFLD_ESM2G, INM-CM4, IPSL-CM5A-LR, MI- ROC-MIROC5, MPI-ESM-MR and NCC-NORESM1-M.

[26] Rodríguez, J., Thomas, T. S., Cenacchi, N, Rios, A. R. (2019). Climate Change, Agriculture, and Adaptation Options for Nicaragua

30. It is projected that during the period from December to February there will be an increase in rainfall in the coastal zones on the Pacific side, in particular in the provinces of Chinandega and León, while decreasing in the interior and southeast of the Caribbean Coast. In the period from March to May, the pattern is inverted, with a drop in rainfall projected along the Pacific Coast and in increase in the interior and southeast of the Caribbean side. It is foreseen that maximum and minimum temperatures will increase between 1° and 3°C throughout the year, with the largest increases being along the coastal areas (Prager *et. al*., 2020)[27].

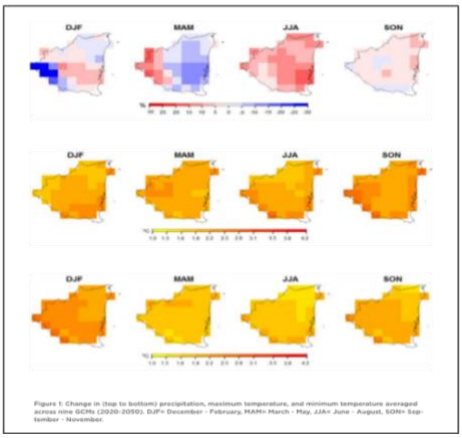


Figure 6. Future Climate Impacts (Prager et al., 2020)

31. Based on the projected changes, forecasts were modelled for maize, rice, red bean and soybean yields, using the Decision Support System for Agrotechnology Transfers (DSSAT v4.5) at a spatial resolution of 0.5 degrees. The parameters for execution of the models for each crop were set by using genetic coefficients of varieties carefully selected by experts for their relevance in the region. The results of crop modelling in Nicaragua shown in Figure 7 suggest it is likely that both the rainfed and irrigated maize and beans systems will see a decline in average yields when compared to scenarios without further climate change (Prager *et. al*., 2020)[28].

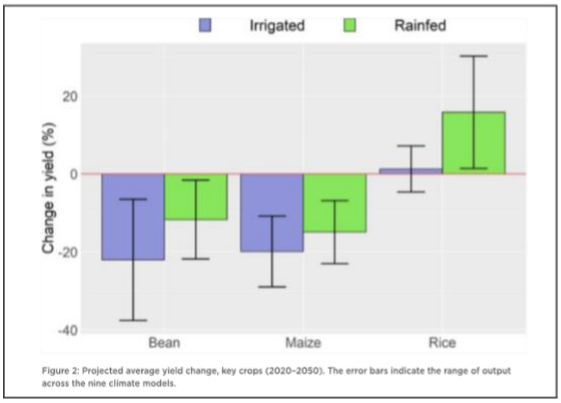
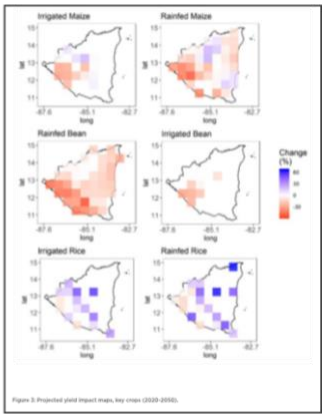


Figure 2: Projected average yield change, key crops (2020–2050). The error bars indicate the range of output across the nine climate models.



[27] Prager, S., Rios, A.R., Schiek, B., Almeida, J.S., Gonzalez, C.E. (2020). Vulnerability to climate change and economic impacts in the agriculture sector in Latin America and the Caribbean

[28] Prager, S., Rios, A.R., Schiek, B., Almeida, J.S., Gonzalez, C.E. (2020). Vulnerability to climate change and economic impacts in the agriculture sector in Latin America and the Caribbean

Figure 8. Projected average yield change, key crops (2020-2050). The error bars indicate the range of output across the nine climate models

Figure 7. Projected yield impact maps, key crops (2020-2050)

32. The geographic view shown in Figure 8 indicates that the maize and beans systems in the north-western coastal region, specifically in the provinces of Chinandega and León, may find themselves particularly affected, with mean yields falling by 20% or more beneath a baseline without climate change. The higher decrease projected for irrigated as compared to rainfed crop yields is due to the concentration of irrigated agriculture in these vulnerable zones. The rainfed maize and beans systems are found mainly in the interior, where it is considered that the impacts of climate change will be relatively less severe. Meanwhile, the potential yield for rainfed and irrigated rise shows relative resistance everywhere in the country, and it is in fact foreseen there may an increase in yields in several areas, especially in the inland (Prager *et. al*., 2020)[29].

33. Considering there will be a population increase, the demand for water could grow by almost 300% by the year 2050 and 1 600% by 2100, according to a trend scenario with no saving measures and no climate change. However, if there is climate change, the demand for water could increase by 20% more than in this baseline scenario (B2) and 24% more in scenario A2. Total availability of renewable water could diminish by 35% with B2, as compared to current availability, and by 63% with A2 in 2100. In those scenarios, Nicaragua would be one of the most affected in the region. The combination of changes in demand and availability on the one hand and climate change on the other generates a possible intensity in water use by 2100 of 36% for the region in a scenario without climate change, of 140% with B2 and of over 370% with A2 if no adaptation and saving measures are taken (CEPAL, 2011)[30].

Capacity to adapt to climate change in the agriculture sector

34. The economic dependency on the agriculture sector is a disadvantage for the country, and several projections indicate that crop yields and their viability will be very much affected by climate change. For this reason, it is important to begin adapting to changing conditions. The sensitivity to variation in patterns of temperature, humidity and rainfall may influence crop components such as soil fertility and its capacity to retain water. Location may also become an issue, if there are changes in the adequacy of certain places for growing particular crops (CAF, 2014)[31].

35. The country produces a significant percentage of the food consumed by its population (mainly beans, maize, milk, beef and poultry). Around 65% of the food grown depends upon rainfall (rainfed agricultural systems). Maize yields, for instance, are less than 2 t/ha, and many smallholders produce only 1 t/ha. Climate irregularities, such as droughts and floods, can reduce harvests by 50%, possibly leading to nationwide food scarcity (Rodríguez, J. *et. al,* 2019)[32].

36. The increase in yields among rainfed crops could have a substantial impact on food security, especially in the cases of smallholder farmers (Rodríguez, J. *et. al,* 2019)[33]. The changing conditions

[29] Prager, S., Rios, A.R., Schiek, B., Almeida, J.S., Gonzalez, C.E. (2020). Vulnerability to climate change and economic impacts in the agriculture sector in Latin America and the Caribbean

[30] CEPAL (2011). La economía del cambio climático en Centroamérica Reporte técnico 2011.

[31] CAF (2014). Vulnerability Index to climate change in the Latin American and Caribbean Region

[32] Rodríguez, J., Thomas, T. S., Cenacchi, N, Rios, A. R. (2019). Climate Change, Agriculture, and Adaptation Options for Nicaragua

[33] Rodríguez, J., Thomas, T.S., Cenacchi, N, Rios, A.R. (2019). Climate Change, Agriculture, and Adaptation Options for Nicaragua

for growing crops could open spaces for the spread of pests and diseases. In this scenario, capacity and agricultural outreach services intended to improve knowledge and skills among local producers, sustainable soil and water management practices, forest conservation and biodiversity are critical to maintaining capacities in the sector.

The Nicaraguan Dry Corridor

37. The Nicaraguan Dry Corridor is part of the Central American Dry Corridor which extends from the Pacific Coast of Guatemala to Costa Rica and the so-called Dry Arch in Panama. The criteria used for its demarcation is based on zones whose dry season is longer than four months (Rojas, O., 2020)[34]. In Nicaragua, the Dry Corridor comprises 21% of the national territory and most of the country's central region. It comprises 64 municipalities (42% of the 153 nationwide) and 37% of the rural population live in these. Of these, around 60% live in conditions of extreme poverty (MEFFCA, 2018)[35]. There are some 67 000 farms in the Dry Corridor, of which 46% are smaller than 2 ha and most of these smallholders practice subsistence agriculture.

38. Most of the project's area of intervention corresponds to a livelihood zone based on subsistence farming activities and alternative economies (extraction and sale of firewood, artisanal production of mud derivatives and sale of labor in agribusiness and agricultural companies to complement families' income). It is an area with intensive systems of basic grains (corn, beans and sorghum), vegetables and coffee. Chickens and pigs are also raised, mostly for consumption and, in a lesser degree, to obtain cash. Although the Pan-American Highway crosses the area, the distances from the most isolated areas to the markets are great, which limits the frequency with which families can attend them and makes them depend on intermediaries for the sale of their surpluses. The shortage of rainfall and / or the irregular rainfall, together with the limited coverage of irrigation systems, particularly in subsistence farms, limit productivity and reduce the availability of food for family consumption (MFEWS and Acción contra el Hambre, 2010)[36].

39. According to SINAPRED and INETER, the 2017-2018 agricultural cycle of the Nicaraguan dry corridor was affected by the deficit of rainfall, triggering impacts on the development of corn, rice, beans and sorghum and the emergence of pests, reporting a lower production during that period. These same institutions report that 300 000 people are exposed to a greater risk of drought in the 22 municipalities of the dry corridor, whose consequences can have a greater impact on these subsistence agricultural activities and on the food security of these people (WFP, 2018)[37].

[34] Rojas, O. (2020). Agricultural extreme drought assessment at global level using the FAO Agricultural Stress Index System (ASIS). Weather Clim. Extreme.

[35] Ministerio de economía familiar, comunitaria, cooperativa y asociativa (MEFCCA). (2018). Agricultura Resiliente al Clima en el Corredor Seco de Nicaragua

[36] MFEWS and Acción contra el Hambre (2010). Perfiles de Medios de Vida en Nicaragua

[37] WFP (2018). Evaluación Inicial de Seguridad Alimentaria en Emergencia Nicaragua. Impacto del déficit de lluvias en 22 municipios del Corredor Seco 2018

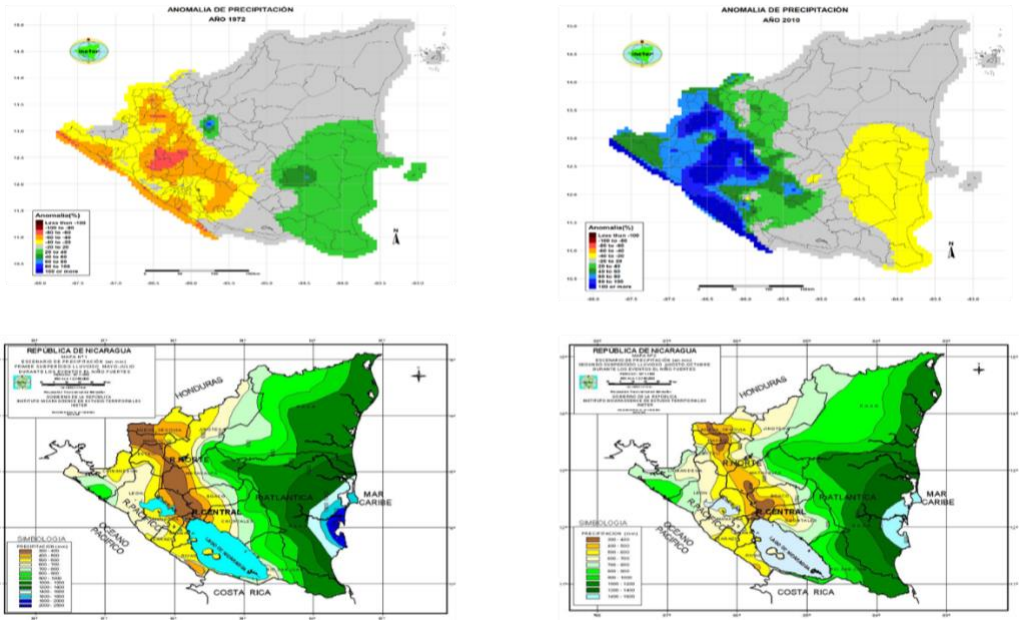


Figure 9. Precipitation anomalies in the Dry Corridor of Nicaragua

40. The municipalities in the Dry Corridor have highly degraded natural ecosystems, caused mainly by the extraction of fuelwood (used by 75% of households), slash-and-burn agricultural practices or accidental fires, change of land use to carry out agricultural activities that cause degradation and loss of natural plant ecosystems, and climate variations that lead to water scarcity or excessive rainfall. The increase in temperatures and droughts significantly reduce the availability of water resources for agricultural and livestock production, which in turn causes substantial economic losses to production, and to family farming in particular.

41. According to the NDC of Nicaragua, the country still has extensive coverage in natural forests that represent 30% of the total area of the continental surface (3.9 million ha; INETER 2015[38]), which makes it the fourth country in Central America with the largest forest area. The forests are distributed in 3 main physiographic regions of the country. According to the 2015 land use map, they are found in a higher proportion in the Caribbean Coast region with 88% and 12% in the Pacific and Central - North regions, where the Dry Corridor is located (see Figure 10).

