ADAPTATION FUND

CONCEPT NOTE PROPOSAL

PART I: PROJECT INFORMATION

Name of the Project/Programme: Integrated Management of Water Resources in the watersheds prioritized by the National Adaptation Plan of Ecuador.

Country: Ecuador

Thematic Focal Area: Water Management, Food Security, Ecosystem based Adaptation.

Type of Implementing Entity: Multilateral Implementing Entity

Implementing Entity: World Food Programme

Executing Entities: Local NGOs

Designated Authority: Ministry of the Environment, Water and Ecological Transition (MAATE)

Financing Requested: $ 10,000,000 United States dollars

Project Formulation Grant Request: ☐X Yes ☐ No
Amount of Requested financing for PFG: 125,000.00 (in U.S Dollars Equivalent)
Letters of Endorsement (LOE) signed for all countries: Yes ☒ No ☐
NOTE: LOEs should be signed by the Designated Authority (DA). The signatory DA must be on file with the Adaptation Fund. To find the DA currently on file check this page:
Stage of Submission:
☐X This proposal has been submitted before including at a different stage (pre-concept, concept)
X This is the first submission ever of the proposal at any stage
In case of a resubmission, please indicate the last submission date: December 17, 2024 / June 16, 2025 / July 23, 2025/ September 07, 2025/September 16, 2025

A. PART I: PROJECT / PROGRAMME BACKGROUND AND CONTEXT

NATIONAL CONTEXT

1. Ecuador is an Andean country, located in the northwest of South America, whose 256,370 km² of territory include the continental region, which is divided into Coast, Highlands and Amazon, and the Insular region, composed mainly of the Galapagos Islands. It is organized into 24 provinces, 221 municipalities, and 1,499 rural local governments, which correspond to the different levels of territorial organization (MAATE NDC, 2022). The country's orography is complex and the influence of oceanic phenomena such as El Niño-Southern Oscillation (ENSO) and the Humboldt Current have given rise to great climatic diversity. Unlike temperate regions with their four well-defined seasons, the Ecuadorian territory presents an alternation between dry and rainy periods. The Andes Mountains shape rainfall patterns, with the western slopes getting heavy rain from Pacific winds, while the eastern slopes remain drier due to the rain shadow effect.

2. The 2022 population census reports that Ecuador has 17,7 million residents, with a population density of 52 individuals per square kilometer. The country is known as an intercultural and plurinational state, home to Mestizo, Afro-descendant, Montubio, 14 nationalities, and 18 indigenous peoples with interconnected ancestral languages. The Constitution protects these communities' collective rights, identity, ancestral knowledge, and territorial and customary rights.

3. Between 2020 and 2050 there could be years with temperatures higher by up to 2 °C, which could generate several changes in people, living organisms, and natural resources. Likewise, there is evidence of precipitation changes of up to 9mm of precipitation per day in certain areas of the country, which would potentially generate a greater number of floods and landslides. In Ecuador, drought-prone regions with low rainfall may see precipitation decrease by 4.5 mm per day below the average.

Water Management

4. Ecuador is one of the countries with the highest biodiversity and water resources, with an annual average total water resources of 376 km3 or 1,514 mm of contribution to the runoff sheet. They are located on two main watersheds: the Pacific Ocean with 72 watersheds and the Eastern or Amazonian watershed with 7 watersheds. However, the water potential between the watersheds is very heterogeneous, since the Eastern Slope has 3/4 of the country's water resources, while the highest concentration of the population is in the Pacific Ocean Slope with 87% of the 17.7 million inhabitants, which leads to greater pressures and demands on the natural resources of region.
5. The sustainable management of water assets in the country is key for water security, environmental sustainability, and the well-being of communities. The largest tributaries of this vital resource are glaciers and moorlands that encompass rivers, lakes, wetlands, and aquifers, and benefit rural and urban populations. In the last 50 years, glaciers have decreased by 33%, and the surface of the Paramos, which act as natural flow regulators, has decreased by at least 25% (MAATE-RAS, 2024).

Food Security

6. Agricultural methods in Ecuador are tailored to the specific properties of regional soils. Coastal areas apply the fertile alluvial land to cultivate crops including rice, bananas, and cocoa. In the highland regions, farmers cultivate crops including corn, potatoes, and quinoa, utilizing volcanic soils. In the Amazon area, cassava and plantain are produced, but intensive agricultural practices may be difficult due to the soil composition (Espinosa, 2024).

7. In 2022, the agricultural sector was responsible for 40% of the foreign currency that entered the country from exports of goods, excluding oil. This is equivalent to a total of USD 27,2356 million in exports, of which USD 18,086 million correspond to non-oil exports and USD 7,438 million to agricultural exports not including aquaculture and fisheries. This significant contribution highlights the importance of the agricultural sector in the country's trade balance and job creation (ECB, 2023).

8. Labor indicators in the agricultural sector reveal a complex panorama. In rural areas, the unemployment rate was 1.8% and the under-employment rate was 28.5%, while in urban areas, unemployment reached 5.2% and underemployment 20.4%. The agricultural sector employs 32% of the country's working population. This means that three out of ten employed people work in this sector, which highlights its importance as a source of employment and livelihood for a large part of the Ecuadorian population (INEC, 2022).

Ecosystem conservation

9. One of the threats currently faced by megadiverse countries such as Ecuador is the loss of biodiversity in terms of flora, fauna and ecosystems caused by the effects of climate change. This in turn affects the well-being of vulnerable populations for whom access is limited: a) supplies (meat, skins, and natural medicines); b) regulation and support (water purification, soil fertility, decomposition, pollination, and biological control), and c) cultural services (aesthetic value and recreational activities) (MAE, 2015b).

10. In Ecuador, the rich diversity of ecosystems not only provides habitats for a wide range of species but also plays a crucial role in the hydrological cycle. Forests and wetlands act as natural water regulators, facilitating the infiltration and recharge of aquifers, as well as the regulation of flows in rivers and streams (MAATE-RAS, 2024).

Impacts of climate change on other economic sectors

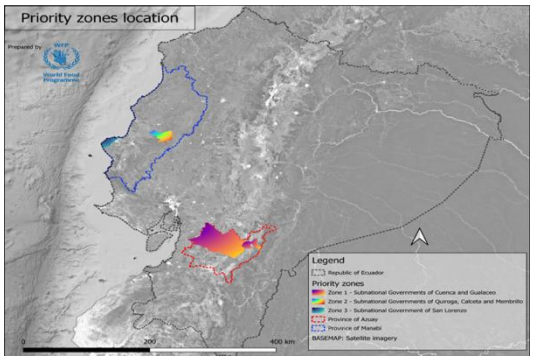
11. Energy security in Ecuador faces major challenges, mainly due to its high dependence on hydroelectric generation. Currently, 92% of the country's energy generation comes from hydroelectric power plants, 7% from thermal plants, and 1% from non-conventional sources (photovoltaic, wind, biomass, biogas, geothermal, among others) (Ministry of Energy and Mines, 2023).

12. This dependence on water resources makes it vulnerable to severe droughts, such as the one that has affected the country since 2023, with notable impacts on electricity production. During the dry season, reservoirs drop in level, which limits the operation of hydroelectric power plants, directly affecting energy supply. However, significant challenges remain to diversify the energy matrix and expand non-hydro renewable sources.

SUBNATIONAL CONTEXT IN THE AREAS OF INTERVENTION

13. In the Fifth National Communication, the Ministry of the Environment, Water and Ecological Transition (MAATE) calculated an index for a detailed analysis of Ecuador's socioeconomic vulnerability to climate change. This index was constructed with 31 indicators and six dimensions. Demography and social groups to calculate the sensitivity and dimensions of physical infrastructure, economic capacity, human capital, and institutional capacity to calculate Adaptive Capacity. Based on the results of the calculation of this composite index, the country's municipalities were classified into different levels of socioeconomic vulnerability to climate change. This index was represented on a national map, where the territories are grouped into categories ranging from "highly vulnerable" to "least vulnerable". The ranking was based on the combination of factors such as poverty, access to basic services, employment, education, health, and local governance.

14. The three areas prioritized for the intervention were selected precisely because they are classified as highly vulnerable or moderately vulnerable according to this index. These areas have a combination of high exposure to climatic events such as drought, low institutional and economic capacity, and a population with high levels of poverty and unmet basic needs, which makes them priority territories for climate action and investment in adaptation measures.



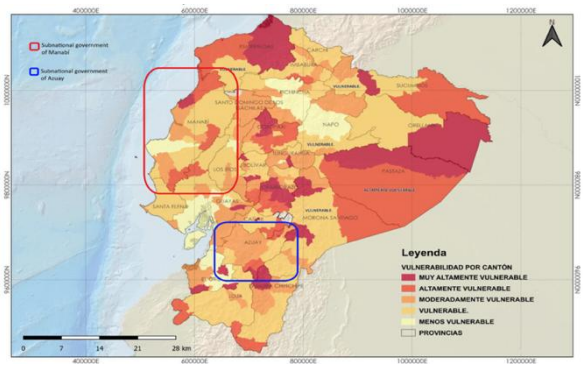


Figure 1. Priority areas for intervention (MAATE -RAS, 2024) / Figure 2. Map of socio-economic vulnerability of Ecuador (5CN/BTR)
Source: MAATE, 2023
Prepared by: 5CN/BTR

Category	IVSE range (0–100)	Description

Very Highly Vulnerable	**> 80**	Extreme concentration of poverty, very low educational attainment and serious deficits in water, sanitation, electricity or housing. Households here have the *least* capacity to absorb or recover from shocks; targeted social protection and risk-reduction measures are urgent.
Highly Vulnerable	**61 – 80**	Widespread poverty and multiple service gaps persist, although not as acute as the previous group. External assistance is still critical to prevent long-term losses when hazards strike.
Moderately Vulnerable	**41 – 60**	Mixed socio-economic conditions: parts of the population have basic services, but sizeable segments remain poor or under-served. Targeted investments can quickly improve resilience.
Vulnerable	**21 – 40**	Better-than-average access to education and infrastructure, yet measurable poverty pockets remain. Development and DRM programmes should consolidate recent gains and close residual gaps.
Less Vulnerable	**< 20**	Districts with the most favorable socio-economic profile in the country. While still exposed to natural hazards, their higher incomes, education and service coverage give them greater adaptive capacity; policy focus can shift towards maintaining these conditions and supporting neighboring high-risk areas.

Table No. 1: Vulnerability ranking
Source: 5CN/BTR 2024

15. The population of these areas is mainly dedicated to agriculture and livestock, activities that are seriously affected by water scarcity. The lack of seeds adapted to water stress, the inefficient distribution of irrigation, and increasing climate variability have reduced productivity and increased the vulnerability of rural livelihoods, conditions that limit farmers ability to adapt, especially in territories where water infrastructure is insufficient or inefficient (MAATE, 2024).

Priority area 1: Azuay Province, Cuenca and Gualaceo municipalities (*Paute River Basin, Machangara River Sub-basins and San Francisco and Santa Bárbara Rivers)*

16. Azuay province is in southern Ecuador, in the inter-Andean region, mainly on the Paute basin in the northeast and the Jubones basin in the southwest. Its climate varies from tropical to glacial due to the presence of the Andes Mountain range. Azuay is made up of 15 municipalities, including Cuenca, located in the center of the province, and Gualaceo, located in the northeast.

17. The northeastern area of the Cuenca has a mountainous geomorphology with elevations that vary between 2,500 and 4,000 meters above sea level. Land use focuses on agriculture and livestock. The region is linked to the Machangara River basin and has the Machangara-Tomebamba Protected Forest, which is crucial for the conservation of biodiversity and water sources used for human consumption, agricultural irrigation, and hydroelectric power generation. .

18. Gualaceo borders Cuenca, the country's third most populous city, whose rapid urban sprawl (with a density of 187 inhabitants/km²) increases pressure on water and other services. In both municipalities, 3 out of 10 inhabitants are under 20 years of age, which increases the demand for basic services. In rural areas, between 30% and 40% of the population lives in poverty due to unmet basic needs. Only half are employed, mainly in agriculture in difficult and unproductive conditions, which has led to high youth migration.

19. In this context, the drought deepens the existing structural inequalities in the territory and its population, who depend mainly on agriculture and livestock in conditions of low productivity. The scarcity of irrigation water due to prolonged periods of drought, coupled with its poor distribution, severely limits agricultural activities, while the increasing pressure on water sources for human consumption – especially due to the urban expansion of Cuenca – generates conflicts and social tensions.

Prioritized Area 2: Manabí Province, Bolívar municipality, where the La Esperanza dam is located *(Upper hydrographic basin of the Carrizal River)*

20. Manabi province is in western Ecuador, in the coastal region, with an approximate population of 1,592,840 inhabitants. The main economic activity of the province is agriculture and fishing, with a focus on the production of cocoa, bananas, and fishery products. Water scarcity, due to its dependence on the coastal mountain range and the unpredictability of the rainy season, is a serious problem that affects agriculture and quality of life.

21. Bolívar municipality is in the northeast of Manabi province, it has a mountainous relief with slopes greater than 30%, with altitudes that vary between 100 and 400 meters above sea level. The average annual rainfall is about 1,200 mm. With a population density of 80 people per km2, the main environmental problem is water erosion and the silting up of the La Esperanza reservoir, located in the Quiroga city, approximately 12 kilometers from the Calceta city. The dam has a storage capacity of around 450 million cubic meters of water, its main objective is to control the flow of the Carrizal River to prevent floods and provide water for agricultural irrigation, benefiting the local population by improving agricultural production and guaranteeing water supply, during times of drought.

22. The main economic activity in the area is agriculture, with crops mainly of corn, rice, and cocoa, as well as livestock. Most families in the area depend almost exclusively on the production of hard corn, who face the lack of diversified economic opportunities. The lack of adequate infrastructure and modern agricultural techniques limits productivity and efficiency; therefore, the implementation of smart irrigation technologies and sustainable agricultural practices could improve productivity.

23. In Manabí, women spend an average of 27.29 hours a week on unpaid care work, while men contribute 7.28 hours. In rural Bolívar, 91.4% of residents live in poverty with unmet basic needs. Among the rural population, 40.6% are employed. Of those employed, 75.4% are men and 24.6% are women. Women constitute 72.7% of the unemployed population. The large employment gap highlights a structural imbalance, as women's unpaid and invisible labor restricts their economic independence and limits their role in decision-making (ENARM, 2022). To address these systemic inequalities, the project will implement the Social and Gender Norms Assessment Tool (SGNAT) alongside a Social and Behavior Change Communication (SBCC) strategy. These tools aim to challenge harmful norms, encourage shared responsibility, and support inclusive participation through intergenerational dialogue and community engagement.

Priority area 3: Province of Manabí, Manta Municipality, San Lorenzo city, where the Pacoche forest is located.

24. San Lorenzo city is in the south of the Manta municipality, on the coastal profile of the province of Manabí and is characterized by housing in its territory the Pacoche Forest, a Coastal Marine Wildlife Refuge that preserves endemic species of flora and fauna, with a total of 4,152 hectares, which represents 25.3% of the total territory of the San Lorenzo.

25. The Pacoche forest acts as a climate regulator and source of drinking water, is a habitat for endemic and endangered species such as howler and capuchin monkeys, and helps maintain the balance of the hydrological cycle, which is crucial for agriculture and water supply. In addition, the forest contributes to the conservation of biodiversity and offers opportunities for ecotourism as a possible source of income for the community, which has an awareness of care and conservation, with the participation of young people in the protection of the forest, as volunteer community guards.

26. The population of San Lorenzo is young, more than 60% are under 40 years old, which projects an increase in the demand for water for human consumption, which currently comes mainly from the La Esperanza dam, located more than 135 kilometers away. Even though, aquifers exist in the Pacoche forest, they have not been quantified and there is no adequate water distribution and redistribution system, which is aggravated by the intervention and deforestation of the forest and prolonged droughts, which have contributed to the reduction of the flow of the adjacent estuaries and rivers affecting productive activities and putting the water supply at risk.

27. The main economic activity in the area is artisanal fishing, followed by agricultural production of corn, coffee, and cocoa, as well as short-cycle products, 45.6% of the economically active population is employed in paid jobs, 73.5% are men and 26.5% are women. They make up 73.8% of the economically inactive population, that is, they are not working for an income and are not looking for work. Since fishing is an activity that keeps men away from home for several days, women are exclusively in charge of unpaid care work in the home, with limited possibilities of carrying out economic activities for an income to achieve their economic autonomy.

28. Faced with the problem of drought, the lack of studies on its water capacity and the absence of an adequate distribution system aggravates water insecurity in the area. The prolongation of dry periods, together with deforestation and intervention in the forest, has reduced the flow of estuaries and rivers, affected agriculture and putted the population's drinking water supply at risk. Drought, in this context, not only compromises natural resources, but also deepens social and gender inequalities, limiting development opportunities for a young population with high dependence on local ecosystems.

Climate Rationale

29. According to the Fifth National Communication on Climate Change and the Fifth Biennial Transparency Report (5CN/BTR), Ecuador Based on the review of the records of disasters associated with hydroclimatic events and landslides, it was found that the threats that have had the greatest impact or could have in Ecuador, are those related to extreme precipitation and temperature events, which are (MAE, 2019):

Droughts: Prolonged periods without rain, or with very low volumes of precipitation. This scarcity affects crop production and affects the supply of water for its different uses.

High temperatures: Very high temperature values that can occur in one or several days, and that produce effects on human populations, crops, goods, and services.

30. Drought risk is quantified through precipitation deficits, whereas extreme-heat risk is evaluated by anomalously high temperature values. These indices provide a consistent basis for monitoring and analyzing the evolution of both hazards.

Climate Threat	Associated Index	Description
Drought	CDD	Number of consecutive dry days per year
High Temperatures	TX95p	Number of days per year with extreme maximum temperatures

Table No. 2: Description of climatic hazards and associated indices
Source: 5CN/BTR 2024

Threat: Drought

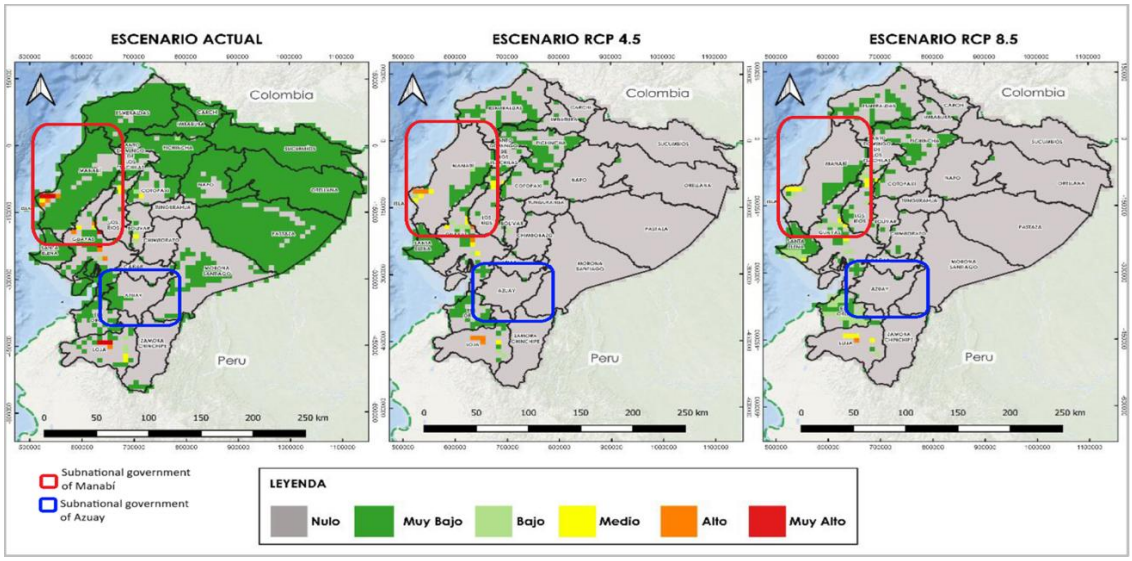


Figure 3. Climate threat of drought: present (1981-2015) and future (2016-2040) period
Source: MAE, 2019.
Prepared by: MAATE/Project 5CN1RBT.

Trend (#días/year)	Threat Level	Interpretation
x <= 0	0 – Null	The trend is towards a reduction in the number of consecutive dry days per year (i.e. there will be more rainy days and droughts would be shorter. Therefore, the threat level is zero)
0 < x <= 0.1	1 – Very Low	The trend is towards an increase of 1 day every 10 or more years (the strongest droughts would extend by a day and a half more by 2030, and would extend by 3 more days by 2040)
0.1 < x <= 0.2	2 – Low	The trend is towards an increase of 1 day every 5 or 10 years (the strongest droughts would extend by 3 more days by 2030, and would extend by 6 more days by 2040)
0.2 < x <= 0.5	3 – Moderate	The trend is towards an increase of 1 day every 2 or 5 years (the strongest droughts would extend by 6 more days by 2030, and would extend by 15 more days by 2040)
0.5 < x <= 1	4 – High	The trend is towards an increase of 1 day every 1 or 2 years (the strongest droughts would extend by 15 more days by 2030, and would extend by 30 more days by 2040)
x> 1	5 – Very High	The trend is towards an increase of more than 1 day each year (the strongest droughts would extend by 20 more days by 2030, and extend by more than 30 days by 2040)

Table No. 3: Interpretation of drought-related threat levels.
Source: 5CN/BTR 2024

31. Ecuador is increasingly exposed to prolonged drought conditions, intensified by climate change and its interaction with natural phenomena such as El Niño-Southern Oscillation (ENSO). According to the Fifth National Communication on Climate Change (2024), under the catastrophic scenario RCP 8.5, an increase in the average annual temperature of between 2.5 °C

and 4.3 °C is projected by the end of the twenty-first century, which will profoundly alter the country's hydrological cycle. An increase in the number of consecutive dry days (CDD index) of up to 100 days per year is expected in critical areas such as Manabí, Loja, and parts of the southern Amazon, classified as having a "high" or "very high" drought threat (Figure 3). These projections coincide with trends observed between 1961 and 2016, where regions such as the southwestern coast and the southern highlands already show a decrease of up to 20% in annual rainfall, severely affecting aquifer recharge and the availability of water for human consumption, irrigation, and ecosystems.

32. The Second Nationally Determined Contribution (2025) underlines that drought is not only an isolated climate threat, but a systemic risk, as it directly affects key sectors such as agriculture, water, energy, and health. In this sense, the adaptation component recognizes that more than 65% of the country has some level of water vulnerability, with rural communities and small-scale production systems being the most exposed. This vulnerability is aggravated by structural limitations such as poor coverage of irrigation, soil degradation and low local institutional capacity to manage water resources in advance.

33. The projections under RCP 8.5 not only warn about a future scenario, but also show an already ongoing trajectory of desertification, its effects, and water stress for Ecuador. The convergence between observed trends, climate projections, and territorial exposure reflects a high national vulnerability to drought events, the management of which requires a multisectoral response that includes investment in green infrastructure, watershed restoration, community strengthening, and territorial climate planning. The urgency of these measures is reinforced by the already tangible impacts on food security, urban supply systems and public health, particularly in rural areas where access to safe water sources is increasingly uncertain.

Area 1: AZUAY

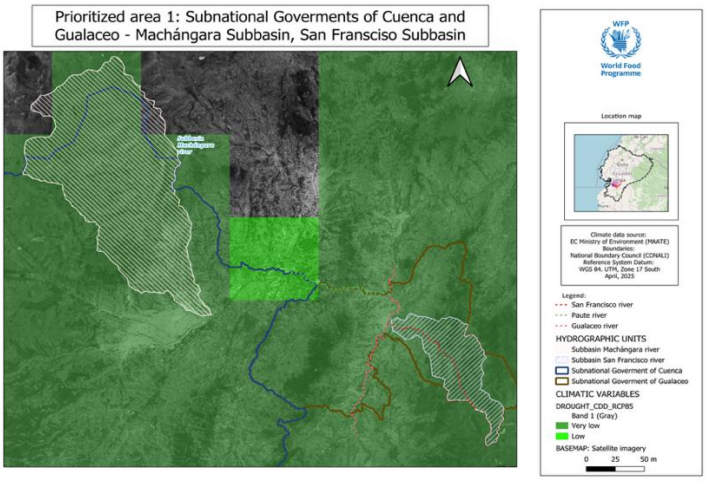


Figure 4. Climate threat of drought: present (1981-2015) and future (2016-2040) period
Source: MAE, 2019.
Prepared by: MAATE/Project 5CN1RBT.

34. Although the Fifth National Communication on Climate Change (5CN, 2024) ranks Azuay's meteorological drought hazard as medium-lower[1] than the coastal hotspots that guided the project's initial screening-the province remains a priority site because of two compounding factors:

a. Chronic mass-movement pressure. The National Risk Management Service (SNGRE) placed Azuay under an Orange Alert for landslides on 24 February 2025, after inventories identified more than 250 km of road corridor intersecting zones of "high" or "very high" slope instability (SNGR, 2024). Field reports such as the 30 March 2025 Nabon rotational slide illustrate how a single event can sever access to multiple rural communities and critical infrastructure. Prolonged dry spells (projected to lengthen by up to two weeks under RCP 8.5) desiccate clay-rich Andean soil, increasing the likelihood of catastrophic failures once intense rains return.

b. National-scale energy security. Azuay hosts the Paute-Mazar-Sopladora hydro-electric complex, which generated about 55 % of Ecuador's hydro-electric output in 2024 and, at full capacity, covers roughly 38 % of total national demand.

[1] The classification refers to table 3.

Damage to channels, access roads or transmission lines caused by drought-related landslides would therefore jeopardies electricity supply country-wide (5CN, 2025).

