



ADAPTATION FUND

**REQUEST FOR PROJECT/PROGRAMME
FUNDING FROM THE ADAPTATION FUND**

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project/programme must be fully prepared (i.e., fully appraised for feasibility) when the request is submitted. The final project/programme document resulting from the appraisal process should be attached to this request for funding.

Complete documentation should be sent to:

The Adaptation Fund Board Secretariat
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List of acronyms

Acronym	Description
AOP	Annual Operating Plan
ARP	Rural Association of Paraguay (SP)
CADEP	Centre for the Analysis and Outreach of the Paraguayan Economy (SP)
CFA	Collaboration for Forest and Agriculture
DINAC	National Direction of Civil Aeronautic. Direction of Meteorology (SP)
DMH	Directorate of Meteorology and Hydrology (SP)
ECLAC	Economic Commission for Latin America and the Caribbean
ENACC	Paraguay's National Climate Change Adaptation Strategy (SP)
FAPI	Federation for the Self-determination of Indigenous Peoples (SP)
FCAA	Forest Conservation Agriculture Alliance
GDP	Gross Domestic Product
GNI	Gross National Income
HDI	Human Development Index
IND	Intended Nationally Determined Contribution
INDERT	National Institute of Rural Development and Lands (SP)
INDI	Paraguayan Institute of Indigenous Peoples (SP)
INFONA	National Forestry Institute (SP)
IPCC	International Panel on Climate Change
IPTA	Paraguayan Institute of Agrarian Technology (SP)
LCC	Local Coordination Committees
MAG	Ministry of Agriculture and Livestock (SP)
MTR	Mid-Term Review
M&E	Monitoring and Evaluation
NGO	Non-Governmental Organization
NSC	National Steering Committee
ONCC	National Office for Climate Change (SP)
PAI	National Programme for Indigenous People Economy and Agriculture (SP)
PLANAL	National Plan for Food Sovereignty and Security (SP)
PMU	Project Management Unit
PPA	National Programme to Support Food Production by Family Agriculture (SP)
REGATTA	Regional Gateway for Technology Transfer and Climate Change Action in Latin America and the Caribbean

SEAM	Environment Secretariat (SP)
SEN	National Emergency Secretariat (SP)
SENASA	National Environmental Sanitation Services (SP)
SENAVE	National Service of Vegetal and Seed Health and Quality (SP)
UNA/FCA	National University of Asuncion, Agrarian Faculty (SP)
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States (of America) Dollar
VIA	Vulnerability and Impact Assessment
WCS	World Conservation Society
WSI	Water Stress Index
WWF	World Wildlife Fund



ADAPTATION FUND

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT/PROGRAMME INFORMATION

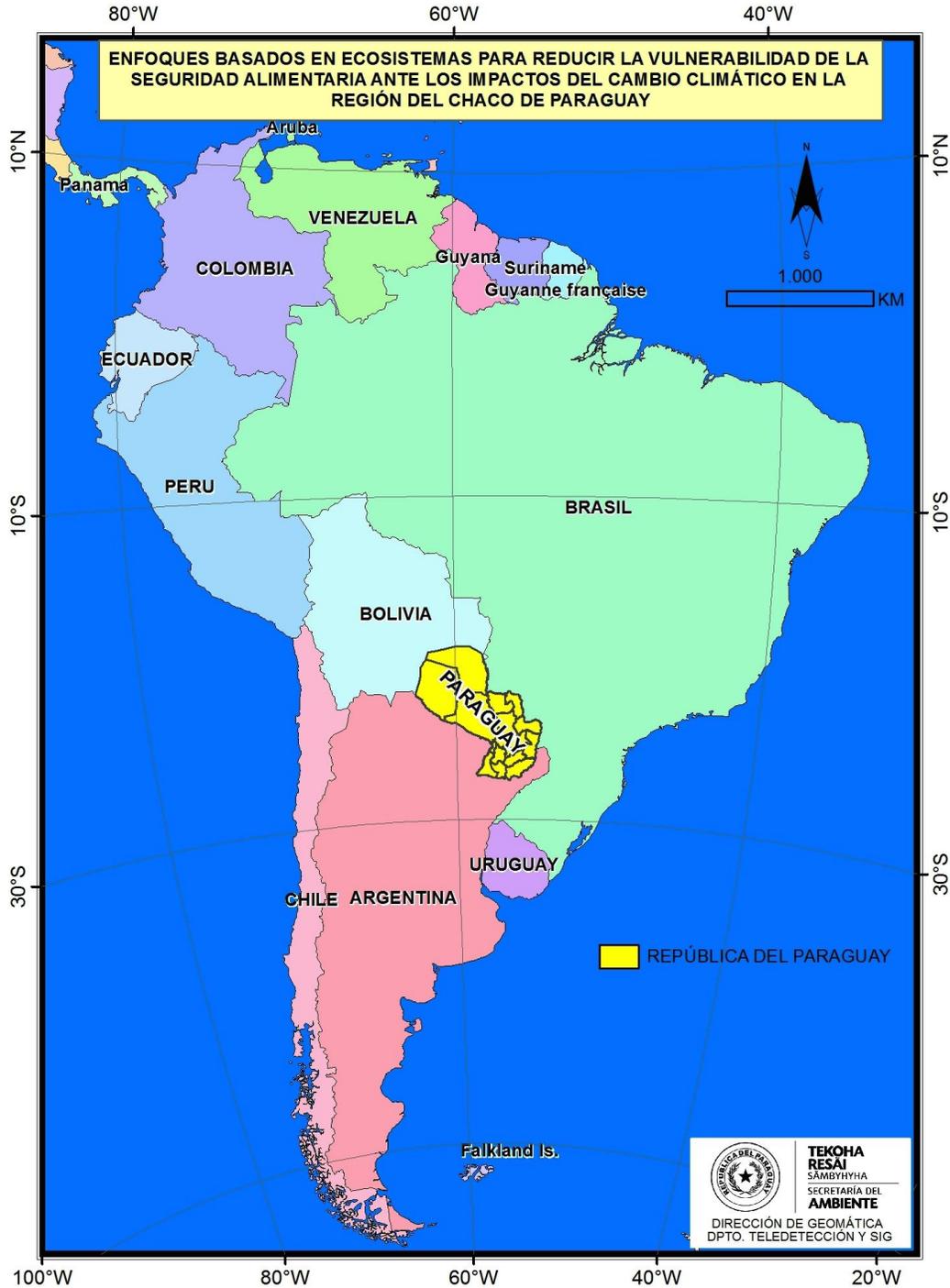
Project/Programme Category:	Regular project
Country/ies:	Paraguay
Title of Project/Programme:	Ecosystem Based Approaches for Reducing the Vulnerability of Food Security to the Impacts of Climate Change in the Chaco region of Paraguay
Type of Implementing Entity:	Multilateral Implementing Agency
Implementing Entity:	United Nations Environment Programme
Executing Entity/ies:	Environment Secretariat of Paraguay
Amount of Financing Requested:	7,128,450 (in U.S Dollars Equivalent)

Project / Programme Background and Context:

Provide brief information on the problem the proposed project/programme is aiming to solve. Outline the economic social, development and environmental context in which the project would operate.

As illustrated in Map 1, the Republic of Paraguay is a landlocked country in central South America, bordered by Argentina to the south and southwest, Brazil to the east and northeast and Bolivia to the northwest.

Map 1. Paraguay in Latin America.



The country is divided by the Paraguay River into two regions. To the east of the river is the Eastern Region, with 14 departments and the capital district. To the west of the river is the Western Region or Chaco, which represents more than 60% of the country's land area and has 3 departments: Presidente Hayes, Alto Paraguay and Boqueron. The country is divided in 250 districts. Map 2 illustrates this.