42. The loss of natural forests continues to be a challenge for Nicaragua. The most recent report on land use change at the national level presented by MARENA (2018)[39], shows that during the period between 2000 and 2015 the country lost 100 815 ha of primary forest annually. However, the deforestation rate was reduced by 52% with respect to the figure reported between the 1983 - 2000 period
(208 303 ha).

43. Nicaragua is part of the Mesoamerican Biological Corridor, where the Pino-Encino forest ecoregion stands out in the North Central Pacific region where the Dry Corridor is located, making it an important transit space for biodiversity in migratory processes and connectivity between patches of forests and degraded landscapes.

[38] INETER (2015). Mapa de suelos de la republica de Nicaragua. Managua Nicaragua

[39] MARENA (2018). Third National Communication to United Nations Framework Convention on Climate Change

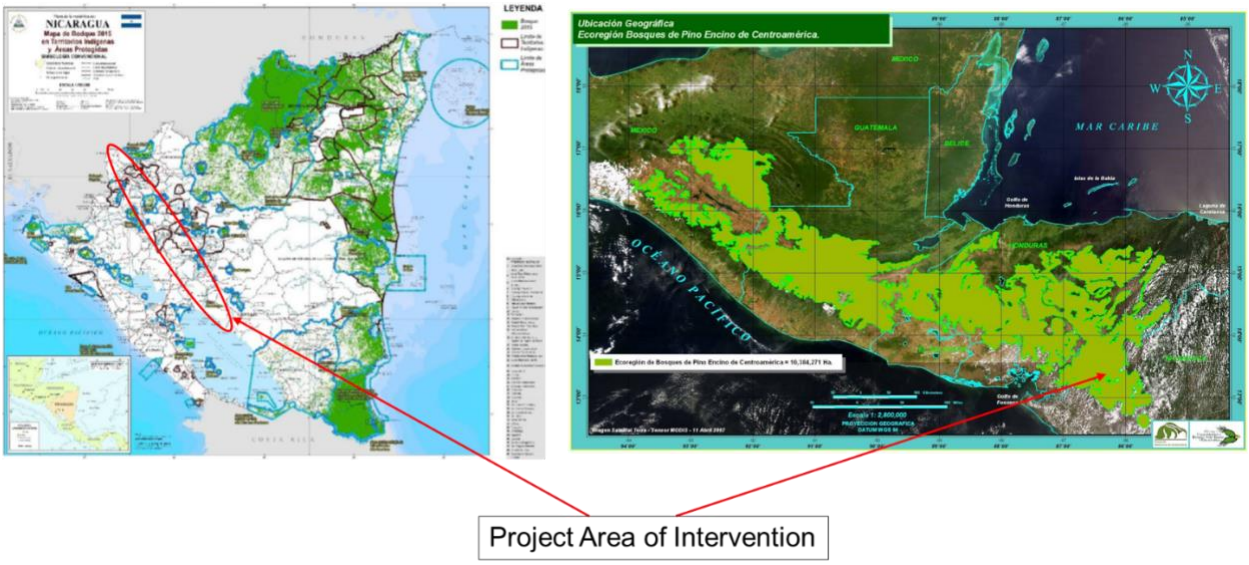


Figure 10. Forest Coverage 2015 and location of the Dry Corridor in the Pino Encino Forest Ecosystem

44. In the document of the Third National Communication on Climate Change, published in 2018, it is indicated that the measures contemplated to avoid the degradation and loss of forest cover with the ENDE-REDD + National Strategy contribute to adaptation to climate change, because they benefit notably the availability of water in depleted sources, especially in areas with a deficit of rain. It also favours the reduction of risks of erosion and landslides, protecting water sources from sedimentation and the mobility of pollutants, as well as protecting a resource as valuable as fertile soil against erosion. On the other hand, they contribute to the increase in biodiversity that is the source of food for some families with low economic incomes and provide ecosystem services for many people who depend economically on the forest resource, such as fibres, firewood, animals for export, etc.

45. Most farms have access to water by way of wells, rivers and streams, but neither permanently nor in the amounts required, which means it has become an ongoing challenge. Available water is used mainly for human consumption and irrigation. The most grown crops are maize and beans. During the 2018-2019 agricultural cycle, drought affected approximately 53% of these. This was followed by excessive rains that caused 62% of production to be lost.

46. The level of schooling between men and women is similar. Incomplete primary school is the level that prevails in 34% of households, mainly among the older age groups (30 to 45 and 46 to 55 years of age). This lag in education limits the possibilities of accessing better-paying jobs, particularly among the 30-45 age group. Only 9% of households have a member who has finished secondary school, which suggests there is a high percentage of the young population that is currently not studying.

47. Agricultural activities cover 58% of basic household needs, meaning families are vulnerable to the effects of climate change on agriculture. Limited access to financial resources, agricultural technologies[40] and the capacities needed to use these and thus adapt to and overcome the effects of climate change and contribute to ensuring the sustainability of their livelihoods is a growing need for families living in the Dry Corridor.

[40] The UNFCCC Adaptation Committee notes the lack of adequate access to financial resources, the insufficient legal and regulatory framework, inadequate capacity to prepare projects, barriers related to traditions and habits, and scarce knowledge about climate change and technological solutions as the main obstacles to the development and transfer of technology in Latin America and Caribbean (UNFCCC, 2020).

48. The Dry Corridor in Nicaragua has been identified as the epicentre of the yearly dry spell (the aforementioned reduction in rainfall during the rainy season) that affects agriculture and cattle-raising in Central America. There is a 25% probability, meaning once every four years, that crop losses due to drought will exceed 20% in agricultural areas (Rojas, O., 2020)[41]. The drought in 2001 caused losses estimated at USD 49.1 million (ECLAC, 2011)[42].

Identification of problems, causes and barriers in the dry corridor of Nicaragua

49. Droughts and extreme rainfall have a negative impact on the rural livelihoods of families living in the Dry Corridor. As the magnitude, frequency and impact of meteorological events increase and are aggravated by climate change. Their vulnerability increases due to the overexploitation of soil, water and forest resources, and more and more families have less resilience, understood as the ability to assimilate, recover and adapt, becoming more vulnerable to future climatic events.

50. The diagnostics carried out by the Nicavida project[43] in Dry Corridor municipalities point to the following as the main barriers that limit the adaptation of smallholder families to climate change: droughts that affect agricultural production; scarce access to water for human consumption, irrigation and livestock waterers; limited capacity to implement sustainable land management practices; an increase in soil degradation and erosion due to loss of forest cover and inadequate agricultural production practices; and low levels of agricultural productivity; and levels of schooling and few training opportunities. FAO data (2019) indicate that moderate or severe food insecurity affects 47% of households in the Dry Corridor, a situation it may be assumed has grown worse due to the impact of the COVID-19 pandemic.

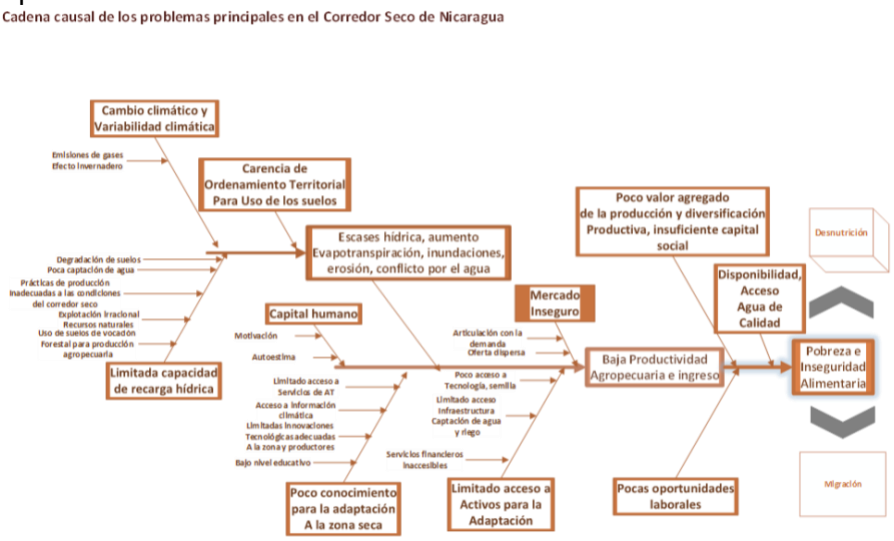


Figure 11. Causal chain of the main problems found in Nicaraguan Dry Corridor

51. The project seeks to address the barriers facing adaptation to climate change in the agricultural sector, specifically from small producers who need to adapt to continue producing corn and beans in 14 municipalities in the Dry Corridor, an area of 12 414 hectares. These municipalities were selected

[41] Rojas, O. (2020). Agricultural extreme drought assessment at global level using the FAO Agricultural Stress Index System (ASIS). Weather Clim. Extrem.

[42] CEPAL (2011). La economía del cambio climático en Centroamérica Reporte técnico 2011.

[43] Government of Nicaragua and IFAD (2016). Proyecto de Desarrollo Sostenible de las Familias Rurales en el Corredor Seco de Nicaragua - NICAVIDA

upon having undertaken a first multi-criteria analysis which took into account the variables of soil coverage, poverty, population density, drought and variations in rainfall. Subsequently, those areas were prioritized in which there is a larger presence of small and medium farmers, which are more sensitive to the effects wrought by climate change, due to their limited purchasing power as concerns adaptive technologies. Map 6 shows in detail the 14 municipalities that comprise the project area of intervention.

52. The 14 prioritized municipalities are as follows: Ciudad Darío, Condega, El Jicaral, La Trinidad, Palacagüina, San Isidro, San Juan de Limay, San Lorenzo, Santa Rosa del Peñón, Sébaco, Somoto, Telpaneca, Teustepe and San Francisco Libre. Ten of these municipalities are under serious threat of drought (Somoto, San Lorenzo, Teustepe, El Jicaral, Santa Rosa del Peñón, Telpaneca, San Francisco Libre, Ciudad Darío, San Isidro and Sébaco). The municipality of San Francisco Libre is also at high risk of flooding (MARENA, 2018)[44].

53. The project intends to focus on facilitating the transfer of adaptation capacities and the development of climate-smart agriculture that contributes to reducing climate vulnerability, while increasing the adaptive capacity of smallholder families and their agro-ecosystems in 14 municipalities in the Dry Corridor.

Identification and description of the project area of intervention

54. The model for prioritizing areas for project intervention was based on the Multiple Criteria Methodology designed by the Intergovernmental Panel for Climate Change (IPCC). This methodology calls for carrying out an overall review of the situation in any given area of intervention, from an adaptive perspective based on multiple approaches (see Table 1). Processes were established for the quantification and evaluation of the sensitivity of the aforementioned municipalities to the effects of climate change, as well as the identification of places with the highest potential for carrying out actions keyed to increasing the resilience of smallholders living in the project area of influence.

55. According to the methodological design described in the foregoing, multi-criteria models were run in all municipalities located in the Dry Corridor. Using two categories – high (1) and very high (2), the model prioritised 26 municipalities in nine provinces (see Table 2 and Figure 6).

Table 1. Criteria and numerical weighting for multi-criteria analysis

CRITERIA	WEIGHTING
Soil coverage	20%
Poverty	15%
Population density	15%
Drought	20%
Rainfall variation	30%
Total	100%

[44] MARENA (2018). Third National Communication to United Nations Framework Convention on Climate Change

Table 2.Municipalities prioritized according to multi-criteria analysis

No	Municipalities	Total ha to be covered	Estimated Total Population to 2020 (Inhabitants)	Urban (Inhabitants)	Rural (Inhabitants)
	MADRIZ	1 407.57	**79 535**	**33 224**	**46 311**
1	Palacagüina	348.74	15 389	5 601	9 788
2	Somoto	410.59	39 821	21 021	18 800
3	Telpaneca	648.24	24 325	6 602	17 723
	ESTELÍ	3 690.77	**68 679**	**29 591**	**39 088**
4	Condega	1 093.23	31 086	11 836	19 250
5	La Trinidad	816.01	22 521	12 852	9 669
6	San Juan Limay	1 781.53	15 072	4 903	10 169
	MATAGALPA	2 630.42	110 970	57 790	53 180
7	Ciudad Darío	1 067.10	53 268	22 918	30 350
8	San Isidro	895.71	19 995	9 300	10 695
9	Sébaco	667.61	37 707	25 572	12 135
	LEÒN	1 194.10	22 781	4 948	17 833
10	El Jicaral	762.65	11 833	1 577	10 256
11	Santa Rosa del Peñón	431.45	10 948	3 371	7 577
	BOACO	1 491.47	65 228	15 749	49 479
12	Teustepe	844.43	33 592	6 995	26 597
13	San Lorenzo	647.04	31 636	8 754	22 882
	MANAGUA	2 000.00	11 267	3 451	7 816
14	San Francisco Libre	2 000.00	11 267	3 451	7 816
	TOTAL	**12 414.33**	**358 460**	**144 753**	**213 707**

Source: MARENA 2021 for surface to prioritize. INIDE 2020 population estimates[45]