35. Additionally, official climate-scenario modelling shows that parts of Ecuador can experience precipitation deficits of up to 100 consecutive dry days per year. Under both the Fifth National Communication on Climate Change (MAATE, 2024) and the National Drought Plan (MAATE, 2021), the Consecutive Dry Days (CDD) index surpasses this threshold in drought placing rain-fed agriculture and high-Andean paramo ecosystems at severe risk.

36. The flow of the Paute River can reach up to 161 m^3/s (excess rainfall), which allows an adequate supply for the hydroelectric plants it feeds, such as Sopladora, Paute-Molino and Mazar, which together generate approximately 1,756 megawatts, which makes it the largest generator of energy in the country and other uses. However, during periods of drought, such as those experienced in 2024, the flow has decreased, reaching critical levels of 25.21 m^3/s to 11.40 m^3/s, which caused government blackouts of up to 14 hours per day, affecting the productive, commercial, and residential sectors (MAATE-RAS, 2024).

Area 2: CALCETA

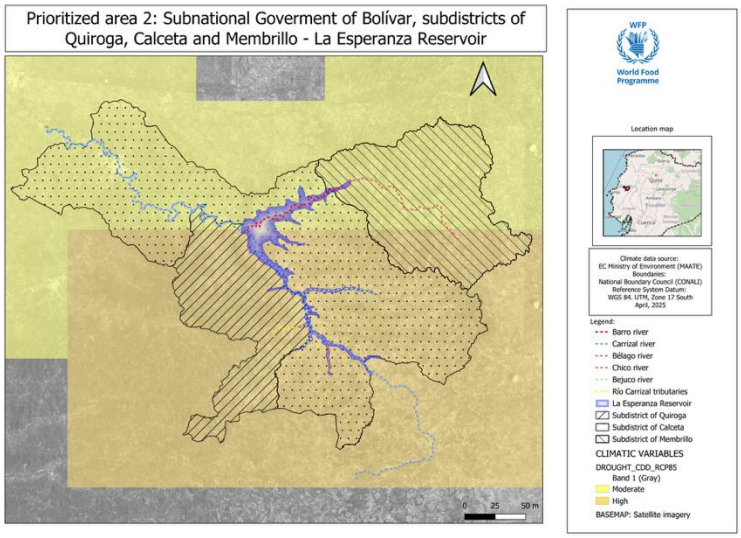


Figure 5. Climate threat of drought: present (1981-2015) and future (2016-2040) period
Source: MAE, 2019.
Prepared by: MAATE/Project 5CN1RBT.

37. In the area of Calceta, Membrillo and La Esperanza dam (Manabí province), the effects of climate change under the RCP8.5 catastrophic scenario show a significant increase in the threat of high temperatures and prolonged droughts, compromising both ecosystems and critical water infrastructure[2].

38. The drought scenario projects up to 100 consecutive rain-free days per year in southern Manabí, sharply reducing aquifer recharge, irrigation supply and the active storage of La Esperanza reservoir. Low inflows concentrate nutrients while the +2.5 – 4.3 °C rise in mean air temperature expected under RCP 8.5 warms surface waters, creating ideal conditions for floating macrophytes such as water lettuce (Pistia stratiotes) and water hyacinth (Eichhornia crassipes). Field monitoring has already classified La Esperanza as hypertrophic, with lechuguín mats covering ~95 ha and obstructing water transfer and navigation2 (Reasearch Gate, 2012)

[2] The classification refers to table 3.

Area 3: SAN LORENZO

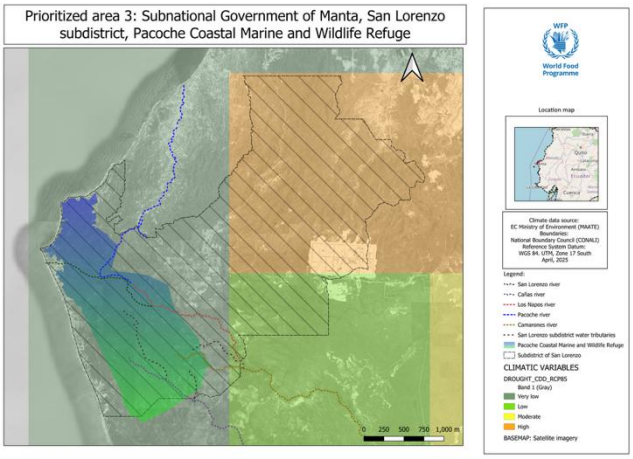


Figure 6. Climate threat of drought: present (1981-2015) and future (2016-2040) period
Source: MAE, 2019.
Prepared by: MAATE/Project 5CN1RBT.

39. The Pacoche Rainforest thrives in an otherwise semi-arid strip that receives fewer than 200 mm of rain per year thanks to a fine-tuned local hydrological cycle and the cooling onshore winds that generate persistent garua fog (CI, 2017). Over the last five years, however, official drought monitors, and field observations indicate that this balance is breaking down:

a. Longer dry spells. Climate-scenario runs in the Fifth National Communication on Climate Change project up to 70-100 consecutive dry days (CDD index) along the central Manabi coast, including Pacoche, under RCP 8.5.

b. Formal drought alerts. Ecuador's National Drought Plan already classifies coastal Manabi as a "severely dry" zone in present-day conditions; the plan warns that aridity will intensify as temperatures rise. (MAATE, 2021)

40. Ecological stress signals. Park rangers documented the drying of the Pacoche waterfall and the early leaf-shedding of fog-forest species during the 2024 dry season, phenomena not seen since the strong 1997-98 El Niño. Local stations also registered rainfall totals more than 45 % below the 1991-2020 average, shortening the fog season by roughly three weeks. (MAATE, 2025). Together, these indicators show that Pacoche's garua forest is already experiencing climate-driven drought stress-manifested in longer rain-free periods, reduced fog frequency and escalating wildfire risk-making immediate adaptation measures essential for the refuge and the communities that depend on its micro-climate.

41. Although the climate projection of drought under the RCP8.5[3] catastrophic scenario suggests a slight decrease in vegetation and possible alterations in the hydrological cycle due to the increase in rainless days, being an ecosystem classified as very sensitive to these changes, the recharge and availability of these vital water resources are compromised.

42. March, April, and December emerge as the most climate-sensitive months, with high-resolution RCP 8.5 simulations projecting a decline of at least 80 % in mean monthly rainfall across coastal Manabi (including the San Lorenzo influence zone). Historical station normal put the present-day daily maximum temperature near San Lorenzo at 27.4 °C; the same model suite foresees a ≈ 9 % rise (≈ +2.5 °C) by mid-century. Long-term INAMHI records show a baseline rainfall of ≈ 1 mm per day for the zone, a figure expected to fall by almost 40 % under future conditions, jeopardizing water availability for agriculture, ecosystems and human consumption[7].

[3] The classification refers to table 3.

Threat: High temperatures

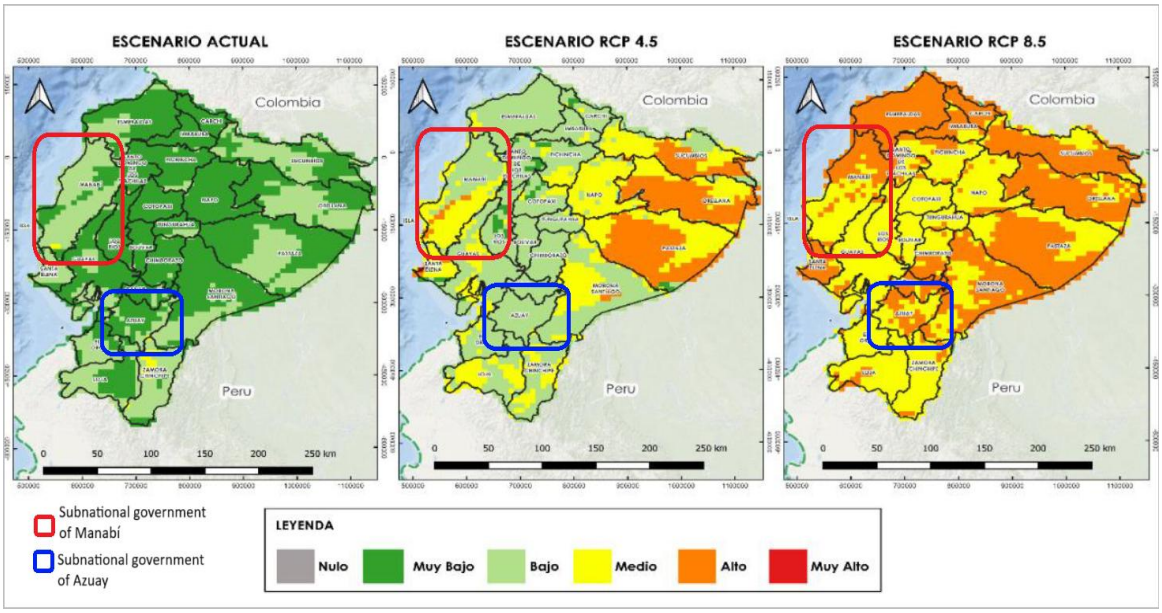


Figure 7. Climate threat of high temperatures present period (1981-2015) and future (2016-2040)
Source: MAE, 2019.
Prepared by: MAATE/Project 5CN1RBT

Trend (#días/year)	Threat Level	Interpretation
x <= 0	0 – Null	The trend is towards a reduction in the number of days per year with very high temperatures (i.e. each year there will be fewer days with extreme temperatures. Therefore, the threat level is zero)
0 < x <= 0.1	1 – Very Low	The trend is towards an increase of 1 day every 10 or more years (there would be one and a half more day with very high temperatures around the year 2030, and 3 more days with very high temperatures around the year 2040)
0.1 < x <= 0.2	2 – Low	The trend is towards an increase of 1 day every 5 or 10 years (there would be 3 more days with very high temperatures around 2030, and 6 more days with very high temperatures around 2040)
0.2 < x <= 0.5	3 – Moderate	The trend is towards an increase of 1 day every 2 or 5 years (there would be 6 more days with very high temperatures around 2030, and 15 more days with very high temperatures around 2040)
0.5 < x <= 1	4 – High	The trend is towards an increase of 1 day every 1 or 2 years (there would be 15 more days with very high temperatures around 2030, and 30 more days with very high temperatures around 2040)
x> 1	5 – Very High	The trend is towards an increase of more than 1 day each year (there would be 20 more days with very high temperatures by 2030, and more than 30 more days with very high temperatures by 2040)

Table No. 4: Interpretation of threat levels related to high temperatures.
Source: 5CN/BTR 2024

43. Ecuador faces increasing exposure to extreme temperatures, with alarming projections under the RCP 8.5 scenario. According to the Fifth National Communication on Climate Change (2024), for the period 2016–2040, an increase of up to 30 additional days per year with extreme maximum temperatures (TX95p index) is expected in regions such as the Coast, Amazon, and foothills of the southern Sierra. This increase especially affects areas such as Manabí, Guayas, Esmeraldas, and El Oro, where the heat threat is already classified as "high" or "very high".

44. National policy echoes these field observations: the 2023-2027 National Adaptation Plan warns that longer, hotter dry seasons along the coast will "increase the frequency of heat waves and heighten water-supply insecurity", making extreme heat a structural driver of social vulnerability. Extreme heat in Ecuador is therefore no longer an episodic

anomaly; it has become a determinant of daily routines, labour patterns and perceived water security that must be addressed through territorial planning, public-health action and climate-justice frameworks

Area 1: AZUAY

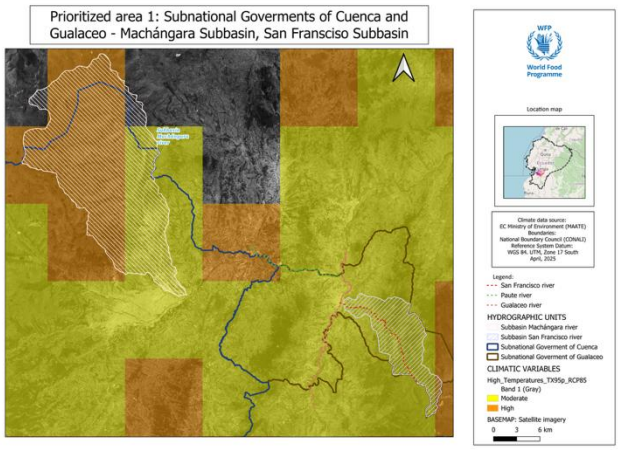


Figure 8. Climate threat of high temperatures present period (1981-2015) and future (2016-2040)
Source: MAE, 2019.
Prepared by: MAATE/Project 5CN1RBT

45. The southern area of Ecuador presents a moderate but worrying upward trend, particularly under the RCP8.5 catastrophic climate scenario, according to the analyses presented in the Fifth National Communication on Climate Change. Although in the base period (1981–2015) Azuay shows a threat category between "moderate" and "high"[4], projections for the period 2016–2040 point to a significant increase in the number of days with extreme maximum temperatures (TX95p index), with increases of between 10 and 20 additional days per year towards 2030, and even more than 30 additional days towards 2040, depending on the behavior of climate models.

46. This increase in the frequency and intensity of heat waves represents a direct risk to sensitive sectors such as public health, mountain water resources, energy infrastructure (especially hydropower) and high-altitude crops. In urban areas such as Cuenca, the combined effect of heat and urbanization is generating "thermal islands" that aggravate the conditions of thermal comfort for the population. On the other hand, studies in the Andean region show that high temperatures cause heat stress in older adults and children, reduce labor productivity in outdoor work and generate psychological effects on vulnerable populations.

47. In addition, the increase in temperature alters the functioning of key high Andean ecosystems such as the páramos, affecting water retention and putting the water supply for cities at risk. This phenomenon is especially critical in the Machangara River basin, where it is necessary to implement adaptation measures such as efficient irrigation systems and ecological restoration precisely to counteract the effects of regional warming.

[4] The classification of 'moderate' and 'high' refers to table 4.

Area 2: CALCETA

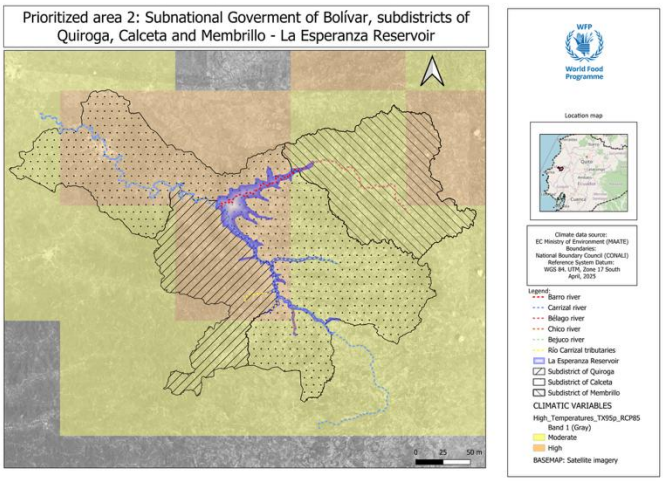


Figure 9. Climate threat of high temperatures present period (1981-2015) and future (2016-2040)
Source: MAE, 2019.
Prepared by: MAATE/Project 5CN1RBT

48. According to the Fifth National Communication on Climate Change, for the period 2016–2040 it is expected that much of this territory, including the southern rural districts such as Calceta, will transition to a "high"[5] climate threat due to extreme temperatures, which means an increase of 15 to 20 days per year with maximum temperatures above the 95th percentile (TX95p index) compared to the base period 1981–2015.

49. This climatic projection, due to high temperatures, will alter the phenological cycles of key crops such as corn, peanuts, and bananas, causing losses of up to 40% in yields in particularly hot years (5CN, 2024). On the other hand, the lack of water has a direct impact on the supply for human and animal consumption, leading to restrictions and conflicts between users of the resource, as evidenced by the history of tensions in times of drought between agricultural and urban sectors. Added to this is the impact on public health: the combination of extreme heat and water scarcity favors the spread of gastrointestinal, dermatological, and heat stress-related diseases, especially in children and older adults.

50. Finally, the environmental deterioration of micro-basins such as the Membrillo River – due to deforestation and overuse of the soil – reduces the ecological resilience of the area to climate change, limiting the soil's infiltration capacity and increasing runoff, which puts at risk the stability of communities downstream of the dam. The combination of high temperatures, prolonged droughts and ecosystem degradation represents a composite threat that requires urgent adaptation actions, including watershed reforestation, reservoir structural maintenance, early warning systems and participatory governance of water resources.

Area 3: SAN LORENZO

51. The Pacoche Protected Forest, located in the San Lorenzo city of the subnational government of Manta (Manabí), is a relict ecosystem of tropical humid forest in a semi-arid area, whose biodiversity depends on a delicate climatic and micro hydrological balance. Under the RCP8.5 catastrophic climate scenario, projections indicate an increase of up to 30 additional days per year with extreme maximum temperatures (TX95p index) by 2040 in areas of the Manabi coast, including areas near San Lorenzo[6]. This thermal increase is accelerating evapotranspiration processes and altering the microclimate that sustains the forest, especially the coastal garua that maintains its humidity.

[5] The classification of 'high' refers to table 4.
[6] The classification refers to table 4.

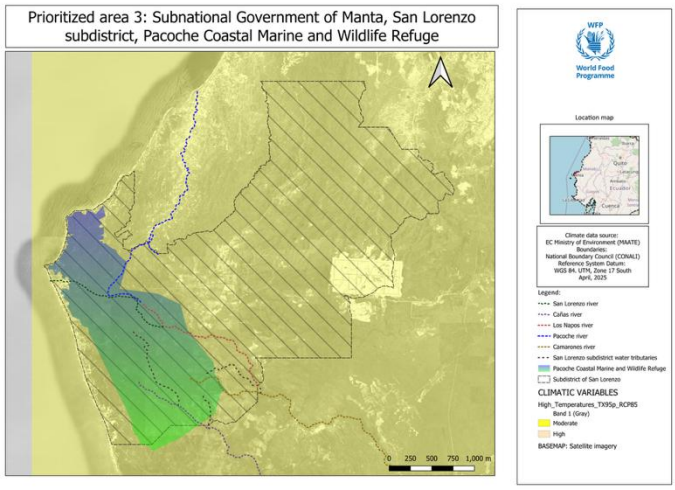


Figure 10. Climate threat of high temperatures present period (1981-2015) and future (2016-2040)
Source: MAE, 2019.
Prepared by: MAATE/Project 5CN1RBT

52. The effects are visible: cases of temporary disappearance of ferns and water sources such as the main waterfall of the forest have been reported, indicating a change in the local water regime. This puts sensitive species such as howler monkeys and endemic birds at risk, as well as affecting rural communities that depend on the forest for water, food, and tourism. As temperatures rise, the pressure on coastal aquifers, essential for human supply in San Lorenzo, also increases.

53. In addition, the San Lorenzo area is very highly socioeconomically vulnerable, which further complicates adaptation to climate change. This implies that the local population has fewer resources and infrastructure to cope with heat waves, water scarcity and the loss of forest ecosystem services. In this context, it is urgent to implement active conservation measures for the Pacoche forest, strengthen local climate monitoring, and ensure adaptation plans based on traditional knowledge and the restoration of micro-watersheds, to guarantee the sustainability of this fragile coastal ecosystem and the resilience of its communities.

Vulnerability

Area 1: AZUAY

54. The Machangara River basin, which supplies drinking water to cities such as Cuenca, faces growing vulnerabilities to climate change, especially due to the increase in extreme temperatures under the RCP8.5 scenario. Up to 20 additional days per year with extreme heat are projected by 2040, affecting water availability in paramo ecosystems that regulate the water cycle. The element exposed is the urban supply system, whose sources are at risk due to the decline in high Andean vegetation cover, the decrease in infiltration and the greater competition for the resource between urban and agricultural uses.

55. Water vulnerability in this basin is manifested in the high dependence on sources regulated by paramo ecosystems, which are being altered by progressive warming, reducing their natural storage capacity, and affecting the stability of the flow during the dry season. In the agricultural sector, traditional irrigation systems are inefficient in the face of changes in the distribution of rainfall and increases in temperature, which aggravates the exposure of small producers to losses and low yields of their crops. Finally, the pressure on the high Andean ecosystems is intensified by the advance of the agricultural frontier, reducing their ecological resilience and adaptive capacity.

56. Thus, the flow of the Paute River can reach up to 161 m^3/s (excess rainfall), which allows an adequate supply for the hydroelectric plants it feeds, such as Sopladora, Paute-Molino and Mazar, which together generate approximately 1,756 megawatts, which makes it the largest energy generator in the country.

57. However, during periods of drought, for example, at the end of 2024, the flow has decreased due to lack of rainfall, reaching critical levels of 25.21 m^3/s to 11.40 m^3/s, which caused blackouts of up to 14 hours per day, affecting the productive, commercial, and residential sectors (MAATE-RAS, 2024).

Area 2: CALCETA

58. La Esperanza reservoir, key to irrigation and water supply in Manabí, is exposed to combined climatic threats increases in the number of consecutive dry days (up to 100 days/year) and greater frequency of high temperatures (more than 30

days of extreme heat per year projected). These conditions intensify evapotranspiration, lettuce proliferation, and sedimentation, reducing their capacity. The exposed element is the water and agricultural infrastructure dependent on the reservoir, whose functionality and security are compromised by extreme weather events (prolonged periods of drought) and insufficient maintenance.

59. The reservoir's water system is markedly structurally vulnerable, aggravated by its limited capacity to adapt to prolonged droughts and accelerated evaporation. Dependence on agricultural activities sensitive to climatic variations. In addition to hard corn, livestock and other agricultural activities would be affected by the increase in the number of rainless days, i.e. an increase in the dry period. This reduces the planting periods of the population (2 to 3 plantings/year and with prolonged droughts to 1 planting/year).

Area 3: SAN LORENZO

60. The Pacoche Forest, located in San Lorenzo, is highly vulnerable to the increase in extreme temperatures on the coast of Manabí, with projections of up to 30 more days per year, with severe heat. This threat alters the coastal fog microclimate that sustains the rainforest, affecting its biodiversity and capacity to recharge coastal aquifers. The exposed element is the ecosystem, which acts as a climate regulator, and the local communities that depend on it, such as water supply, tourism, and subsistence agriculture.

61. San Lorenzo faces critical water vulnerability due to the limited natural storage capacity of the soil and the fragility of the coastal aquifers that depend on the forest cover of the Pacoche forest. The lack of capture and storage infrastructure aggravates this situation. At the agricultural level, changing thermal patterns and water scarcity have limited the development of sustainable crops, accentuating food insecurity in rural communities. As for ecosystems, the Pacoche forest suffers a progressive loss of ecological functionality, due to the alteration of its microclimate, which reduces its capacity to sustain biodiversity and provide environmental services.

Climate Risk

62. According to the 5CN/BTR, Biophysical Climate Risk Analysis is the interaction between the parameters of a biophysical model, which represent the sensitivity and adaptive capacity (vulnerability) of the exposed elements, and the climate threats they face. In the agricultural field, models were used to evaluate crop yields, while for water resources and hydroelectric generation, flow variations in the basins are analyzed. In the case of natural ecosystem, the suitability of species is assessed based on changing climatic conditions.

Area 1: AZUAY

63. As more (degraded) tracts of land are overexploited, the amount of sediment reaching reservoirs increases, which has a direct impact on hydroelectric power plants. This can lead to problems such as increased sedimentation, which reduces the storage capacity of reservoirs, loss of power generation, increased water treatment costs, and increased operation and maintenance costs of hydroelectric power plants (MAATE-RAS, 2024).

64. In addition, there are non-climatic exacerbating factors such as the expansion of the agricultural frontier in the hydrographic sub-basins of the upper area, in the high scrub and the paramo. The inappropriate use of land in the Andean landscape, which translates into a severe overexploitation of soil resources, with an increase in erosion rates, runoff, and decreased infiltration, are processes that affect the destabilization of slopes, sedimentation in river channels (downstream) and low crop production and degradation of pastures. Changes in rainfall and the temperature of the environment and soils will directly affect water recharge, irrigation, and human consumption, among other uses (MAATE-RAS, 2024).

65. According to the climate risk for the water sector in the Machangara river sub-basin as part of the Paute river basin, the maximum flow values according to the RCP 4.5 climate change scenario for the 2031–2035-time window is 63.99m3/s and for 2036-2040 it is 67.49 m3/s (MAATE/AICCA, 2021).

66. Under the high-emissions RCP 8.5 scenario, the hydrological-model ensemble applied by Ecuador's Ministry of Environment, Water and Ecological Transition and the AICCA project projects a median peak discharge of 101 m^3/s for the five-year window 2031-2035 (mid-point 2033). For 2036-2040 the same ensemble indicates 62 m^3/s, suggesting a possible 40% reduction in maximum flows relative to the recent baseline. These figures are conditional on the RCP 8.5 forcing and assume unchanged land cover and hydraulic infrastructure (MAATE/AICCA 2021). In the Andean headwaters this decline could translate into lower firm-energy output at the Paute–Mazar hydropower complex and may slow refill

rates of Cuenca's reservoirs, potentially triggering tighter water-allocation rules during dry years. Canal-fed potato, maize and dairy systems in the páramos would likely face shorter irrigation seasons, encouraging farmers to stagger sowing dates or adopt more drought-tolerant varieties. Towns such as Gualaceo might experience a lower frequency of major overflows, yet remain exposed to high-intensity cloud-burst storms capable of initiating landslides.