Map 2. Departments in Paraguay



The country has nearly 7 million inhabitants, 60% urban¹. The population is concentrated in the Eastern region, with 97% of the country's inhabitants. Great Asuncion, the metropolitan area encompassing the capital, Asuncion, and 12 surrounding cities, has more than 2.5 million inhabitants, that is, almost 40% of national population. The population of the country is expected to grow to almost 8 million by 2025².

In 2014, Paraguay's human development index (HDI) was 0.679, being the 112 out of 188 countries that year. Comparatively, Paraguay's HDI is above the average of 0.630 for countries in the medium human development group and below the average of 0.748 for countries in Latin America and the Caribbean³. Between 1980 and 2014, Paraguay's HDI value increased significantly (23%). The growth in GNI per capita was particularly high in the period, increasing 36%, and being the highest in Latin America. Over the last decade, the Paraguayan economy grew at an average of 5%, higher than its neighbours. Coupled with social policies, social indicators have improved in the country over the last two decades. Between 1980 and 2014, Paraguay's life expectancy at birth increased by 6.1 years, mean years of schooling increased by 3.1 years and expected years of schooling increased by 3.7 years. Income of the bottom 40% increased by 8% annually between 2009 and 2014 and the proportion of Paraguayans living below the regional poverty line (USD 4 a day) fell from 32.5% to 18.8%. According to the 2015 Households Survey, between 2011 and 2015, the proportion of Paraguayans living below the national poverty line decreased from 32.4% to 22.2%, with 1,534,000 Paraguayan considered poor in 2015. Poverty in rural areas continues to be higher than in urban areas. In 2015, 32.5% of the rural population or 895,000 people were living below the poverty line, well above the 15.4% in urban areas (640,000 people)⁴.

The Paraguayan economy is however very volatile, as it is significantly linked to natural resources. The primary sector accounted for 27% of Gross Domestic Product (GDP) in 2015⁵. As shown in Figure 1, the importance of the primary sector has increased since 1994, while the percentage of the secondary sector has decreased in the same period, even if electric power is a huge business for the country⁶. As some of the activities included in the secondary and tertiary sectors are related to the primary sector (e.g. some processing, transport or commerce activities), agriculture and livestock are crucial sectors in Paraguay. According to the Centre for Analysis and Outreach of the Paraguayan Economy (CADEP by its initials in Spanish), in 2015 80% of originally Paraguayan goods' exports were composed of agricultural and livestock products and

¹ General Directorate of Statistics, Surveys and Census (DGEEC by its Spanish initials) (2015): Continuous Household Survey 2015.

² DGEEC (2015): District Population Projections 2000-2025. 2015 Update.

³ United Nations Development Programme (UNDP) (2016): 2015 Human Development Report. Work for human development. Briefing note for Paraguay, p. 2.

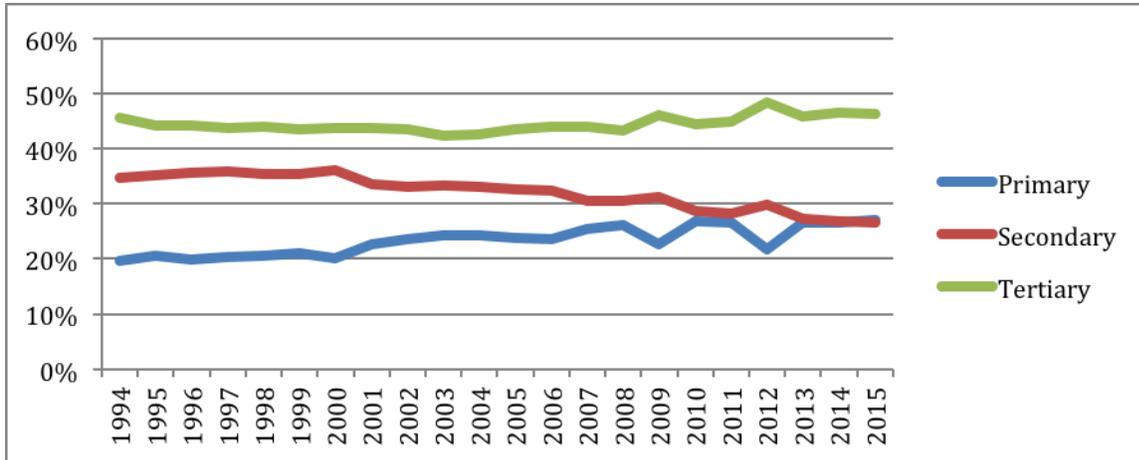
⁴ DGEEC (2015). Main finding on poverty and income distribution of the Continuous Household Survey 2015. Asuncion, Paraguay: DGEEC. The poverty line is different in urban and rural areas in Paraguay.

⁵ DGEEC (2015): Continuous Household Survey 2015. The primary sector includes agriculture, livestock, hunting and fishery. The secondary sector includes mining, electricity and water, construction and industry. The secondary sector includes services (e.g. commerce, transport, communications, financial and insurance services, hotels and restaurants and government).

⁶ Paraguay is the world's biggest net exporter of electric power.

their agro-industrial processing⁷. According to the 2015 Household Survey, 21% of the population of Paraguay worked in the primary sector, up to 47% in rural areas.

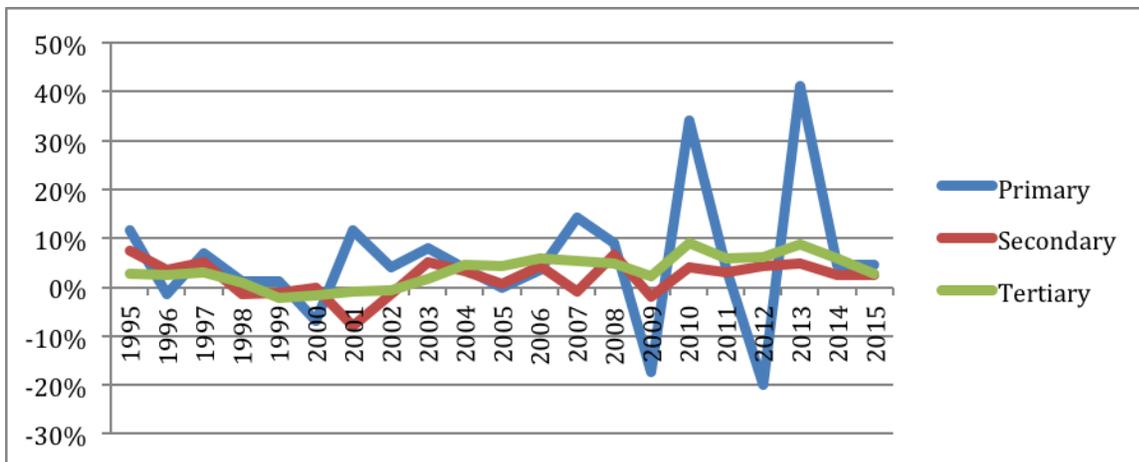
Figure 1. Paraguay. Sectoral Contribution to GDP. 1994-2015



Source: Own calculation based on Statistical Annex. Economic Report. May 2016. Paraguayan Central Bank.

Figure 2 proves, however, that the sector is highly volatile. While the secondary and tertiary sectors have not experienced great variations, the primary sector has experienced dramatic increases and decreases in the last 20 years, particularly acute in the last seven years.