[45] INIDE (2020). Anuario Estadìstico 2019

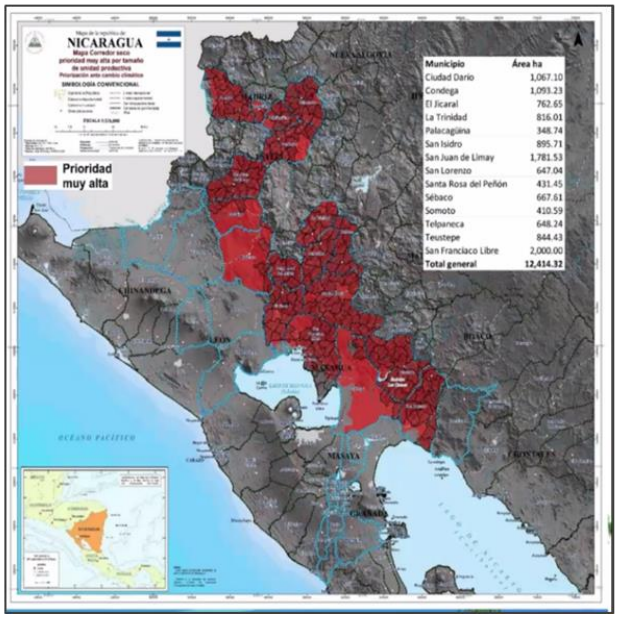


Figure 12. Project Area of Intervention

56. The Project plans to carry out activities in two municipalities with indigenous communities in the North and Central Region of the country: i) in the Chorotega del Norte indigenous people, which includes the municipality of Telpaneca in the department of Madriz and ii) in the Chorotega del Centro Indigenous people in the municipality of Sèbaco in the department of Matagalpa. The indigenous town of Li Telpaneca is located in the department of Madriz and its foundation dates from the year 1626, it has an estimated population of 12 000 people, which are distributed in 39 rural communities and five urban areas, agriculture is directed towards the sowing of grains basic: corn, beans, sorghum, musaceae, coffee being grown on a regular scale in mountainous areas such as the El Malacate hills with 1 490 meters high, Santo Domingo with 1 348 and El Picacho with 1 343. The Council of Elders, made up of an elder from each community, is the highest decision-making body and guardian of historical memory. The Board of Directors is the administrative and executive body subject to popular election. The Youth Network, Women's Network, Mediators also operate.
57. Indigenous Community and Communicators. The indigenous town of Sébaco is characterized by intense industrial activity, such as the processing of rice and coffee, to which is added an active trade. In addition to the municipal government, there is an indigenous community government, made up of community members through the Indigenous Assembly, the Council of Elders, the Administrative Board of Directors and the Electoral Directory.

B. Project / Programme Objectives

58. The general project objective is to contribute to reducing the climate vulnerability of smallholder families and their agro-ecosystems in the Nicaraguan Dry Corridor by increasing their adaptive capacity, rehabilitating their agricultural livelihoods and using ecological transition practices, climate-smart agriculture and restoring the forest landscape.

59. Participatory planning processes and the transfer of capacities will facilitate the implementation of ecosystem-based adaptive measures and actions that improve the water and food security of benefiting families, generate ecosystem services at landscape scale and contribute to the ecological transition.

60. To reach the objective described in the foregoing, four outcomes are proposed, as follows:

Outcome 1. Smallholder families in 14 municipalities in the Dry Corridor develop capacities to plan and implement adaptive measures and actions based on ecosystems, with a gender and ethnic approach, that contribute to improving their water and food security.

Outcome 2. Forest landscape restoration activities that help to improve the flow of ecosystem services are implemented by smallholder families in 14 municipalities in the Dry Corridor.

Outcome 3. Climate-smart agricultural practices, including silvopastoral and agroforestry systems, are adopted by smallholder families in 14 municipalities in the Dry Corridor.

Outcome 4. An adaptive administration and knowledge management approach is applied during project implementation.

C. Project / Programme Components and Financing

PROJECT / PROGRAMME COMPONENTS	EXPECTED OUTPUTS	EXPECTED OUTCOMES	AMOUNT (US$)
1. Transfer of capacities to smallholder families in 14 municipalities in the Dry Corridor, leading to implementation of adaptive, ecosystem-based measures and actions.	1.1 A capacities development project with a gender and ethnic approach to participatory planning and start-up of ecosystem-based adaptive measures and actions, together with skills improvement on issues such as marketing and digital tools, is developed and implemented.	1. Smallholder families in 14 municipalities in the Dry Corridor develop capacities for planning and implementing ecosystem-based adaptive measures with a gender and ethnic approach that contributes to improving their water and food security.	1 141 600
2. Restoration of forest landscape so it generates ecosystem services.	2.1 Forest landscape is restored and generates ecosystem services.	2. Forest landscape restoration activities that help to improve the flow of ecosystem services critical to water availability during periods of droughts are implemented by smallholder families in 14 municipalities in the Dry Corridor.	4 000 000
3. Rehabilitation of agricultural livelihoods at farm level, using climate-smart agriculture practices.	3.1 Agricultural crops, silvopastoral and agroforestry systems are established and/or improved with the use of selected heat-resistant seeds and the implementation of agroecological practices based on sustainable soil and water management.	3. Climate-smart agricultural practices, including silvopastoral and agroforestry systems and agroecological practices are adopted by smallholder families in 14 municipalities in the Dry Corridor.	2 500 000

PROJECT / PROGRAMME COMPONENTS	EXPECTED OUTPUTS	EXPECTED OUTCOMES	AMOUNT (US$)
	3.2 Promotion of resilient livelihoods by means of diversification and access to markets, with a gender and ethnic approach, for at least two crops grown using sustainable land management practices.		
4. Capture and dissemination of knowledge and lessons from the project, as well as participatory monitoring and follow-up to the activities implemented.	4.1 A knowledge and communications management strategy, with a gender and ethnic approach, is developed and implemented. 4.2 A project follow-up, monitoring and evaluation system, with a gender and ethnic approach, is developed and implemented.	4. An adaptive administration and knowledge management approach is applied during project implementation.	700 000
6. Project/Programme Execution cost (9.5%)			875 000
7. Cost Total Project/Programme Cost (= Project Components + Execution Cost)			9 216 600
8. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable) (8.5%)			783 400
Amount of Financing Requested			**10 000 000**

D. Projected Calendar

Milestones	Expected Dates
Start of Project/Programme Implementation	January 2022
Mid-term Review (if planned)	June 2024
Project/Programme Closing	December 26
Terminal Evaluation	March 2027

PART II. PROJECT JUSTIFICATION

A. Project components

61. The project has for its objective to contribute to reducing climate vulnerability among smallholder families and their agroecosystems in the Dry Corridor by increasing their adaptive capacity, rehabilitating their agricultural livelihoods and using ecological transition practices, climate-smart agriculture and the restoration of forest landscapes.

62. The participatory planning and capacities transfer processes will facilitate the implementation of ecosystem-based adaptive measures and actions that improve the water and food security of benefiting families, as well as the generation of ecosystem services at landscape scale.

63. This objective is closely related to three Adaptation Fund outcomes, as follows: i) Fund Outcome 3. Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level; ii) Fund Outcome 5. Increased ecosystem resilience in response to climate change and variability-induced stress; iii) Fund outcome 6. Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas.

64. The low agricultural production and the losses in corn and bean crops suffered by families in the dry corridor are directly related to the presence of prolonged droughts and extreme rains as a result of climate change. Additional difficulties include soil degradation; the loss of vegetation cover; limited access to water for human consumption, irrigation and livestock waterers during the dry season; and low levels of schooling and limited training opportunities that reduce these families' adaptive capacities. To address this situation, the opportunity was perceived to request resources from the Adaptation Fund to be used as a means of improving the adaptive capacity of a targeted number of smallholder families through adaptation strategies that focus on how to continue producing corn / beans, reducing their vulnerability to climate change by developing capacities by means of which to rehabilitate their agricultural livelihoods, using climate-smart agricultural practices and restoring the forest landscape in a setting marked by a changing climate.

65. The project consists of four interrelated components, as described immediately below:

66. **Component 1.** Transfer of capacities to smallholder families in 14 municipalities in the Dry Corridor, leading to implementation of adaptive, ecosystem-based measures and actions.

67. It is foreseen that the project will directly benefit at least 5 000 smallholder families and indirectly another 20 000 persons in 50 communities located in the 14 municipalities. This will translate into greater capacities to confront climate change and improve food security among benefiting families.

68. The project will place special emphasis on smallholder women. When activities begin, an analysis of gender relations is planned that will ensure that the capacities transfer uses a gender approach and has a strong direct impact on this population group. During the preparation of the Concept Note, an initial gender assessment has been prepared (see Annex 1) based on a study carried out by FAO with 1 206 rural households in the dry corridor (March, 2021), reflecting that 79% of the women consulted said their crops had been affected by climate change, be it due to the effects of drought or excessive rainfall, access to water is a daily challenge, only 35% of the informants said they have water sources in their place of residence and 7% have natural forest. The project aims to expand the economic development of smallholder women by empowering them and strengthening their role in communal decision-making, in addition to improving capacities among the project's technical team

on matters related to gender, ethnic groups and social equity. The use of digital tools will be a key strategy for capacity-development processes that strengthen the resilience of these families' livelihoods.

69. **Outcome 1.** Smallholder families in 14 municipalities in the Dry Corridor develop capacities for planning and implementing ecosystem-based adaptive measures with a gender and ethnic approach that contributes to improving their water and food security.

70. This outcome is directly related to Outcome 3 of the Fund: "Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level". To achieve this outcome, it is proposed to develop the following outputs and activities:

71. **Output 1.1** A capacities development project with a gender and ethnic approach for participatory planning and start-up of ecosystem-based adaptive measures and actions, together with skills improvement on issues such as marketing and digital tools is developed and implemented.

72. The capacities development project has for its aim to transfer theoretical and practical knowledge to benefiting families, as well as to share the experience with a group of local actors in the Dry Corridor who are not directly involved but have links to cooperatives or civil society organisations.

73. For the design of the program, meetings, workshops, and dialogues will be held with key stakeholders who will provide inputs related to existing capacities, indigenous and local knowledge, and training needs that should be addressed by this program. The Project plans to carry out activities in 2 municipalities with indigenous communities in the North and Central Region of the country: i) in the Chorotega del Norte Indigenous people, which includes the municipality of Telpaneca in the department of Madriz and ii) in the Indigenous people Chorotega del Centro in the municipality of Sèbaco in the department of Matagalpa and for this reason it will be considered that peasant agriculture, especially family farming, has a strong roots in the ecosystem and the natural resources associated with it. Consequently, a certain resilience to climate change has been developed, through the development and practice of various forms of production, commonly called ancestral practices and which are analogous to agroecological practices, such as, for example, indigenous food systems.

74. Further, it will be necessary to carry out a participatory analysis on the setting and its vulnerability at landscape scale that allows for understanding the existing climate risk and livelihoods affected by climate threats, as a point of departure for the actions to be implemented under components 2 and 3.

75. The program will be implemented through the creation of learning sites, directly in the territory. The learning sites promoted by FAO are the Capacity Development Units (UDC) and the Agroecological Promotion Units (UPA) through Field Schools that are developed on farms to be selected in each municipality where there are already experiences of adaptation practices with ancestral, indigenous and / or project knowledge previously developed in the project area. In the learning sites, groups of producers from a community are formed who carry out participatory research to solve productive problems in their crops and the farms where soil and water management practices are already implemented are identified; the protection of forests, wetlands and other sensitive ecosystems and in the case of the cultivation of corn and beans to identify the farms where to validate the implementation of certified improved seeds and / or seed banks, local strains to improve the productivity of red and black beans and white, crop rotation, vegetation cover (Mulch) and no burning and the "Water Harvest" as a practice of adaptation to climate change. The Field Schools are an experiential and participatory learning methodology, used by FAO since the eighties, and has been adapted to different contexts and needs around the world. The methodological guide called "Field School Guide

for Facilitators in the Agricultural Extension Process" will be used, based on non-formal education for adults, where rural families and teams of facilitators exchange knowledge, based on experience and experimentation through simple and practical methods, using the cultivation and the home as a teaching-learning resource for empowerment and development.

76. As part of the design of the capacity development program, a study will be carried out to expand the initial gender assessment to allow its mainstreaming throughout the project, in order to support gender equality by aiding men and women in all activities that promote the project, promoting equal opportunities and the generation of affirmative actions aimed especially at heads of household and women who lead agricultural production activities on their farms, in order to contribute to the elimination of obstacles that hinder their development.

77. For the purpose of undertaking the study on gender relations, consultations will take place with actors in the project area of intervention and other key actors, as needed. FAO has carried out similar studies in the Dry Corridor and other parts of the country. The results, as well as the methodological processes developed, are fundamental to the implementation of this output.

78. **Component 2:** Restoration of forest landscape so it generates ecosystem services.

79. The component incorporates and contributes to the objectives set forth in the National Sustainable Forestry Sector Development Policy, the National Avoided Deforestation Strategy (ENDE-REDD+) and the National Reforestation Crusade, among other political action instruments. Nicaragua has extensive coverage in natural forests that represent 30% of the total area of the continental surface (3.9 million ha; INETER 2015)[46], however, its highest proportion is found in the Caribbean Coast region with 88% and 12% in the Pacific and Central North regions. Forest restoration in Nicaragua is a priority and there are potential areas in the project area to implement forest cover management and restoration actions. Landscape restoration actions will make it possible to protect, sustainably manage and restore natural or modified ecosystems, through agroforestry, improved farmland management, agricultural diversification, integrated water management and forest management.