Area 2: CALCETA

67. Based on data from the NAP 2023, historical yields of hard corn average 7 metric tons per hectare. Under the climate change scenario, yields per ton would drop to 5 Tm/ha. Yields of crops, the main source of income for the population and livelihood for livestock, could be reduced, which would directly affect food security in the region. In this area, the water deficit exceeds 700 mm of annual rainfall, which means that the amount of water naturally available is insufficient to sustain crops throughout the year (INAMHI, 2024). In climate change scenarios, the importance of irrigation in areas with water deficit becomes even more evident and crucial. In areas where annual rainfall is not sufficient to meet the water needs of corn, irrigation becomes an indispensable element to maintain agricultural production and guarantee food security for the population.

Area 3: SAN LORENZO

68. The Pacoche River, the main watercourse of the basin, has an approximate length of 48 km and an average flow of 35 m^3/s. Its flow varies throughout the year, from a maximum of 70 m^3/s in the rainy season to a minimum of 20 m^3/s in the dry season. Although the presence of underground aquifers is estimated, their potential has not yet been fully evaluated. Water quality faces threats from pollution, such as agrochemicals and solid waste. From July to December, irrigation demand is highest, increasing farmers risk of crop water shortages. This situation highlights the urgent need to implement effective measures to ensure an adequate supply of water throughout the year, not only to ensure food security, but also to protect the livelihoods of vulnerable farming communities in the region.

BENEFICIARY POPULATION

69. There are 36,071 direct and 54,559 indirect beneficiaries. The direct beneficiaries represent 40% of the total population, distributed equally between men and women and in age groups under 40 years of age, located in 14 rural parishes in four municipalities of the provinces of Azuay and Manabí.

70. At the national level, 78% of agricultural producers are male, while 22% are female. However, over 86% of rural women participate in unpaid agro-productive work, lacking formal economic recognition (MAG, 2020). These women have heavy workloads and little presence in the formal economy. Poverty rates are extremely high in project areas—91.4% in Bolívar and 83.4% in Manta—worsening existing inequalities. The project aims to tackle barriers to rural women's economic participation by encouraging their engagement in landscape restoration, water governance, and territorial planning.

Province	Municipality	Poverty (%)	Population Density (people/km²)	Population (people)	Men (people)	Women (people)	% Men (%)	% Women (%)
Azuay	Cuenca	35%	187	234,577	110,139	124,44	47%	53%
	Gualaceo	39%	125	29,345	13,114	16,231	45%	55%
Manabí	Bolívar	91%	80	21,816	11,014	10,802	51%	49%
	Manta	83%	935	12,448	6,239	6,209	50%	50%

Table No. 5. Population of the rural area of the municipalities of the prioritized areas.
Source: INEC-CPV 2022

BARRIERS

71. Recent droughts have worsened social, economic, and environmental barriers in intervention areas, leading to increased environmental degradation, food shortages, and lower river flows. This is how the following barriers have been developed and described, which have synergies between them and their continuity would increase vulnerability in the population most affected by drought in the intervention areas.

Barrier 1: ***Absence of subnational/community weather stations and minimal investment to manage and disseminate climate information on the effects of drought for decision-making***

72. Ecuador has a deficit of meteorological stations (85% deficit), which is why it has a minimum network of 56 automatic stations between water and meteorological and of which only 34 are operational at the national level. Currently, in the

Project Intervention Area, there are 4 operational weather stations and 5 installed stations that for various reasons are not transmitting data to the central system. There are no stations in important monitoring places, such as the water recharge spaces of the basins that are part of the prioritized areas. This prevents the generation of trend curves and other climate analyses useful to communities, which are vulnerable to these effects.

73. Lack of awareness of the importance of climate information on the part of local and community decision-makers leads to a reduction in budget allocations aimed at developing appropriate technology and interoperable protocols for the generation, tracking, monitoring, transmission and interpretation of meteorological information and hydrological, which prevents an effective evaluation to make assertive decisions that allow increasing adaptive capacities in the face of the effects of prolonged droughts.

74. There is still a lack of coordination and articulation between national government institutions and local governments, to rehabilitate and install agroclimatic stations, which contribute to the national hydrometeorological network, reducing the loss of information from climatic and hydrological stations.

75. Local communities and local government technical teams do not have the tools and adequate knowledge for the management and interpretation of climate information. Therefore, they cannot generate and interpret the agroclimatic newsletters[7], which are issued by the national hydrometeorological services (National Institute of Hydrology and Meteorology – INAMHI).

Barrier 2: Limit knowledge to manage and interpret climate information, reducing the ability to make effective decisions in the face of the effects of prolonged droughts

76. Local communities and subnational governments do not have detailed climate information to design measures and actions that allow them to increase their adaptive capacity in the face of the effects of drought. Local governments do not have detailed studies to make decisions when implementing adaptation actions and/or measures. Many of these studies are general and at the national and regional levels.

77. The lack of knowledge and management of information for climate risk management has caused inefficient measures to be implemented that do not reduce the vulnerability (maladaptation) of the population most affected by the drought.

Barrier 3: Lack information and technical knowledge for the implementation of effective and efficient adaptation measures.

78. The adaptation measures implemented have not been based on technical studies, nor have they followed a participatory design process and do not have implementation strategies and cooperation with local partners. This has led to a low level of credibility and legitimacy of local authorities, international cooperation agencies and climate donors.

79. There are inefficient measures such as irrigation canals that are not suitable for intervention areas, causing poor water distribution that puts productivity and food security at risk. Another example, agricultural techniques do not respond to the biophysical and climatic conditions of the area, altering the balance of the ecosystem and degrading soil conditions. Local actors empirically identify the effects of drought on natural ecosystems and its impact on the provision of water for human consumption and for agri-food systems. But they cannot evidence the synergies and co-benefits between these sectors (water management, food security, ecosystem-based adaptation).

Barrier 4: Limited subnational and community technical training to deal with the effects of drought.

80. Technical capacities in local communities and local governments are minimal, as there is insufficient funding for regular training and access to knowledge and information is limited. Local governments do not have the necessary capacities to incorporate climate change criteria into their planning and local development instruments, which limits the design of adaptation measures and actions. The absence of local capacities limits the efficient implementation of adaptation measures, which is why citizen participation is low and there is no local empowerment to make climate investment sustainable.

[7] An agro-climatic bulletin for Ecuador is a short, periodic report that presents the current state of the climate and weather projections in the short or medium term. It includes information on temperatures, rainfall, extreme events (such as droughts or heavy rainfall) and their possible impacts on key sectors such as agriculture, health or water management. It is prepared by INAMHI and other specialized institutions.

Barrier 5: Low investment in the creation of spaces for territorial articulation and coordination for decision-making in the face of the effects of drought

81. The few local technical capacities, the absence of incentives to ensure the participation of local decision-makers, and the low investment to create spaces for coordination and articulation (committees, councils, and others) limit the capacity for articulation and coordination for an adequate strategy for the implementation of adaptation measures and the creation of public policies and local regulatory frameworks. The lack of coordination between local and national actors hinders effective decision-making processes to increase the resilience of the most vulnerable territories to climate threats such as droughts and floods.

82. The diversity of criteria without technical support, disorganization of local authorities, lack of knowledge of competencies for the governance of the territories and the absence of local regulatory frameworks, do not guarantee the effective implementation of measures and do not guarantee the sustainability of climate investment.

Barrier 6: Insufficient actions to ensure the technical and financial sustainability of investments made in drought-affected areas.

83. Local governments and communities do not have ownership strategies and lack strategies to sustainable projects or investments made in their territories.

84. The investments identified in the territory of intervention do not have sustainability mechanisms, which has caused adaptation measures to remain inconclusive, strengthened capacities have been lost, the process of developing policies and regulatory frameworks has not been concluded, they have only technical studies, but there has been no investment for the implementation of measures. Absence of a financing strategy to ensure the sustainability of climate investments already implemented.

B. OBJECTIVES OF THE PROJECT / PROGRAM

85. The objective of this proposal is *"to increase the adaptive capacities of communities vulnerable to droughts through access to local climate information, strengthening local technical capacities, implementation of effective adaptation measures, generation of spaces for articulation and coordination that allow promoting sustainable policies and ensure the continuity of climate investment, driving a paradigm shift towards inclusive and sustainable climate planning in the long term".*

86. **Outcome 1:** Increased awareness and behavioral change among local communities and governments through the use and interpretation of locally generated agro-climatic information to inform adaptive decision-making in food systems.

87. **Outcome 2:** Enhanced adaptive capacity and climate-resilient livelihoods among vulnerable populations in drought-prone priority areas, through improved natural asset management and diversified livelihood strategies.

88. **Outcome 3**: Improved institutional and technical capacities at local level, and establishment of coordination platforms to support the formulation and integration of climate-resilience strategies and regulatory frameworks into territorial and sectoral development planning.

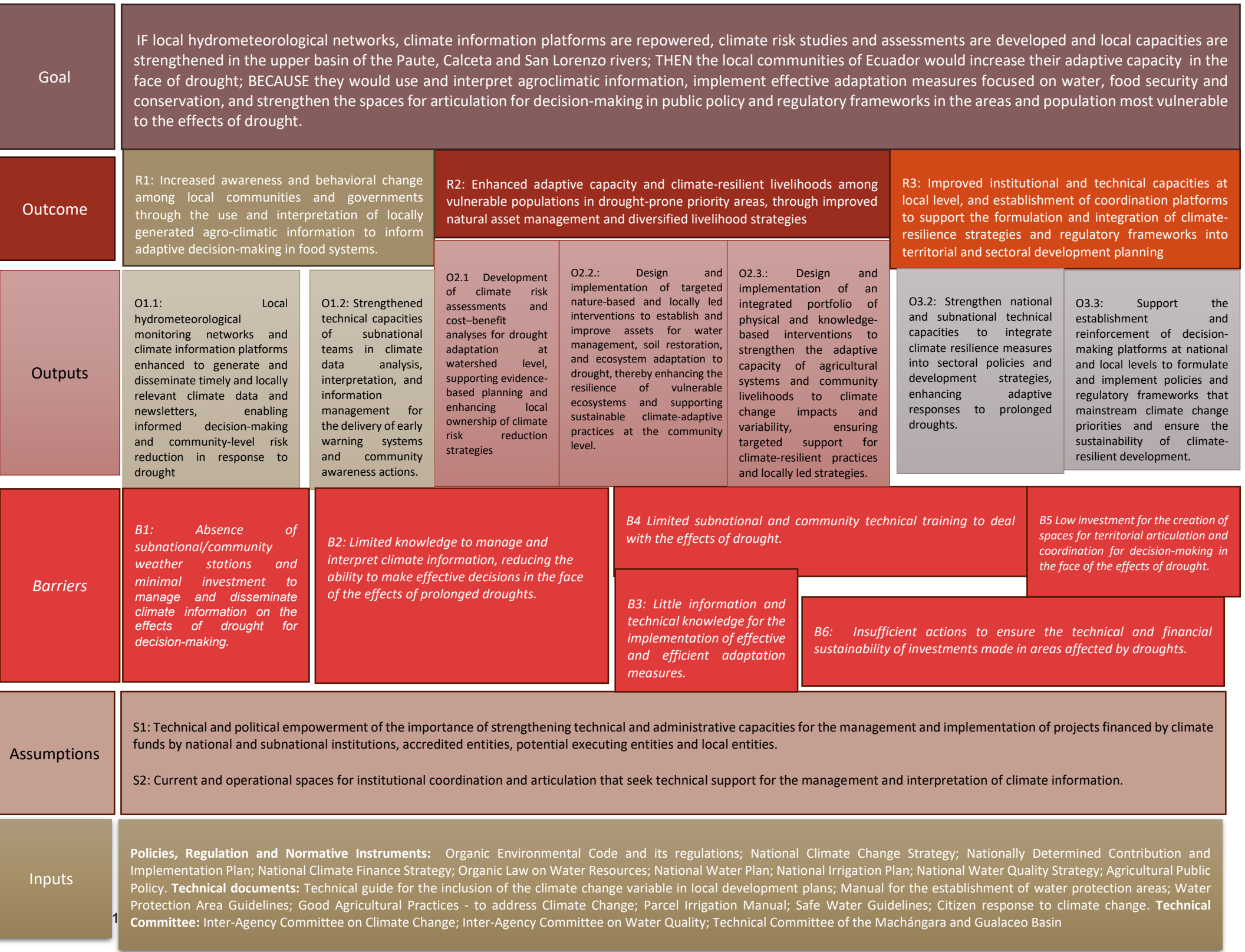
C. PROJECT/PROGRAMME COMPONENTS AND FUNDING

COMPONENTS	OUTCOME	OUTPUT	VALUE (USD $)
COMPONENT 1: Climate information for effective decision-making	OC1. Increased awareness and behavioral change among local communities and governments through the use and interpretation of locally generated agro-climatic information to inform adaptive decision-making in food systems.	OP1.1. Local hydrometeorological monitoring networks and climate information platforms enhanced to generate and disseminate timely and locally relevant climate data and newsletters, enabling informed decision-making and community-level risk reduction in response to drought.	1,295,000
		OP1.2. Strengthened technical capacities of subnational teams in climate data analysis, interpretation, and information management for the delivery of early warning systems and community awareness actions.	
COMPONENT 2: Local climate risk and implementation of adaptation measures	OC2. Enhanced adaptive capacity and climate-resilient livelihoods among vulnerable populations in drought-prone priority areas,	OP2.1. Development of climate risk assessments and cost–benefit analyses for drought adaptation at watershed level, supporting evidence-based planning and enhancing local ownership of climate risk reduction strategies	5,950,000

	through improved natural asset management and diversified livelihood strategies.	OP2.2. Design and implementation of targeted nature-based and locally led interventions to establish and improve assets for water management, soil restoration, and ecosystem adaptation to drought, thereby enhancing the resilience of vulnerable ecosystems and supporting sustainable climate-adaptive practices at the community level.	
		OP2.3. Design and implementation of an integrated portfolio of physical and knowledge-based interventions to strengthen the adaptive capacity of agricultural systems and community livelihoods to climate change impacts and variability, ensuring targeted support for climate-resilient practices and locally led strategies.	
COMPONENT 3. Strengthening capacities and spaces for articulation as a sustainability strategy.	OC3. Improved institutional and technical capacities at local level, and establishment of coordination platforms to support the formulation and integration of climate-resilience strategies and regulatory frameworks into territorial and sectoral development planning.	OP3.1. Strengthen national and subnational technical capacities to integrate climate resilience measures into sectoral policies and development strategies, enhancing adaptive responses to prolonged droughts.	1,096,600
		OP3.2 Support the establishment and reinforcement of decision-making platforms at national and local levels to formulate and implement policies and regulatory frameworks that mainstream climate change priorities and ensure the sustainability of climate-resilient development.	
Project Execution Cost (9.5%)			875,000
Total Project Cost			9,216,600
Project/program cycle management fee charged by the executing entity (if applicable) (8.5%)			783,400
Amount of funding requested			10,000,000

D. PROJECTED CALENDAR

Milestones	Expected Dates
Start of Project/Programme Implementation	December 2026
Mid-Project Review	June 2029
Project/Programme Closure	December 2031
End-of-Project Evaluation	September 2031


Goal
IF local hydrometeorological networks, climate information platforms are repowered, climate risk studies and assessments are developed and local capacities are strengthened in the upper basin of the Paute, Calceta and San Lorenzo rivers; THEN the local communities of Ecuador would increase their adaptive capacity in the face of drought; BECAUSE they would use and interpret agroclimatic information, implement effective adaptation measures focused on water, food security and conservation, and strengthen the spaces for articulation for decision-making in public policy and regulatory frameworks in the areas and population most vulnerable to the effects of drought.
Outcome
R1: Increased awareness and behavioral change among local communities and governments through the use and interpretation of locally generated agro-climatic information to inform adaptive decision-making in food systems.
R2: Enhanced adaptive capacity and climate-resilient livelihoods among vulnerable populations in drought-prone priority areas, through improved natural asset management and diversified livelihood strategies
R3: Improved institutional and technical capacities at local level, and establishment of coordination platforms to support the formulation and integration of climate-resilience strategies and regulatory frameworks into territorial and sectoral development planning
Outputs
O1.1: Local hydrometeorological monitoring networks and climate information platforms enhanced to generate and disseminate timely and locally relevant climate data and newsletters, enabling informed decision-making and community-level risk reduction in response to drought
O1.2: Strengthened technical capacities of subnational teams in climate data analysis, interpretation, and information management for the delivery of early warning systems and community awareness actions.
O2.1 Development of climate risk assessments and cost–benefit analyses for drought adaptation at watershed level, supporting evidence-based planning and enhancing local ownership of climate risk reduction strategies
O2.2.: Design and implementation of targeted nature-based and locally led interventions to establish and improve assets for water management, soil restoration, and ecosystem adaptation to drought, thereby enhancing the resilience of vulnerable ecosystems and supporting sustainable climate-adaptive practices at the community level.
O2.3.: Design and implementation of an integrated portfolio of physical and knowledge-based interventions to strengthen the adaptive capacity of agricultural systems and community livelihoods to climate change impacts and variability, ensuring targeted support for climate-resilient practices and locally led strategies.
O3.2: Strengthen national and subnational technical capacities to integrate climate resilience measures into sectoral policies and development strategies, enhancing adaptive responses to prolonged droughts.
O3.3: Support the establishment and reinforcement of decision-making platforms at national and local levels to formulate and implement policies and regulatory frameworks that mainstream climate change priorities and ensure the sustainability of climate-resilient development.
Barriers
B1: Absence of subnational/community weather stations and minimal investment to manage and disseminate climate information on the effects of drought for decision-making.
B2: Limited knowledge to manage and interpret climate information, reducing the ability to make effective decisions in the face of the effects of prolonged droughts.
B4 Limited subnational and community technical training to deal with the effects of drought.
B5 Low investment for the creation of spaces for territorial articulation and coordination for decision-making in the face of the effects of drought.
B3: Little information and technical knowledge for the implementation of effective and efficient adaptation measures.
B6: Insufficient actions to ensure the technical and financial sustainability of investments made in areas affected by droughts.
Assumptions
S1: Technical and political empowerment of the importance of strengthening technical and administrative capacities for the management and implementation of projects financed by climate funds by national and subnational institutions, accredited entities, potential executing entities and local entities.
S2: Current and operational spaces for institutional coordination and articulation that seek technical support for the management and interpretation of climate information.
Inputs
Policies, Regulation and Normative Instruments: Organic Environmental Code and its regulations; National Climate Change Strategy; Nationally Determined Contribution and Implementation Plan; National Climate Finance Strategy; Organic Law on Water Resources; National Water Plan; National Irrigation Plan; National Water Quality Strategy; Agricultural Public Policy. Technical documents: Technical guide for the inclusion of the climate change variable in local development plans; Manual for the establishment of water protection areas; Water Protection Area Guidelines; Good Agricultural Practices - to address Climate Change; Parcel Irrigation Manual; Safe Water Guidelines; Citizen response to climate change. Technical Committee: Inter-Agency Committee on Climate Change; Inter-Agency Committee on Water Quality; Technical Committee of the Machángara and Gualaceo Basin

PART II: JUSTIFICATION OF THE PROJECT

A. PROJECT COMPONENTS

89. This proposal has three components, the first is the generation of agro-climatic information through climate networks and platforms, the second is the management of climate risk information and implementation of adaptation measures and the third component is the process of strengthening capacities and spaces for articulation for the development of climate risk and climate change policy development and regulatory frameworks as a sustainability strategy for climate investment. Which responds to the barriers identified in the previous section.

90. Similarly, this proposal aligns with the Adaptation Fund's Results Framework; this is how component 1 of the proposal aligns with Outcome 1 "Reducing national-level exposure to climate risks and threats. Indicator 1: Relevant threat and hazard information generated and disseminated to stakeholders in a timely manner", component 2 with Outcome6 "Diversification and strengthening of livelihoods and income sources of vulnerable people in targeted areas" and Outcome 5 "Increased resilience of ecosystems in response to climate change and variability-induced stress", finally, component 3 with Outcome 7 "Improved policies and regulations that promote and implement resilience measures".

Component 1.- Climate information for effective decision-making

Outcome 1: Increased awareness and behavioral change among local communities and governments through the use and interpretation of locally generated agro-climatic information to inform adaptive decision-making in food systems.

91. The strengthening of the monitoring system will allow to generate a better level of detail in the country's meteorological information and in turn in the preparation of forecasts that are fed by two sources of satellite data and ground-level data from the stations, so that a greater number of stations reduces errors in forecasts and improves the national network led by the National Institute of Meteorology and Hydrology (INAMHI).

92. The implementation strategy of this proposal is aligned with the institutional mandate and strategic planning of the National Institute of Meteorology and Hydrology (INAMHI), Ecuador's autonomous authority responsible for hydrometeorological services throughout the country. Based on the existing cooperation framework (specific agreement) between WFP and INAMHI. This legal framework was developed in the framework of the project 'Strengthening Adaptive Capacity through Food and Nutritional Security and Peace Building Actions in Vulnerable Afro and Indigenous Communities in the Colombia-Ecuador Border Zone' financed by the Adaptation Fund. This process continues to be executed with other initiatives implemented by WFP Ecuador, focused on strengthening INAMHI's technical infrastructure and forecasting capacities.

93. This process of cooperation between Ecuador and INAMHI includes the improvement of data processing and modelling systems, the expansion and rehabilitation of the network of automatic weather stations and the installation of new stations in priority water recharge zones in the areas of Manabí and Imbabura. All equipment will be installed and maintained in accordance with INAMHI's technical standards and protocols[8], and will be fully integrated into its national data systems to ensure their long-term sustainability. In addition, agreements will be signed with sub-national governments and local universities to support the maintenance of the stations.

94. The monitoring system of local hydrometeorological stations will be strengthened through the application of new technologies and the optimization of data collection and analysis procedures, improving the capacity to respond to prolonged droughts and facilitating informed decision-making for the implementation of effective adaptation measures. The use of these tools is aimed at local communities and subnational governments.

95. This proposal will repower at least 10 stations identified in the intervention area, which are not transmitting data, and install at least 25 stations at strategic points, selected based on scientific and technical criteria to maximize the relevance and usefulness of the data collected, as well as the adoption of advanced remote monitoring technologies, ensuring wider coverage and high-quality data.

[8] WMO No. 09 Observing Standards; WMO No. 488 Global Observing System Guide; WMO No. 544 Global Observing System Handbook

96. Standardized protocols will be established for the collection, analysis, and reporting of data, thus facilitating greater coherence and reliability in the information obtained. This strengthening will allow for more exhaustive and continuous monitoring of water, providing essential data for the conservation and sustainable management of water resources.

97. The technological interface of the systems of each station will directly send the data of the captured climatic variables to the governing institution INAMHI. This data will immediately feed into the WRF platform, based on analysis algorithms, which, together with satellite information, will develop and refine the forecasts in instruments that, in turn, will be sent to mobile devices of vulnerable producer groups or communities, for informed decision-making and adaptive actions.

98. The project responds directly to the gaps identified in the Country Hydromet Diagnostics report for Ecuador, produced by INAMHI and the World Meteorological Organization (WMO). It aims to improve the quality and accessibility of weather forecasts, early warning systems, and impact-based climate information. INAMHI will lead and coordinate the implementation of all meteorological and hydrological activities, including the collection, processing and dissemination of climate forecasts, as well as the continuous maintenance of meteorological instruments, even after the end of the project. This proposal will support INAMHI's efforts to foster partnerships with sub-national governments and academic institutions, ensuring local ownership and technical sustainability. This collaborative approach reinforces INAMHI's national leadership in climate services and ensures that the project will make a significant contribution to building the country's resilience.

99. The generation of climate data will strengthen the role of the responsible institute at the national level, generating forecasts with greater accuracy, which will be sent to the communities, who after a process of training and strengthening, will be able to understand, use and interpret the information to take actions aimed at reducing their vulnerability and improving their resilience.

100. In addition, local capacities in the management of climate information and in mechanisms for interpreting agroclimatic newsletters will be strengthened. These trainings will be aimed at local communities and technical teams of local governments.

101. Finally, as part of the ongoing collaboration with INAMHI, established through a formal agreement, the proposed intervention will build upon previous Adaptation Funded projects such as the Binational Adaptation Project, which supported the institution’s strategic planning and strengthened the technical capacities of subnational governments.

Output 1.1: Local hydrometeorological monitoring networks and climate information platforms enhanced to generate and disseminate timely and locally relevant climate data and newsletters, enabling informed decision-making and community-level risk reduction in response to drought.

102. High quality climate and hydrological data at ground level are necessary in regions where the National Institute of Meteorology and Hydrology (INAMHI) network does not yet offer sufficient coverage. This proposal aims to rehabilitate at least 10 stations and install 25 new ones, all meeting INAMHI technical standards. INAMHI will not serve as a direct implementing partner. NAMHI will provide strategic oversight and technical leadership for the implementation of meteorological and hydrological activities, including the standardization of data collection, processing, and dissemination protocols. While the installation and maintenance of new stations will be carried out by local partners, all systems will adhere to INAMHI standards and be integrated into its national network.

103. There is no specific national standard in force; the scheme applied by INAMHI adheres to the World Meteorological Organization (WMO) specifications for data acquisition, metadata, quality control, and traceability, specifically the Guide to Meteorological Instruments and Methods of Observation (WMO-No. 8) and the Manual on the WMO Integrated Global Observing System (WIGOS) (WMO-No. 1160), so as not to constrain equipment types, sensor protocols, or implementation processes, thereby preserving interoperability across vendors. WMO-No. 8 provides guidance on sensor siting and exposure, accuracy classes, sampling methodologies, and calibration intervals; WMO-No. 1160 defines the WIGOS Metadata Standard, the WIGOS station identification scheme, quality management processes (QM/WIGOS), intercomparison of instruments, and the requirements for interoperability and data sharing among national systems. The data-submission protocol to INAMHI is based on standardized flat files and secure FTP transfer (SFTP/FTPS). Data are transmitted as UTF-8 CSV files with normalized headers. In the operational phase, INAMHI ensures the metrological traceability of measurements through its metrology laboratory and reference stations, enabling drift detection and the correction of systematic errors without compromising the historical integrity of the time series.