Figure 2. Paraguay. Variations in sectoral GDP. 1994-2015

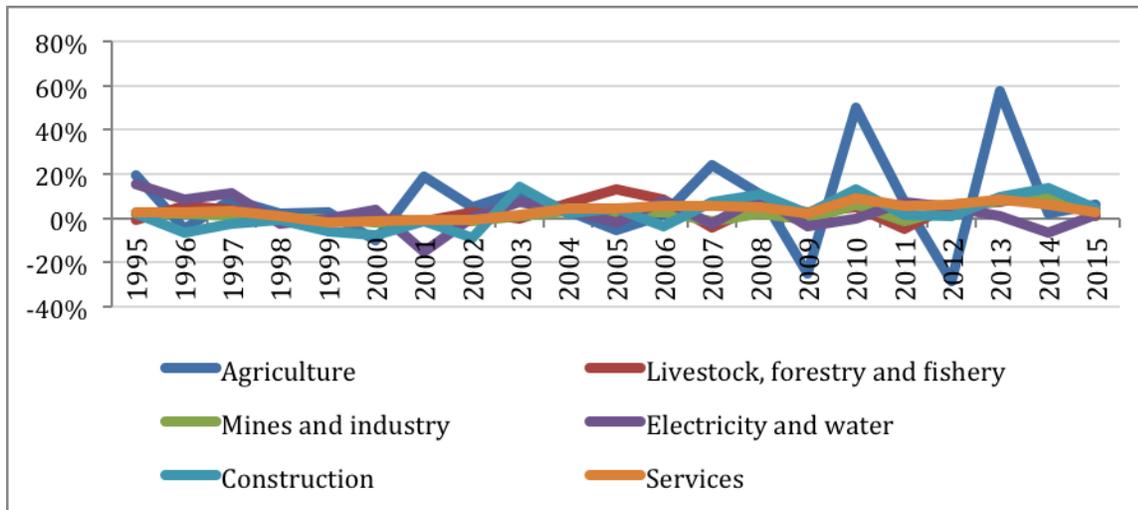


Source: Own calculation based on Statistical Annex. Economic Report. May 2016. Paraguayan Central Bank.

⁷ CADEP: 2015. Crecimiento económico y el factor agro-alimentario.

As shown in Figure 3, agriculture is particularly volatile. This sector shows the greatest variability, well above all other sectors, between 1995 and 2015, with significant volatility in from 2006.

Figure 3. Paraguay. Variations in sub-sectoral GDP. 1994-2015.



Source: Own calculation based on Statistical Annex. Economic Report. May 2016. Paraguayan Central Bank.

In this background, the Paraguayan economy is considerably dependent on weather conditions, in terms of production, and international commodity prices and the economic situation of some destination markets, such as Brazil and Argentina, which account for 40% of the country's exports and are the main source of foreign direct investment, in terms of income. According to the World Bank, growth decelerated to an estimated 3% in 2015 due to bad weather conditions and low international commodity prices. According to the same source, prospect of international prices for key commodities for 2016 and 2017 are far from great. The slowdown of Brazil and Argentina could weigh down on the outlook going forward.

In the long term, given its nature, climate change may be a more structural driver of economic growth and, with an important complexity involving political priorities, the evolution of income and social indicators at the national level as a whole, and in rural areas in particular. Although the non-primary sector related secondary and tertiary sector activities are currently crucial and it is sensible to strategically invest in them, as reflected in the National Development Plan 2014-2030, both to reduce their vulnerability to climate change and increase their added value, and urban areas and population are also fundamental, Paraguay certainly needs to increase the resilience of its primary sector and rural population. Indeed, climate change policies and studies have tended to focus on agriculture, livestock and forestry. These topics are prioritized in Paraguay's National Climate Change Adaptation Strategy (2015) (ENACC by its Spanish initials), in the study conducted in 2011 by the United Nations Development Programme (UNDP)

on the investment and financial flows needed for adaptation⁸ and in the assessment conducted by the Economic Commission for Latin America and the Caribbean (ECLAC by its Spanish initials) in 2014⁹ on the economic impacts of climate change¹⁰.

The vulnerability to climate change is particularly high for family agriculture (ENACC, 2015, p. 30), which in the last (2008) agricultural census represented 94% of the total number of farms in the country, with 83% of all farmers having less than 20 hectares. According to ECLAC (2013), while business agriculture would have an initial period of higher productivity, the productivity of family agriculture would register notable declines from 2010. Indeed, the UNDP (2011) study found that 99% of the additional USD 115.5 million¹¹ public investment needed for adaptation in the agriculture and livestock sector in the period 2010-230 would be for family agriculture¹². This means that every year around additional USD 6 million, around 1.5% of the GDP, would need to be invested by public institutions to increase the resilience of family agriculture. The indigenous people are also very vulnerable, given their material and cultural link with natural resources. Although their main source of income is derived from occasional wage labour carried out outside their communities, indigenous communities depend on ecosystems for food through agriculture, livestock, hunting and gathering activities, wood for housing and fuel, medicines and maintaining their traditional ways of life.

The vulnerability of the primary sector and family agriculture and livestock makes the region of Chaco particularly vulnerable. The Chaco region is a vast area with slightly more than 200,000 inhabitants¹³. According to the vulnerability and impact assessment conducted by UNEP¹⁴ for the period 2011-2040, the Paraguayan Chaco is the most vulnerable area of the Great Chaco, a broader region including also 11 provinces in Argentina and 3 provinces in Bolivia. The three Paraguayan departments have great exposure, great sensitivity and low adaptive capacity.

According to the Paraguayan Second National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) (2011, p. 20), the Chaco is the

⁸ UNDP (2011): Assessment of the investment and financial flows in agriculture, health and forestry. Asuncion, Paraguay: UNDP. The assessment focused on the flows required for adaptation in agriculture, livestock and health and the flows related to mitigation in forestry.

⁹ ECLAC (2014): Climate change economics in Paraguay. Santiago, Chile: ECLAC.

¹⁰ Health has tended to be prioritized also as a critical sector. It is explicitly covered in the ENACC, and the UNDP and ECLAC reports. The ENACC also includes social issues (the activities related to the Social Affairs Secretariat), and has a more integrated closing section. The ECLAC report includes water resources and biodiversity in addition to agriculture, livestock, forestry and health.

¹¹ Constant at 2005 prices and with 3% annual discount rate. UNDP (2011), p. 15.

¹² In this study family agriculture covers consumption crops (i.e. cassava, peanuts and beans) and income crops (i.e. cotton, sugar cane and sesame), business agriculture covers corn, soya and wheat, and livestock covers meat and milk cows. Note that these investment flows do not include all financial costs; all agricultural and livestock subsectors; and the costs to be borne by the private sector. Significantly, they do not cover either the costs related to other critical sectors, such as health, forestry and infrastructure, including housing, productive infrastructure, transport or energy.

¹³ DGEEC (2015): District Population Projections 2000-2025. 2015 Update.

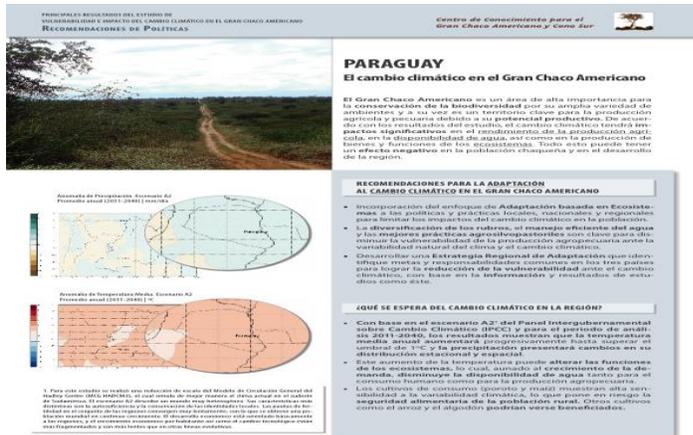
¹⁴ UNEP (2013): Climate Change Impact and Vulnerability Assessment in the Great Chaco Region. Panama City, Panama: UNEP.

warmest and driest region of the country. Average temperature ranges between 23 °C and 26 °C. Summers are very warm, with maximum temperatures going in average up to more than 30°C, reaching up to 45°C. In winter, the minimum temperatures go in average down to 12°C, reaching even 0°C.