80. **Outcome 2**. Forest landscape restoration activities that help to improve the flow of ecosystem services critical to water availability during periods of droughts are implemented by smallholder families in 14 municipalities in the Dry Corridor.

81. This outcome is directly related to the Fund's Outcome 5: "Increased ecosystem resilience in response to climate change and variability-induced stress".

82. **Output 2.1** Forest landscape is restored and generates ecosystem services.

83. The restoration of the forest landscape will improve the flow of ecosystem services in the municipalities where the project intervenes. This will contribute to improving soil productivity, recovering water resources, restoring forest cover and generating ecosystem services, such as pollination, pest and disease control, all of which will have a positive impact on agriculture, the main livelihood of benefiting families, as well as their climate resilience.

84. To achieve the proposed result and product, it will be necessary to carry out a participatory planning exercise of actions at the landscape scale to locate the restoration of forests on the banks of rivers and streams for the conservation of water sources and in areas for the creation of biological corridors. between patches of forest, and development of agreements between actors for their implementation.

[46] INETER (2015). Mapa de suelos de la republica de Nicaragua. Managua Nicaragua

The forest landscape restoration actions will improve the flow of ecosystem services by developing them in the identified areas to protect the aquifer recharge zones in the project area, areas to generate non-timber products for food cooking, natural medicine and to ensure the transit of biodiversity in the migratory processes of wildlife.

85. The forest restoration implemented by the project will contribute to the fulfilment of Nicaragua's goal in the 20x20 Initiative with the objective of restoring nearly 2.8 million hectares and to the NDC's goal in the Forest Management, Land Use and Change of Land Uses. Through the national system of production, consumption and trade, Nicaragua has established productive strategies with a focus on adaptation and mitigation to climate change, promoting best practices for the establishment and management of crops and incorporating low-emission production initiatives that also contribute to the environmental restoration.

86. To put these agreements into practice, detailed investment plans will be carried out to define the protection areas of water recharge zones, areas for the creation of biological corridors between forest patches and areas to generate non-timber products, with a gender and ethnic focus, developed to guide forest landscape restoration actions in each municipality. Local governance systems and arrangements will also be strengthened in the municipalities where the project will work, to anchor the implementation of forest landscape restoration actions to these local governance arrangements.

87. **Component 3:** Rehabilitation of agricultural livelihoods at farm level, using climate-smart agriculture practices.

88. This component pursues the strengthening of adaptive capacities on the part of communities and families, by adopting climate-smart sustainable agriculture practices. It prioritizes the scaling up of adaptation practices sufficiently tested in Nicaragua and other countries with similar Dry Corridor environments. It will make use of lessons and systematisations developed by the Agriadapta Project, in which 37 climate change adaptation technologies have been identified, among them soil and water conservation works, increases in tree coverage and water harvesting, and the implementation of community initiatives intended to improve the quality of life of women, men and young adults in the *Adapta Jóvenes* Network, as protagonists in ten municipalities in the Dry Corridor.

89. **Outcome 3.** Climate-smart agricultural practices, including silvopastoral and agroforestry systems and agroecological practices are adopted by smallholder families in 14 municipalities in the Dry Corridor.

90. This outcome is directly related to Outcome 6 of the Adaptation: “Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas”. This can be considered the project’s central outcome, which will contribute directly to improving the resilience of benefiting families. Its achievement is closely related to the development of the other outputs and activities mentioned below.

91. **Output 3.1** Agricultural crops, silvopastoral and agroforestry systems are established and/or improved with the use of selected heat-resistant seeds and the implementation of agroecological practices based on sustainable soil and water management.

92. To rehabilitate and enhance livelihoods based on agriculture and animal-raising using climate-smart agricultural practices at farm level, the point of departure will be the use of climate change adaptation technologies in prioritised sectors which were developed as part of the Third National

Communication.[47]

93. **Output 3.2** Promotion of resilient livelihoods by means of diversification and access to markets, with a gender and ethnic approach, for at least two crops grown using sustainable land management practices.

94. This strategy will provide guidelines for the selling of the crops harvested by benefiting smallholder families at local markets. Developing market access capacities and the sale of agricultural products will be addressed as part of the training to take place at the Field Schools mentioned in component 1.

95. **Component 4:** Capture and dissemination of knowledge and lessons from the project, as well as participatory monitoring and follow-up to the activities implemented.

96. This component aims at developing knowledge management by systematising the project's experiences from the outset, followed by the dissemination of this information through the youth and community board networks, using digital technology. It also includes follow-up, monitoring and evaluation.

97. **Outcome 4.** An adaptive administration and knowledge management approach is applied during project implementation.

98. This outcome is related directly to Outcome 3 of the Fund: "Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level". It is thought this outcome will provide important guidelines, set forth in the following outputs, while facilitating project development and the achievement of the objectives and outcomes proposed.

99. **Output 4.1**. A knowledge and communications management strategy, with a gender and ethnic approach, is developed and implemented.

100. The participatory formulation and implementation of a knowledge and communications strategy will allow for systematising and later on disseminating the main project results and lessons learnt.

101. In order to formulate this strategy, it will be necessary to hold meetings and workshops with key actors that provide inputs which feed strategy development.

102. **Output 4.2**. A project follow-up, monitoring and evaluation system, with a gender and ethnic approach, is developed and implemented.

103. Having in place a follow-up, monitoring and evaluation system will allow the technical team to take informed decisions, using the lessons-based adaptive management approach and making adjustments to activities still to be undertaken.

B. Economic, social and environmental benefits

104. The objective of the project is to contribute to reducing the climatic vulnerability of peasant families and their agro-ecosystems in the Dry Corridor of Nicaragua. It is estimated that the project will directly benefit at least 5 000 peasant families and indirectly around 20 000 people in 50 communities in 14 municipalities of the dry corridor in poverty. The economic benefits will be generated mainly by making

[47] MARENA (2018). Third National Communication to United Nations Framework Convention on Climate Change

the livelihoods of these peasant families more resilient to climate change, which will help to minimize the losses associated with prolonged droughts (heatwave), while creating economic opportunities for sale. of your products in local markets, through short marketing chains.

105. In social terms, the project will be inclusive and ensure that different types of families and actors can become beneficiaries of the activities to be carried out. The beneficiaries' eligibility criteria (farm size, number of crops, number of animals, level of schooling, etc.) will be defined in the project's early stage. Participating smallholder families will benefit from better planning, recovery and forest landscape management. The rehabilitation of their agricultural and animal husbandry livelihoods, including the establishment of new crops with a climate-smart approach to agriculture will improve food security.

106. The capacity transfer process (component 1) will allow families to have access to more information that will allow them to increase their resilience, adaptive capacity and at the same time improve decision-making when faced with extreme weather events. The direct beneficiaries of the project, 5 000 farmers, will be trained in agricultural practices for sustainable and climate-resilient land management; forest landscape restoration; local governance and market and marketing issues. To further expand the number of beneficiaries, the capacity and knowledge building materials are designed in a way that provides accessibility and replicability on a large scale (on-farm practices, support for diversification, access to climate hazard monitoring). This will also be added to the number of direct and indirect beneficiaries of Components 2 and 3.

107. The project will generate direct and indirect environmental benefits through component 2, promoting a favourable local environment for the management and conservation of natural resources at the farm level and in the surrounding landscape. The restoration of the forest landscape in an area of at least twenty thousand hectares will allow obtaining benefits that can impact at least 20 000 inhabitants of 50 communities in 14 municipalities of the dry corridor, through the improvement of long-term ecosystem services, among them, improvement the availability of water by protecting the aquifer recharge zones in the project area, greater availability of non-timber products for cooking food, natural medicine and ensuring the transit of biodiversity in the migratory processes of wildlife. Through component 3, the implementation of climate-smart agriculture practices will allow less management of soils and water courses, which will have a positive impact on ensuring food production, especially corn and beans, which contributes to improving the food security of families.

108. The detailed study to be carried out on gender relations will make it possible to quantify the direct benefits to rural women through the activities of all the components of the project. It is estimated that the project can enable the active participation of 30% of women in the project's target area and reach significantly more women beneficiaries through outreach and capacity-building activities. Component 1, as well as the managerial transfer of results developed in Component 3, have great potential to increase the benefit to women through the Creative Economy Model, actively and productively involving women and their representation directly in managerial roles and decision making. Also, in component 1 the project will include the promotion and consolidation of a culture of coexistence based on values and non-violence, fostering spaces for dialogue, awareness and training.

Table 3.Expected benefits

Type of benefit	Baseline (conditions)	With project
Economic	• The prolonged droughts, aggravated by climate change, mean harvests are reduced, which translates into lost	• The rehabilitation of agricultural livelihoods using climate-smart practices will reduce harvest losses and create opportunities to sell family

Type of benefit	Baseline (conditions)	With project
	income for smallholder families.	agriculture products in local markets, which translates into better incomes for beneficiary families. • Landscape restoration will make better forest management possible, including access to fuelwood and economically valuable non-timber products.
Institutional	• Many institutions at local level are not prepared to take decisions related to climate change and/or actions to increase the resilience of families and their livelihoods.	• The capacities transfer process will assist local institutions (as well as beneficiary families) to be better prepared for comprehensive decision-making when faced with extreme climate events.
Social	• Droughts, aggravated by climate change, are causing social problems, mainly because of the limited access to water, both for irrigation and human consumption purposes. • Reduced harvests due to droughts have led to food and nutrition security problems for smallholder families.	• Once livelihoods become climate-resilient, food and nutritional security of beneficiary families will improve. • The transfer of capacities to beneficiary families will give them access to more information, which in turn will increase their resilience and adaptive capacity, while improving decision-making in the face of extreme climate events.
Environmental	• The overexploitation of natural resources, together with climate change, are having negative environmental impacts, especially as regards land / soil degradation and the loss of forests and biodiversity.	• Landscape restoration will lead to better forest management, conserving the water courses and improving ecosystem services. • Climate-smart agricultural practices will improve fertility and other soil conditions and associated ecosystem services. • The implementation of climate-smart agricultural practices will contribute to reducing GGE.

C. Cost-effectiveness of the proposed project

109. As presented in the section I.A, Nicaragua is especially vulnerable to climate impacts that are already disrupting agricultural production, ecosystem degradation, and causing human health issues. Climate impacts contribute to increased poverty and food insecurity, as well as economic losses at local and national scales across the country. In the last 30 years, Central America lost USD 9 800 due to drought and half this figure was in the agricultural sector.

110. The project aims at contributing to the reduction of the climate vulnerability of smallholder families and their agroecosystems in the Nicaraguan Dry Corridor by increasing their adaptive capacity through the rehabilitation of agricultural husbandry livelihoods, using climate-smart farming practices and restoring the forest landscape. To ensure an effective reduction in vulnerability and an increase in the adaptive capacity of smallholder families and their agroecosystems, the project will drive the implementation of nature-based solutions (NbS) that help to address the existent challenges.

111. NbS is used as an umbrella concept to cover a range of ecosystem-related approaches including ecosystem-based adaptation, natural climate solutions, and green infrastructure that can be implemented for climate change adaptation and mitigation while also restoring ecosystems, conserving biodiversity, and enabling sustainable livelihoods. Due to their multiple benefits, NbS have the potential to cost-effectively achieve ecological, social, and economic goals. NbS help communities build resilience in a way that provides "the most benefit for the least cost" compared to grey infrastructure.

112. The project will take advantage of previous and ongoing initiatives in the country by drawing on experiences and lessons learned. This also includes partnering with different government and non-government initiatives (see section II.F) to ensure the project will reduce the need of testing pilot areas and developing new tools, methodologies and approaches that can be costly and timely to adjust into successful models.

113. It is estimated that around 20 000 people, averaging 5 000 households, will be the direct beneficiaries of the project components. Calculating the average USD 850 investment cost per direct beneficiary of components 1 to 3, the project can be considered cost-effective.

114. Costs per activity will be calculated in the detailed proposal, including the cost by benefiting family, by livelihoods restored and by forestland recovered (measured by area). Losses and damages associated with low productivity or reduced harvest due to extreme climate events will also be calculated, to generate quantitative information on the cost-effectiveness of the actions proposed, as well as to hold a comparison with alternative activities. Among these are possible disbursements by government social assistance programmes in case there are harvest reductions caused by extreme climate events.

115. Altogether, the project will be cost-effective by:

- Avoiding future costs associated with damage and loss due to climate change impacts (especially droughts) and to ensure the interventions are sustainable;
- Efficient project operations because of 'in-house' technical support options and capacity building expertise and because of direct partnering with communities (thereby building their capacity as well as reducing costs);
- Community involvement with development/construction of concrete interventions and because of community capacity building
- Selected technical options based on cost-feasibility and resilience/sustainability criteria (assessment to be done during full proposal).