104. The Standard Operating Procedures (SOPs) developed for data collection, analysis, and reporting will not replace but rather reinforce the guidelines established by the WMO and INAMHI. These SOPs will ensure consistency and quality in

field operations, especially in remote or underserved areas. Forecasts will continue to be generated by INAMHI using its national platform based on the Global Streamflow Forecasting System (GEOGloWS), which has been adapted for Ecuador through the INAMHI-GEOGloWS platform. This platform integrates global hydrological models with local data to produce tailored meteorological forecasts and hydrological alerts. Outputs are shared with strategic partners, including subnational governments, to support local decision-making and risk management. Situation rooms and training activities under Action 1.2.1 and Output 1.2 will be implemented in coordination with INAMHI and targeted at local institutions, ensuring alignment with national systems and strengthening local capacity.

Action 1.1.1: Acquire and install at least 25 weather stations that facilitate the prediction of extreme events, improve the monitoring and management capacity of water resources, optimize water planning and distribution, and contribute to the improvement of weather forecasts for informed decision-making in Manabí and Azuay provinces.

Action 1.1.2: Rehabilitate at least 10 hydrological and meteorological stations that are out of service, as well as update the software of the entire network of stations in Manabí province (Bolívar municipality and Manta municipality), and Azuay province (Cuenca and Gualaceo municipalities).

Output 1.2: Strengthened technical capacities of subnational teams in climate data analysis, interpretation, and information management for the delivery of early warning systems and community awareness actions.

Action 1.2.1: Acquire at least 2 situational climate monitoring rooms with teams of subnational specialists in the prefectures of Manabí and Azuay provinces for the analysis of meteorological and hydrological data collected by the weather stations, for the preparation of accurate, continuous, and updated climate newsletters aimed at citizens or vulnerable communities, about possible extreme weather events.

Action 1.2.2: Develop at least 6 training modules for subnational teams from the 3 intervention areas of Manabí, Azuay provinces and local communities, with the following minimum topics: i) Introduction to climate and hydrological monitoring, ii) Analysis of climate data and generation of agroclimatic newsletters, and iii) Risk communication and climate crisis management (SMIC).

105. Component 2: Local climate risk and implementation of adaptation measures

106. Outcome 2: Enhanced adaptive capacity and climate-resilient livelihoods among vulnerable populations in drought-prone priority areas, through improved natural asset management and diversified livelihood strategies.

107. This component aims to generate and retrieve information for the efficient management of local climate risk. The information and methodologies developed by the Ministry of Environment, Water and Ecological Transition (central government) will serve as a guide to analyze in detail in the areas of intervention. The purpose is to develop a portfolio of adaptation measures that have a technically verified basis on their efficiency in increasing resilience in drought-affected areas.

108. The weather and climate information generated in component 1 (newsletters) will enable methodological and conceptual decisions to be made for the development of adaptation measures such as nature-based solutions, which will increase the adaptive capacity of the population most vulnerable to drought.

109. Despite, a participatory strategy will be developed for the implementation of adaptation measures, which respond to local needs and allow the design of efficient adaptation measures, ensuring the appropriation and sustainability of the operation of the different actions to increase the resilience of populations in the face of drought.

110. Based on the information consulted in participatory workshops, it was possible to preliminarily identify some adaptation actions that would respond to the deficit of water supply, food security and conservation of natural resources. Adaptation measures could be reconfirmed with a technical assistance process to accompany the development of local management and planning tools to identify their efficiency and effectiveness.

111. Finally, technical assistance will be provided, and technical processes will be developed to incorporate climate change variables, the gender approach and cultural considerations into the territorial management and planning instruments of subnational governments. This would ensure more resilient territorial planning with climate considerations and a focus on gender, interculturality and intergenerationally.

Output 2.1: Development of climate risk assessments and cost–benefit analyses for drought adaptation at watershed level, supporting evidence-based planning and enhancing local ownership of climate risk reduction strategies

Action 2.1.1: Develop at least 2 climate risk studies in the face of the threat of drought, which contain in their structure the analysis of gaps and needs, at the level of the 2 hydrographic basins, located in Manabí province, Bolivar and Manta municipalities, Carrizal-Chone water basin, and Azuay province, Cuenca and Gualaceo municipalities, Paute water basin.

Action 2.1.2: Develop at least one strategy for the implementation of green infrastructure measures (management of riverbanks, infiltration terraces, drainage ditches, others); and cooperation with local partners, at the level of the 2 watersheds, in Manabí province, Bolivar municipality and Manta municipality, and Azuay province, Cuenca and Gualaceo municipalities.

Action 2.1.3: Develop a strategy and cooperation with local partners to design conservation measures for paramos in Azuay province, Cuenca municipality and Gualaceo municipality; and restoration and reforestation Manabí province Bolivar municipality and Manta municipality.

Output 2.2: Design and implementation of targeted nature-based and locally led interventions to establish and improve assets for water management, soil restoration, and ecosystem adaptation to drought, thereby enhancing the resilience of vulnerable ecosystems and supporting sustainable climate-adaptive practices at the community level.

Action 2.2.1: Implement at least 4 sustainable water storage (micro-reservoirs) and redistribution systems (albarradas) that maximize the resource and minimize losses for the supply of the areas most affected by the drought in Manabí province, Manta municipality, San Lorenzo rural local government.

Action 2.2.2: Install at least 2 systems of fog trap nets for the collection, storage, and redistribution of water, in times of drought in Manabí province, Manta municipality, San Lorenzo rural local government.

Action 2.2.3: Implement technified irrigation systems to irrigate at least 400 ha of crops, to counteract the effects caused by prolonged periods of drought, in the upper basins of the Santa Bárbara, San Francisco and Machangara rivers, in Azuay province, Cuenca municipality and Gualaceo municipality.

Action 2.2.4: Restore and conserve at least 600 ha of riverbank in the San Francisco River in Azuay province, Gualaceo municipality, to promote water retention, biodiversity, and the protection of associated ecosystems.

Action 2.2.5: Restore at least 400 ha of degraded areas with native terrestrial and fluvial species that favor water retention in the soil and reduce erosion in Manabí province, Bolivar municipality.

Output 2.3. Design and implementation of an integrated portfolio of physical and knowledge-based interventions to strengthen the adaptive capacity of agricultural systems and community livelihoods to climate change impacts and variability, ensuring targeted support for climate-resilient practices and locally led strategies.

Action 2.3.1: Implement at least 600 ha for agroforestry systems that improve water retention, reduce soil erosion, and diversify livelihoods in Manabí province, Manta municipality, and Bolivar municipality, and Azuay province, Cuenca municipality and Gualaceo municipality.

Beneficiary communities will help implement these systems using productive species like cacao and coffee. The activity will be carried out through participatory planning workshops and, where applicable, through Free, Prior and Informed Consent (FPIC) processes, applying a gender-responsive, culturally relevant, and territorially appropriate approach. This activity has been classified as low risk under Principle 8 "Involuntary Resettlement," and a corresponding mitigation measure has been included under Section K of the Environmental and Social Impacts and Risks Matrix.

Action 2.3.2: Implement at least 450 ha through reforestation in the highlands for productive purposes (coffee or cocoa), and promote agrobiodiversity, with a gender equity approach, to strengthen food security and the resilience of ecosystems to drought; in Manabi province, Bolivar municipality.

Since this intervention aims to enhance livelihoods without imposing land use restrictions, the risk of involuntary resettlement is assessed as negligible or minimal. To avoid potential social conflicts, the activity will be implemented through voluntary agreements, consensual planning, and community-based monitoring, ensuring the inclusiveness, sustainability, and local ownership of the process. The activity has been classified as low risk in accordance with Principle 8, as the intervention does not involve physical displacement or restrictions on land access or use. A mitigation measure has been incorporated under item “K” of the Environmental and Social Risks and Impacts Matrix to minimize any potential risk.

Action 2.3.3: Develop a germplasm bank and rescue of native seeds of drought-adapted varieties in Manabí province, Bolivar municipality, guaranteeing their preservation and availability for the adaptation of agricultural systems to climate change, for food security.

Action 2.3.4: Implement seed production centre in Manabí province, Bolivar municipality, Calceta rural local government, for the reproduction and multiplication of plant species for the restoration of soils degraded by prolonged drought, promoting ecological regeneration and sustainability of local ecosystems.

Component 3: Strengthening capacities and spaces for articulation as a sustainability strategy.

Outcome 3: Improved institutional and technical capacities at local level, and establishment of coordination platforms to support the formulation and integration of climate-resilience strategies and regulatory frameworks into territorial and sectoral development planning.

112. In this context, technical capacities will be strengthened in local communities and subnational governments for the proper management of adaptation measures to be implemented in the areas of intervention. Modules will be carried out to understand climate risk in the face of climate threats such as droughts in water management systems, agri-food systems, and natural ecosystems.

113. Training modules covering the water, food security and ecosystem conservation sectors will be designed for different levels of government and communities, integrating principles of gender equity, respect for cultural diversity and consideration of different generations.

114. After a training process, technical assistance will be created and provided to strengthen the spaces (e.g., local committees, basin councils, water, and irrigation boards, among others) where decisions are made in the face of droughts, ensuring that these processes have a climate focus, are inclusive, and consider gender, cultural, and territorial perspectives.

115. The strengthening of these local decision-making spaces will facilitate coordination between communities and local and national authorities, for the creation of public policies and regulatory frameworks in the prioritized areas, ensuring that adaptation actions are effective and aligned with local needs.

116. Once the spaces for articulation and local capacities have been strengthened, a strategy for sustainability and local empowerment of the climate investments made will be developed, with the purpose that the measures continue to function, transfer knowledge, and institutionalize the project processes through public policies and regulatory frameworks.

117. As part of the sustainability process, a communication and visibility strategy for results will be designed with local, national, and international scope, including participation in strategic events to multiply the reach, such as the Conferences of the Parties (COPs) so that the results achieved can be replicated and scaled.

Output 3.1: Strengthen national and subnational technical capacities to integrate climate resilience measures into sectoral policies and development strategies, enhancing adaptive responses to prolonged droughts.

Action 3.1.1: Develop at least 1 e-learning and face-to-face capacity building program called "Water Resilience: Comprehensive Training for Adaptation and Sustainable Management in the Face of Drought" for local, national and community technicians with 4 Modules, for Manabí and Azuay provinces: M.1. Sustainable Water Management and Watershed Recovery; M.2. Agrobiodiversity and Resilience to Climate Change; M.3. Ecological Restoration and Ecosystem Conservation for Resilience to Prolonged Droughts; M.4. Local Governance, Community Participation and Adaptive Management in the face of climate risks with the participation of 50% men and 50% women with a generational and intercultural approach.

Action 3.1.2: Strengthen institutional capacities by conducting at least 8 workshops aimed at municipal technicians of Cuenca province, Gualaceo, Manta and Bolívar municipalities, using the andragogical methodology "learning by doing", to integrate the sustainable management of climate risks associated with droughts into the Territorial Planning Plans (PDyOT).

Output 3.2: Support the establishment and reinforcement of decision-making platforms at national and local levels to formulate and implement policies and regulatory frameworks that mainstream climate change priorities and ensure the sustainability of climate-resilient development.

Action 3.2.1: Provide technical assistance to subnational governments in the preparation of reports, documents and protocols as technical inputs for subnational governments to develop their legal instruments and/or regulations for the

effective implementation of adaptation measures in response to prolonged droughts, through participatory processes and community dialogues that ensure the participation of at least 50% of women and youth. In Manabí province, Manta municipality and Bolivar municipality, and Azuay province, Cuenca and Gualaceo municipality

Action 3.2.2: Provide technical assistance for the strengthening of at least 2 Watershed Committees/Councils, in Azuay province, Cuenca municipality and Gualaceo municipality; and Manabí province, Manta municipality and Bolivar municipality, promoting their articulation with community networks as key structures for the adaptive governance of water resources in the face of prolonged drought and other extreme weather events. This measure will promote participatory and inclusive processes, ensuring the participation of at least 50% of women and young people in decision-making spaces, and will contribute to the design and implementation of public policies and local regulatory frameworks that support the sustainability of climate investments and strengthen the resilience of beneficiary communities.

Action 3.2.3: Develop at least 4 spaces for community dialogue and exchange of experiences, in Azuay province, Cuenca municipality and Gualaceo municipality; and Manabí province, Manta municipality and Bolivar municipality, on the role of water and irrigation boards as a key mechanism of community governance, ensuring a 50% participation of women and young people.

Action 3.2.4: Develop at least one sustainability strategy that promotes the empowerment and social and institutional ownership of climate investments by the four municipalities, two prefectures and the beneficiary communities, contributing to the continuity of adaptation actions and the strengthening of territorial resilience to climate change. In Azuay province, Cuenca municipality and Gualaceo municipality; and Manabí province, Manta municipality and Bolívar municipality.

Action 3.4.5: Design and implement an international visibility strategy that allows the sharing of learnings, innovations, and results of the project in global platforms such as the COP, positioning the beneficiary communities as protagonists of nature-based adaptation solutions.

B. ECONOMIC, SOCIAL AND ENVIRONMENTAL BENEFITS

118. The objective of this proposal is to increase the adaptive capacity to the drought of approximately 36,071 people, including farming families, focusing on 52% of the population who are rural women.

119. This is how the proposal has identified economic benefits to improve income and avoid losses of the families most vulnerable to drought, as shown in component 1, access to agroclimatic information will allow informed decisions to be made about planting periods, thus avoiding the loss of farmers investment in the case of a prolonged drought period. In component 2, the actions will focus on the diversification of production systems, the efficient management of water resources and the management of the environmental services of natural ecosystems, allowing them to improve their production and productivity.

120. Social benefits have been identified, so that, in component 1, equitable access to agroclimatic information will be equal and without any discrimination. In component 2, the adaptation actions identified will focus on young women. In component 3, community leaders will be identified and their capacities to make effective decisions in the face of the effects of droughts will be strengthened. The spaces for articulation created will be equitable, giving a gender focus and affirmative action's so that women acquire adequate and relevant technical knowledge that allows them to increase their self-esteem and the recognition of other members of the community, especially men, to be part of the decision-making process to adapt to climate change.

121. The environmental benefits are evidenced in component 2 in the protection of water recharge areas and in the restoration of forests that allow ensuring quality and quantity water for human consumption and for productive systems in the lower basins. The protection of the banks of the upper basins of the Paute River mitigates the sedimentation process in the reservoirs of the hydroelectric complex located in the lower basin.

122. Finally, the proposal will mitigate the risks identified in relation to the 15 principles of the Adaptation Fund. In Component 1, the risk of exclusion of dispersed rural populations with low connectivity or limited digital literacy was identified, which could restrict their access to timely agroclimatic information. To mitigate this risk, inclusive communication formats, culturally relevant training processes and community feedback mechanisms will be adopted. In Component 2, the potential risks are related to possible impacts on natural habitats, soil degradation, alteration of land use patterns or unintended impacts on livelihoods. To address these risks, technical criteria will be applied that prioritize native species and commercial agroforestry species, environmentally fragile areas will be excluded, and participatory consultation

processes, consensual planning and voluntary agreements will be implemented for the location of measures such as reforestation, green infrastructure and technified irrigation systems.

123. Component 3 recognizes the risk of limited participation by women, young people, indigenous peoples, Afro-descendants and Montubios in water governance and community decision-making spaces, perpetuating structural gaps. To mitigate these risks, biocultural community protocols, inclusive decision-making spaces and training processes will be developed, using andragogical methodologies through a culturally relevant 'learning by doing' approach. Across the board, Free, Prior and Informed Consent (FPIC) will be applied in areas with ancestral peoples, as well as participatory consultations and culturally appropriate feedback mechanisms. All these actions are aligned with the Adaptation Fund's Environmental and Social Policy and Gender Policy and are supported by the Gender Assessment (Appendix 2) and the Environmental and Social Risk Management Plan (Appendix 3).

Economic benefits

124. This section details the economic benefits of the actions to be implemented with this proposal. For example, component 2 will implement agroforestry, agrobiodiverse and agrosilvopastoral systems, which will provide new sources of income for farmers, while improving food security in communities, reducing economic dependence on a single type of crop (reducing losses), improving local diets (disease reduction).

125. Another action is the construction of a germplasm bank, together with the installation of seed production centre, which will guarantee the availability of seeds and plants that adapt to drought, increasing the production and productivity of agricultural systems, reducing losses, and increasing incomes.

126. Another economic benefit is evidenced in component 1, technical newsletter with agroclimatic information will be generated, which will be disseminated to farmers through mobile phones, which will allow them to make informed decisions about what to plant, when to plant and how to plant, avoiding economic losses for families.

127. However, by implementing sustainable water storage and redistribution actions, agricultural productivity improves, increasing the monthly income of farmers, in addition, this activity generates local employment, since workers will be needed to install and maintain these reservoir systems and irrigation canals. In these spaces, the participation of women will be prioritized to increase their knowledge and so that they can develop initiatives to increase their income through more efficient productive practices adapted to climate threats. Finally, the installation of fog trapping mesh systems reduces the operating cost of water redistribution and increases efficiency in use, thus increasing productivity and income of families.

Social Benefits

128. In rural areas of Ecuador, accessing water from surface sources involves a high cost in time and effort, especially for households without basic infrastructure. According to INEC and ESPAC 2023, many families must travel up to 2 hours a day to collect it, which affects productivity, health, and access to education, especially for children and women, who usually take on this task. Although water is free, limited access to water generates a significant hidden social cost. For this reason, this proposal in component 2 proposes water resources management actions such as irrigation canals, reservoirs and fog catchers, as efficient water distribution mechanisms.

129. The social benefits of this project proposal are evident in component 3, as community and technical capacities will be strengthened in the spaces to make decisions for water management, ensuring the equitable participation of men and women in local governance.

130. A Training Program will be developed in e-learning and face-to-face format, entitled "Water Resilience: Comprehensive Training for Adaptation and Sustainable Management in the Face of Drought". This Programme will address sustainable water management, watershed recovery, agrobiodiversity, ecological restoration, and community governance, with at least 60% participation of young women heads of household, promoting their leadership in territorial planning and management.

131. Through the diversification of the population's livelihoods and the incorporation of young women into paid work, their economic autonomy and their families will be promoted, all of which will be accompanied by awareness-raising processes on positive masculinities to overcome the marked sexual division of labor (Manabí province) and advance in the eradication of gender-based violence against women (Azuay province).

132. As part of the social benefits, in component 3 of the proposal, the local regulatory framework will be strengthened through the integration of adaptation variables in the Territorial Planning and Development Plans in the 4 subnational governments (4 Municipalities), with a focus on gender, multiculturalism and intergenerationally. In addition, specific public policies will be developed to improve the management and response capacity of municipalities to the impacts of drought, ensuring the inclusion of adaptive water management strategies, resilient production systems and environmental conservation.

133. To consolidate these advances, an exit strategy (specific action of component 3) will be developed to ensure the institutionalization of adaptive measures, promoting water security, food security and environmental conservation in the four municipalities and two prefectures. WFP's Social and Behavioral Change Methodology (SBCC) will promote community ownership of resilient practices, ensuring that both men and women play an active role in decision-making and in the implementation of sustainable water solutions.

Environmental benefits

134. In component 1, it is proposed to generate agroclimatic newsletter with updated information on climatic conditions and their impacts, farmers will be able to implement agroforestry systems that improve water retention, reduce soil erosion, and diversify their livelihoods. This will allow them to optimize the use of natural resources, such as water and soil, thus reducing overexploitation and environmental degradation in the riverbanks or water recharge areas of the prioritized areas.

135. In addition, component 2 of this proposal proposes actions such as riverbank management, the implementation of infiltration terraces, drainage ditches and reforestation in the upper basins of Machangara, Paute, La Esperanza and San Lorenzo, whose environmental benefits will be the increase in soil moisture and reduction of sediments in the lower basins as in the case of Paute, thus benefiting the reservoir capacity for the operation of hydroelectric power plants.

136. Similarly, component 3 proposes measures for efficient water management through the implementation of technified irrigation and sustainable water storage and redistribution systems, which will optimize agricultural production and guarantee sustainable access to water for human consumption, reducing vulnerability and creating a more resilient environment to climate change. while the nets trap fog for the collection, storage, and redistribution of water, in times of drought it will improve the use and sustainable use of water in San Lorenzo-Manta.

137. The implementation of a germplasm bank, a seed production centre, and the recovery of native seeds, in La Esperanza will promote ecological regeneration through the reproduction and multiplication of key plant species for the restoration of soils degraded by drought. This action will contribute to reforestation, improving water retention capacity, soil stability and local biodiversity. By increasing vegetation cover, the vulnerability of ecosystems to desertification will be reduced and the natural cycles of water resources will be strengthened. This measure will strengthen food security by ensuring the genetic diversity necessary for resilient production systems, reducing dependence on commercial varieties vulnerable to climate change. In addition, it will allow the recovery of ancestral knowledge on crop management in scenarios of water stress.

138. The reforestation of at least 250 ha in the highlands of Manabí province, Bolívar municipality, for productive purposes such as coffee or cocoa, will contribute to the conservation and restoration of ecosystems. This improves ecosystem services by increasing forest cover, which in turn protects water sources and reduces soil degradation.

139. The restoration and conservation of at least 400 ha of riverbank on the San Francisco River Azuay province, Gualaceo municipality, can improve water retention and biodiversity. By protecting associated ecosystems, water availability is ensured for local communities and soil erosion is reduced. These actions also contribute to the reduction of soil degradation and the improvement of ecosystem services, creating a more sustainable and resilient environment.

C. COST-EFFECTIVENESS OF THE PROPOSED PROJECT

140. ECLAC (2020)[9] reports a cost-benefit ratio of 1:2 to 1:10, sometimes even higher, showing a very high return. This is followed by the measures of "Improving agricultural production in drylands" with a return of between 2 and 12 dollars for every dollar invested. And with a positive return, although smaller, is the measure of strengthening the resilience of water resources management, with a return between 3 and 8 dollars for every dollar invested. In summary, the selected

[9] A. Bárcena et al., The Climate Change Emergency in Latin America and the Caribbean: Do We Continue to Wait for Disaster or Take Action?, ECLAC Books, No. 160 (LC/PUB.2019/23-P), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), 2020.

measures have a high return on investment. Component 1 shows profitability by using agroclimatic newsletters as cost-effective tools for drought adaptation, giving farmers and local authorities timely, relevant climate information for better decision-making. These newsletters provide farmers and local authorities with essential information for planning, combining weather forecasts and climate analysis with targeted crop and irrigation advice. They help reduce economic losses, optimize resources, and offer a low-cost way to improve agricultural planning and manage climate risks in vulnerable communities.

141. Agroclimatic newsletters help communities manage climate risks by promoting information sharing between technical institutions, meteorological services, and local actors. Its dissemination, through traditional media, digital or through community networks, allows smallholders to adapt to prolonged drought conditions, adjust their agricultural calendars and adopt resilient practices with greater agility. In terms of cost-effectiveness, these tools generate high social returns by protecting livelihoods, reducing food insecurity, and avoiding more serious impacts in the long term, positioning themselves as a key measure in early warning and information-based adaptation systems.

142. Similarly, component 2 presents adaptation measures that utilize Nature-Based Solutions, which are identified as cost-effective options for climate change adaptation, particularly in areas such as water management, food security, and ecosystem conservation. These solutions take advantage of natural processes and ecosystem services—such as water infiltration into forest soils, wetland water regulation, and carbon sequestration by native vegetation—to reduce climate risks at a fraction of the cost of traditional infrastructure. For example, ecosystem restoration in upper basins can improve aquifer recharge, reduce runoff, and mitigate the effects of droughts and floods, benefiting both rural communities and water-dependent urban centers.

143. This is how actions and/or measures are proposed, such as the implementation of sustainable water storage and redistribution systems in Manabí province, Manta municipality where it is projected to generate a positive economic return. It is estimated that the cost-benefit ratio will reach 2.47 dollars for every dollar invested (1:2.47), evidencing efficiency and profitability. In addition, the reduction of costs associated with extreme weather events, such as droughts, is anticipated, which will result in financial savings.

144. The installation of fog-trapping mesh systems and the implementation of technified irrigation systems will contribute to reducing environmental vulnerability in the long term. These actions will improve the conservation of water resources and agricultural productivity. The avoided costs of the loss of ecosystem services are projected to be high, as water sources will be protected, and soil erosion will be reduced. The return indicators will include a 9.53% increase in the basic basket and a rate of return of 1.90 dollars for each dollar invested (1:1.90).

145. The implementation of agroforestry systems and reforestation in Manabí and Azuay provinces are expected to generate a remarkable environmental return. Paramos and forest conservation is expected to show a high benefit-cost ratio, with US$5.57 recovered for every US$1 invested in environmental and economic benefits (1:5.57). Forest conservation is projected to yield a return of $1.78 for every dollar invested (1:1.78), highlighting the relevance of these measures for ecological sustainability. The reduction of long-term environmental vulnerability will be achieved through the restoration of degraded soils and the protection of water sources. The avoided costs of the loss of ecosystem services are expected to be high, improving water retention and biodiversity.