The region is dry, with an average of 60 days of rain per year, but with very low precipitation levels. In the south of the region the annual average is 1,000 mm, while in the northern part the annual average is 600 mm. Rain is more frequent in summer, while droughts are predominant in winter (an average of 8 days with rain in January and 2 days with rain in July).

UNEP (2013) assessment provided climate change projections up to 2040, using International Panel on Climate Change (IPCC)'s A2 scenario (significant increase in greenhouse gas emissions) and taking the period 1961-1990 as the baseline. As presented in Figure 4, according to the study, average annual near-surface temperature would increase gradually to up to 1 more degree Celsius by the 2030, that is, 6% higher than in the baseline period, which given high baseline temperatures is quite significant.

Figure 4. Average annual near surface temperature change in the Paraguayan Chaco. A2 Scenario. 2031-2040.

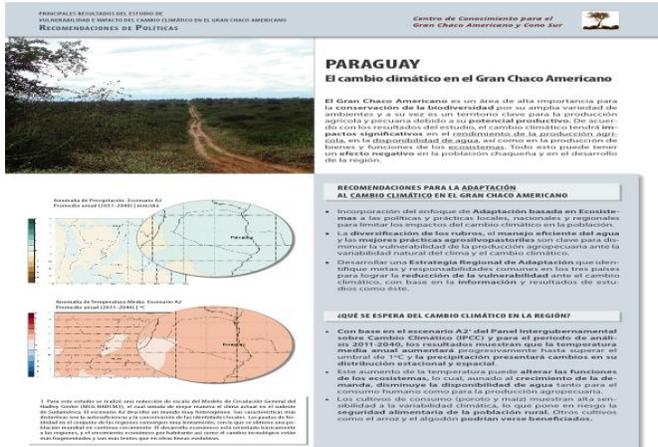


Source: UNEP (2013): Climate Change Impact and Vulnerability Assessment in the Great Chaco Region. Synthesis for policy makers for Paraguay , p. 1

Changes in average annual precipitation are more uncertain. As shown in

Figure 5, the study projects a slight but gradual increase of average annual precipitation in the region. In terms of distribution, precipitation is likely to increase in winter and autumn in the three departments and decrease in Presidente Hayes and Boquerón in summer. Droughts and floods are however projected to become more frequent and intense, with longer dry spells.

Figure 5. Average annual rainfall change in the Paraguayan Chaco. A2 Scenario. 2031-2040.



Source: UNEP (2013). Synthesis for policy makers for Paraguay, p. 1

These changes in climate will affect water availability in a region where subsurface waters have limited use due to their high salinity level. Although in the region rainwater harvesting is relatively common¹⁵, and, according to UNEP (2013), as illustrated in Figure 6, the water stress would be low until 2020, this will grow gradually to become moderate by 2030 in most of the region, with high water stress in the areas of low Chaco and riverside areas. This is in line with the Second National Communication’s (2011, p. 65) concerns. Water scarcity would affect different uses, from water for human consumption to water for production, higher temperatures meaning increasing water demand.

Figure 6. Water stress in the Paraguayan Chaco. A2 Scenario.



¹⁵ As a general rule the catchment system consists of the roofs of the houses. Pipes and filters are used to conduct the rainwater to a reservoirs or cistern used as a storage place. In addition, in some cases artificial ponds (tajamares) and tanks (particularly Australian ponds) are used.

Source: UNEP (2013). Synthesis for policy makers for Paraguay, p. 3.

In addition, climate change will affect soil productivity. Increased temperatures and evapotranspiration, and more erratic precipitation, with longer dry spells, will increase the risk of desertification. This will affect significantly the production of most of the consumption crops, such as beans, sorghum and peanuts, and less significantly income crops, such as corn and sugar cane, and livestock production of meat and milk. The production of cotton and rice could benefit from climate change. In any case, the impact on consumption crops could negatively affect food security.

Crucially, climate change is predicted to affect also the different ecosystems of the region, affecting significantly adaptation and mitigation efforts. Figure 7 shows that, although deforestation, especially for livestock, has been significant over the last years, human activities have traditionally concentrated in a relatively small area in the centre-south and the region still maintains an extended area of non-modified ecosystems.

Figure 7. Non-modified ecosystems in the Paraguayan Chaco.

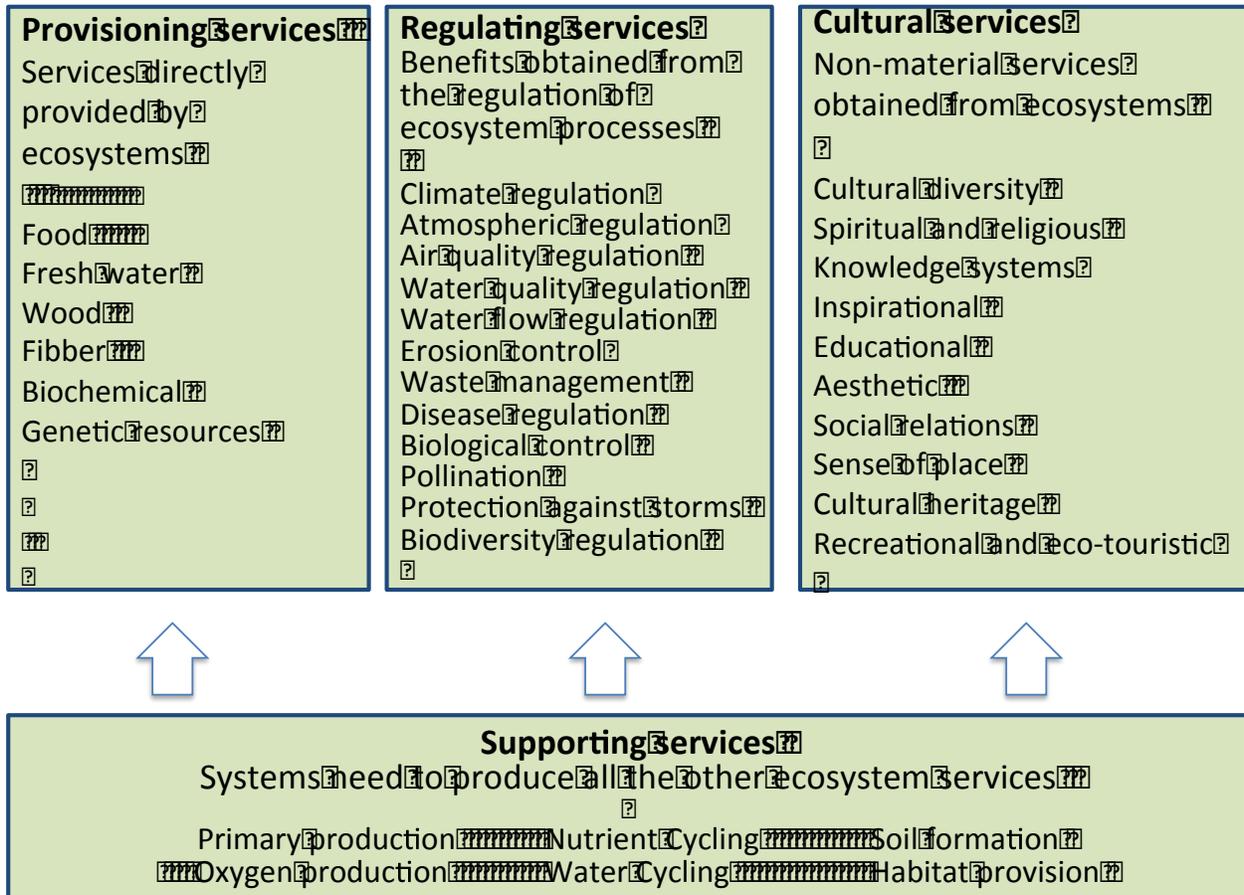


Source: UNEP (2013). Synthesis for policy makers for Paraguay, p. 1.