Table 4.Cost-effectiveness perspective

Specific outcomes / outputs expected	**Rationale why priority actions have been selected from a cost-effectiveness perspective**
Component 1. Transfer of capacities to	This component will ensure community and sub-national

Specific outcomes / outputs expected	Rationale why priority actions have been selected from a cost-effectiveness perspective
smallholder families in 14 municipalities in the Dry Corridor, leading to the implementation of adaptive, ecosystem-based measures and actions. 1.1 A capacity development project, with a gender and ethnic approach, for purposes of participatory planning and implementation of ecosystem-based adaptive measures and actions, together with improved marketing skills is developed and begun.	authorities' ownership and maintenance of assets and approaches disseminated by the project, as an important ingredient for sustainability and cost-effective investment. The project will ensure that the activities undertaken respond to needs and demands of communities, by identifying and addressing barriers that prevent people from adopting those practices driven by the project. The participatory planning and implementation of measures allows also for important savings in terms of: i) identifying those practices and tools that are most likely to be adopted in a sustainable way; and ii) the logistical cost of targeting and providing services to participants by partnering with local counterparts such as municipalities, NGO's or cooperatives.
Component 2: Restoration of forest landscape so it generates ecosystem services. 2.1 The forest landscape is restored and begins to generate ecosystem services.	Many of the NbS are implemented at a landscape or ecosystem scale. They have critical importance to agriculture, as they can generate important benefits in the production of food and other agricultural products, and the usually include agricultural producers as implementing partners. Even when NbS are being implemented at an individual farm or local project, it is important to plan for landscape scale deployment, both to maximize benefit and to understand impact if actions are scaled up. Examples of landscape-scale NbS are: avoided forest and grassland conversion (with an estimate of 23 Pg CO_2e/yr of climate mitigation on average); natural forest management; or fire risk management. FAO Nicaragua has been working since 2020 in the elaboration of a "Catalogue of measures for adaptation to climate change in the dry corridor (Agriadapta)", which provides costs and methods for the adoption of measures for tree cover increase.
Component 3: Rehabilitation of agricultural livelihoods at farm level, using climate-smart agriculture practices. 3.1 Crop, silvopastoral and agroforestry systems are established and/or improved by using selected seeds and practicing sustainable soil and water management practices. 3.2 A strategy leading to access to local markets, with a gender and ethnic approach, for at least two crops grown using sustainable land management practices is developed and implemented.	NbS may occur also directly in the realm of agricultural production and grazing management and are implemented primarily by farmers or producers. These activities may create direct economic benefit to the producer, in terms of increased yields or reduced costs, in addition to broader societal benefit. If the benefits to the landowner are sufficient, technical assistance and transition funding may be sufficient to achieve lasting changes. Many of these practices align with an emerging field of practice called 'regenerative agriculture'. The catalogue Agriadapta (mentioned above) provides costs and methods for the adoption of measures for the sustainable management of soil, water and the agricultural production as a whole.
Component 4: Capture and dissemination of knowledge and lessons from the project, as well as participatory monitoring and follow-up	This component capitalises on previous and ongoing initiatives by drawing on their experiences and lessons learned. This, together with partnering with different government and non-government actors, will allow the project to reduce the need of testing pilot areas

Specific outcomes / outputs expected	Rationale why priority actions have been selected from a cost-effectiveness perspective
to the activities implemented. 4.1. A knowledge and communications management strategy, with a gender and ethnic approach, is developed and implemented. 4.2. A project follow-up, monitoring and evaluation system, with a gender and ethnic approach, is developed and implemented.	and developing new tools, methodologies and approaches, with the associated saving in costs and time that is usually needed to adjust successful models.

D. Consistency with national or sub-national sustainable Development Strategies (Project alignment with government priorities)

116. The National Human Development Plan 2018-2021 prioritises the conservation and recovery of soils, water and forests; the promotion of the modernisation and transformation of the agriculture and animal husbandry sectors in a setting marked by climate change; the improvement of education, awareness-raising and human and institutional capacities as concerns climate change mitigation, the reduction of its effects and early warnings; and the coordination of participatory environmental management with families, communities and local governments in attendance, focusing on adaptation and mitigation (Government of Nicaragua, 2017)[48].

117. In line with the National Human Development Plan, the National Climate Change Mitigation and with Presidential Decree 15-2021 through which the National Climate Change Management System was created and the Principles and Guidelines of the National Climate Change Policy was established. One of the principles that stands out is the ecosystem approach, which defines that measures for adaptation to climate change will consider the degree of environmental degradation of ecosystems and their evolutionary context; furthermore, guidelines 5 and 6 define as work guidelines the use and conservation of ecosystems services to achieve economic development adapted to climate change and the conservation, restoration and rational use of forests, as well as the promotion of forest plantations in areas of forest potential, as the best way to face the impacts of climate change. This policy is intended to contribute to achieving economic and social development with the capacity deal with climate risk, reduce economic damages and losses, as well as promoting economic development, low carbon emissions and assists the population as it takes advantage of opportunities offered by climate change to contribute to improving the quality of life and well-being of all Nicaraguans (*La Gaceta*, official government record, 2021)[49].

118. The policy contains a number of guidelines for mitigation and adaptation to climate change, some of which are aligned to the proposal set forth in the Concept Note: i) agricultural and animal husbandry development that is resilient to the impacts of current and future climate variability, with low carbon emissions; ii) the use and conservation of ecosystem services to achieve low-emissions economic development adapted to climate change; and iii) conservation, restoration and rational forest use, as well as the promotion of forest plantations in areas with forestation potential (La Gaceta, 2021).

[48]Government of Nicaragua (2017). Ejes del programa nacional de desarrollo humano 2018-2021

[49] Decreto Presidencial (2021)
http://legislacion.asamblea.gob.ni/Indice.nsf/9499521c0ebc358b06256ff80049dd33/d85a8e19533693df0625703500527004?OpenDocument&ExpandSection=-1

119. The project is aligned with the updated Nationally Determined Contributions (NDC)[50] through the promotion of land management and reforestation; improved capacity development towards the development of a climate-resilient agricultural sector; and the protection of forest ecosystem services provided by forests for the most vulnerable native communities and small forestry producers.

120. The project is furthermore aligned with the Third National Communication (MARENA, 2018)[51] that highlights the need to adapt to climate change by developing capacities in the agriculture sector that contribute to the economy of smallholder families and the implementation of resilient ecosystem management programs with a landscape approach, including the promotion of reforestation and silvopastoral systems.

121. The national family agriculture promotion strategy for food and nutritional security (2019 – 2021) is anchored to the National Human Development Plan and proposes to strengthen family agriculture by diversifying food production, promoting the use of technologies as appropriate in each geographic area, promoting crop processing and conservation, the consumption of healthy and nutritious foods and income generation based on the sale of surplus production (MEFCCA, 2019)[52].

122. There is a framework of key national policies and strategies that are being implemented by the National Production, Consumption and Commerce System (SNPCC),[53] as follows: In the National Plan National Plan for Production, Consumption and Trade 2021/2022, the policies to promote the commercialization of agricultural products in the national and international market stand out, as well as the Productivity Policy that aims to improve the productivity and yields of the main items of socioeconomic dynamization; and guarantee a nutritious and healthy diet in conditions of equity, with social and environmental responsibility. The research and productive innovation policy that is oriented to continue generating agricultural biotechnologies and agricultural practices that increase productive yields, making them available to small and medium producers, in such a way that they can transcend towards sustainable and resilient productive systems to Climate Change. The policy of Conservation and Protection of Mother Earth, which prioritizes the strengthening of the country's resilience and adaptive capacity, as well as the transition to an economy based on nature and low in carbon emissions.

123. While an adaptation project, it will also have co-benefits in terms of mitigation, contributing to the National Strategy for the Reduction of Emissions due to Deforestation and Forest Degradation (ENDE - REDD+ 2008 – 2040). This strategy has as objectives i) to reduce GGE caused by deforestation and forest degradation; ii) to conserve and improve forest carbon reserves; iii) and to contribute to the protection of Mother Earth vis-à-vis climate change. The strategy was designed in a participatory manner and is nationwide in scope (MARENA, 2018)[54]. It also aims to contribute to the enforcement of the country's Forestry Law, the National Forestry Policy and the National Forestry Programme, which has for its mission articulated, consensus-based, sustainable development with equity, leading to the efficient and effective provision of goods and services coming from agroforestry and forest ecosystems, with the participation of the public and private sectors, Indigenous and Afro-Descendant peoples and ethnic communities, thus contributing to the establishment of a sustainable, associative forest, agroforestry and agro-industrial use and management model that bolsters the food security and sovereignty of the Nicaraguan people.

[50]MARENA (2020). Updated Nationally Determined Contribution

[51] MARENA (2018). Third National Communication to United Nations Framework Convention on Climate Change

[52]MEFCCA (2019). Estrategia nacional de promoción de la agricultura familiar para la seguridad alimentaria y nutricional (2019 - 2021)

[53] MEFCCA. Estrategias Nationales. [Online] Documentos (economiafamiliar.gob.ni)

[54] MARENA (2018). Third National Communication to United Nations Framework Convention on Climate Change

124. ENDE-REDD+ is based on the promotion of sustainable forestry production, food security, the resilience of vulnerable areas, the protection of water recharge zones and the development of a financing mechanism. In addition, as an implementing platform, it takes into account the strengthening of strategic alliances, interinstitutional coordination and forest governance (MARENA, 2018).

E. Compliance with relevant national technical standards (project alignment with legislative base)

125. The project is aligned with national laws and regulations, as detailed in the table below. It is also in keeping with the Environmental and Social Policy (ESP) of the Adaptation Fund, the FAO Gender Policy and its Social and Environmental Safeguards Policy.

126. The extensive proposal will analyse in detail how the activities proposed line up with the regulation covering its sphere of action, describing how it complies with the pertinent environmental regulation, including issues such as land tenancy /use, and associated resources. It will also detail how the project intends to approach the principles set forth in the Adaptation Fund's ESP. Further, an Environmental and Social Management Plan will be drawn up. Controls will be implemented to ensure that the project does not deepen inequalities or have a negative impact on marginalized populations and the environment.

Table 5.Regulations, standards and relevant procedures

Specific outcomes / outputs expected	Regulations, standards and procedures relevant to compliance with FA principle 1	Compliance, procedures, authorized offices
1.1 A capacity development project, with a gender and ethnic approach, for purposes of participatory planning and implementation of ecosystem-based adaptive measures and actions, together with improved marketing skills is developed and begun.	Equal Rights and Opportunities Law No. 648 – 2008	Nicaraguan Women's Institute
1.2 An incentives mechanism, with a gender and ethnic approach, that facilitates the implementation of ecosystem-based adaptive measures and actions with the participation of beneficiary families is designed and put into practice.	Equal Rights and Opportunities Law No. 648 – 2008	Nicaraguan Women's Institute
1.3 A study on gender relations that incorporates the gender approach to the capacities development project and the incentives mechanism is carried out.	Equal Rights and Opportunities Law No. 648 – 2008	Nicaraguan Women's Institute
2.1 The forest landscape is restored and begins to generate ecosystemic services.	Law 462 (2003) Nicaragua Forestry Law and its enabling regulations Emissions Reduction Strategy due to Deforestation and Forest Degradation (ENDE - REDD+ 2008 – 2040)	Ministry of the Environment and Natural Resources (MARENA)
3.1 Crop, silvopastoral and agroforestry systems are established and/or improved by using selected seeds and practicing sustainable soil and water management practices.	Presidential Decree: Soil Protection and Erosion Control Law (1983) National General Water Law (Ley 620, 2008) and its enabling regulations National Strategy to Increase Bean Productivity 2019 – 2023 National Strategy to Promote Family Agriculture for Food and Nutritional Security 2019 – 2021	Ministry of Family, Community, Cooperative and Associative Economy (MEFCCA) Ministry of Agriculture and Livestock Nicaraguan Institute of Agricultural Technology (INTA)
3.2 A strategy leading to access to local markets, with a gender and ethnic approach, for at least two crops grown using sustainable land management practices is developed and implemented.	Law to Promote Agroecological or Organic Production (2011) National Strategy to Promote the Marketing of Agricultural and Livestock Products in National and International Markets 2020 - 2023	Ministry of Agriculture and Livestock Nicaraguan Institute of Agricultural Technology (INTA)
4.1 A Knowledge and Communications Management Strategy, with a gender and ethnic approach, is developed and implemented.	Equal Rights and Opportunities Law No. 648 – 2008	Nicaraguan Women's Institute
4.2 A Project Follow-up, Monitoring and Evaluation System, with a gender and ethnic approach, is developed and implemented.	Equal Rights and Opportunities Law No. 648 – 2008	Nicaraguan Women's Institute

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

Table 6.Complementarity and synergy with related projects

Programmes and Projects	Outcome/goal pertinent to the project area	Complementarity and synergies	Project time- frame	Donors
Sustainable Development of Rural Families Living in the Nicaraguan Dry Corridor (NICAVIDA)	Contribute to achieving the national objectives of improving living conditions of rural families and indigenous peoples in the Dry Corridor. There is the presence in five of the 14 prioritised municipalities: San Juan de Limay, San Isidro, Teustepe, San Lorenzo and Santa Rosa del Peñón.	Complements component 1 by transferring capacities to improve rural livelihoods. The families and their organisations are trained in income-generating activities, soil and water management, as well as strategies and practices that improve their diet. Complements components 2 and 3 by investing in the diversification of sources of income that also favour environmental protection and adaptation to climate change. When designing the complete proposal, the best practices, outputs and lessons learnt will be carefully examined, so as to avoid duplication in the five municipalities in which there is an overlap.	2017-23	IFAD/CABEI
Resilient landscapes management	Strengthen the National Protected Areas System and support sustainable land use and the restoration of selected areas in the Dry Corridor and the North Caribbean Coast, with the aim of promoting the conservation of biodiversity, resilient landscapes and local livelihoods. It is present in two of the 14 municipalities prioritized by the project: Somoto and La Trinidad.	Complements component 1 and 2 through a pay-for-results pilot project (ENDE-REDD+ and Sustainable Land Management (SLM) in the Pine Corridor. There are also community initiatives to practice sustainable production (differentiated by gender) that contribute to a reduction in deforestation. No overlapping with the project has been identified, but the project proposed herein can take into account outputs and lessons learnt about ecosystem-based	2020-25	GEF/FAO