146. The construction of a germplasm bank and the rescue of native seeds in Bolívar municipality, Manabí province, will guarantee the preservation and availability of drought-adapted varieties, strengthening food security and the resilience of ecosystems. The implementation of seed production centre for the reproduction of plant species aimed at restoring degraded soils will also contribute to the ecological regeneration and sustainability of local ecosystems. The restoration of the riverbank on the San Francisco River, in the Gualaceo canton, Azuay province, will improve water retention and biodiversity, promote the protection of associated ecosystems and reduce soil erosion.

COMPONENTS / RESULTS / PRODUCTS	JUSTIFICATION
OC1. Increased awareness and behavioral change among local communities and governments through the use and interpretation of locally generated agro-climatic information to inform adaptive decision-making in food systems.	This component will contribute to the generation and management of agro-climatic information by strengthening the local and national climate network and increasing local capacities for interpretation and use of agroclimatic newsletter for informed decision-making, reducing economic losses for farmers. Maintaining an agroclimatic monitoring system is a potential investment for local governments and communities, since they provide technical information when making an investment in productive systems such as planting or access to agricultural credit.
OC2. Enhanced adaptive capacity and climate-resilient livelihoods among vulnerable populations in drought-prone priority areas, through improved natural asset management and diversified livelihood strategies.	This component will use and enhance the value of agroclimatic information, through climate risk studies it will be possible to prioritize climate investments, which is evidenced in effective adaptation measures that respond to local realities. The cost/effectiveness of implementing measures that respond to local needs is significant, since they ensure ownership and sustainability over time. In this component, measures will be implemented focused on the equitable distribution of water resources through reservoirs, irrigation canals and fog catcher nets, which are cost-effective for farmers, since they are low cost and the results increase crop productivity, thus improving the usefulness of farmers. For this portfolio and strategy for the implementation of adaptation measures, the concept of Nature-Based Solutions will be used, which are integral and seek balance with the environmental services of ecosystems, this is how resilient production systems low in GHG emissions are proposed, such as agroforestry, agrobiodiversity, germplasm banks and agroecological seed production centre, which ensure drought-resilient seeds, reducing economic losses to farmers. The comprehensive approach in this component, which goes from seed production, securing the means of production and identifying markets to market agricultural products, increases income and economic benefits to farmers. Similarly, cost-effective measures such as restoration and reforestation with native species and rehabilitation of altered ecosystems have been considered, as actions to regularize the hydrological cycle and control erosion of watersheds.
OC3. Improved institutional and technical capacities at local level, and establishment of coordination platforms to support the formulation and integration of climate-resilience strategies and regulatory frameworks into territorial and sectoral development planning.	This component will focus on strengthening local capacities to operationalize adaptation measures and ensure the process of citizen and community participation and empowerment. Investing in local capacities is a future saving for the sustainability of the measures and/or actions implemented. Priority will be given to women heads of household, community leaders and young people. Finally, decision-making spaces at the local level such as committees, water boards, account councils will be strengthened. This investment will allow the development of efficient public policies and regulatory frameworks that respond to specific legal needs, ensuring the institutionalist of the climate investment made in the areas of intervention.

D. ALIGNMENT WITH NATIONAL AND SUBNATIONAL DEVELOPMENT STRATEGES

PLANS / STRATEGIES	ALIGNMENT	COMPONENT
Political Constitution of Ecuador	Article 414 establishes that the State must take adequate and cross-cutting measures to mitigate climate change and protect the population at risk.	This proposal is aligned with component 2 since it is proposed to carry out climate risk studies and implement climate change adaptation measures to increase the resilience of the population in the face of prolonged drought.
Ecuador's National Climate Change Strategy	The National Climate Change Strategy (ENCC), through Ministerial Agreement 095, promotes the incorporation of climate change and risk management in different economic sectors to improve emergency preparedness, response, and recovery capacities. The Decentralized Autonomous Governments (GADs) submit their climate change plans, programs, and strategies to the National Government for approval, to be incorporated into the National Climate Change Plan.	Component 1 is aligned since it proposes to establish climate stations and repower other stations, in addition to implementing monitoring rooms for agroclimatic information. Component 2 proposes climate change adaptation measures for the sectors prioritized in the ENCC (Water, Food Security, and Conservation). The scope of this measure is to improve the living conditions of the population and increase their economic income. Component 3 prioritizes the strengthening of local capacities, the transfer of knowledge and information, and mechanisms for citizen participation and empowerment, to make climate investment sustainable.

National Plan for Adaptation to Climate Change (PAN)	This Plan is the basis for the progressive strengthening of the technical, environmental, social, economic, and political scenarios for adaptation management in the country, aspects that are fundamental for the updating of the following Plans, and the gradual scaling up of inputs such as climate risk analysis, adaptation measures and financing mechanisms to ensure the sustainability of multiscale and multi-stakeholder interventions.	Component 1 is aligned with Ecuador's NAP by strengthening the local agroclimatic network and increasing capacities for the interpretation and use of information. Component 2 will take the NAP methodology for local climate risk analysis and mechanisms for designing adaptation measures for the water, food security and conservation sectors. Similarly, this proposal has taken the types of measures of the NAP and the monitoring and follow-up process for implementation. Component 3 proposes a strategy for the sustainability of climate investment, which involves strengthening local/community capacities, creating spaces for territorial articulation to design public policies and regulatory frameworks to ensure citizen empowerment and participation.
Gender and Climate Change Action Plan in Ecuador	It allows an opening to understand the impacts associated with and identified from the climate threat, showing a gender perspective approach in the socioeconomic and climate change context.	In the 3 components, processes of equitable participation and gender considerations are proposed in accordance with the guidelines of the Gender Action Plan. In the consultation and capacity-building processes, priority will be given to the segment of young women heads of household. Similarly, in the design of adaptation measures, the gender approach will be considered in the baseline, in accordance with methodologies established by MAATE. For the spaces of articulation and decision-making, it will focus on being led by women, who stay in the territories, since due to permanent or temporary migration, the absenteeism of men is high.
Second Nationally Determined Contribution	The objective of Ecuador's NDC is to implement policies, actions and efforts to reduce greenhouse gases and increase resilience to climate change in priority sectors, according to the National Climate Change Strategy. These measures will be based on the strategic lines and measures detailed in the document. Ecuador seeks to meet its obligations under the Paris Agreement	This proposal aligns with the priorities of the second NDCs in the processes of adaptation to climate change. Thus, Ecuador prioritized the following sectors: a) Natural heritage; b) Water heritage; c) Health(d); d) Human settlements; e) Productive and Strategic Sectors; f) Food Sovereignty and Agriculture. For this reason, this proposal is part of the sectors, and the measures proposed. For example, promotion of green infrastructure for the use of and access to water resources. Diversity of efficient and effective production systems, promotion of technified irrigation. Ecosystem restoration processes, conservation of native and endemic plant habitats. Finally, the process of inclusion of climate change adaptation variables in development planning and local land use.
The Climate Finance Strategy.	The EFIC presents three strategic lines of action that outline its implementation: Clear and effective governance of climate finance. Consolidation of a financial system that integrates the climate approach in a cross-cutting way. Effective and efficient access, management, allocation, and mobilization of climate finance.	Component 3 focuses on a strategy of technical sustainability and empowerment of decision-makers to invest climate funds in the most vulnerable to drought. Similarly, capacity building and the creation of spaces for articulation will allow decisions to be made to identify climate funds that allow the continuity and replicability of the measures and processes implemented through this proposal.
Fifth National Climate Change Communication and First Biennial Transparency Report	It highlights the country's progress and challenges in the implementation of climate policies, in line with its commitments to the United Nations Framework Convention on Climate Change (UNFCCC). The document presents an updated inventory of greenhouse gases, identifies key sectors of vulnerability (such as agriculture, water, health, and biodiversity), and details mitigation and adaptation measures, including planning instruments such as the NDCs and the National Adaptation Plan.	This proposal has taken the conceptual frameworks, methodologies, tools, and lessons learned from the National Communication, for the development of all the proposed actions. It is important to mention that, for future national communications, the project has a monitoring and reporting process, to contribute to the MRV adaptation module that is part of the National Climate Change Registry (Process contemplated in the Organic Environmental Code).

E. COMPLIANCE WITH RELEVANT NATIONAL TECHNICAL STANDARDS

COMPONENTS / RESULTS / PRODUCTS	RELEVANT REGULATIONS, STANDARDS AND PROCESSES ALIGNED WITH AF PRINCIPLES	COMPLIANCE, AUTHORIZED PROCEDURES
OC1. Increased awareness and behavioral change among local communities and governments through the use and interpretation of locally generated agro-climatic information to	Standards of the National Institute of Meteorology and Hydrology (INAMHI): Regulate the operation and maintenance of the country's meteorological and hydrological stations. Standards of the National Water Information System (SENAGUA): Regulate the collection, management, and dissemination of information on water resources.	Aligns with Institutional Strategic Plan of INAMHI 2021–2025 Strategic Objectives 1: To increase the timely generation and dissemination of products and services related to weather, climate, and water; 2: To enhance effective communication mechanisms that promote a hydrometeorological culture, strengthen institutional visibility, and improve user satisfaction; and 3: To increase the generation, reliability, and availability of hydrometeorological products and services in the medium and long term, as inputs for the formulation of public policies aimed at climate change mitigation and adaptation. The installation and enhancement of agroclimatic

inform adaptive decision-making in food systems.	Law on Water Resources, Water Uses and Exploitation (2014): Regulates the use, conservation, management, and administration of water resources, including the monitoring and control of water resources at the national and subnational levels.	stations and monitoring rooms will strictly comply with current standards. In addition, the international standards of the World Meteorological Organization will be complied with: OMM_N° 09 Observation standards; WMO-No. 488 Guide to the Global Observing System; WMO-No. 544 Global Observing System Handbook. WFP, as the implementing agency, will ensure compliance with environmental and water resources standards in reference to the management of hydrological, climatic and agroclimatic information.
OC2. Enhanced adaptive capacity and climate-resilient livelihoods among vulnerable populations in drought-prone priority areas, through improved natural asset management and diversified livelihood strategies.	Organic Environmental Code (2017) Law on Agricultural Promotion and Development. Law on Water Resources, Water Uses and Exploitation (2014) National Agricultural Strategy for Rural Women (2020) Forest Plantation Regulations. National Reforestation Plan (PNR) National Forest Restoration Policy.	Adaptation studies and measures shall be framed and strictly comply with all national technical regulations. Adaptation measures related to water resources will comply with the current legal framework, such as irrigation systems, reservoirs and green infrastructure, and measures related to the conservation of natural resources such as reforestation and restoration. Similarly, with food security measures (agroforestry systems, germplasm banks), they will be oriented towards compliance with public policy and national and local regulatory frameworks, in accordance with the decentralized competencies of the Provincial Governments.
OC3. Improved institutional and technical capacities at local level, and establishment of coordination platforms to support the formulation and integration of climate-resilience strategies and regulatory frameworks into territorial and sectoral development planning.	Organic Law on Water Resources, Water Uses and Exploitation (2014): Articles 3, 4, 56 and 57: Promote citizen participation and social organization in the management of water resources, including the creation of water boards and user committees. Organic Law on Citizen Participation (2010): Articles 1, 6 and 7: Establish mechanisms for citizen participation in public management, including water management.	For this component, priority will be given to and compliance with current regulations in relation to the processes of consultation and community and citizen participation. Based on current regulations, the design and implementation of adaptation measures must go through a process of socialization and prior consultation. This process is tempered as part of the implementation, cooperation, and sustainability strategy of the project proposal.

F. DUPLICATION WITH OTHER FUNDING SOURCES

147. According to Ecuador's 5CN/BTR, during the period from 2021 to 2023, Ecuador has received a total of financial support linked to climate change amounting to USD 746,422,795, broken down as follows: 2021 with USD 107,863,84; 2022 with USD 253,752,530 and 2023 with USD 384,806,419. The analysis of the received financing, categorized by components, indicates that during the evaluation period, most economic resources were allocated to the mitigation component. This approach accounted for approximately 54% of total funding, equivalent to $401,076,875. While the adaptation component received about 35% of the total financial support, with an amount of USD 259,735,698. Finally, the remaining values are distributed in a transversal area with a participation of 11% of the total support, equivalent to USD 85,610,221.

Projects	Description	Complementarity and Synergies with the new project
Integrated management and ecological connectivity of a priority landscape in the Ecuadorian Amazonian headwaters (GEF ID 11202) (CI-WWF) Amount: 5,333,333.00 Term: 2024-2028	It conserves, restores and promotes the sustainable management of 1,038,377 ha of tropical montane forests. It improves Andes-Amazon connectivity through protected area management, territorial governance, financial incentives, and inclusive participation. It incorporates SMART technologies for monitoring and knowledge management.	**GEF 11202:** It will benefit 56,177 people (40% women). It will strengthen the management of 577,289 ha of protected areas, restore 400 ha and promote sustainable practices in 461,088 ha. It integrates SMART technologies, monitoring platforms, local environmental governance, and 5 $MtCO_2eq$ mitigation. **Complementarity:** The GEF project will provide expertise in ecological restoration, territorial governance and SMART technologies. The new project will add community water planning, use of the SMIC and strengthening of water boards. They complement each other in territorial approaches and local capacities for climate adaptation. **The proposed new project will:** Introduce water resource redistribution, community water governance and operational use of the SMIC for local decisions. **Synergies:** There is methodological complementarity. **There is no geographical or thematic duplication.**
Integrated Landscape Management in the Napo River Basin for Sustainable Land Management and Biodiversity Conservation (GEF-ID 11333/UNDP) Amount 9,835,750.00	It promotes sustainable landscape management in the Napo River basin through territorial governance, adoption of sustainable practices (SLM/SFM), access to finance, and strengthening local capacities with a	The GEF-11333 project. It will benefit 7,676 people, at least 40% women. It will protect and improve 125,000 ha, with sustainable management of 21,188 ha of forest and restoration of 4,020 ha. It applies models of integrated watershed management, biodiversity conservation and access to financing with a gender approach and inclusion of local actors. **Complementarity:** The GEF project provides knowledge on ecological restoration,

Term 2023-2028 (60 months)	gender approach. It addresses deforestation, land degradation and climate vulnerability.	financial mechanisms and local governance models in the Amazon. The new project adapts these learnings to coastal and Andean contexts, applying community climate planning, SMIC and strengthening of water boards. **The new proposed project**: Introduces water resource redistribution, territorial scaling of the SMIC and community water governance, components not addressed in the GEF project. There is no direct territorial overlap or thematic overlap, but there is technical complementarity in restoration, territorial planning and community participation.
Integrated Management of Transboundary Basins between Colombia and Ecuador – Mira, Mataje and Carchi–Guáitara Basins (Term not specified) (GEF-9566) Amount: 3,850,000 Term: 2019-2022	Binational project focused on the joint governance of transboundary watersheds, adaptation to climate change, institutional strengthening and ecosystem conservation in the Mira, Mataje and Carchi-Guaitara basins. Implements sustainable solutions for water access, food security, and community climate monitoring.	Complementarity: The GEF project strengthened community processes for access to safe water, women's participation in water governance, and climate monitoring through the SMIC. These elements constitute a key technical basis that can be used by the new project. The proposed new project: Introduces new approaches not addressed by the GEF, such as community-based redistribution of water resources, the development of local regulations for sustainable community water management, and the operational scaling up of the SMIC in the country's Azuay and Manabí provinces. Synergies: Both projects can generate methodological complementarities. Given that the new project is in the formulation phase with a duration of five years, there is the possibility of resuming, updating and scaling tools that were implemented by the GEF project, particularly those related to climate governance and community agro-climate monitoring. There is no geographical overlap or overlap of activities. The new project builds on previously validated learnings and tools, expanding its scope and focus in 3 areas of high vulnerability to prolonged droughts
Developing an enabling environment for sustainable businesses based on Ecuador's native biodiversity (GEF-FMAM10219) (HEIFER) Amount: 3,119,266 Term: 2021-2023 (missing)	She promoted sustainable bio-entrepreneurship with territorial identity, with an emphasis on rural women and youth. Intervention is being carried out in Santa Ana (Manabí), promoting agroecological production, sustainable use of guadua sugarcane and conservation of ecosystems.	Complementarity: This project promotes regenerative practices in livestock landscapes to conserve biodiversity, which can complement the ecosystem restoration and productive diversification actions planned in San Lorenzo (Manta) by the new project. The proposed new project will: Introduce water resource redistribution, local water governance, use of SMIC, restoration with native species, and strengthening of water committees, components not considered in GEF-11369. Synergies: Methodologies for productive restoration and landscape management may be shared. If there is territorial coincidence, articulation with the GAD of Manta and local actors will be explored. There is no duplication: The GEF focuses on sustainable livestock production; The new project in water management and climate adaptation. There is no territorial or functional overlap, but there is thematic complementarity
Adaptation to Climate Change through Effective Water Governance (GEF-2931) Amount 3,000,000 Term: 2008 - 2012	The project facilitated the implementation of efficient water management practices to withstand the effects of climate change through strong water governance arrangements; decentralization of climate-resilient water management; information management and dissemination, and flexible financial mechanisms.	**Complementarity:** The GEF project strengthened climate planning in the Machángara basin and developed tools such as the Water Evaluation and Planning (WEAP) model and pilot early warning systems. **The new proposed project:** It will intervene in the sub-basin of the Machángara and Gualaceo rivers (Zone 1), incorporates the SMIC, water redistribution and community governance, with a focus on gender, territorial and cultural relevance. **Synergies:** Although the GEF project has already ended, its tools and experiences can be taken up and adapted to reinforce the actions planned in Zone 1. There is no thematic overlap. There are replicable methodological experiences.
Promotion of the integration of biodiversity and the protection of ecosystem services through regenerative and deforestation-free livestock farming in the provinces of Manabí, Pichincha and Morona-Santiago. (GEF-11369) Amount: 2,346,481	It seeks to conserve biodiversity and protect ecosystem services through regenerative and deforestation-free livestock practices in Manabí, Pichincha and Morona Santiago, with coordination by MAATE.	**Complementarity:** The GEF 11369 project promotes regenerative practices to conserve biodiversity in livestock landscapes. This experience can complement the ecosystem restoration and productive diversification planned in the San Lorenzo basin (Manta), within the new project. **The proposed new project:** Introduces components not addressed by the GEF, such as community-based redistribution of water resources, local water governance, and the use of the GISS for climate decisions. In addition, it includes restoration with native species and strengthening of water boards and/or committees. **Synergies:** Both projects could exchange methodologies in productive restoration and sustainable landscape management. If they coincide territorially, the articulation through the GAD of Manta and local actors will be explored. **There is no duplication:** The GEF focuses on sustainable livestock production; the new project on water management and adaptation to climate change. There is no territorial overlap, but there is a potential for thematic complementarity.

Developing financial and land-use planning instruments to reduce emissions from deforestation (GCF-FP019) Amount: 41,172,739 Term: 2016-2023	Project executed by MAATE with financing from the GCF, focused on strengthening land use policies, forest restoration, deforestation-free agricultural production, and territorial governance in six Amazonian provinces and Loja. It is aligned with the National REDD+ Strategy.	**Complementarity:** The GEF project strengthened territorial planning, deforestation-free production chains and access to green financing, benefiting 199,536 people. **The proposed new project will:** Introduce nature-based restoration, community water governance, water redistribution, and use of SMIC in the 3 prioritized areas. **Synergies:** Sustainable planning and production approaches for resilient livelihoods can be adapted in San Lorenzo and Gualaceo. **There is no duplication:** The GEF-FP019 was national and focused on mitigation. The new project is territorial and adaptive.
The Amazon Bioeconomy Fund: Unlocking Private Capital by Valuing Bioeconomy Products and Services with Climate Mitigation and Adaptation Outcomes in the Amazon (GCF-FP173) Amount: 10,000,000. Term: 2021-2029	Executed by Natura Capital with support from IDB Lab in four Amazonian countries. It mobilizes private investment towards sustainable nature-based models.	Complementarity: The project promotes community bio-enterprises and climate finance for sustainable value chains açaí, guayusa, camu camu, ungurahui, guaba, chonta, essential and vegetable oils, resins, latex, medicinal/aromatic plants, fine aroma cacao, natural fibers (such as chambira or toquilla straw) and beekeeping in the Amazon, with indigenous participation and ecosystem conservation. The proposed new project will: Strengthen community water governance, ecosystem restoration, access to climate information (SMIC), and resilient livelihoods. Synergies: Bioeconomy methodologies and financial mechanisms can be explored to replicate models in territories such as Bolívar and Manabí, according to viability and local context. There is no territorial or thematic coincidence.
Arbaro Fund – Sustainable Forestry Fund-Project - Multi-country (GCF-FP128) Amount: USD 200 million (approximately 5% of the fund would correspond to Ecuador). Term: 2020-2036	It seeks to close the gap in sustainable wood supply, mitigate climate change through carbon sequestration (up to 20 million tCO_2), and provide adaptation co-benefits such as formal employment, rural economic diversification, and community strengthening. In Ecuador.	Complementarity: The Arbaro Fund will implement sustainable teak forest plantations with a productive-commercial focus in Manabí. The new proposed project: It will prioritize the ecological restoration of conservation areas such as the Pacoche Forest with native species, strengthen community water governance and implement the SMIC for decision-making on preventive actions against climate threats. Its focus will be on nature-based solutions and climate resilience. Synergies: There are no synergies with the proposed new project due to the nature of each project. Both projects will have different objectives: the Arbaro Fund will focus on commercial forestry; the new project on water adaptation and restoration.
Green Fund: Investing in Inclusive Agriculture and Protecting Forests (GCF-FP212) Multi-Country Project: Ecuador, Brazil, Paraguay, Indonesia, and Sub-Saharan African countries Amount: Green Fund Investment: USD 981.6 million The Green Climate Fund (GCF) contributes USD 189.35 million. Term: 2023-2039 /16 years	Multilateral program that transforms tropical agricultural chains towards sustainable, deforestation-free and inclusive models. It provides climate finance and technical assistance to cocoa, cattle ranching, palm companies, among others, under commitments to conservation, restoration and community participation. Ecuador is one of the target countries, given the pressure of agricultural expansion on native forests.	It seeks to reduce 339 $MtCO_2e$ through regenerative production and deforestation-free value chains. In Ecuador, it addresses the conversion of forests to pastures (64.9% of deforestation) with sustainable practices. Complementarity: The project will promote regenerative agriculture, traceability and deforestation-free value chains. In Ecuador, specific areas of intervention have not yet been defined. The proposed new project will: Promote ecological restoration, water redistribution, community water governance, and operational use of the SMIC for local climate decision-making. Synergies: If the Green Fund project confirms its presence in Ecuador, methodological synergies can be generated in productive restoration, traceability and landscape management. The new project will be able to adapt these approaches if there is future geographical overlap. There is currently no territorial overlap.
Project: Multi-country Project Advancing Early Warnings for All (EW4All) – FP258 Total amount: USD 114,586,309 (GCF contribution: USD 103,246,722) Term: 2025–2030 Accredited Entity: UNDP Countries: Antigua and Barbuda, Cambodia, Chad, Ecuador, Ethiopia, Fiji, Somalia	Regional project strengthening multi-hazard early warning systems (MHEWS) to increase climate resilience in seven highly vulnerable countries, including Ecuador. It focuses on strengthening governance, technical capacities, hydrometeorological monitoring networks, alert communication systems, anticipation mechanisms and early response.	**Complementarity:** The project will strengthen the national multi-risk early warning system, through regulatory frameworks, hydrometeorological monitoring, advance action protocols and community capacities, with a gender and intercultural approach. **The proposed new project will:** implement the SMIC, promote community water governance, and develop drought adaptation measures. **Synergies:** Methodologies in climate monitoring, risk management and participation of indigenous knowledge can be used to strengthen water planning in the Municipalities of Cuenca, Gualaceo, Manta and Bolívar. **There is no geographical duplication: the GCF project** will have a national focus; the new project will be implemented in the provinces of Azuay and Manabí.
Building Capacity to Adapt to Climate Change – Awá and Afro-descendant Peoples (Binational Ecuador–Colombia) Donor: Adaptation Fund Amount: USD 7,000,000 (binational) Term: 2018–2024	The project was implemented by WFP. It seeks to increase the resilience of Awá and Afro-descendant communities that are highly vulnerable to climate change, through ecosystem-based adaptation (EbA) measures.	**Complementarity: The Binational project** strengthened climate resilience through safe water systems, community governance, mangrove restoration, and development of the SMIC with 12 weather stations and agroclimatic newsletters. **The proposed new project:** It will scale up the SMIC in Azuay and Manabí, install hydrometeorological stations, promote reforestation, green infrastructure and sustainable agroforestry systems, strengthening local water governance. **Synergies:** SMIC methodologies and community water