As illustrated in Figure 8, ecosystems provide provisioning services, such as the production of food, freshwater, wood, fiber, rocks, oils, minerals, metals or fuel; regulating services, such as the control of climate and diseases and protection against weather events; cultural services, such as patrimonial, aesthetic, recreational and

cognitive benefits; and supporting benefits, such as habitat provision, soil formation and nutrient cycling.¹⁶

Figure 8. Ecosystem services



Source: Adapted from Millennium Ecosystem Assessment (2005)

The UNEP (2013: 68-78) report confirmed the importance of the different ecosystems of the area for human well-being¹⁷. Resilience against climate change in general, and food security in particular would be highly affected by the degradation of ecosystems due to climate change, as highlighted in the Second National Communication.

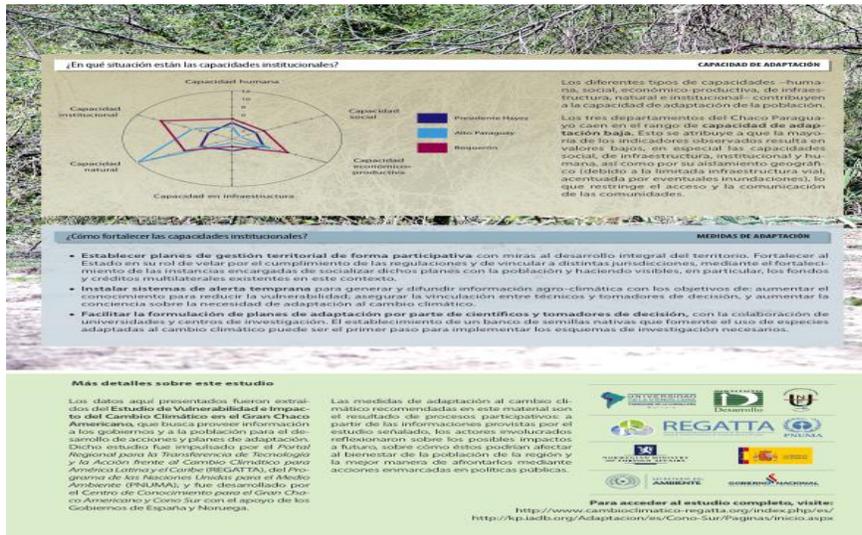
Furthermore, the adaptive capacity to these impacts is low in the three departments of the region. As shown in

Figure 9,. Overall, they have low social, infrastructure, institutional and human capacity.

¹⁶ Some authors add the option value, attributed to preserving the option to utilize ecosystem services in the future, to the supporting, provisioning, regulating and cultural services. See Millennium Ecosystem Assessment: *Ecosystems and human well-being*, Millennium Ecosystem Assessment, Washington, 2005.

¹⁷ The UNEP (2013: 65) report uses a slightly different conceptual framework.

Figure 9. Adaptive capacity in the Paraguayan Chaco



Source: UNEP (2013). Synthesis for policy makers for Paraguay, p. 4

Indeed the three Paraguayan departments are the ones with the lowest adaptive capacity in the Great Chaco region. Three Bolivian and five Argentinian departments have all moderate adaptive capacity, and six Argentinian departments have high adaptive capacity.

The situation in the Paraguayan Chaco presented above can be better understood explaining the vulnerability to climate change and the adaptive capacity to deal with it at the community level. The UNEP (2013) assessment selected 4 communities: Campo Aceval and Lolita in the district of Teniente Irala Fernandez in Department of Presidente Hayes; Yalve Salga in the district Loma Plata in the Department of Boqueron and Toro Pampa in the District of Fuerte Olimpo in the Department of Alto Paraguay. Lolita, a typical Mennonite colony, was found to be not particularly vulnerable. Table 1 presents some contextual data regarding the three vulnerable communities studied by UNEP. As can be shown in the table, in both Campo Aceval and Toro Pampa the communities are composed of small farmers, while Yalve Sanga is an indigenous community.

Table 1. Contextual information of communities in the Paraguayan Chaco selected by UNEP

Department	Presidente Hayes	Boqueron	Alto Paraguay
District	Tte. Irala Fernandez	Loma Plata	Fuerte Olimpo
Community	Campo Aceval	Yalve Sanga	Toro Pampa
Area (ha)	18,000	6,000	200
Population	2,200	1,762	600
Type of beneficiary	Family agriculture	Indigenous (Nivaclé and Enlhet)	Family agriculture

The UNEP (2013) report found significant impacts to the changes in climate discussed

above in these communities. Water scarcity would be low (water stress index (WSI) below 10%) in Toro Pampa; high in Yalve Sanga, where water supply would not cover water demand in some years; and extremely high in Campo Aceval, with WSI close to 80% by 2040. Moreover, in the three communities all agricultural products would be significantly affected, except for sesame in Yalve Salga, while meat and milk production would not be significantly affected.

The three communities are unevenly positioned to deal with these potential impacts. As shown with more detail on Table 2, overall, Campo Aceval has medium adaptive capacity, while this is medium low in Yalve Sanga, and low in Toro Pampa.

Table 2. Adaptive capacity in three selected communities in the Paraguayan Chaco

Resource	Indicator	Campo Aceval	Yalgue Salga	Toro Pampa
Physical	Housing quality	Medium	Medium	Low
Natural	Access and availability of water	Medium	Low	Low
	Conservation	Low	Medium	Medium
Human	Access to education	Medium	Low	Low
	Food security	Medium	Low	Low
	Knowledge on production systems	Low	Low	Low
Social	Organisation	High ¹⁸	Medium ¹⁹	Low
	Distribution of work	Medium	Medium	Low
Economic	Variation of annual production	Medium	Low	Medium
	Income diversification	Low ²⁰	Low ²¹	Medium
	Access to credit	Medium	Low	Low
	Market access	High	Medium	Low

Source: UNEP (2013) – Assessment of selected communities, p. 3.

Over the last five years, Paraguay has made a significant progress in setting the conditions to reduce the vulnerability to these impacts at the national level and in the Chaco. The country has created a solid institutional structure, with the National Climate

¹⁸ Almost all farmers within Cooperativa Chortitzer.

¹⁹ Two organizations of producers.

²⁰ 80% of the population manages livestock for milk production.

²¹ In the area there is a mix of family farms, production of cotton, poroto and sesame, livestock, silviculture and occasional work in neighbor Mennonite colonies.

Change Commission, the National Climate Change Office and the National Climate Change Programme. It has also developed its policy framework, including a National Climate Change Policy (2011), a National Mitigation Strategy (2014) and a National Adaptation Strategy (2015). Furthermore, the country has conducted research and communicated its findings and position to the international community, through the Second National Communication to the UNFCCC (2011) and the production of its Intended Nationally Determined Contribution (INDC) (2015) to the 21st Conference of the Parties to the UNFCCC held in Paris in December 2015. As illustrated above, important studies have also been developed for the country, such as the UNDP (2011) and ECLAC (2014) reports. The Chaco has received considerable attention. The UNEP (2013) report provides very valuable information.