Programmes and Projects	Outcome/goal pertinent to the project area	Complementarity and synergies	Project time- frame	Donors
		adaptation in the pine forest found in the biological corridor between Cerro Tisey- Estanzuela-Cerro Quiabuc-Las Brisas-Tepesomoto-Patasta.		
Strengthen resilience in protected areas.	Multiple global environmental benefits generated through the Sustainable Forest Management and Sustainable Land Management outside the protected areas (PA). It is present in two of the 14 municipalities prioritized by the project: Teustepe and San Lorenzo.	Complements component 1 and 2 by means of consolidated biological corridors to improve connectivity between existing protected areas and tropical forest habitats under threat in productive landscapes. There are also community initiatives to practice sustainable production (differentiated by gender) that contribute to a reduction in deforestation. No overlapping with the project has been identified, but the project proposed herein can take into account outputs and lessons learnt about ecosystem-based adaptation in the dry forest found in the biological corridor between the protected areas Cerro Cumaìca-Cerro Alegre-Serranía Amerrisque.	2020-2025	GEF/FAO
Adaptation of Agriculture to Climate Change by Harvesting Water in Nicaragua.	The project promotes the construction of reservoirs to store water from rainfall runoff as a means of transforming agriculture and livestock production systems. It is present in four of the 14 municipalities prioritized by the project: Somoto, Telpaneca, Palacagüina and Condega.	No overlapping with the project has been identified, but the project proposed herein can take into account outputs and lessons learnt about water-harvesting technologies as an effective way to adapt to climate change and protect water sources in water recharge areas.	2019-22	SDC/ CATIE
Innovation and Dissemination of Agricultural Adaptation to Climate Change Technologies (AGRIADAPTA)	Selected communities in the micro-basins improve the resilience of their livelihoods and the sustainable management of forests, water and soil by implementing technological innovations and promoting productive activities	No duplication of the project has been identified and basically the proposed project will be able to take into account the lessons learned related to the transfer of technical capacities of producers,	2016-22	SDC/FAO

Programmes and Projects	Outcome/goal pertinent to the project area	Complementarity and synergies	Project time- frame	Donors
	that are compatible with the sustainable use of natural resources. Present in four of the 14 municipalities prioritized by the project: El Jicaral, Santa Rosa del Peñón, Teustepe and San Francisco Libre.	promoters and promoters in technologies focused on the productivity and conservation of natural resources. It will also be possible to count on lessons learned for the protection of water sources and in collective or family / individual rural enterprises implemented.		
Environmental risk management program for disasters and climate change (PAGRICC)	The project supported the adoption of environmental restoration systems. It financed activities to contribute to the conservation of natural resources in the farms of 4 600 protagonists, of which 3 600 producers with IDB resources and, in 2014, it was expanded with 1 000 additional producers financed by SDC, covering the costs of goods and services that form part of 7 technological packages called Environmental Restoration Systems (SRA) in the upper parts of the Río Viejo and Lake Apanás sub-basins	No duplication of the project has been identified and basically the proposed project will be able to take into account the lessons learned related to reversing the negative effects of droughts by adopting environmental restoration systems in order to 1) reduce the vulnerability of the beneficiaries to phenomena associated with the climate change; 2) successfully restore the natural resources of the areas intervened when adopting the seven SRAs promoted by the Program; and 3) improve the economic situation and food security of the households that are the protagonists of the PAGRICC.	2010-2016	BID, FND and SDC
Nicaragua's Dry Corridor Nutrition Sensitive Agriculture Project (World Bank - FUNICA)	The project will (i) strengthen agricultural productivity, climate resilience, and nutritional security of 1 590 value-added farmers and small agri-food businesses, and (ii) support the organization of newly created local small businesses to provide extension services to farmers. in six municipalities of the Dry Corridor Serves: Condega and San Juan de Limay.	It is complemented by components 1 and 3 supporting the generation of lessons learned in the adoption of climate-smart productivity-enhancing technologies, with accompanying water technologies as a package through demand-driven subprojects and agribusiness technical services.	2021-2023	World Bank / FUNICA

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learnt

127. The project will develop a knowledge and communications strategy (output 4.1) in support of compliance with the outcomes as planned by component, with the following objectives:

- ✓ Capturing and sharing the knowledge generated based on the rehabilitation of agricultural / animal breeding livelihoods and their impact on the restoration of the ecosystem and its functions.
- ✓ Empowering actors in the application of ecosystem-based adaptive measures and actions, as well as climate-smart agriculture, based on solid, agreed-upon and shared knowledge.
- ✓ Visibilising knowledge on skills and changes achieved by attending the Capacity Development Units through Field Schools (ECA) and other learning processes with a gender and ethnic approach.
- ✓ Systematising and sharing information, experiences and lessons for purposes of internal and external learning (to be done periodically).

128. Beforehand, and given that knowledge-capture activities and the empowerment of actors will be in the hands of the technical team and that specific types of knowledge and skills are needed, the strategy will include an analysis of the knowledge gaps that must be closed. To that end, it will design a capacity building plan for team members on issues such as knowledge management, the gender approach, social equity, communications and the involvement of actors.

129. Likewise, working jointly with the team, platforms required to manage the knowledge captured will be identified: an internal storage space, access to the information (documents, reference information, photographs, digitised materials) and collaborative work, as well as one or more dissemination channels, such as creating a web site and social network, for the purpose of sharing and disseminating the knowledge output and the information generated (publications, news, computer graphics, blogs).

130. Internally, the project should document the experiences and select the relevant learning sites where to demonstrate the application of measures to adapt to climate change, forest landscape restoration and climate-smart agriculture practices in the dry corridor, which can be valuable for the Adaptation Fund, for the country and for other projects.

131. To that end, systematization workshops will take place, for two purposes: a) capture information and analyse experiences for the purpose of detecting which changes have taken place, who the actors involved have been, what strategies were implemented and what results were obtained; and b) know the lessons generated, success factors and practical recommendations by which to replicate or scale up the experience.

132. The project will draw up forms for the purposes of gathering information, new knowledge and lessons learnt that must be used by the team in order to ensure the proper systematization of experiences and impact awareness by gender and ethnic group.

133. At external level, and in addition to the results of the study on gender relations, it will be necessary to define what knowledge, attitudes and practices (KAP) need to be modified in order to meet the project's objectives. The KAP analysis will also establish the strategies to be applied for each public objective (awareness-raising, persuasion, sensitization, motivation), in order to facilitate the participation and empowerment regarding adaptive actions, the capacities development project, the ECAs, incentives, adaptive technologies, the strengthening of a sales strategy, access to markets

and affirmative action to promote gender equality.

134. The project will work with another group of key actors on governance agreements and investment plans leading to forest landscape restoration in municipalities with smallholder populations. Here the strategy will include activities around access to relevant information and the generation of new knowledge on the positive impact of ecosystems, the well-being of persons, the improvement of soil productivity, the regeneration and restoration of forest cover and sustainable production, as a means of motivating involvement, participation and informed decision-making.

135. The strategy will determine the knowledge and communications outputs that are to be generated in order to gather the existing knowledge on adaptation measures and the bridging of gaps found in the information. These outputs, to be gathered on different forms, must be generated in accordance with the communications guidelines to be established.

136. In the case of the capacity development program and the ECAs (component 1), it will be taken advantage of the development of learning sites on farms to be selected in each municipality where there are already experiences of adaptation practices with ancestral, indigenous and / or knowledge. or from projects previously developed in the project area and the workshops and program design meetings to gather information on the type of knowledge material that needs to be produced for on-farm learning (guides, manuals, videos, games) and the channels through which knowledge will be reinforced (brochures, radio spots, peripherals, material for local events). As concerns forest restoration actions and climate-smart agriculture, in addition to the training materials aimed at the target populations, the strategy must identify which knowledge outputs (publications, maps, reports, infographics) and which actions (lobbying, media dissemination, public debates) will be necessary for purposes of exerting public influence on mayor's offices and the national government.

137. An important activity by which to generate and share knowledge will be the forging of alliances with external actors in order to expand the reach of the adaptation and resilience measures being proposed. One example of this will be actions that can be planned upon analysing the synergies with two MEFFCA-led projects that are being implemented in the zone in order to ensure food security. It will be necessary to investigate whether on the matter of marketing other types of alliances are needed with private companies.

138. Regarding knowledge transfer and exchange, in addition to the communication channels and spaces defined by the strategy, the project must take advantage of those pertaining to FAO, MARENA and the Adaptation Fund, as these can help extend the scope of dissemination and open opportunities for exchanges at national and international scales. The Adaptation Fund's website, for instance, contains a section on knowledge and learning that promotes knowledge outputs, events and even scholarships that could serve to increase the impact of the activities.

139. The project must set up a dynamic monitoring and follow-up system (output 4.2), with a gender and ethnic approach, that facilitates the evaluation, adaptive management, understanding of the impact and dissemination of results.

140. The follow-up, monitoring and evaluation system must contain:

- ✓ The indicators proposed and the percentage of annual compliance, in accordance with the APO;
- ✓ The means of verification (quantitative and qualitative evidence) that evidence the monitoring of each indicator;
- ✓ Warnings regarding progress or delays on the path to meeting outcomes;
- ✓ Compliance with project milestones;

- ✓ The lessons learnt and associated adaptive management measures.

141. The creation of a Follow-up Committee with FAO and MARENA staff, as well as other key partners and actors will be important in terms of taking pertinent adaptive management actions in an effective and timely manner.

142. The system will require the use of software (which may be free access), to be fed periodically and that will provide the information needed to prepare the reports requested by the Adaptation Fund:

- ✓ Annual Project Performance Report (PPR);
- ✓ Final Evaluation (FE);
- ✓ Knowledge outputs for the FE – studies, analyses and reports on lessons learnt; articles, videos and stories for publication on the website.

143. For purposes of accountability and positioning, the follow-up system will favour transparency and knowledge / information transfer. This is to take place through the Milestones Dissemination Plan and the annual publication and public presentation of outcomes at national or international events.

Table 7.Expected outcomes and outputs regarding knowledge management

Expected outcomes	Stakeholders and learning objectives	Knowledge product
4.1 Knowledge and communications management strategy in support of compliance with the planned outcomes for each component.	The project team • Strengthens capacities on strategic project issues. The project team and decision-makers: • Capture and share the knowledge generated from the rehabilitation of agricultural livelihoods and their impact on the restoration of the ecosystem and its functions, valid for decision-making purposes. Beneficiary smallholder families: • Enhance capacities and empower these actors to apply adaptive ecosystem-based measures and actions, climate-smart agriculture, based on solid, agreed-upon and shared knowledge. Decision-makers, beneficiary smallholder families, donors: • Visibilise knowledge on skills acquired and changes achieved through the ECA and other learning processes with a gender and ethnic approach.	• Training materials • KAP analysis • Policy brief with evidence of the impact caused by ecosystem-based adaptation measures and public policy recommendations. • Publication on ecosystem-based adaptation measures in the Dry Corridor and its impact on the ecosystem and livelihoods. • Guide to good ecosystem-based adaptation practices. • Educational material in support of training project. • Community radio campaign on ecosystem-based adaptation and good practices. • Audio-visual series on restoration. • Network of women resilient to climate change • Documentary series on traditional knowledge useful to adaptation to climate change.

Expected outcomes	Stakeholders and learning objectives	Knowledge product
		• Policy brief to reduce development opportunity gaps by gender and ethnic group.
4.2 A dynamic monitoring and follow-up system with a gender and ethnic approach that facilitates evaluation, adaptive management, understanding of the impact and dissemination of outcomes.	Project team: • Facilitates decision-making on adaptive management. • Periodically systematises and share knowledge, experiences and lessons learnt, for purposes of internal and external knowledge acquisition. • Visibilises the impact reached in the development of women's and ethnic groups. Donors: • Informed on impact reached and outcomes met	• Document on lessons learnt during project implementation. • Webinar series • Case study on the implementation of successful ecosystem-based adaptation. • Document on lessons learnt regarding climate-smart agriculture. • Case study of a successful marketing alliance achieved by a women's group or ethnic association. • PPR reports • Annual publication on milestones reached • Final Evaluation

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

144. During the months of December 2020 to July 2021, as part of the process of formulating the concept note, nine participatory meetings and three local consultation workshops were held, one in Estelì on May 19, a second in Managua on May 21. May 2021 and a third in Estelì on July 7, 2021 aimed at the two municipalities with the presence of the Chorotega Indigenous People, under the leadership of MARENA and technical support from FAO, with the participation of officials from the following organizations: MAG, MEFFCA, INTA, INAFOR and IPSA.

145. The consultative process involved stakeholders at different levels, from decision-makers to representatives from the 14 mayor's offices. The consultation also included staff from the pertinent ministries, in order to ensure alignment with national priorities and strategies. MARENA participated during the Project Concept Note preparation stage in order to exchange information and ascertain that the activities proposed are in accordance with Nicaragua's adaptation objectives and the project is anchored to the real needs of the communities, in order to obtain their support for the project. Two field consultation workshops were held with communities in the target area.