		governance will be replicated to improve participatory management in Cuenca, Gualaceo, Manta and Bolívar. **There is no** geographical or thematic duplication. Tools adapted to new territorial contexts will be applied.
Participatory and Equal Sustainable Agri-Food Systems – Transformative Gender Approaches Donor: European Union Executing Agencies: WFP, FAO and IFAD Estimated amount: USD 561,988.50 Timeframe: 2021–2024	Project executed in the provinces of Imbabura, Manabí and Azuay by WFP, with the aim of promoting sustainable production, agroecology, empowerment of rural women, inclusive marketing and local governance. It focused on leadership, reducing gender gaps, and access to markets.	**Complementarity:** The Gender Approach project strengthened the capacities of 1,457 people (62% women) in agroecology, marketing, and leadership. She applied the transformative gender approach methodology and the SNET tool to explore social and behavioral norms (SBCC), generating evidence to promote female leadership, co-responsibility and egalitarian decision-making in local agri-food systems. **The proposed new project will:** Strengthen community water governance, local climate planning, and resilient livelihoods. It will promote the active participation of at least 50% of women and young people in water boards and decision-making spaces in the 3 prioritized areas. **Synergies:** WFP's SNET and SBCC methodologies will be adapted to understand and transform social norms related to water use, decision-making and community participation, ensuring the effective inclusion of women in water management and the implementation of adaptation measures to strengthen climate resilience. There is no geographical or thematic overlap, the completed project focused its efforts on strengthening inclusive food systems; The new project will focus its intervention at the level of water basins in the face of prolonged droughts.
Sustainable, resilient and nutritious agri-food systems – "Rice-Duck" Donor: Government of the People's Republic of China Amount: USD 520,000 Term: 2019–2023	Project implemented by WFP with funding from the Government of China. It was carried out in the provinces of Manabí, Guayas, Los Ríos, El Oro and Loja. He promoted an agroecological model that integrates rice and ducks to control pests and fertilize naturally, reducing agrochemicals and CO2 emissions, improving nutrition and increasing incomes and strengthening food security.	The project benefited 2,445 people (41% women) through agroecological practices and clean production systems. Complementarity: Sustainable agroecological practices were implemented, such as the elimination of the use of agrochemicals, productive diversification and improvement of food security through clean and associative production. The project aims to restore native species, encourage sustainable water use, and support community governance in rural areas facing water scarcity and climate challenges. Synergies: Methodologies from agroecological production practices and experiences in sustainable and nutritional production can be leveraged to strengthen resilient livelihoods and food security in areas such as San Lorenzo (Manta) and Quiroga (Bolívar). There is no duplication: The previous project had a specific agro-productive approach based on the rice and duck system and has already concluded.
Reduction of Climate Vulnerability and Flood Risk in Coastal Urban and Semi-Urban Areas of Latin American Cities (Chile, Ecuador). Implementing Entity: CAF. Executing Entities: UNDP Geographic Scope: Regional – Chile/Ecuador. Donor: Adaptation Fund Funding Amount: USD 13´910.400 Implementation Period: 2020–2025	Reduce vulnerability to climate-related floods, mudflows, and landslides in three coastal cities by integrating a risk-based adaptation approach, fostering collaboration and networking, and promoting a culture of adaptation. The project focuses on hydrometeorological risks such as mudflows in Antofagasta and Taltal (Chile), and floods and landslides in Esmeraldas (Ecuador).	Complementarity: The AdaptaClima project contributes methodological tools and experience in the participatory design of local adaptation plans, the Early Warning System (EWS), and vulnerability analysis, which can be leveraged in the new project. The proposed new project will implement the Climate Information Monitoring System (SMIC) in three vulnerable rural areas and will develop community-based water governance processes and nature-based solutions, which were not addressed under AdaptaClima. Synergies: Although the target areas do not overlap (Esmeraldas vs. Cuenca, Gualaceo, Manta, Bolívar), there is technical complementarity in local climate planning, integration of intercultural approaches, and community participation. There is no geographic or technical duplication.
Project Sustainable and Appropriate Development in Rural Territories DESATAR (IFAD – MAG) Amount: USD 31.2 million Duration: 2022–2027 Location: upper watershed of the Guayas River	The project covers investments in sustainable agriculture, capacity building, value chain diversification, innovation, and emergency response. Geographic scope: 33 cantons across the provinces of Guayas, Manabí, Los Ríos, and Santa Elena. Target beneficiaries: 10,000 small-scale producers, including 4,000 women and 2,000 youth. Increase small rural producers' incomes—especially for women and youth—through innovation, climate resilience, and stronger cooperative enterprises.	Complementarity (IFAD DESATAR Project): Strengthened inclusive productive capacities, diversification, and environmental sustainability with a focus on small scale producers, women, and youth. The proposed new project: Will enhance community water governance, equitable water redistribution, and the use of the Climate Information Monitoring System (SMIC) in climate vulnerable watersheds such as Cuenca, Gualaceo, Manta, and Bolívar. Synergies: Participatory methods, technological innovations, and community-based financial strategies developed under DESATAR can be leveraged to strengthen resilient livelihoods in new intervention areas. No duplication: The DESATAR project focuses on productive systems and coastal regions, whereas the new proposal centers on community-based climate adaptation in prioritized Andean and coastal watersheds.

G. KNOWLEDGE MANAGEMENT AND LEARNING TO CAPTURE AND DISSEMINATE LESSONS LEARNED

148. The project will develop a knowledge management, communication, and visibility strategy as part of the sustainability strategy that is considered in component 3 of the proposal. The communication and knowledge management strategy aims to strengthen local and institutional capacities through access, use and dissemination of relevant climate information, ensuring that all actors involved understand, participate in and take ownership of the adaptation measures implemented in components 1 and 2.

149. The World Food Programme (WFP) actively promotes South-South and Triangular Cooperation (SSTC) as a key strategy to facilitate the exchange of knowledge, experiences and practical information between countries facing similar development challenges. Through this modality, WFP acts as a technical facilitator and neutral convener, connecting governments, institutions, and communities to share innovations in food security, climate change adaptation, nutrition, and resilient livelihoods. South-South cooperation enables countries in the global South to co-create solutions, scale up successful practices and adapt them to their local contexts.

150. The information and knowledge management of the proposal will be transferred to the information management platforms of the Ministry of Environment, Water and Ecological Transition (National Climate Change Registry) and the WFP platforms. On the other hand, document management platforms of sub-national governments (Manabi and Azuay Province) have been identified where the information and knowledge generated by the project could be transferred.

151. The first phase is knowledge management, which involves the identification, systematization and dissemination of good practices, lessons learned, technological innovations and methodologies applied in this proposal. Products such as case studies, technical manuals, infographics, and practical guides will be developed, which will be used in training workshops, exchanges of experience and dialogue events between the beneficiaries of the 3 intervention areas. This management will be participatory and inclusive and will seek to strengthen the technical empowerment of local governments, community organizations, and key sectoral actors considered in component 3 of the proposal.

152. The second phase is capacity building through formal and informal climate education strategies. Priority will be given to the training of community promoters and local technical leaders through educational modules, face-to-face and virtual workshops, and field visits, promoting a mutual learning approach, considered in component 3 of the proposal. Likewise, the creation of learning networks between territories that allow the replication and scaling of successful adaptation solutions will be promoted. The training tools will be contextualized and accessible, with a focus on gender, interculturality and linguistic relevance.

153. The third phase is focused on communication for development and public awareness, using multichannel campaigns that connect emotionally with communities and make visible the impacts of climate change and nature-based solutions. Audiovisual, radio, and digital materials will be developed that combine scientific evidence with life stories and testimonies of local actors that allow communities to give a voice. This line of action seeks to generate collective awareness, modify perceptions and practices around water management, sustainable land use, conservation, and preparation for extreme events such as droughts.

154. Finally, the strategy will incorporate a system of monitoring, evaluation, and feedback of the processes of knowledge management and communication, with clear indicators to measure the level of appropriation, participation, and use of information. This will allow methodologies to be adjusted, the impact of messages to be strengthened, and to ensure the sustainability of processes beyond the project cycle. Overall, the strategy will be consolidated as a cross-cutting axis that articulates the technical with the social, facilitating visible messages to reach national and international conventions such as the COPs on climate change, biodiversity, and desertification.

155. On the other hand, the implementing agency WFP Ecuador, has a unit for monitoring and evaluating implemented projects and initiatives. Monitoring and evaluation (M&E) are a systematic, technical, and continuous process that allows you to collect, analyze, and use information to measure the performance of your interventions in real time. This system is guided by corporate guidelines and is operationalized through the Corporate Results Framework (CRF), which structures the levels of outputs, results, and expected effects. M&E allows us to observe progress, detect deviations, make timely decisions, and generate evidence for the constant improvement of operations, maintaining high standards of quality, relevance, and accountability.

156. During implementation, data collection is carried out through field visits, structured surveys, participant interviews, and direct observation. The data collected is disaggregated according to relevant variables such as age, sex, location, or

population group, and stored in secure and standardized systems. The MoDA platform allows the information to be georeferenced, facilitating the spatial analysis of the intervention. The analysis of the information is carried out by cross-referencing results with the predefined goals in the monitoring plan. This allows for comparative reporting, early warnings, and analytical visualizations through dashboards that consolidate data from the field. In addition, the system incorporates the Complaints and Feedback Mechanism (CFM), which receives comments, claims, or requests from beneficiaries through calls, text messages or WhatsApp.

H. CONSULTATION PROCESS DURING THE PREPARATION OF THE CONCEPT NOTE

157. This process was led by the Ministry of Environment, Water and Ecological Transition (MAATE), with technical support from the World Food Programme (WFP), and allowed for the identification, validation and prioritization of climate challenges, key actors, adaptation measures and associated risks, with special emphasis on the participation of vulnerable groups, women, young people, and people at climate risk.

158. The territorial, participatory and multisectoral approach ensured the alignment of the project with the three prioritized Outcomes: O1: Use and interpretation of agroclimatic information for local decision-making; O2: Increase in adaptive capacity in the face of severe droughts in prioritized areas; O3: Strengthening local capacities and articulation for the sustainability of climate investment.

Phase 1 Territorial participatory base line.

Dates	Actors	Problems/Needs	Proposed adaptive measures
Areas: Manabí, Bolívar/Quiroga 04/03/2024, 08/03/2024, 19/4/2024	Technicians from the Bolivar Mayor's Office, Ministry of Environment, Water and Ecological Transition, Consulting Team, WFP	Water scarcity and ecosystem degradation	Studies of resilient infrastructure, ecological restoration, agroforestry systems
Areas: Manabí, Manta/San Lorenzo 23/02/2024, 19/4/2024	GAD Manta, Ministry of Environment MAATE, Consulting Team, WFP	Deficit of drinking water and sanitation, pressure on Pacoche	Forest conservation, gallery reclamation, watershed management
Areas: Azuay, Cuenca and Gualaceo 10/01/2024, 09/02/2024	ETAPA, WFP, MAATE	Sedimentation, erosion, lack of weather alerts	Reforestation, technified irrigation, strengthening of monitoring

Phase 2 – Inter-institutional coordination visits (May-June 2024)

Date	Location	Key Players	Validated adaptive measures
11/7/2024	Cuenca Machángara	Machángara Basin Committee, ETAPA, ELECAUSTRO, Chiquintad Council, MAATE-Azuay, FONAPA, Saucay Association	Implementation of the SMIC with a community approach Technified irrigation system Infiltration terraces and absorption ditches. Management Plan for the Machángara Wildlife Refuge. Training for women and young people in climate monitoring
12/7/2024	Gualaceo	GAD Gualaceo, EMAPS GEP, Mancomunidad Collay, Remigio Crespo Water Board, San Francisco River Water Board, Luis Cordero Vega, Water Board Uchucay Water Board, Maylas Foundation,	Strengthening the Watershed Management Committee SMIC and water monitoring green infrastructure and reforestation Agroforestry systems Climate communication plan
16/7/2024	Bolívar Quiroga	GAD Bolívar, MAATE, WFP	Conservation of recharge areas (La Esperanza dam); Water management legal mechanism; Germplasm bank and seed production centre, Community training in monitoring and decision-making
17/7/2024	Manta San Lorenzo	local Council, local conseil communities	SMIC and water monitoring, filtering galleries and catchment meshes, Conservation of the Pacoche Forest Inclusion of climatic variables in PDOT; Capacity building of national committees

159. Four field visits were made to the intervention areas to refine the intervention strategy. Municipal authorities, water boards, MAATE technical teams and community representatives participated. This process made it possible to validate local priorities, the predominant climatic threats (drought, erosion, water scarcity) and existing institutional barriers, thus articulating the project's measures with the Development and Territorial Planning Plans (PDyOT), the 2nd NDC and the National Adaptation Plan. 110 direct participants (29 women) were registered, including water boards, basin councils, local governments, and representatives of rural communities.

160. The Republic of Ecuador's Constitution acknowledges the country's ethnic diversity and defines it as an intercultural, plurinational state, a point emphasized during participatory workshops when preparing the Concept Note[10]. The Population and Housing Census (INEC, 2022), it was identified that approximately 96% of the beneficiary population in the three intervention areas self-identifies as mestizo[11], 2% as indigenous[12], 0.67% as Afro-descendant[13] and 1% as montubio[14], in the provinces of Azuay (municipalities of Cuenca and Gualaceo) and Manabí (municipalities of Manta and Bolívar). Workshops in Quiroga (Bolívar municipality) involved Montubio committee and water board leaders to ensure vulnerable groups participated in consultations. For indigenous and Afro-descendant populations, coordination with subnational governments in Gualaceo, Cuenca, and Manta will be underway to gather detailed ethnic-cultural data for the Fully Developed Proposal, through the Free, Prior and Informed Consent (FPIC)[15] mechanism for effective participation in the design, validation and implementation of adaptation measures.

161. This approach responds to the Adaptation Fund's principle of promoting participatory and inclusive processes that recognize the differentiated vulnerability of ethnic groups to climate change; In addition, the application of FPIC ensures that indigenous, Afro-descendant and Montubio communities who suffer disproportionate impacts from the drought and face ethnic-linguistic barriers that limit their access to technical assistance, financing and livelihood strengthening and participate autonomously in the definition, design and localization of adaptation measures. Thus, this mechanism, aligned with Article 57 (7) of the Constitution of Ecuador and Article 530 of the Organic Code of the Social Knowledge Economy, strengthens climate justice through nature- and community-based solutions, building on the successful experiences of the binational project "Building Capacity to Adapt to Climate Change in the Awa and Afro-descendant Peoples" to guarantee the full exercise of their collective rights. This consultative process laid the foundations for a participatory, territorial, inclusive and technical implementation of the project, aligned with the Environmental and Social Safeguards policy of the Adaptation Fund, a mechanism that will be implemented in the design phase of the full proposal (Fully Developed Proposal).

162. WFP Ecuador and INAMHI have maintained ongoing collaboration under their legal agreement, supporting current projects in this area. Previous meetings with INAMHI helped to define actions in the priority areas for this proposal, highlighting the need to rehabilitate stations that are not operational or that operate intermittently, as well as to install additional automatic meteorological and hydrological stations in the project area. All stations will be connected to the INAMHI network, contributing data to its WRF model to support the generation of forecasts, in line with the institution's strategic plan and efforts to address the deficiencies identified by the WMO.

Date	Location	Key Players	Validated adaptative measures
12/02/25	Quito	INAMHI, WFP	SMIC and monitory climate system Meteorologic stations, WRF model and forecast
17/03/25	Quito	INAMHI, WFP	SMIC and monitory climate system Meteorologic stations, WRF model and forecast
10/07/25	Quito	INAMHI, WFP	SMIC and monitory climate system Meteorologic stations, WRF model and forecast

[10] Constitution of the Republic of Ecuador. Article 1.- Ecuador is a constitutional State of rights and justice, social, democratic, sovereign, independent, unitary, intercultural, plurinational, (...)

11 The mestizo ethnic group is also classified as a people with their own and practices, customs and ways of life and for decades they have used traditional techniques that have contributed to facing the effects of climate change.

12 Constitution of the Republic of Ecuador (2008). Article 56.- The indigenous communities, peoples, and nationalities, the Afro-Ecuadorian people, the Montubio people, and the communes are part of the Ecuadorian State, which is unique and indivisible

[13]. The survivors settled in freedom, uniting with local natives and forming the so-called Republic of Zambos de Esmeraldas. Another important group of Afro-Ecuadorians is found in the Chota Valley, in the province of Imbabura. They currently represent 5% of the Ecuadorian population nationwide (CENSO, 2022), currently distributed throughout the country.

[14] Enrique Delgado Copiano (Historian from Manabí). The Montubio People are the inhabitants of the coast, this population is in the provinces of Manabí, Los Ríos and Guayas, they are dedicated to agricultural activities, both men and women are characterized by using straw hats, machetes and horseback riding for their activities in the countryside, and the most representative cultural expression is the "rodeo montubio". According to national data, the Montubio People represent 8% of the national population (INEC, 2022).

[15] FPIC is based on Article 8(j) of the Convention on Biological Diversity and Article 530 of the Organic Code of the Social Knowledge Economy. This principle applies to indigenous peoples and local communities, including the mestizo people as holders of traditional knowledge and subjects of rights, considering that this people also have a territorial bond and a differentiated cultural heritage. FPIC will be applied for the optimal location of unidentified subprojects. FPIC is not limited to indigenous peoples alone.

I. JUSTIFICATION OF THE REQUESTED FINANCING

163. The funding requested from the Adaptation Fund will enable decisive progress to be made in reducing vulnerability to drought in specific priority communities by strengthening both local capacities and institutional adaptation mechanisms. Through access to locally generated climate information and technical capacity building, communities will be better prepared to implement effective and sustainable adaptation measures. The project will also promote opportunities for coordination and collaboration among local, community and institutional actors, ensuring the continuity of climate investment and a paradigm shift towards inclusive, sustainable and resilient planning in the long term. These efforts are directly aligned with the Adaptation Fund's mission to protect populations most exposed to the adverse impacts of climate change, in this case drought.

164. In addition, the proposal seeks to transform the way communities and local governments use agroclimatic information, promoting greater awareness and behavioral changes that directly impact food security and natural resource management. The integration of diversified and resilient livelihood strategies will enable vulnerable populations to strengthen their adaptive capacity, while consolidating institutional frameworks and coordination platforms that support the incorporation of climate resilience into territorial and sectoral planning. Thus, the investment will generate sustainable impacts at both the community and institutional levels, contributing to the construction of more resilient livelihoods and the strengthening of public policies consistent with current and future climate challenges.

Components / Results / Products	**Reference scenario without AF**	**Additionality with AF**
OC1. Increased awareness and behavioral change among local communities and governments through the use and interpretation of locally generated agro-climatic information to inform adaptive decision-making in food systems.	Some agroclimatic stations have stopped transmitting information due to lack of maintenance. At the subnational level (local community level) Meteorological infrastructure is limited, with few stations receiving regular maintenance. The lack of agroclimatic newsletters has led farmers to make poor decisions when planting and to lose their crops. The lack of technical capacity to manage and interpret agroclimatic information has caused farmers to lose their crops.	The project is expected to improve climate information generation in regions where reliable data is currently limited. By installing and rehabilitating agroclimatic stations and linking them to INAMHI's national network, the initiative will strengthen local monitoring capacity and improve forecast accuracy. Given the strategic location of the intervention areas, these data are vital for national planning and climate resilience. In addition, the project will support the downscaling and interpretation of forecasts at the provincial level, enabling subnational governments to better understand climate information, thereby promoting anticipatory action and coordinated responses across river basins.
OC2. Enhanced adaptive capacity and climate-resilient livelihoods among vulnerable populations in drought-prone priority areas, through improved natural asset management and diversified livelihood strategies.	The lack of local climate information has led to the implementation of inadequate and ineffective adaptation measures. Prolonged periods of drought have caused crop losses and reduced incomes for farmers. High temperatures, lack of rainfall, increased extensive agriculture and uncontrolled urban growth have led to the degradation of natural ecosystems. The lack of preventive measures for river management and the expansion of the agricultural frontier have led to the accumulation of sediments in the lower basins, affecting the flow of water for power generation at the Paute hydroelectric complex, which has caused economic losses in Ecuador.	Through project financing from the Adaptation Fund, adaptation measures will be implemented in the areas of water security, food security, and natural resource conservation. To increase water security, management actions will be implemented for the storage and distribution of water resources, such as reservoirs, irrigation systems, fog trap networks, among other measures. For the conservation of natural resources, reforestation, restoration, and sustainable management of the páramo and rainforest will be implemented to ensure water quantity and quality. To improve food security, measures will be implemented to increase crop production, resilient seed management, and agrobiodiverse systems.
OC3. Improved institutional and technical capacities at local level, and establishment of coordination platforms to support the formulation and integration of climate-resilience strategies and regulatory frameworks into territorial and sectoral development planning.	Limited local and community capacity to manage and develop adaptation measures to address prolonged droughts. The weakening of local and community decision-making spaces hinders the management of national and international climate finance. Lack of citizen and community participation and empowerment processes in the management of adaptation measures to reduce the effects of droughts.	Coordination spaces will be strengthened to enable transparent and efficient decision-making in the process of implementing adaptation measures. Technical capacities will be strengthened through e-learning modules, which will enable knowledge to be transmitted in a sustainable and continuous manner. A communication strategy will be developed to highlight the results and efficiency of the investment in different national and international spaces, such as the COP summit on climate change, biodiversity and desertification.

J. SUSTAINABILITY OF THE PROJECT

165. This proposal outlines a strategy aligned with the five sustainability dimensions: environmental, social, economic, financial, and institutional. The project will implement a climate governance model designed to facilitate cooperation among national agencies, local governments, and community stakeholders to promote social, environmental, and institutional sustainability. For example, component 3 will merge local committees or dialogue spaces to improve decision-making and adaptation planning using scientific evidence and local knowledge. Agroclimatic monitoring systems will be incorporated into territorial and sectoral planning, ensuring ongoing operation through technical capabilities in public institutions and community organizations. With a focus on economic and financial sustainability, this proposal will implement co-execution[16] mechanisms, tax and credit incentives with public resources and a strategy for international financing. For example, local financial capacities will be strengthened to access credits and tax incentive schemes and access to climate finance to scale up adaptation measures. Priority will be given to the adoption of resilient technologies and practices with high replicability potential and low operating costs, promoting partnerships with the productive sector to facilitate their adoption in agricultural and conservation systems. Furthermore, comprehensive maintenance and operational strategies for water and agricultural infrastructure will be formulated. Formal agreements will also be established with academic institutions and research organizations, including INAMHI, to ensure the ongoing development of capacity building, monitoring, and knowledge transfer initiatives.

166. In component 1, the network of local hydrometeorological stations will be strengthened with the repowering and acquisition of new stations, this process will be carried out with local actors (subnational governments and communities) this will generate a process of empowerment and appropriation (social sustainability). The importance of generating real and local climate data reduces the risk of financial losses (economic sustainability). This information will be provided to farmers and local decision-makers (institutional sustainability). In the same way, monitoring rooms will be installed, which will allow the processing and communication of climate information, through agroclimatic newsletters, improving local technical capacities to interpret the information and make informed decisions (institutional and economic sustainability).

167. In component 2, priority will be given to the implementation of nature-based measures, such as reforestation, ecological restoration and conservation of strategic ecosystems, which not only contribute to climate resilience, but also increase essential ecosystem services such as water, air and quality soil for beneficiary communities (environmental sustainability). These actions will be carried out through a participatory process, promoting community co-responsibility through mingas and collective days (social sustainability).

168. Similarly, sustainable land management practices will be promoted, such as the control and stabilization of river banks, the construction of infiltration terraces and drainage ditches, which will be maintained continuously by the communities themselves, since the benefits are evident in the management of sediments in the lower basins and reduce the cost of purchasing or renting machinery such as dredgers (environmental sustainability and economic). These interventions increase water infiltration and recharge, reducing soil erosion and ensuring water supply for human consumption and agro-productive activities, especially in contexts of water stress (environmental and economic sustainability). By evidencing the benefits of these practices, communities will be empowered and committed to their maintenance and care (institutional and social sustainability). For production systems, priority will be assigned to technified irrigation systems, reservoirs, germplasm banks (including resilient and improved seed), and actions with high potential benefits that enhance crop production and productivity (economic sustainability). This production will improve the local economy of farmers and reduce the risk of crop losses due to drought (economic sustainability). Farmers, by evidencing this type of efficient, innovative and technified practices, will commit to maintaining this infrastructure (social sustainability). Consequently, for structural adaptation measures, it will be expected to have counterparts from local governments (building licenses, machinery, personnel) and local communities (personnel, local information). These commitments will be detailed in the full proposal in Part III "IMPLEMENTATION ARRANGEMENTS".

169. In component 3, community technical capacities will be increased, in addition to strengthening spaces for articulation and decision-making for the development of public policies and regulatory frameworks, through participatory processes and citizen empowerment (social and institutional sustainability). The strengthening of spaces for articulation ensures decision-making for the design of adaptation measures and their implementation strategy from cooperativism and citizen empowerment (social

[16] Co-execution mechanisms refer to establishing legal agreements and cooperation with sub-national governments and communities for the implementation of adaptation measures. For example, the sub-national government will provide machinery or facilitate construction permits as a counterpart for the project. The community will provide labour (mingas comunitarias) for the construction of measures such as reservoirs or water distribution channels.

sustainability), these actions can be institutionalized with the development of public policies and regulatory frameworks that ensure their operation and maintenance over time (institutional sustainability).

170. For example, the information generated through agroclimatic newsletters and the knowledge generated for the functioning and operation of adaptation measures will be maintained over time, since local technical and community capacities will be strengthened and will allow evidence of the importance of making informed decisions and efficient investments (social and institutional sustainability). Consequently, the information and knowledge generated will be stored, transferred and managed in the geoportals and servers of subnational governments and universities.

171. Finally, international financial mechanisms (strategies to access climate finance), national (incentives and access to credit) and subnational (tax compensation) and other mechanisms (financial sustainability) will be identified and proposed to encourage the maintenance, scalability and replicability of agroclimatic information systems, adaptation measures and strengthening of the articulation spaces prioritized in this proposal

K. OVERVIEW OF THE ENVIRONMENTAL AND SOCIAL IMPACTS AND RISKS IDENTIFIED AS RELEVANT TO THE PROGRAM

172. A preliminary environmental and social risk assessment was carried out during the preparation phase of the Concept Note in accordance with the Adaptation Fund's Safeguards and Gender Policy. This evaluation is complemented by the Risk Management Plan (Appendix 3) and the Vender Assessment (Appendix 2), which allowed the proposal to be classified in Category B, by identifying moderate but mitigable risks through clear, participatory and culturally relevant actions. No Unidentified Subprojects (USPs) are contemplated in this phase, since the 4 prioritized areas are geographically delimited and adaptation measures were prioritized in coordination with local authorities of subnational governments, water boards, representatives of civil society organizations (foundations), national and sectional authorities, beneficiary family farming associations and participating institutions.