However, there are still important barriers for adaptation in Paraguay, in general, and the Chaco, in particular. First, despite the efforts made, information on climate variables and its impacts is still insufficient. Paraguay's network of meteorological stations is poor. According to the Directorate of Meteorology and Hydrology (DMH) of the National Directorate of Civil Aeronautics (DINAC), in the Chaco, a region with 246,925 km², there are only 10 stations, and only 5 are functioning, limiting the reliability of climate information. While there are some collection points in the Yacare river watershed, the situation is particularly critical in the Pilcomayo river watershed. Existing information is also poorly disseminated and used, without a system to inform farmers and herders so that they can make more strategic decisions. In addition, although a general vulnerability study has been conducted for the Chaco, there is a lack of detailed understanding of the area and the impacts on some populations, geographical areas, economic sub-sectors, ecosystems and natural species are still unknown. Only four communities were for instance studied. The role of traditional practices, forest standards and economic incentives is neither well understood.

Second, although some projects have been implemented recently in the area (see section F for their description and the explanation of how synergies will be created), the findings of the comprehensive UNEP (2013) vulnerability assessment have not yet been fully considered and most of its recommendations have not been implemented. This is particularly important for two reasons. The first reason is failing to exploit the momentum created by the UNEP (2013) study. This momentum is technical, in terms of having relevant up to date information on the area, and political, in terms of having raised the awareness and interest of regional and local stakeholders. So far, this information has not been used to build integrated action plans at the local level. This is also particularly important because some of the current practices could undermine the effectiveness of implementing some of the most prominent adaptation measures recommended by the UNEP (2013) in the future. Deforestation, prolonged use of land, insufficient soil management and conservation practices and indiscriminate use of agro-chemicals, among other practices, are degrading ecosystems and the provision of critical services that they entail, significantly reducing the prospect of current and future resilience. If the ecosystem-based adaptation activities proposed by UNEP (2013) are not implemented soon, the non-modified ecosystems presented in Figure 7 could be reduced and the ability to ensure significant ecosystem services would be more limited in the future.

Finally, although considerable progress has been achieved at institutional level, there is still significant work to do to improve the capacity of national, regional and local officials for climate change adaptation.

Project / Programme Objectives:

List the main objectives of the project/programme.

The goal of this project is to reduce the vulnerability of the population (selected family agriculture producers and indigenous communities) of the Chaco Region of Paraguay to the impacts of climate change on food security.

In order to do so, the project addresses the main barriers for adaptation in the selected region. Specifically, the project seeks i) to improve information and knowledge for climate resilience; ii) to implement concrete cost-effective on-the-ground adaptation measures; and iii) to strengthen the institutional capacities to adequately address climate change adaptation issues.

The project is organized accordingly in three components: i) Knowledge management on vulnerability and climate change resiliency improved; ii) adaptive capacity in rural areas of greatest vulnerability strengthened through concrete agro-ecosystem based adaptation measures; and iii) capacity development and awareness to upscale effective implementation of adaptation measures at the national and local levels.

It is important to note that the project favors an ecosystem-based approach to adaptation. As illustrated in Figure 8 above, ecosystems provide crucial services to the population of the region. The UNEP (2013) report found that these services are critical for increasing resilience against climate change. For that reason, the project will work at the catchment scale, which is a particularly appropriate physical unit for land use planning. In particular, it will work in the Pilcomayo River (8,669,400 ha) and Yacare River (857,610 ha) watersheds.

Each of the three components has a focus on ecosystem-based adaptation. In the first component, detailed vulnerability assessments will be carried out. The focus on ecosystem-based adaptation is particularly evident in the second component, dealing with concrete measures on the ground. As detailed in the next section, among other things, this component will include the conservation and restoration of forests, agroforestry, silvopastoralism, agro-ecological farming (including reduction in the use of chemical fertilizers) and sustainable ranching practices. The training provided through the third component will raise awareness on the importance of ensuring the protection and rehabilitation of ecosystems to strengthen resilience.

The goal, the specific objectives and the approach are in line with national priorities, as detailed in section D below, and take into account current projects, as detailed in section F below, to avoid duplication and generate synergies.

The findings and recommendations of the vulnerability and impact assessment conducted by UNEP in 2013 and the information provided by key stakeholders at the national and local level were used to identify vulnerable communities. In order to be cost-effective²², the project will work in ten. Two (Campo Aceval and Toro Pampa) were analyzed by UNEP²³. The other eight are: Casanillo, General Diaz, Pozo Hondo, Campo Loa, Ijnapui, Colonia Maria Auxiliadora, San Carlos and Bahia Negra. All these communities are environmentally integrated. According to key national, departmental and district officials all of them are extremely vulnerable to climate change. These communities are located along two watersheds, the one of the Pilcomayo River and the one of the Yacare River. They include the three departments (Presidente Hayes, Boqueron, and Alto Paraguay) of the Paraguayan Chaco and five municipalities (Bahía Negra, Fuerte Olimpo, Filadelfia, Mariscal Estigarribia, and Teniente Irala Fernandez). Both peasant and indigenous communities are included. Table 3 provides essential information of the ten communities selected for the project.

²² The impact will be greater working in a greater number of areas, but many of the costs will not increase. The selection has taken care of finding a balance between doing a lot in one place and doing little in many places, by conducting actions that make a significant change in a significant number of related communities.