Table 8.Results of local consultation workshops

Workshops	Problems identified at the consultation workshops	Identification of adaptive measures
Workshop: Estelí - 19 de mayo de 2021 Institutions belonging to the Production, Consumption and	• Lack of water • Deforestation • Lack of soil and water conservation works.	• Harvesting water. • Irrigation systems. • Forest management and natural regeneration.

Workshops	Problems identified at the consultation workshops	Identification of adaptive measures
Commerce System (SPCC) / local actors in the municipalities of Ciudad Darío, Condega, La Trinidad, Palacagüina, San Isidro, San Juan de Limay, Sébaco, Somoto and Telpaneca.	• Climate variability index in low crop yield. • Lack of use of grain seeds adapted to the area. • High consumption of firewood for the use of the kitchens.	• Soil and water conservation works. • Use of seeds adapted for the area. • Construction of improved kitchens. • Protection of water sources. • Agroforestry and silvopastoral systems.
Workshop: Managua - 21 May 2021 Institutions belonging to the Production, Consumption and Commerce System (SPCC) / local actors in the municipalities of El Jicaral, San Lorenzo, Santa Rosa del Peñón, Teustepe and San Francisco Libre.	• Lack of water. • Deforestation. • Bad agricultural practices: burning and dependence on agrochemicals. • Inappropriate use of the soil. • Lack of market for production. • Pests affect crops • Low availability of pastures for livestock feeding.	• Forest management. • Construction of soil and water conservation works. • Watershed management and water harvesting. • Construction of improved kitchens • Improvement of pastures with pasture seeds suitable for the area. • Agroforestry and silvopastoral systems.
Workshop in Estelí- July 7, 2021 In 2 municipalities with indigenous communities in the North and Central Region of the country: i) in the Chorotega del Norte Indigenous people, which includes the Telpaneca municipality in the Madriz department and ii) in the Chorotega del Centro Indigenous people in the Sèbaco municipality in the department of Matagalpa	• Water demands of indigenous communities. • Low financial capacity of the main families in indigenous communities.	• Construction of soil and water conservation works. • Activities to improve the value addition of agricultural products by taking advantage of opportunities for high-value agriculture.

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

146. The project is fully aligned with the outcomes framework of the Adaptation Fund, the needs of country and the guidelines set forth in the National Climate Change Mitigation and Adaptation Policy No.07-2019. Further, the project is aligned with the needs of smallholder families, its main target group, as it contributes directly to reducing their climate vulnerability and that of the agroecosystems they live in, while developing capacities for adaptation to climate change.

147. Project outcomes will generate a robust intervention framework made up of social, environmental and economic elements that can be implemented in other parts of the country. Likewise, because it is a project designed with a comprehensive approach. It requires no additional financing to achieve the expected impact.

148. The economic contraction suffered by Nicaragua over the past three years and the crisis caused by the COVID-19 pandemic have reduced the government's capacity to work on climate-related issues and increased its dependency on external financial support. Water scarcity and associated harvest losses during the dry spell, and the challenges these represent for smallholder families living in the Dry Corridor are a government priority, but its human and financial resources to deal with the problem are limited.

149. The transformational aspect of this project comes from its integrated approach, where strategies proposed at landscape and farm level are complementary. The project addresses specific needs of most vulnerable farmers using the combination of traditional and innovative climate resilient techniques for agricultural production. Farm management contributes to the ecological and hydrological functioning of the watershed as a whole. This represents an innovative model for climate-resilient rural development in Nicaragua that combines integrated climate-smart solutions focused on livelihoods and agroecosystem-based adaptation.

Table 9.Cost of adaptation reasoning

Project outcomes / outputs	Baseline scenario (without AF project)	Additionality (with AF project)
Component 1. Transfer of capacities to smallholder families in 14 municipalities in the Dry Corridor, leading to the implementation of adaptive, ecosystem-based measures and actions 1.1 A capacity development project, with a gender and ethnic approach, for purposes of participatory planning and implementation of ecosystem-based adaptive measures and actions, together with improved marketing skills is developed and begun.	Water scarcity and associated harvest losses during the dry spell, and the challenges these represent for smallholder families living in the Dry Corridor are a government priority, but its human and financial resources to deal with the problem are limited. In a no-project scenario, smallholder families have only very limited, not to say non-existent possibilities (difficulties concerning capacities, knowledge, skills, technical and financial resources) to adapt to climate change-related water scarcity and the challenges these imply in relation to agricultural production and the sustainable management of forest landscapes.	The project will promote a package of nature-based solutions that will address problems associated with droughts in the Dry Corridor municipalities in a comprehensive manner, providing beneficiary families with greater capacities to confront climate change and leading so to a sustained improvement in food security and quality of life.

Project outcomes / outputs	Baseline scenario (without AF project)	Additionality (with AF project)
Component 2: Restoration of forest landscape so it generates ecosystem services. 2.1 The forest landscape is restored and begins to generate ecosystem services.	The municipalities in the Dry Corridor have highly degraded natural ecosystems, caused mainly by the extraction of fuelwood (used by 75% of households), slash-and-burn agricultural practices or accidental fires, and climate variations that lead to water scarcity or excessive rainfall. The increase in temperatures and droughts significantly reduce the availability of water resources for agricultural and livestock production, which in turn causes substantial economic losses to production, and to family farming in particular Ecosystem degradation continues due to unstainable productive management, exposing local livelihoods to recurrent and exponential climate impacts. Traditional livelihoods remain insufficient to make up for economic losses due to climate impact and ecosystem degradation.	The restoration of the forest landscape will improve the flow of ecosystem services that sustain the agricultural systems in the municipalities where the project intervenes. This will contribute to improving soil productivity, recovering water resources, restoring forest cover and generating ecosystem services, such as pollination, pest and disease control, all of which will have a positive impact on agriculture, the main livelihood of benefiting families, as well as their climate resilience protection of EBA services valuable to livelihoods The activities under this output will focus on watershed restoration as an adaptation strategy to increase forest cover, improve the hydrological cycle and increase the amount of available water. This is critical for agricultural production and underpins food security.
Component 3: Rehabilitation of agricultural livelihoods at farm level, using climate-smart agriculture practices. 3.1 Crop, silvopastoral and agroforestry systems are established and/or improved by using selected seeds and practicing sustainable soil and water management practices. 3.2 A strategy leading to access to local markets, with a gender and ethnic approach, for at least two crops grown using sustainable land management practices is developed and implemented.	Agricultural activities cover 58% of basic household needs, meaning families are vulnerable to the effects of climate change on agriculture. In a no-project scenario smallholder families living in the Dry Corridor would continue to have limited access to climate-smart technologies and techniques for agriculture, meaning they would continue to lose their harvests due to a reduction in the availability of water or, to the contrary, floods and mudslides The diagnostics carried out by the Nicavida project in Dry Corridor municipalities point to the following as the main barriers that limit the adaptation of smallholder families to climate change: droughts that affect agricultural production; scarce access to water for human consumption, irrigation and livestock waterers; limited capacity	The project will promote a package of nature-based solutions that will address problems associated with droughts in the Dry Corridor municipalities in a comprehensive manner, providing beneficiary families with greater capacities to confront climate change and leading so to a sustained improvement in food security and quality of life. Diversification provides an opportunity for spreading the climate risk across different activities, therefore minimizing overall impacts and providing a safety net in the case of extreme drought. With more diverse production and activities, smallholder farmers

Project outcomes / outputs	Baseline scenario (without AF project)	Additionality (with AF project)
	to implement sustainable land management practices; an increase in soil degradation and erosion; and low levels of agricultural productivity; and levels of schooling and few training opportunities. FAO data (2019) indicate that moderate or severe food insecurity affects 47% of households in the Dry Corridor, a situation it may be assumed has grown worse due to the impact of the COVID-19 pandemic.	will be given more options for coping strategies during prolonged droughts, thus increasing their resilience The project will strengthen community-based organisations, such as cooperatives, micro-enterprises, and farmers associations to help linking small-scale rural entrepreneurs with private-sector players along the value chains in the long run.
Component 4: Capture and dissemination of knowledge and lessons from the project, as well as participatory monitoring and follow-up to the activities implemented. 4.1. A knowledge and communications management strategy, with a gender and ethnic approach, is developed and implemented. 4.2. A project follow-up, monitoring and evaluation system, with a gender and ethnic approach, is developed and implemented.	Best practices developed by communities and other development initiatives in the country remain non not capitalized and not disseminated to inform other local actors facing similar challenges. Institutional barriers remain particularly at the sub-national level that avoid the capacity of local-level authorities to design and enforce normative instruments on land planning and natural resources sustainable use.	The project will address the need to build the capacity of national, sub-national and local institutions on climate change adaptation. The project will enhance knowledge sharing and capacity at multiple levels on climate resilient strategies for agriculture by establishing information channels to enhance the effective flow of information, between institutions at regional and local levels and farmers.

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

150. The project addresses the sustainability of its outcomes from three perspectives: environmental. social and economic.

151. Environmental sustainability will be reflected in the lasting impact of landscape restoration activities that will contribute to the generation of ecosystem services translated into an improvement in hydrological flows, soil fertility and in the production of goods such as fruits, wood and firewood. Restoring agricultural livelihoods using climate-smart agriculture and soil and water management practices will contribute to improving environmental quality at the farm and plot level and reducing GHG emissions.

152. Social sustainability will be reflected in the social benefits and in terms of governance that the implementation of the project will bring to the participating families and actors. The active participation of peasant families, women, young people and other vulnerable groups in the project activities will contribute to concretizing actions such as reducing disagreements and conflicts around the use of

common resources and improving livelihoods and social security. food security, with a positive social impact. Families and other participating actors will be trained to build and maintain the proposed interventions themselves and improve their livelihoods in a sustainable and resilient way.

153. In order to maintain the results of the project in the social sphere, it is ensured by involving the relevant actors from the beginning of its planning and throughout its implementation. These actors include government institutions involved in the project, in particular MARENA, MAG, MEFCCA, INTA, IPSA and INAFOR that are part of the National System of Production, Consumption and Commerce (SNPCC) and the 14 Mayors to be involved. This will guarantee the commitment of the Government of Nicaragua to continue working on adaptation to climate change beyond the life of the project and will contribute to the development of the National Plan for Adaptation to Climate Change with emphasis on issues related to the agricultural sector. The lessons and approaches implemented can be shared and implemented in other regions of the country.

154. Economic sustainability the investment made to increase the resilience of peasant families in the dry corridor and their agroecosystems will avoid (totally or partially) future costs related to climate change and its impacts, in addition to improving the livelihoods of participating families and the provision of ecosystem goods and services. The generation of income from the improvement of agricultural livelihoods and access to markets will translate into better quality for participating families. As they are nature-based solutions, which do not require expensive and sophisticated technologies, the cost of these activities is relatively low when compared to the benefits generated, generating a positive cost / benefit ratio and, therefore, more capable of make such investments in the future.

155. To maintain the project's economic results, the project in its detailed design stage will identify the mechanisms to facilitate the effective and sustained participation of private sector actors (that is, the beneficiary farmers of component 3 and the actors of the private sector in the agricultural value chain, such as fertilizer and seed suppliers, wholesalers who buy their products from farmers) and public sector actors involved in the climate change agenda and in the implementation of the SNPCC's productive strategies. In addition, creating links with the private sector will open market niches to ensure the purchase of farmers 'production and access to national and local markets will increase farmers' income, thus ensuring the continued implementation of resilient practices and allow demonstrate that the benefits of adopting climate-resilient agriculture and resilient landscape management practices can stimulate economic activity in rural areas of Nicaragua's Dry Corridor even under conditions of climate change. All these actions represent a win-win for the beneficiary families, which contributes to ensuring the sustainability of the proposed results in the medium and long term.

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

156. The Project proposed herein is entirely aligned with the Adaptation Fund’s Environmental and Social Policy (ESP). It has been designed to generate positive economic, social and environmental outcomes. To achieve these, it will use contributions made available by local and national authorities and participating institutions. Further, the project intends to incorporate best practices from other projects, while simultaneously prioritising contributions made by women and marginalized, vulnerable groups that are included among the target population. The proposed adaptation and actions will be selected together with beneficiary families and participating institutions, thus ensuring they are culturally and locally appropriate.

157. The entire project at concept note level was assessed for environmental and social risks under the 15 principles set out in the AF ESP. The potential risks were identified together with the needs for

further assessment as presented in Table 10. An initial pre-assessment at concept note stage has classified the project in Category B (project with minimal risks), however this remains to be further clarified during the full ESA at the stage of full proposal development.