Environmental and social principles checklist	No further evaluation is required for compliance	Potential impacts and risks: more assessment and management required for compliance
1. Compliance with the Law		**Low risk** There is a low risk of regulatory non-compliance, considering that, although the project is aligned with national and international instruments such as the National Plan for Adaptation to Climate Change, the Nationally Determined Contribution (NDC), the National Irrigation and Drainage Plan, the Development and Land Use Plans (PDOT), the Land Use and Management Plan (PUGS) and municipal ordinances, it will be necessary to update and verify its effective application in each territory. To mitigate this risk, during the Full Proposal phase, a territorial regulatory assessment will be developed that will include: the technical review of the current legal instruments, the identification of regulatory incompatibilities or gaps, and the articulation with municipal governments to ensure coherence between local regulatory frameworks and the proposed adaptation measures. This additional evaluation will allow the adequate implementation of the three components: (i) generation and use of agroclimatic information for decision-making (Component 1); (i) local climate risk management and implementation of adaptation measures (Component 2); and (yes) strengthening capacities and spaces for articulation for territorial sustainability (Component 3), to ensure full legal compliance in the areas of intervention.
2. Access and Equity		**Medium risk** There is a medium risk that some vulnerable groups may not fully benefit from the project's adaptation measures, due to structural barriers such as: geographical dispersion, digital divides, mobility limitations, or low participation in decision-making processes such as water or watershed boards, committees or councils. This risk is considered moderate, as the proposal incorporates mitigation measures designed to ensure equitable access across all 3 components. O1. Use and interpretation of agroclimatic information for local decision-making. O2: Increasing adaptive capacity in the face of severe droughts in prioritized areas and O3: Strengthening local capacities, community governance and sustainability of climate investment particularly for rural women, youth, indigenous peoples, Montubios and Afro-descendants. During the Full Proposal phase, an additional environmental and social assessment will be carried out to refine the effective inclusion mechanisms. This evaluation will improve the targeting criteria, adapt the technical content to the different population profiles, and reinforce equal access to the benefits of the project, including green infrastructure and irrigation systems. WFP's Community Feedback Mechanism (CFM) will be activated and an Environmental and Social Management Plan will be developed with an intersectional, ethnic, gender and generational approach, in accordance with the policies of the Adaptation Fund.
3. Marginalized and Vulnerable Groups		**Low risk** There is a low risk that certain historically marginalized groups such as rural women, youth, people with disabilities, older adults, and geographically distant rural communities will not equitably access the benefits of the project due to territorial dispersion, lack of connectivity, or exclusion from decision-making spaces. The project contemplates specific measures in its three components to ensure the effective inclusion of these groups: Component 1 promotes equitable access to agroclimatic information in understandable and adapted formats; Component 2 prioritizes territories with less access to water and will apply Community consultation mechanisms through Free, Prior and Informed Consent (FPIC), to define the optimal location of adaptation measures and green infrastructure; and Component 3 strengthens local organizational capacities and community governance for sustainable water management, with an intercultural, intergenerational and gender approach, guaranteeing the active participation of at least 50% of women and young people. Although the level of risk is low, an additional environmental and social assessment is required in the Jully Proposal, with an emphasis on effective inclusion mechanisms and participatory assessment, to ensure that adaptation measures do not generate adverse impacts and that the Fund's Safeguards Policy and WFP standards are fully complied.
4. Human Rights		**Low risk** There is a low risk of affecting human and collective rights in territories with the presence of indigenous, Afro-descendant or Montubio peoples, because the implementation of adaptation measures such as reforestation, ecological restoration or water redistribution could modify land use. Although the proposal is aligned with the national and international legal framework

		including the Constitution of the Republic of Ecuador, the Comprehensive Criminal Code, the Law of Jurisdictional Guarantees and Constitutional Control, and will implement its three components (1: access to climate information; 2: community adaptation measures; 3: capacity building and community water governance) with a rights-based approach, interculturality and cultural relevance, it will be necessary to apply appropriate consultation mechanisms with cultural and linguistic relevance during the Full Proposal phase. To mitigate this risk, Free, Prior and Informed Consent (FPIC) will be implemented in accordance with Article 8J of the Convention on Biological Diversity, and the Community Feedback Mechanism (CFM) as participatory channels. An additional evaluation is required in the Fully Developed Proposal, which will include specific measures in the Environmental and Social Management Plan to verify the effective implementation of human and collective rights in the 4 areas of intervention.
5. Gender Equality and Women's Empowerment		**Medium risk** There is a medium risk of limitations in the full exercise of the economic, social and political rights of rural women, who represent 52.28% of the population benefiting from the proposal. This situation is aggravated in territories such as Quiroga (Bolívar) and San Lorenzo (Manta), more than 70% of women heads of household have no income of their own and face high levels of economic dependence. In Bolívar, only 24.6% of the employed population are women, and in San Lorenzo, 73.8% of women do not participate in the labor market due to the burden of unpaid work. These figures reflect a structural exclusion in access to livelihoods, participation in decision-making spaces and control over water resources. Although the project will integrate affirmative actions in its three components to ensure that at least 50% of women and young people have access to: technified irrigation, green infrastructure, agroforestry systems, nurseries and germplasm banks. WFP's own training methodologies will be implemented tailored to their care responsibilities. These actions will be integrated into the Environmental and Social Management Plans (ESMPs). It is expected to achieve: (i) greater economic autonomy of women through access to resilient agricultural practices and local employment, (ii) reduction of unpaid work overload, (iii) strengthening of technical capacities and leadership, (iv) effective inclusion in community structures, and (v) transformation of exclusionary social norms through participatory and intergenerational processes. An additional environmental and social assessment is required, in the Fully Developed Proposal, and a mandatory Gender Plan will be prepared with a specific budget, disaggregated indicators and the active participation of women's organizations.
6. Fundamental Labor Rights		**Low Risk** There is a low risk of non-compliance with fundamental labour rights during the implementation of the community activities envisaged in the project, particularly in local recruitment processes, working conditions and prevention against exploitation or abuse. To mitigate these risks, the proposal will contemplate mechanisms such as Field-Level Agreements (FLA) with labor clauses aligned with the fundamental ILO conventions, the Community Feedback Mechanism (CFM) will be activated, for the reception and management of complaints or feedback, and awareness-raising processes will be developed on Protection against Sexual Exploitation and Abuse (PEAS). aimed at local partners and beneficiary communities. The Fully Developed Proposal phase will include an additional environmental and social assessment detailing labor monitoring mechanisms including compliance indicators, monitoring protocols, and corrective measures. These actions will allow decent working conditions, safe and inclusive work environments, and respect for the policy of the Adaptation Fund and the World Food Programme (WFP), especially in the implementation of green infrastructure and community adaptation measures.
7. Indigenous Peoples		**Medium risk** There is a medium risk of non-compliance with national and international regulatory frameworks related to the collective rights of indigenous, Afro-descendant and Montubio peoples, due to the possible impact on their organizational forms, community governance systems and worldview, in the event that the planned adaptation measures are implemented without adequate customary mechanisms for consultation and validation. During In the development of the 4 participatory workshops, it was identified that 4.38% of the beneficiary population self-identifies as indigenous (1.77%), Afro-descendant (0.67%) and Montubia (1.45%) (INEC, 2022), present in the 3 prioritized areas of the provinces of Azuay and Manabí. This population is part of the ancestral peoples recognized by the Constitution of the Republic of Ecuador and binding international treaties. Therefore, the application of Free, Prior and Informed Consent (FPIC) will be mandatory in activities with possible significant impacts, related to access to water, community governance and capacity building. In the Fully Developed Proposal, an additional environmental and social assessment will be carried out, with a culturally relevant approach, to identify differential impacts, respect collective rights and ensure the implementation of mitigation measures through the Environmental and Social Management Plan (ESMP).
8. Involuntary Resettlement	**X**	**Low risk** There is a low risk of impacts associated with involuntary displacement, since the planned activities such as reforestation, agroforestry systems, ecological restoration, green infrastructure and irrigation systems will be developed on communal lands or productive properties of the beneficiary families in a participatory manner and articulated with territorial planning instruments, such as the Development and Territorial Planning Plan (PDyOT) and the Plan for the Use and Management of the Soil (PUGS). These actions will not involve land use restrictions or interventions in human settlements. However, there could be a potential risk of affecting livelihoods, land-use patterns or the presence of informal settlers, if adequate community consultation processes are not implemented. To mitigate any risks associated with activities 2.2.4 and 2.2.5, participatory planning mechanisms, voluntary agreements, and community monitoring will be developed. In the case of involving the indigenous, Afro-descendant or Montubio population, Free, Prior and Informed Consent will be applied. During the Fully Developed Proposal phase, an additional environmental and social assessment will be carried out to confirm the absence of informal settlers and to ensure that no adaptation measures generate unintended impacts, in strict compliance with the Adaptation Fund's Safeguards Policy.
9. Protection of Natural Habitats		**Medium risk** There is a medium risk of affecting natural habitats of ecological value if adequate technical criteria are not applied during the implementation of adaptation measures of Component 2, especially in buffer zones such as the Pacoche Protected Forest and the Saucay Forest. Although the project contemplates activities aimed at restoring degraded areas and improving water availability in the face of prolonged droughts, such as reforestation, green infrastructure and sustainable agroforestry systems, it will be necessary to ensure that interventions do not compromise sensitive ecosystems. To mitigate these risks, specific Environmental and Social Management Plans (ESMPs) will be developed and applied for each intervention, validated locally, which include technical criteria aimed at prioritizing the use of native species, excluding environmentally sensitive areas and avoiding the introduction of invasive species. In the Fully Developed Proposal phase, an additional environmental assessment will be required to ensure that no adaptation measures and/or green infrastructure affect protected habitats or fragile ecosystems, and to strengthen coherence with the project's overall Environmental and Social Management Plan (ESMP).
10. Conservation of Biological Diversity	**X**	**Low risk** There is a low risk of negative impacts on wildlife, given that the proposal promotes ecological restoration and reforestation practices with native species as part of Component 2, which directly contributes to the resilience of ecosystems to prolonged droughts. The interventions are aligned with the National Biodiversity Strategy and expressly exclude the use of exotic, invasive or genetically modified species. The species used will be technically validated, prioritizing native varieties adapted to the local context. In addition, community actors will be trained in criteria for ecological restoration, habitat conservation and recovery of ancestral practices of biodiversity conservation. The project's approach will integrate biological conservation principles and

		sustainable practices from its design. Actions that will allow positive and sustainable impacts to be anticipated, without requiring additional environmental and social assessment in the Full Proposal phase.
11. Climate Change		**Medium risk** There is a medium risk that some adaptation measures will fail to adequately reduce climate exposure and territorial vulnerability if the specific risks associated with prolonged droughts are not comprehensively considered. Although the project is strongly aligned with the Second Nationally Determined Contribution (NDC), the Fifth National Communication and the National Adaptation Plan, it will be necessary to fine-tune the climate risk assessment during implementation. Planned activities such as access to climate information through the Climate Information Monitoring System (Component 1), ecological restoration, reforestation, soil restoration, and construction of green infrastructure for water redistribution (Component 2), and capacity building and community water governance (Component 3), are geared towards strengthening climate resilience in a sustainable manner, they do not generate significant GHG emissions, nor do they reduce carbon sinks. On the contrary, they strengthen local adaptive capacity and sustainable land use in all three priority areas. However, an additional environmental and social assessment is required at the Fully Developed Proposal stage, which allows for the analysis of specific climate risks by area of intervention, ensuring the technical coherence of the measures and ensuring their effective contribution to Community adaptation. This analysis will be integrated into the Environmental and Social Management Plan (ESMP).
12. Pollution prevention and resource efficiency		**Medium risk** The activities envisaged in the proposal present a specific and controllable risk to public health, limited to the implementation phase of green infrastructure works. This risk is related to the possible exposure of workers and the beneficiary population to conditions that affect health safety, if adequate biosecurity measures are not implemented. Although the project does not contemplate activities with significant health risks, it is necessary to ensure that the construction of infiltration ditches, reservoirs and technified irrigation systems is carried out in accordance with technical protocols that ensure safe conditions for human health and the environment. To mitigate these risks, the following measures will be applied: Implementation of Environmental Management Plans, which include specific procedures for biosecurity, vector control, and prevention of contamination of water sources, technical training for local actors and workers in responsible environmental management practices (efficient use of water and prevention of health risks), permanent technical supervision during the execution of green infrastructure works, with community participation, to verify compliance with the established protocols. In the Fully Developed Proposal phase, an additional technical assessment will be carried out to verify that there are no negative impacts on public health. The measures will be incorporated into the Environmental and Social Management Plan (ESMP), including procedures for the safe management of solid and liquid waste generated during the works, community surveillance mechanisms for the monitoring of sanitary conditions, guarantees of access to safe water, technological tools for response to extreme weather events. These measures will ensure compliance with the standards of the Adaptation Fund, the environmental and health regulations in force in Ecuador, and the operational policies of the World Food Programme (WFP).
13. Public health		**Low risk** There is a low risk of indirect impact on public health during the execution of green infrastructure works, due to the possible exposure of workers and communities to inadequate sanitary conditions, if biosecurity, waste management, and risk control measures are not applied in the field. Although the project does not contemplate activities that generate direct health risks, it is recognized that the installation of infiltration ditches, reservoirs and technified irrigation systems can generate indirect impacts if health and environmental aspects are not properly managed. To prevent these risks, all activities will be aligned with the biosafety protocols of the World Food Programme (WFP) and with the environmental and health regulations in force in Ecuador. In the Fully Developed Proposal phase, an additional environmental and social assessment will be carried out, which will include Specific health safety protocols applicable to the works, Measures for the safe management of solid and liquid waste generated in the field, Procedures for controlling health risks during the execution of the activities. These actions will ensure safe conditions for public health in all areas of intervention, in compliance with the standards of the Adaptation Fund and WFP's operational policies.
14. Physical and Cultural Heritage		**Low under** There is a low risk of affecting the physical and cultural heritage, in case of fortuitous discoveries during the execution of green infrastructure works, especially in areas with cultural value not formally registered or in sites considered sacred by local communities. The planned interventions will not be carried out in heritage areas or in officially identified archaeological sites. However, given the possibility of findings during the execution of works, a prior archaeological verification protocol will be applied, and in case heritage elements are identified, it will be coordinated with the municipalities and the National Institute of Cultural Heritage (INPC) for their management in accordance with current regulations. Likewise, the presence of indigenous, Afro-descendant and Montubia populations in the areas of intervention is recognized. Therefore, their cultural heritage will be valued and respect for their traditional practices and knowledge will be promoted. In line with the Convention on the Protection of the Cultural and Natural Heritage of Humanity, ratified by Ecuador in 1975, an additional environmental and social assessment will be included in the Fully Developed Proposal phase, which contemplates these procedures to ensure regulatory compliance and comprehensive protection of tangible and intangible cultural heritage.
15. Soil and Land Conservation	**X**	**Low risk** The project will not generate negative impacts on soils or water bodies; on the contrary, its focus is oriented towards its conservation and restoration. Through its three components, measures such as reforestation with native species, the establishment of green infrastructure (infiltration ditches, terraces) and the application of good agroecological practices in degraded areas will be implemented. Likewise, local capacities will be strengthened in climate monitoring, sustainable water management, conservation of ecosystems and resilient livelihoods, with a gender and intercultural approach. These actions will be articulated with the Territorial Planning Plans (PDOT) and the Land Use and Management Plans (PUGS) of the four municipalities involved. No significant risks are identified. The project activities promote the restoration of watersheds, soil regeneration and the transition to sustainable production systems as an integral part of its technical design, therefore no additional environmental and social assessment is required, since the interventions are aligned with the Fund's environmental and social policies and current national and local policies. directly contributing to improving soil conservation and its water retention capacity against the effects of prolonged drought.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Alignment with the Results Framework of the Adaptation Fund

Project objective(s)	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Objective: To increase the adaptive capacities of communities vulnerable to droughts through access to local climate information, strengthening local technical capacities, implementation of effective adaptation measures, generation of spaces for articulation and coordination that allow promoting sustainable policies and ensure the continuity of climate investment, driving a paradigm shift towards inclusive and sustainable climate planning in the long term	Number of people benefiting from adaptation practices and measures.	Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	6.2. Percentage of targeted population with sustained climate-resilient alternative livelihoods	**8,341,600**
OC1. Increased awareness and behavioral change among local communities and governments through the use and interpretation of locally generated agro-climatic information to inform adaptive decision-making in food systems.	Percentage of beneficiaries who are using and interpreting the climate information generated through the local agroclimatic network.	Outcome 1: Reduced exposure to climate-related hazards and threat	1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis.	775,000
		Outcome 8: Support the development and diffusion of innovative adaptation practices, tools and technologies	8.1. Innovative adaptation practices are rolled out, scaled up, encouraged and/or accelerated at regional, national and/or sub national level	520,000
OC2. Enhanced adaptive capacity and climate-resilient livelihoods among vulnerable populations in drought-prone priority areas, through improved natural asset management and diversified livelihood strategies.	Number and type of locally appropriate adaptation measures implemented in drought-prone areas, supported by updated risk assessments, strengthened natural assets, and community-based adaptation solutions.	Outcome 1: Reduced exposure to climate-related hazards and threats	1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis.	160,000
OC2. Enhanced adaptive capacity and climate-resilient livelihoods among vulnerable populations in drought-prone priority areas, through improved natural asset management and diversified livelihood strategies.	Number and type of locally appropriate adaptation measures implemented in drought-prone areas, supported by updated risk assessments, strengthened natural assets, and community-based adaptation solutions.	Outcome 5: Increased ecosystem resilience in response to climate change and variability-induced stress	5. Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress	2,820,000
		Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	6.2. Percentage of targeted population with sustained climate-resilient alternative livelihoods.	2,970,000
OC3. Improved institutional and technical capacities at local level, and establishment of coordination platforms to support the formulation and integration of climate-resilience strategies and regulatory frameworks into territorial and sectoral development planning.	Number of beneficiaries trained, and number of articulation spaces strengthened.	Outcome 7: Improved policies and regulations that promote and enforce resilience measures	7. Climate change priorities are integrated into national development strategy	1,096,600
TOTAL				**8,341,600**

Project Outcome (s)	Project Outcome Indicator(s)	Fund Output	Fund output indicator	Grant Amount (USD)
OC1. Increased awareness and behavioral change among local communities and governments through the use and interpretation of locally generated agro-climatic information to inform adaptive decision-making in food systems.	Percentage of beneficiaries who are using and interpreting the climate information generated through the local agroclimatic network.	Output 1.1: Risk and vulnerability assessments conducted and updated	1.2 No. of early warning systems (by scale) and no. of beneficiaries covered	775,000
		Output 8: Viable innovations are rolled out, scaled up, encouraged and/or accelerated.	8.1. No. of innovative adaptation practices, tools and technologies accelerated, scaled-up and/or replicated	520,000
OC2. Enhanced adaptive capacity and climate-resilient livelihoods among vulnerable populations in drought-prone priority areas, through improved natural asset management and diversified livelihood strategies.	Number and type of locally appropriate adaptation measures implemented in drought-prone areas, supported by updated risk assessments, strengthened natural assets, and community-based adaptation solutions.	Output 1.1: Risk and vulnerability assessments conducted and updated	1.1. No. of projects/programmes that conduct and update risk and vulnerability assessments (by sector and scale)	160,000
		Output 5: Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability	5.1. No. of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type and scale)	2,820,000
		Output 6: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	6.1.1. No. and type of adaptation assets (tangible and intangible) created or strengthened in support of individual or community livelihood strategies	2,970,000
OC3. Improved institutional and technical capacities at local level, and establishment of coordination platforms to support the formulation and integration of climate-resilience strategies and regulatory frameworks into territorial and sectoral development planning.	Number of beneficiaries trained, and number of articulation spaces strengthened.	Output 7: Improved integration of climate-resilience strategies into country development plans	7.2. No. of targeted development strategies with incorporated climate change priorities enforced	1,096,600
TOTAL				**8,341,600**

Project (s) Output	Project Output Indicator(s)	Fund Output	Fund output indicator	Grant Amount (USD)
OP1.1. Local hydrometeorological monitoring networks and climate information platforms enhanced to generate and disseminate timely and locally relevant climate data and newsletters, enabling informed decision-making and community-level risk reduction in response to drought.	Number and type of hydrometeorological systems and climate information platforms strengthened or implemented to generate and disseminate drought data and alerts.	Output 1.1: Risk and vulnerability assessments conducted and updated	1.2. No. of early warning systems (by scale) and no. of beneficiaries covered	775,000
OP1.2. Strengthened technical capacities of subnational teams in climate data analysis, interpretation, and information management for the delivery of early warning systems and community awareness actions.	Number of subnational technicians trained in climate analysis and information management for the issuance of early warnings.	Output 8: Viable innovations are rolled out, scaled up, encouraged and/or accelerated.	8.1. No. of innovative adaptation practices, tools and technologies accelerated, scaled-up and/or replicate	520,000
OP2.1. Development of climate risk assessments and cost–benefit analyses for drought adaptation at watershed level, supporting evidence-based	Number of climate risk studies and technical strategies developed for drought adaptation in prioritized watersheds.	Output 1.1: Risk and vulnerability assessments conducted and updated	1.1. No. of projects/programmes that conduct and update risk and vulnerability assessments (by sector and scale)	160,000

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planning and enhancing local ownership of climate risk reduction strategies				
OP2.2. Design and implementation of targeted nature-based and locally led interventions to establish and improve assets for water management, soil restoration, and ecosystem adaptation to drought, thereby enhancing the resilience of vulnerable ecosystems and supporting sustainable climate-adaptive practices at the community level.	Number and type of natural and productive assets implemented or improved for water management, soil restoration, and ecosystem adaptation to drought.	Output 5: Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability	5.1. No. of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type and scale)	2,820,000
OP2.3. Design and implementation of an integrated portfolio of physical and knowledge-based interventions to strengthen the adaptive capacity of agricultural systems and community livelihoods to climate change impacts and variability, ensuring targeted support for climate-resilient practices and locally led strategies.	Number and type of physical and knowledge assets developed to strengthen the adaptation of agricultural and community livelihoods to climate change.	Output 6: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	6.1.1. No. and type of adaptation assets (tangible and intangible) created or strengthened in support of individual or community livelihood strategies	2,970,000
OP3.1. Strengthen national and subnational technical capacities to integrate climate resilience measures into sectoral policies and development strategies, enhancing adaptive responses to prolonged droughts.	Number and type of technical and institutional capacities strengthened to integrate drought adaptation into territorial management and local and national planning.	Output 7: Improved integration of climate resilience strategies into countries' development plans	7.2. No. of targeted development strategies with incorporated climate change priorities enforced	670,000
OP3.2 Support the establishment and reinforcement of decision-making platforms at national and local levels to formulate and implement policies and regulatory frameworks that mainstream climate change priorities and ensure the sustainability of climate-resilient development.	Number of strengthened or created local strategies, ordinances and mechanisms that incorporate climate change adaptation priorities and ensure the sustainability of climate investments.		7.1. No. of policies introduced or adjusted to address climate change risks (by sector)	426,600
TOTAL				**8,341,600**

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

A. Record of endorsement on behalf of the government[2]

Miss. Jessica Gallegos *Undersecretary for Climate Change* *Ministry of Environment and Energy* *Jessica.gallegos@ambiente.gob.ec*	Date*: 11th November 2025*

B. 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 and the Gender Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally

ADAPTATION FUND

Letter of Endorsement by Government

Date: 6th June 2025

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

Subject: Endorsement for Integrated and Integrated Management of Water Resources in the watersheds prioritized by the National Adaptation Plan of Ecuador

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

Accordingly, I am pleased to endorse the above project/programme proposal with support from the Adaptation Fund. If approved, the project will be implemented by World Food Programme (WFP-Ecuador).

Sincerely,

Mrs. Jessica Gallegos
Undersecretary for Climate Change
Ministry of Environment, Water and Ecological Transition

Revised PFG Submission Form[1]

Project Formulation Grant (PFG)

Date of presentation: 11th November 2025

Adaptation Fund Project ID: AF00000413

Country/s: Ecuador

Project/Program Title: Integrated Management of Water Resources in the watersheds prioritized by the National Adaptation Plan of Ecuador.

Type of EI (NIE/RIE/MIE): Multilateral Implementing Entity

Implementing and Executing Entity: World Food Programme - WFP

One. Project preparation period

PFG Start Date	April, 2026
PFG End Date	September, 2026

B. Proposed activities for the preparation of the project ($)

List of proposals Project preparation activities	Output of PFG activities	Amount in US$	Budget note[2]
Literature review	• An orderly and systematized documentary archive with all the technical and methodological studies generated by the subnational and national governments. • Documentation of similar studies in the Latin American and Caribbean region	8,000	Compilation of climate and technical information generated by subnational and national governments for the development of full proposal
1.- Local consultations and/or workshops to discuss the specific ideas	• Participatory workshops for the socialization of the Concept Note		These consultations will allow to define the strategy for the development of

[1] As presented in AFB/PPRC.33/40, annex 1.