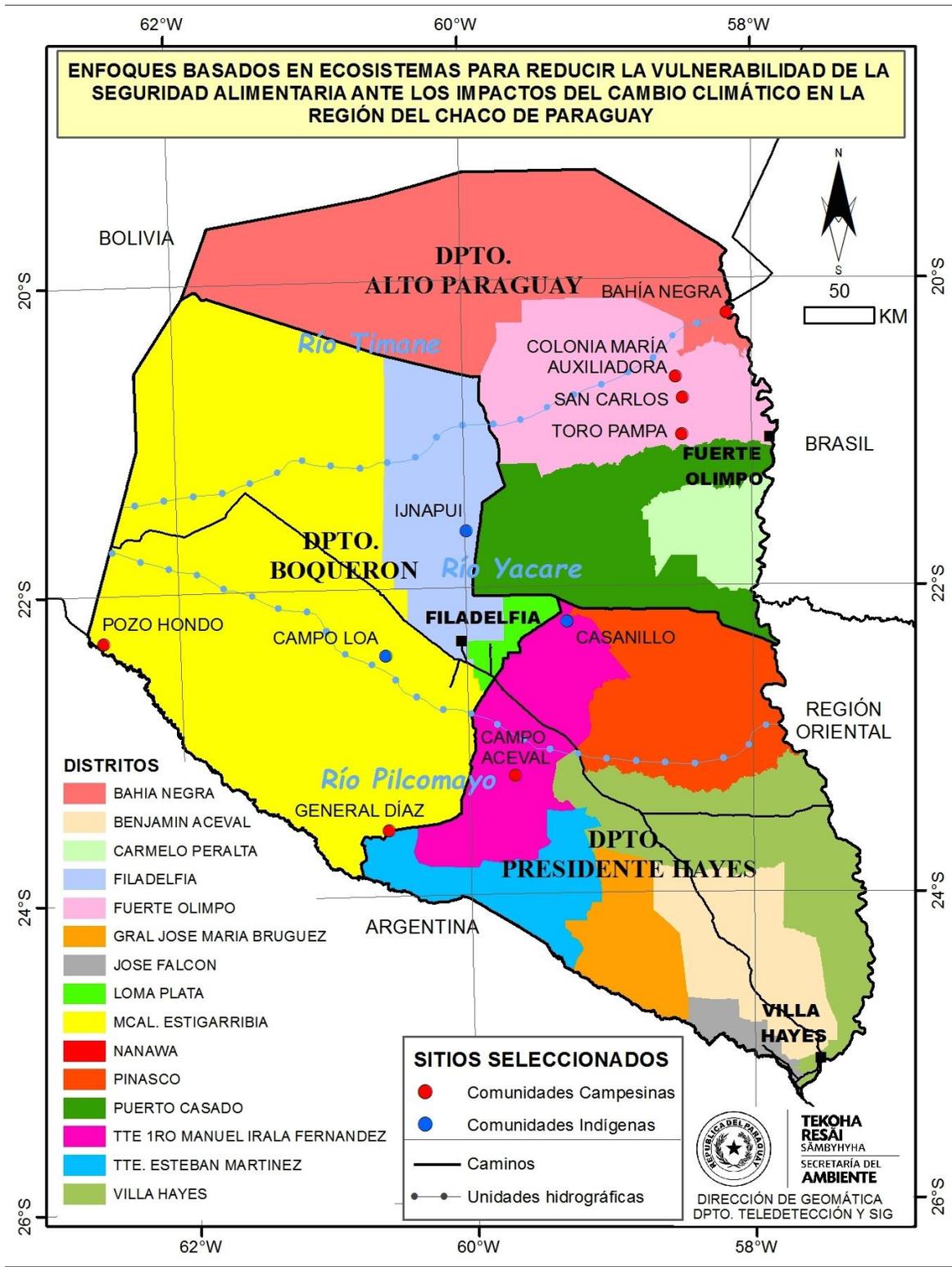
²³ As noted above, Lolita was not found to be particularly vulnerable. Yalve Sanga was found to be vulnerable, but a number of projects have been implemented since the publication of the report and some are ongoing in the area, so this community is not included to avoid duplication, following the suggestion of departmental and district stakeholders.

Table 3. Contextual information of the communities selected for the project in the Paraguayan Chaco

Watershed	Pilcomayo					Yacare				
Department	Presidente Hayes		Boqueron			Alto Paraguay				
District	Tte. Irala Fernandez		Mariscal Estigarribia		Filadelfia	Fuerte Olimpo			Bahia Negra	
Community	Campo Aceval	Casanillo	General Diaz	Pozo Hondo	Campo Loa	Ijnapui	Toro Pampa	Colonia Maria Auxiliadora	San Carlos	Bahia Negra
Area (ha)	18,000	13,000	500	1,500	11,200	3,600	200	200	200	320
Population	2,200	560	300	1,000	1,861	190	600	500	300	3900
Type of beneficiary	Peasants	Indigenous (Toba)	Peasants		Indigenous (Nivaclé)	Indigenous (Ayoreo)	Peasants			

Map 3 illustrates their location in the Chaco region of Paraguay.

Map 3. Location of the selected communities in the Paraguayan Chaco



Furthermore, the project has great replication potential. As noted in section G below, the lessons learned from this pilot will be carefully identified, systematized and disseminated. The third component will also contribute to create robust capacities to use these lessons in up-scaling this pilot in the selected areas and/or replicating it in other districts of the region. To that end the project will work closely with neighboring municipalities, such as Loma Plata, Teniente Esteban Martinez, and Puerto Casado. The involvement of SEAM will facilitate replication in other regions of the country.

Project / Programme Components and Financing:

Fill in the table presenting the relationships among project components, activities, expected concrete outputs, and the corresponding budgets. If necessary, please refer to the attached instructions for a detailed description of each term.

Table 4. Project components and financing

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
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<p>1. Knowledge management on vulnerability and resilience to climate change improved to implement cost-effective adaptation measures</p>	<p>1.1 Detailed mapping of ecosystems, including agro-ecological zones, water resources, forests and other ecosystems 1.2. Assessment of the vulnerability to climate change of specific plants and animals used as food source. 1.3 Study of the Ecology, Management and Nutritional components of Algarrobo and Viñal (Prosopis spp.) 1.4 General vulnerability and impact assessment (including water) for the eight communities not covered by the UNEP (2013) report 1.5 Research on traditional practices that contribute to climate resilience, including crop varieties. 1.6 Study on the contribution to adaptation of the existing regulatory framework 1.8 Information and monitoring system for agro-climatic risk assessment.</p>	<p>Scientific information available to better understand vulnerability to climate change at the local level</p>	<p>1,000,000</p>
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<p>2. Adaptive capacity in rural areas of greatest vulnerability strengthened through concrete adaptation measures favouring an ecosystem-based approach,</p>	<p>2.1 Participatory developed integrated adaptation with a watershed management, ecosystem-based approach 2.2 Participatory implementation of the measures included in the adaptation plans 2.2.1 Conservation and restoration of forests (including “protective forest”) and other ecosystem 2.2.2 Agro-ecological production in farming and livestock, including agroforestry, apiculture, community seed banks and silvopastoral management 2.2.3 Implementation of improvements in the efficient use, catchment, harvesting and storage of rainwater 2.2.4 Implementation of measures to improve incentives for adaptation 2.2.5 Training and exchange of knowledge among stakeholders</p>	<p>Rural communities increase their knowledge and means to respond to climate change risks and adapt their agricultural production systems</p> <p>Indigenous communities are able to adapt their food production systems, while respecting their ethnic-cultural and traditional knowledge</p> <p>Improvements in the availability and use of water for peasant and indigenous people’s communities</p>	<p>4,480,000</p>
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3. Capacity development and awareness to implement and upscale effective implementation of adaptation measures at national and local levels	3.1 Detailed training plan for SEAM on mainstreaming climate compatible development across sectors 3.2 Training plan for partner agencies at national and local levels (ministries and agencies (including but not limited to MAG and INFONA), departmental and municipal governments, universities, NGOs) 3.3 Identification, systematization and exchange of lessons learned of the project	Stakeholders enabled to effectively respond to long-term climate change impacts	520,000
4. Project/Programme Execution cost			570,000
5. Total Project/Programme Cost			6,570,000
6. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)			558,450
Amount of Financing Requested			7,128,450

Projected Calendar:

Indicate the dates of the following milestones for the proposed project/programme

Table 5. Project Calendar

Milestones	Expected Dates
Start of Project/Programme Implementation	January 2017
Mid-term Review	February 2019
Project/Programme Closing	May 2021
Terminal Evaluation	June 2021

PART II: PROJECT / PROGRAMME JUSTIFICATION

- A. Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

The project will significantly increase food security in a climate change context. The project is designed to address the vulnerabilities identified by the vulnerability assessment conducted by UNEP in 2013 and is based on the recommendations provided by the report, which covered the period 2011-2040. The three components of the project address the three main barriers for climate change adaptation in the Chaco region of Paraguay, while the specific activities focus on the most important specific deterrents of adaptation in the area.

Component 1. Knowledge management on vulnerability and resilience to climate change improved to implement cost-effective adaptation measures

The first component addresses the barrier on information and knowledge for resilience against climate change. As indicated above, the vulnerability and impact assessment conducted by UNEP provides very useful information. Taking that into account, this project will go a step further by i) improving the breadth and depth of punctual analyses and ii) creating the conditions for the provision of and providing regular analyses. On the first point, the project will conduct studies covering issues that were not covered with sufficient detail and issues that were not covered in the UNEP assessment.