Table 10.Environmental and social checklist

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law	Risk levels determined with preliminary assessments. A more through ESP risk assessment will be conducted in the full proposal	**No risk**. Relevant national and local authorities have been consulted during the CN development process to ensure compliance with all relevant laws, regulations and technical standards.
Access and Equity		**Low risk.** The project will take the measures needed to ensure that the benefits derived from its implementation are distributed in a manner that is fair, equitable, with no discrimination or favouritism between the families that make up its target population, including marginalized, impoverished and vulnerable actors. If needed, gender, age and other quotas may be considered when selecting the participating families
Marginalized and Vulnerable Groups		**Low risk.** Marginalised and vulnerable groups, including migrant and refugee populations, women, the elderly and the young will be consulted during the preparation of the full proposal, in order to ensure the project takes their needs into account and empowers vulnerable groups so they take decisions on specific adaptation actions. The project will respect property and land use rights, as well as customary law.
Human Rights		**No risk.** Project actions will respect and comply with the requirements set forth in all human rights conventions to which the country is signatory.
Gender Equality and Women's Empowerment		**Low risk.** During the design of the extensive proposal, gender issues will be considered in all project activities. Once the project gets underway, an analysis of gender relations will take place that contributes to better defining the way in which to implement project activities. Gender quotas will be allocated in the different spaces (capacity transfer, livelihoods rehabilitation, forest landscape restoration). The project will promote female leadership and decision-making as a means of reducing the vulnerability of women and their families to climate change, while contributing to adaptation and food and nutritional security.
Core Labour Rights		**No risk.** The project does not foresee addressing issues related to labour legislation and will ensure respect for international and national labour laws.
Indigenous Peoples		**Low risk.** The project expects to implement activities in two municipalities in the North and Central part of the country that have indigenous communities: i) the northern Chorotega ethnic group that lives in Telpaneca and ii) the central Chorotega ethnic group that lives in Sébaco:

		http://www.pueblosindigenaspcn.net/mapa-territorios-indigenas At the beginning of the implementation of the full proposal, an Action Plan for Indigenous Peoples and the Prior, Free and Informed Consent (CPLI) process will be prepared.
Involuntary Resettlement		**No risk.** No project activity will lead to involuntary resettlement.
Protection of Natural Habitats		**No risk.** The project area will not intervene in national parks or natural or biological reserves, nor does it foresee addressing issues related to the protection of natural habitats.
Conservation of Biological Diversity		**Low risk.** The project will hold consultations with local actors and experts at the participating institutions, in order to identify the areas to be restored, using native tree species. Further, joint community management mechanisms may be devised to ensure the survival of the plants used in the restoration effort. Site selection will be aligned with the development and local soil use plan, in consultation with each municipal government, MARENA and other pertinent authorities.
Climate Change		**No risk**. This is clearly an adaptation project, and as such foresees nothing will be done that might undermine adaptation, nor will actions be taken that contribute to GGE.
Pollution Prevention and Resource Efficiency		**No risk.** The proposed AF project will not release pollutants.
Public Health		**No risk.** No risks are foreseen in terms of concerns to public health. Indeed, as a secondary project impact, public health is expected to improve as long as food and nutritional security improve.
Physical and Cultural Heritage		**No risk.** Project risk related to physical and cultural heritage have not been identified.
Lands and Soil Conservation		**No risk.** Nature-based solutions promoted by the project will aim to improve land and water conservation.

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

L. Record of endorsement on behalf of the government:

Fanny Sumaya Castillo Lara Minister of the Environment and Natural Resources Ministry of the Environment and Natural Resources	*Date:* *14 July 2021*

M. Implementing Entity certification

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
Maher Salman Implementing Entity Coordinator	
Date: *August 6, 2021*	Tel. and email: 0039 0657054718 Maher.Salman@fao.org
Project Contact Person: Maher.Salman@fao.org	
Tel. And Email: 0039 0657054718, Maher.Salman@fao.org	

Appendix 1: NDA Endorsement Letter

Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!

2021 ESPERANZAS VICTORIOSAS! TODO CON AMOR!

Minister's office
July 14th, 2021
Ref.: DM-FSCL/132.07.2021

To: **Mr. Mikko Ollikainen**
Manager of the Adaptation Fund Board Secretariat
Email: mollikainen@adaptation-fund.org

Subject: Endorsement for Climate Resilience and Livelihoods Project in the Dry Corridor of Nicaragua

In my capacity as Designated National Authority for the Adaptation Fund in Nicaragua, we confirm that the project concept note is in accordance with the government's priorities in implementing adaptation activities to reduce adverse impacts, and risks, of the by climate change in Nicaragua Dry Corridor. The project will contribute to implementation of Nicaragua of the Nationally Determined Contribution (NDC).

Accordingly, we are pleased to endorse the project concept note proposal with support from the Adaptation Fund. If approved, the project concept note for an amount of US$ 10,000,000, will be developed the full proposal and it will be implemented by the Food and Agriculture Organization of the United Nations (FAO) and executed by Ministry of Natural Resources and Environment (MARENA) in Nicaragua.

Sincerely,

Varios Adelante CON AMOR, ESPERANZA VICTORIA!

Msc. Fanny Sumaya Castillo Lara
Minister
Ministry of the Environment and Natural Resources

MINISTERIO DEL AMBIENTE Y LOS RECURSOS NATURALES MARENA

42/19, FUERZA DE UN PUEBLO QUE VENCE...!
2021, CAMINOS DE PAZ Y VICTORIAS...!
TODOS LOS TRIUNFOS SON DEL PUEBLO...!
VIVA DANIEL...! VIVA LA REVOLUCIÓN...!

FE, FAMILIA Y COMUNIDAD!

CRISTIANA, SOCIALISTA, SOLIDARIA!
MINISTERIO DEL AMBIENTE Y LOS RECURSOS NATURALES
Km.12½ Carretera Norte, frente a Corporación de Zonas Franc
Teléfono 22331112 - 22631994 - 22331916
www.marena.gob.ni

Appendix 2: Initial Gender Assessment

The population of Nicaragua is estimated at 6 million people and a population of women equivalent to 3.1 million of these 41% live in the rural sector (INIDE 2021 estimates). Since 2007, the Government of Nicaragua has promoted a solid Model of Equity and Complementarity, through actions with social justice and respect for the human rights of Women and Men, which contribute to the good living of Nicaraguan families. The Government recognizes in Women their essential and strategic role in the human development of the country. For this reason, it encourages their leadership, empowerment, autonomy and entrepreneurial creativity, to achieve a dignified life, from a comprehensive and articulated approach of all State and Government institutions.

In this context, according to the Global Gender Gap Index 2020, published by the World Economic Forum (WEF), Nicaragua is part of a select group of countries worldwide that have closed the gender gap by more than 80%, going from position 90 in 2007, to position 10 in 2016, to position 5 in 2019 and 2020. According to this report, Nicaragua continues to maintain gender parity in ministerial positions and has one of the highest percentages in the world of Women in Parliament, which places the country in 2nd place overall in the Political Empowerment sub-index.

Progress has been made in health issues for women, for example, according to records contained in the "Maternal Health Profile MDG-5 Nicaragua", of the Pan American Health Organization (PAHO), the Maternal Mortality Ratio (MMR) passed of 121 deaths per 100 000 registered live births (NVR) in 2006 a 36 deaths per 100 000 NVR in 2020 (-70.2% compared to 2006). In education, since 2007 enrolments of children, adolescents and young people have been registered, reaching almost 50.0% parity between genders in the modalities of initial, primary and secondary education. Another important advance is the issue of property management, since between 2007-2020 427 434 property documents have been delivered, broken down into: 254 818 titles in the urban area and 172 616 titles in the rural area; benefiting 235 089 women and 192 345 men.

Women in agriculture

The agricultural sector plays a prominent role in the rural employment of women, since in rural areas women actively participate in agricultural activities, considering that most of the labor force is family, and where members of the home women and men. Women contribute with greater participation in peak tasks such as seed bank preparation and harvesting at different times of the year. Time constraints based on gender are identified in the FAO study since it indicates that women contribute daily to productive work - agricultural work, caring for animals and home garden - an average of 7.5 hours and to reproductive work - cooking, cleaning, washing, home shopping, caring for people, etc. -an average of 9 hours.

Gender pay gaps have not yet been eliminated and men's wages in agriculture are significantly higher than women's wages (FAO, 2021). Current traditional practices applied in agriculture exacerbate the problem, as women are more displaced from heavy physical work (plowing with animal power). Women are more assigned to easy physical jobs (planting, transplanting or weeding); however, these are mostly defined by the head of household (more often men). Lack of access to technology is a major obstacle for women to be more productive. However, according to the study carried out by FAO, it tells us that more than 70% of women have access to a cell phone.

According to a study by the World Bank, of the socio-economic context of women in Nicaragua’s Dry Corridor shows that roughly 26 percent of agricultural holdings are led by women in Nicaragua and only 30 percent of women in agriculture are remunerated, relative to 70 percent of men. Data also shows that 87% of rural women in the Nicaragua Dry corridor are not organized in any productive or commercial association.

In addition, women’s ownership of agricultural assets and use of credit are very low. In general, only 8% of all households have access to financing for productive activities, and this is much lower among female

led households. Further, only 39% of rural women in Nicaragua have completed primary education. Young women, especially those between 26 and 35 years, in rural areas tend to have negative outcomes due to low levels of education, higher illiteracy and very early pregnancy. The median age of pregnancy for a woman in Nicaragua is 19.5.

Women exposition to climate change.
The country is exposed to climate change, while women are directly threatened by climate hazards (floods, droughts). Women are exposed to climatic hazards in the sense that they are more confined to the home, have less mobility and are less likely to migrate from areas prone to floods and droughts. This is particularly true in rural areas, where women have less access to information channels.

Empowerment of women in decision-making. Given that the project is operated at the local level and foresees the promotion of ecosystem-based adaptation at the community level, the project will incorporate concrete actions to improve gender equality. Component 1, as well as the managerial transfer of results developed in Component 3, have great potential to increase the conscious role of women in the Creative Economy Model, actively and productively involving women and their representation directly in managerial roles and decision making. Also, in component 1 the project will include the promotion and consolidation of a culture of coexistence based on values and non-violence, fostering spaces for dialogue, awareness and training.

The project directly targets the empowerment of women through capacity development in Component 1. Another major problem that stems directly from climate change is the interruption of access to drinking water. Since the fall of the phreatic layers represents a serious risk for women, responsible for domestic tasks. In recent years, the effects of droughts led farmers to use groundwater, thus taking advantage of the only resource for household demands. The trend reached the critical stage in which people have practically no water to drink in periods when the phenomenon of the child intensifies. Women who do not have alternative water supply options are often unpaid and without water for essential needs. The project takes due account of the growing vulnerability of women and integrates an important activity of groundwater recharge and protection of water sources through forest restoration, essential for the health and daily activities of women.

There is significant potential from the current project to increase women's productivity and income through Component 2 and 3. Since women work at home, activities can directly address the untapped potential of adaptation to change activities climate. The project can enable the active participation of 30% of women in the project's target area and reach significantly more women beneficiaries through outreach and capacity-building activities.

Appendix 3: Initial Assessment of Indigenous Peoples

In the preparation of the Concept Note, the existence of indigenous peoples has been specifically identified in two municipalities where the project will have direct influence: i) in the Chorotega del Norte indigenous people, which includes the municipality of Telpaneca in the department of Madriz and ii) in the Chorotega del Centro Indigenous people in the municipality of Sèbaco in the department of Matagalpa.

The indigenous people of Li TelpanecaIt is located in the department of Madriz and its foundation dates from the year 1626, it has an estimated population of 12 000 people, which are distributed in 39 rural communities and five urban areas, agriculture is directed towards the sowing of basic grains: corn, beans, sorghum, musaceae, coffee being grown on a regular scale in mountainous areas such as the El Malacate hills with 1 490 meters high, Santo Domingo with 1 348 and El Picacho with 1 343. The Council of Elders, made up of an elder from each community, is the highest decision-making body and guardian of historical memory. The Board of Directors is the administrative and executive body subject to popular election. In addition, the Youth Network, Women's Network, Community Mediators and Indigenous Communicators.

The indigenous people of SébacoIt are characterized by intense industrial activity, such as the processing of rice and coffee, to which an active trade is added. In addition to the municipal government, there is the indigenous community government, made up of community members through the Indigenous Assembly, the Council of Elders, the Administrative Board of Directors and the Electoral Directory.

The main risk identified for the indigenous peoples under the project is the possibility of their exclusion given their high conditions of social and economic vulnerability or because of their cultural differences that can create barriers to access the benefits of the project. For this, an Indigenous Peoples Framework will be developed during the detailed design of the project.

The State of the Republic of Nicaragua has taken care to guarantee in a gradual process the creation and application of safeguards to guarantee due protection and guarantees for native peoples, indigenous peoples and Afro-descendants.

Legal and Institutional Framework.
The Nicaraguan people recognize themselves, through its Political Constitution, as a multi-ethnic people and an integral part of the Central American nation. Similarly, it is indicated that Spanish is the official language of the State, but it has also recognized that the languages of the Communities of the Atlantic Coast of Nicaragua will also have official use in the cases established by law. In September 1987, the National Assembly of the Republic of Nicaragua promulgated Law No. 28 “Statute of Autonomy of the Regions of the Atlantic Coast of Nicaragua”. In May 2010, the National Assembly of the Republic of Nicaragua approved Decree 5934 "Decree of Approval of the Convention on Indigenous and Tribal Peoples, 1989". The State of Nicaragua, on September 17, 2014.

The Council of Indigenous Peoples of the Pacific, Central and North of Nicaragua, is an organization that emerged from the womb and from the reflection of 22 indigenous peoples who, on a negotiating route with the Government to achieve full recognition of their Autonomy, are decided for the strengthening of its institutional framework and thus created in 2008 the Council of Indigenous Peoples of the Pacific, Central and North of Nicaragua.