[2] The proposal should include a detailed budget with budget notes indicating the breakdown of costs at the activity level. It must also include a budget on the use of the Executing Entity's management fee.

of the project and the program	and obtaining information to complete Section III. • Local consultations for the definition of an intervention strategy and development of implementation agreements	20,000	Section III of the Full Proposal Implementation Arrangements.
2.- Analysis of environmental and social and gender risks and formulation of the Environmental and Social Management Plan and the Gender Action Plan.	• Workshops for updating environmental and social risks. • Analysis of the social, environmental and gender risks of the project. • Preparation and validation of the Environmental and Social Management Plan (ESMP). • Development of the Gender Action Plan	17,166	These activities will ensure that the project complies with Environmental and Social Safeguards and, in turn, support the design of the Gender Action Plan.
4.- Free, prior and informed consent and related consultations when appropriate to ensure compliance with the Environmental and Social Policy.	• Socialization workshops for the design of adaptation measures to be proposed in the Full Proposal. • Design of the methodology for Free, Prior and Informed Consent • Technical document containing the entire Free, Prior and Informed Consent process to be included in the Full Proposal	20,000	This proposal proposes to carry out a process of free, prior and informed consent for the design and implementation of adaptation measures, with the purpose of ensuring their appropriation and sustainability of the AF's investment.
6.- Economic and financial analysis for the development of the budget for the proposal	• Development of the economic and financial budget for the full proposal.	10,000	This activity will ensure a budget in accordance with local needs and efficient for the optimization of the investment made by the AF.
9.- Consultancies and contracts to develop the Full Proposal	• Development and design of the sections for the fully developed proposal.	40,000	A technical consulting team will be hired to develop the full proposal in order to optimize resources and time for its presentation to the AF Board.
Implementing Entity Management fee		9,834	Includes direct and indirect support costs of WFP
Total Project Formulation Grant		**125,000**	

Please describe below each of the activities of the PFG and justify its need and the amount of funding required:

Bibliographic review: During the first workshops held in the intervention areas, various technical and methodological studies from previous initiatives were identified. Ecuador's Ministry of the Environment, Water and Ecological Transition has generated relevant information on the impacts of climate change in these areas. In this context, it is considered a priority to collect, review and systematize this information through the creation of a physical and digital archive that consolidates existing documents. This process will allow for the precise identification of required studies and information gaps, thus facilitating the formulation of a portfolio of adaptation measures that adequately respond to local needs.

Local Consultations: A process of socialization of the Concept Note submitted to the Adaptation Fund will be developed. Based on the approved version, local consultations will be carried out aimed at building a consensual intervention strategy and designing territorial implementation agreements. At least 10 consultation workshops are planned: three in each intervention area and one with the Ministry of the Environment. These spaces will ensure the active participation of local actors, allowing the proposed measures to be validated and strengthened.

Analysis of environmental, social and gender risks, and formulation of management plans: At least three specific workshops will be organized to identify, update and validate environmental, social and gender risks related to the implementation of the project. These inputs will be the basis for the formulation of the Environmental and Social Management Plan (ESMP) and the Gender Action Plan (GAP), which will incorporate the gender approach both in the adaptation measures and in the capacity building plan that will be included in the final proposal.

Free, Prior and Informed Consent: In accordance with Ecuador's current legal framework, including the Constitution, any intervention in rural and community territories must be preceded by a free, prior and informed consent (FPIC) process. To this end, at least three participatory workshops will be held to ensure the active inclusion of local and community partners. During these spaces, the adaptation measures contained in the Concept Note will be reviewed, adjusted and collectively approved, which will be expanded and detailed in the Full Proposal. This process will also contribute to greater community ownership and ensure the sustainability of Adaptation Fund investments.

Budget design: A detailed budget will be prepared that includes all the costs associated with the design and implementation of adaptation measures, institutional articulation mechanisms and capacity building, among other actions proposed in the proposal. The process will include a detailed analysis of each expenditure item, which will be initially validated with local and community actors (within the framework of the workshops), and subsequently reviewed to ensure efficiency and transparency in the allocation of resources

Development of the Full Proposal: The formulation of the comprehensive project proposal will incorporate all the essential components required by the Adaptation Fund. First, the specific impacts of climate change and vulnerabilities that the project seeks to address will be identified and characterized, based on scientific information, climate risk assessments, and socio-environmental analyses that support the need for an adaptation intervention. The objectives of the project will be clearly defined and supported by a set of concrete, coherent and results-oriented activities. The participation and representation of key stakeholders, including local communities and vulnerable groups, will be ensured to ensure that the design of the project responds to the real needs, capacities and priorities of the territory.

The proposal will contain a detailed budget, broken down by component and activity, as well as a realistic execution schedule to guide implementation. A robust monitoring and evaluation plan will also be incorporated to monitor progress, measure results, and adjust when necessary to ensure the effectiveness of interventions. A climate, operational and social risk management strategy will also be presented, identifying

potential barriers and proposing concrete mitigation measures. Finally, the proposal will fully comply with the technical, environmental and social guidelines established by the Adaptation Fund, to ensure the probability of approval.

Acting as the executing entity for the PFG, WFP will administer and use PFG resources exclusively for formulation activities in line with the approved work plan and budget, and in accordance with WFP's Financial Regulations and Rules, Procurement Manual, and Human Resources policies. The budget will be allocated to the preparation of the Full Proposal and as required, to the procurement of services and consultancies through fair, transparent, and auditable competitive processes that ensure economy, efficiency, and value for money, as well as the engagement of personnel in line with WFP HR procedures. Implementation will be managed through WFP's corporate financial management systems with appropriate internal controls, segregation of duties, and budget traceability for audit and reporting purposes. This request has been prepared in alignment with the Adaptation Fund's Operational Policies and Guidelines and the procedures of its Board. Applicable management costs will remain within the Adaptation Fund's caps and the approved budget.

C. Executing Entity

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

Implementation Entity Coordinator, IE Name	**Signature**	**Date (Month, Day, Year)**	**Project Contact Person**	**Telephone**	**Email Address**
Matteo Perrone		11/11/2025	Diego Guzmán Climate Change and Food Systems Program Officer	*+593 998291681*	*diego.guzman@wfp.org*

and financially) responsible for the implementation of this project/programme

[6] Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities. *Matteo Perrone - Country Director and Representative Ecuador* *Implementing Entity Coordinator*	
Date: *11th November 2025*	*Tel. and email:* *+593 986006375* *matteo.perrone@wfp.org*
Project Contact Person: *Diego Guzmán - Programme Policy Officer* *Carolina Díaz – Partnership Officer*	
Tel. And Email: *+593 998291681* *diego.guzman@wfp.org* *+593 996435515* *carolina.diaz@wfp.org*	

APPENDIX 2: Gender Assessment

1. **Diagnosis and Identified gaps**

The project is grounded in the recognition that gender inequality constitutes a structural barrier to effective climate change adaptation. In rural areas of Ecuador, these inequalities are reflected in persistent gaps in access to productive resources, participation in decision-making, and recognition of women's contributions particularly under drought conditions. The gender assessment conducted during the project design phase revealed that these conditions not only undermine gender equality but also weaken community resilience by limiting the inclusion of key actors in the management of natural resources and the planning of adaptation measures.

At the national level, rural women face significant economic exclusion and labor overload, which compromises both their autonomy and resilience: 86.1% of rural women engage in unpaid agro-productive activities, compared to 64.9% of men (MAG, 2023); their total weekly workload exceeds 82 hours, nearly 23 hours more than men; and only 38.7% are formally recognized as economically active in rural areas, compared to 70.4% of men[17]. In addition, 55.3% of rural women are engaged in informal employment (INEC, 2025)[18], which limits their access to social protection, labor rights, and safeguards against climate-related risks. These gaps illustrate a feminization of informality and unpaid work, which contributes to the invisibility of women's roles in the agri-food system and restricts their access to the benefits of climate finance and adaptation interventions.

In the three prioritized areas of the proposal, gender inequalities manifest in specific ways that heighten the vulnerability of rural women to the impacts of climate change.

In **Azuay (Cuenca and Gualaceo)**, poverty levels in rural areas exceed the provincial average, reaching 35.2% in Cuenca and 39.2% in Gualaceo (INEC, 2022), revealing structural conditions of exclusion. In this province, approximately 26%[19] of the employed population works in the agricultural sector, and 45% of these are rural women (MAG, 2023). However, many of these women receive no remuneration or economic recognition for their labor, reflecting the feminization of informal employment (INEC, 2025)[20]. This situation is worsened by a high male-dominated migration rate of 12.6%[21], one of the highest in the country, which intensifies the productive and care workload for women[22]. Nonetheless, women remain actively engaged in agriculture and community-based water management, representing a strategic opportunity to strengthen their leadership in water governance and the implementation of adaptation measures.

In **Manabí (Bolívar)**, 91.4% of the rural population lives in poverty, with limited employment opportunities: only 40.6% of the rural population is employed, of which 75.4% are men and only 24.6% are women. Additionally, 72.7% of rural women engage in unpaid productive labor, in addition to shouldering the burden of domestic and caregiving responsibilities (INEC, 2022). This gap reveals a deeply rooted

[17] Ministry of Agriculture and Livestock. National Agricultural Strategy for Rural Women (2023).

[18] National Survey of Employment, Unemployment and Underemployment (ENEMDU). May 2025: https://www.ecuadorencifras.gob.ec/documentos/web-inec/EMPLEO/2025/Mayo_2025/202505_Boletin_empleo_ENEMDU.pdf

[19] Ministry of Agriculture and Livestock (MAG, 2023). Integral Project for Agro-productive Diversification and Agricultural Reconversion (PIDARA). Agricultural Statistics. Azuay, 2023. https://pidara.mag.gob.ec/wp-content/uploads/2024/09/1.Provincia_Azuay_2023.pdf?utm_source=chatgpt.com

[20] National Survey of Employment, Unemployment and Underemployment (ENEMDU). May 2025: https://www.ecuadorencifras.gob.ec/documentos/web-inec/EMPLEO/2025/Mayo_2025/202505_Boletin_empleo_ENEMDU.pdf

[21] International Organization for Migration (IOM). (2024). Migratory flow of Ecuadorian population: https://ecuador.iom.int/sites/g/files/tmzbdl776/files/documents/2024-08/flujo-migratorio-de-poblacion-ecuatoriana_0.pdf

[22] International Organization for Migration (IOM). (2024). Migratory flow of Ecuadorian population: https://ecuador.iom.int/sites/g/files/tmzbdl776/files/documents/2024-08/flujo-migratorio-de-poblacion-ecuatoriana_0.pdf

structural imbalance, where the disproportionate and invisible burden of unpaid work on women undermines their economic autonomy and limits their participation in decision-making spaces (ENARM, 2022). However, 13 Montubio associations focused on agroforestry production (mainly cacao) have been identified, comprising 638 members, of whom 213 are rural women.

In **Manabí (Manta – San Lorenzo)**, women face structural barriers to economic inclusion. Although 25% of the employed population in the province works in the agricultural sector[23] (ENEMDU, 2023), only 29% of those engaged in agricultural activities are women (MAG, 2023).

In response to these identified inequalities, the project proposes an integrated climate adaptation strategy aimed at transforming the structural conditions that perpetuate the exclusion of rural women. This strategy is grounded in three key pillars: equitable access to resources, capacity strengthening, and effective participation in the planning and implementation of adaptation measures. It is operationalized through the project's three components:

Component 1: Ensures equitable access to and use of agroclimatic information through inclusive methodologies that enable rural women to make informed decisions in the face of climate threats such as prolonged drought.

Component 2: Promotes the active participation of women in conservation and restoration activities for water recharge sources, not only as beneficiaries but as key actors in identifying and locating adaptation measures and green infrastructure.

Component 3: Strengthens technical, organizational, and community governance capacities for sustainable water and livelihood management, with a focus on rural women. This component also includes a dedicated strategy to transform social norms and behavioral patterns, recognizing that effective participation requires not only formal inclusion but also structural shifts in the attitudes of women themselves, their partners, families, and communities.

Within this framework, rural women in the three prioritized areas will play an active role in landscape restoration using productive species such as cacao, coffee, hard and soft maize, as well as in community water management initiatives. This scenario represents a strategic opportunity to consolidate their leadership, promote empowerment, and ensure their effective participation in water governance and climate adaptation actions supported by the proposal.

2. Objective

Strengthen the empowerment of rural women, female heads of household and youth, by ensuring their active participation in climate change adaptation processes, equitable access to project benefits, and the transformation of exclusionary social norms.

3. Cross-cutting application by components with a gender focus

O1. Equitable access to agroclimatic information	Culturally appropriate andragogical methodologies will be applied during training workshops, using accessible schedules and adapted formats to ensure that rural women, female heads of households, and youth can access clear and understandable content.
O2. Effective climate change adaptation measures, strengthening the resilience of vulnerable communities and ecosystems to drought.	Affirmative actions will be implemented to ensure the optimal location of adaptation measures and/or green infrastructure, accompanied by inclusive strategies focused on shared responsibilities and care.
O3. National and local technical capacities as an effective adaptive capacity to the effects of prolonged droughts.	The gender approach will be integrated into local regulations, and strategic tools such as the Social and Gender Norms Assessment Tool (SNET) and the Social and Behaviour Change Communication (SBCC) methodology will be applied to strengthen the leadership and voice of at least 50% of women and youth. These actions will promote co-responsibility and equitable participation in water governance.

4. Gender and Social Norms Study Instruments

The following are specific suggestions for mechanisms for each instrument, with a focus on gender, interculturality and territorial relevance:

Instrument	Culturally relevant methodologies
Social Norms Exploration Tool (SNET)24	Participatory application of qualitative and quantitative diagnostics to identify gender norms in force; elaboration of community talking maps; surveys and interviews focused on women and youth; within the framework of the implementation of adaptation measures.
Social and Behaviour Change Communication (SBCC)25	The WFP's Social and Behavioral Change (SBCC) methodology will promote community ownership of resilient practices through awareness-raising workshops, intergenerational dialogues and focus groups on co-responsible masculinities. These culturally tailored actions will strengthen rural women's leadership and ensure equitable participation in decision making and sustainable water management, within the framework of Component 3 activities.
Prevention of Sexual Exploitation and Abuse (PEAS)	Awareness-raising workshops with local stakeholders and technicians; strategic partners on "Prevention of Sexual Exploitation and Abuse" and Gender-Based Violence with cultural relevance.
Community Feedback Mechanism (CFM)26	Activation of telephone and WhatsApp lines; for feedback and community listening; and to receive suggestions or complaints for improvements.
Gender-sensitive Environmental and Social Management Plans (ESMP)	Differentiated risk matrix; consultation processes to obtain Free, Prior and Informed Consent (FPIC) with at least 50% participation of women, youth and women representatives and indigenous, Afro-Ecuadorian and Montubio peoples.
Educational and communication materials	Audiovisual or radio testimonies; Infographics with messages of resilience and equity with cultural and territorial relevance.

5. Expected results

- Increased participation of rural women in access to productive resources, in decision-making spaces and in the definition of adaptation measures and green infrastructure in drought situations.
- Strengthening of the technical and leadership capacities of rural women for an efficient management of adaptation measures in the face of prolonged drought.

[23] Boletín Agropecuario Provincial de Manabí (MAG, 2023): https://pidara.mag.gob.ec/wp-content/uploads/2024/09/13.Provincia_Manabi_2023.pdf

[24] Social Norms Exploration Tool: Aplication of the tool: https://ecuador.un.org/sites/default/files/2023-03/WFP%20Ecuador%20sistematizacion%20SNET%20SBCC%20sep%202022.pdf

[25] Social and Behavioral Tool: Aplication of the tool: https://ecuador.un.org/sites/default/files/2023-03/WFP%20Ecuador%20sistematizacion%20SNET%20SBCC%20sep%202022.pdf

[26] WFP. Tool of Community Feedback Mechanism (CFM). https://newgo.wfp.org/documents/cfm-toolkit

- Greater involvement of rural men in the co-responsibility of care, co-responsibility for community water management and decision making, through awareness raising, training and community dialogue processes that promote more equitable and collaborative relationships between men and women.
- Change patterns of behavior that perpetuate gender inequality through participatory and intergenerational processes.

6. **Conclusion**

This gender assessment corresponds to the Concept Note phase. In accordance with the Fund's Gender Policy, a comprehensive, mandatory gender assessment will be prepared in the Fully Developed Proposal phase to ensure the systematic incorporation of gender equality and women's empowerment throughout all stages of the project. This gender assessment will include:

- An updated territorial and participatory analysis, with information disaggregated by sex, age, ethnicity, and socioeconomic status;
- Gender indicators and specific goals, integrated into the results matrix;
- Monitoring, evaluation, and sustainability mechanisms, with an emphasis on monitoring the meaningful participation of women and youth in water governance, access to project benefits, and decision-making;
- Mapping of social and gender risks, as well as their corresponding mitigation measures.
- Structural inclusion of rural women's and youth organizations in the design, validation, and implementation of adaptive measures, ensuring their cultural, institutional, and territorial relevance.

APPENDIX 3. Environmental and Social Risk Management Plan.

Introduction

The Environmental and Social Management Plan (ESMP) has been prepared for the project "Comprehensive and Integrated Management of Water Resources in the watersheds prioritized by Ecuador's National Adaptation Plan", to be implemented in the provinces of Azuay (municipalities of Cuenca and Gualaceo) and Manabí (municipalities of Manta and Bolívar), territories highly affected by prolonged droughts. The project aims to reduce climate vulnerability through nature-based solutions, green infrastructure, community water governance and local capacity building. The ESMP responds to the Adaptation Fund's 15 principles of Environmental and Social Safeguards. Although the geographical areas of intervention are clearly delimited in the prioritized areas: Machángara River (Cuenca), upper basin of the San Francisco River (Gualaceo), rural local government San Lorenzo (Manta) and rural local government Quiroga (Bolivar), priority will be given to the participation of the beneficiary population for the optimal location of adaptation measures and green infrastructure and to ensure their technical, social, environmental, cultural and territorial relevance. This adaptive technical planning approach will be strengthened during the Fully Developed Proposal phase through local participatory processes, detailed land use information gathering, and validation of the most effective and culturally relevant solutions. The ESMP includes specific measures to ensure the full application of social and environmental safeguards in these interventions, including participatory studies, Free, Prior and Informed Consent (FPIC) processes and the preparation of environmental and social management plans differentiated by territory, with a cultural, gender and generational approach, in accordance with the Fund's Environmental, Social, Gender and Subproject Safeguards Policy.

3. **Identified risks (Category B): a)** Exclusion of vulnerable groups; **b)** Perception of inequality in access to irrigation**; c)** Slight impacts from physical interventions; **d**) Limited participation of women; **e)** Weak institutional sustainability; **f)** Conflicts due to the lack of free, prior, and informed consultation for the optimal location of adaptation measures and/or green infrastructure; **g)** Potential impact on livelihoods or involuntary resettlement due to the implementation of agroforestry systems or reforestation without prior participatory validation processes; **h)** Protection and violence risks (PEAS).
4. **Mitigation mensures for category B risks: a)** Priority will be given to the inclusion of vulnerable groups through participatory criteria, by activating community participation and accountability mechanisms (CFM) on a quarterly basis to receive feedback and intercultural approach; **b)** Adaptation measures will have locally validated Environmental and Social Management Plans (ESMPs) to avoid environmental impacts, community dissatisfaction and promote sustainable practices; **c)** Free, Prior, and Informed Consent (FPIC) will be applied in areas with indigenous, Afro-descendant, and Montubio peoples for the optimal implementation of adaptation measures and/or green infrastructure; **d)** Institutional sustainability will be strengthened through strategies with subnational governments and communities; **e)** Socialization and awareness-raising workshops will be conducted on the Prevention of Sexual Exploitation and Abuse (PEAS) and gender-based violence, through the application of methodologies on Social and Gender Norms (SNET) and the Social and Behavioral Change strategy (SBCC).
5. **Supervision and monitoring: a)** Indicators disaggregated by sex and age**; b)** Frequency: monthly (Community Participation and Accountability Mechanisms - CFM and Prevention of Sexual Exploitation and Abuse - PEAS), quarterly (local coordination), semi-annually (compliance), prior to implementation (Free Prior and Informed Consent - FPIC**); c)** Use of the institutional system Country Office Tool for Managing Effectively (COMET) of the World Food Program (WFP) for follow-up and monitoring of project progress; **d)** Multilevel and multi-stakeholder governance between WFP, municipalities, partners and beneficiary population.

- **Estimated costs:** In the Concept Note stage it is not necessary to include a budget, which will be detailed during the Full Proposal stage.

Environmental and social risk management and monitoring table

Risk: Exclusion of vulnerable groups from the benefits of the project			
Potential negative impact	**Supervision indicator**	**Methodology, frequency**	**Responsibility**
Persistence of structural gaps, invisibilization of the needs of women, youth, people with disabilities and other rural populations.	Number of women strengthened in their community leadership who actively participate in local water governance and climate risk management.	Attendance record of participants disaggregated by sex and age. Frequency: Semiannual.	WFP Safeguards Team, in coordination with gender focal points and sectional governments.
Risk: Perception of inequality in access to irrigation water			
Potential negative impact	**Supervision indicator**	**Methodology, frequency**	**Responsibility**

Community conflicts, institutional distrust, resistance to adaptation measures.	Number of minutes of coordination meetings between local stakeholders prepared.	Minutes of meetings in which various stakeholders participate. Frequency: Quarterly.	WFP Safeguards Team, in coordination with sectional governments and implementing partners

Risk: Limited participation of women and youth in governance and training spaces of the project due to the overload of unpaid care responsibilities.

Potential negative impact	Supervision indicator	Methodology, frequency	Responsibility
Women's participation in workshops, water management committees, community activities or local governance processes could lead to an overload of unpaid work, especially if their care responsibilities are not considered.	Number of women and youth participants who report limitations to attend or remain active in governance and training spaces due to caregiving responsibilities.	Focus groups on Social Norms of Behavior (SNET) disaggregated by sex and age. Frequency: Once only at the beginning of project implementation.	Project Technical Unit and implementing partners, community organizations, municipalities.

Risk: Risks associated with violence, protection and PEAS

Potential negative impact	Supervision indicator	Methodology, frequency	Responsibility
Serious human rights violations and work overload and risk of invisible gender violence, derived from assuming additional production and leadership tasks in water and/or irrigation committees or boards.	Number of awareness-raising workshops on Prevention of Sexual Exploitation and Abuse (PSEA) and gender-based violence with community stakeholders and local partners.	Participant registration	Protection focal points and WFP´s PSEA

Risk: Community dissatisfaction due to lack of adequate consultation mechanisms with FPIC on the optimal location of adaptation measures in communities, community lands or beneficiary associations.

Potential negative impact	Supervision indicator	Methodology, frequency	Responsibility
Social rejection of the optimal location of adaptation measures, denunciations, or paralysis of the implementation of green infrastructure.	Number of free, prior, and informed consent documents provided to the beneficiary population for the optimal location of adaptation measures in communities, community land, or associations.	Participatory validation prior to implementation. Frequency: Once at the beginning of the implementation of the measures for each municipality (4).	WFP, local implementing partners, and target population

Risk: Potential impact on livelihoods or involuntary resettlement due to the implementation of agroforestry systems or reforestation without prior participatory validation processes.

Potential negative impact	Supervision indicator	Methodology, frequency	Responsibility
Loss of access to livelihoods, social conflicts, or involuntary displacement of unidentified local actors (such as informal settlers)	Number of documented prior participatory processes (meeting minutes, attendance lists, signed agreements). Number of grievances received related to land access or livelihoods.	Participatory social mapping conducted prior to implementation. Document review and preliminary field visits. Quarterly monitoring of grievances and feedback through the Grievance Redress Mechanism (GRM).	Project implementing unit. Social safeguards team. Local partners (GADs, MAG, MAATE, community leaders).

Risk: Inadequate use of inputs / bad practices

Potential negative impact	Supervision indicator	Methodology, frequency	Responsibility
Contamination or damage to soil, water and health from unregulated inputs	Number of trainings on responsible management of bioinputs	Technical reports and attendance lists Monitoring: Semiannual	Sustainable Production Systems and Water Specialist

Risk: Potential impact on sensitive ecological areas

Potential negative impact	Supervision indicator	Methodology, frequency	Responsibility
Degradation of strategic ecosystems or loss of biodiversity	Number of activities located and validated outside ecologically sensitive areas.	Zone mapping, community validation and georeferencing. Frequency: Prior to implementation of each adaptation measure.	WFP, local implementing partners, and target population

Risk: Minor impacts from reforestation, infiltration ditches, drainage terraces, fog water catchment.

Potential negative impact	Supervision indicator	Methodology, frequency	Responsibility
Slight impact on native flora, soils or water quality due to interventions without adequate environmental planning.	Number of environmental, social and technical compliance reports prepared.	Field monitoring and review of execution reports. Frequency: Semiannual	WFP Project Technical Unit

Risk: Weak institutional and community sustainability

Potential negative impact	Supervision indicator	Methodology, frequency	Responsibility
The interventions implemented may not be sustained over time or may lose effectiveness if the institutional and community capacities for their autonomous management	Number of long-term sustainability document prepared	Documentary review and socialization with implementing partners	Technical Unit of the Project and implementing partners,

are not consolidated, or if they are not articulated with local regulations and public policies that guarantee their continuity. This would compromise the long-term resilience of communities to extreme climate events.		Frequency: At project closure	community organizations, Municipalities Adaptation Fund

In its formulation stage, a technical, participatory, and intersectional evaluation was applied that made it possible to identify seven priority risks linked to the inclusion of vulnerable groups, equitable access to water resources, minor impacts of green infrastructure works, gender gaps, institutional sustainability and community feedback mechanisms. For each identified risk, the project proposes clear, feasible and culturally relevant mitigation measures.

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