As a starting point, the project will prepare detailed maps of the ecosystems of the ten areas relevant to the selected communities, identifying water resources, forests, agro-ecological zones and other ecosystems and the threats that they face. This will be integrated with GIS. As part of this exercise, existing land use plans will be analysed. SEAM officials will provide support in the preparation of the maps. As presented in Table 13, besides SEAM, this output will include the participation of the Ministry of Agriculture and Livestock (MAG by its initials in Spanish), the National Forestry Institute (INFONA by its initials in Spanish), the governments of the relevant departments and districts and the communities.

In addition, the project will assess the vulnerability to climate change of specific plants and animals used as food source. The study will be conducted during both dry and wet seasons. This will involve SEAM, which will provide five technicians to support this output, the Paraguayan Institute of Agrarian Technology (IPTA by its initials in Spanish), the Paraguayan Institute of Indigenous Peoples (INDI by its initials in Spanish), several universities, the governments of the relevant departments and districts and the communities.

Furthermore, the project will conduct a study on the ecology, management and nutritional components of Algarrobo and Viñal (*Prosopis* spp.)²⁴. These are an essential component of the ecosystem of the region that produce pods that can be eaten by both humans and livestock. This activity will be carried out in cooperation with the National University of Asuncion, Agrarian Faculty (UNA/FCA by its initials in Spanish), which has a branch in the Chaco Region, IPTA and the communities. The research area will be the Central Chaco.

Besides the project will carry out general vulnerability and impact assessment for the eight communities not covered by UNEP in 2013, following the methodology used then. In this sense, among other issues, these studies will assess the water harvesting, conservation and distribution infrastructure needs in each of the eight communities. This output will involve SEAM, the departmental and district governments and the communities, with a close coordination with UNEP. The results will be published in a synthesis report.

Moreover, the project will examine traditional agricultural, livestock and more broadly environmental management practices, identifying those that contribute to reduce the vulnerability to climate variability and change. This could include practices as agroforestry, apiculture, selection of specific crops, mixed use of specific crops and land rotation, among many others practices. This output will be implemented with the active participation of SEAM, MAG, INFONA, IPTA, INDI, the departmental and district governments, the community, universities, NGOs and the private sector.

Besides further detailing ecosystems, vulnerability and potentially useful traditional practices, and increasing the number of studied communities, this project will examine some additional aspects. In particular, it will review all laws, standards, policies and plans at national, departmental and district level regulating the use of natural resources, including forests, water bodies (rivers, lakes, wetlands), farms and pastures, and will propose avenues to improve them, including both compulsory aspects and economic incentives²⁵. This output, conducted for the ten communities as a whole, will review the development plans of the three departments and the six selected districts and will provide recommendations on how to better mainstream climate change adaptation across different sectors. This output will be prepared involving SEAM, the National Emergency Secretariat (SEN by its initials in Spanish), MAG, INFONA, National Service of Vegetal and Seed Health and Quality (SENAVE by its initials in Spanish), the departmental and district governments, the community, universities, NGOs and the private sector.

Furthermore, the project will develop a guide to implement forest management practices on peasant and indigenous peoples communities. Among other issues, this guide will

²⁴ Several species of the *genus Prosopis* (*Prosopis alba*, *P. nuda*, *P. hassleri*, *P. nigra* and seven more) are collectively known as 'algarrobo' and are deep-rooted, nitrogen-fixing trees that produce sweet pods.

²⁵ This review will include, but will not be limited to, the Forest Law, the Afforestation/Reforestation Law, the Environmental Services Law, the Fiscal Reorganization Law, and the Law for Forest Conservation in the Chaco.

include technical criteria regarding the width of forest protection strips in relation to the width of water bodies, species to be used in restoration and the specific measures for conservation of protective forests. Peasant and indigenous communities will be trained in the forest standards developed so that they can complete the documentation process needed to transport and sell forest product at market prices. A training session will take place in each of the selected ten communities. The guide will also be published. This output will involve SEAM, INFONA, which will validate the guide, INDERT, INDI, the departmental and district governments and the community.

In addition to specific studies that provide a static assessment of the situation in the selected communities, this component will create the conditions for the continuous provision of key information in the region. In particular, the project will fund the acquisition and installation of 9 meteorological stations in the Paraguayan Chaco, in particular in the Pilcomayo River watershed, which will result in increased sources of information and therefore more accurate weather forecasts and, in the medium term, climate change projections at regional level. The project will also cover the design and implementation of a system to disseminate the weather forecasts produced on that basis by DMH/DINAC to key public and private stakeholders, so that these can make informed decisions. Agro-climatic information will be particularly important for farmers and herders, as highlighted by UNEP (2013). To that end, software will be bought and a consultant will train national stakeholders on how to use it. This output will be conducted in coordination with DINAC, SEAM, SEN, the departmental and district governments and the community.

In summary, the activities included in component one will significantly improve the information and knowledge available to put in place robust adaptation measures in the region, by covering the gaps of the UNEP report in terms of further exploring some issues covered there, examining issues not covered there and ensuring the continuous provision of very crucial meteorological information.

Component 2. Adaptive capacity strengthened through concrete adaptation measures, favouring an ecosystem-based approach

The second component addresses the lack of integrated and informed adaptation strategies on the ground. This project will overcome this barrier by using the knowledge built through component one to build holistic priority action plans with their corresponding land use plans and implement the corresponding on the ground measures.

One community adaptation plan will be developed in each of the ten selected communities. These will be discussed and approved by all relevant stakeholders. Each plan will reflect the priorities of each community. In this sense, plans are likely to vary slightly according to the contextual situation and the cultural differences between communities.

Overall, adaptation plans will use outputs from component 1 strategically. They will ensure that the most relevant measures are prioritized in terms of individual, group,

sector, geographical area and timeframe and will exploit the synergies between different elements, favoring a cost-effective design and implementation of actions. The adaptation plans will carefully take into account the territorial / spatial dimension of ecosystems and will in that line be aligned or suggest adjustments of the existing land use plans. The proposed plans will make use of a landscape-scale approach taking into account that the intervention sites are in fact made up of a mosaic of natural areas, agricultural areas and communities. In this sense, the plans will take into account the conditions and trends of natural resource use, natural and anthropogenic influences and the opportunities for conservation, restoration and development. Community adaptation plans will be developed in coordination with SEAM, UNEP, the departmental and district governments and, above all, the communities themselves.

As soon as the plans are approved by relevant stakeholders, adaptation measures will be implemented on the ground according to them. The project will carry out activities to conserve and restore forests, including protective forests, and other ecosystems, in line with the forest standards developed in component 1²⁶, and in coordination with INFONA, SEAM, the department and district governments and the communities. In addition, the project will promote agro-ecological production in both farming and livestock. This will include agroforestry and silvopastoralism, but also the development of community banks of adapted seeds, minimum/zero tillage, land rotation, diversification, reduced use of chemical fertilizers and other practices recommended in the output 1.5. Specifically, This will include promoting food production in family and community orchards, given that the production of seasonal vegetable gardens can help to increase food security in many communities. To that end, in close coordination with departmental and district governments, the project will provide technical assistance, seeds, tools and materials to implement these activities²⁷. In particular, the project will also involve the promoting of apiculture, given that there is a high and increasing demand for honey (in part because the national government has recently introduced it into the school lunch program) and the one produced in the region is of high quality (it was recently selected as the third best produced in the country). Support will vary among communities, but in general it will include training, equipment to start the activity and in some cases equipment to start packing. In addition, depending on the results of the output 1.3, specific activities on the sustainable use of carob trees will be also promoted. The activities included in outputs 2.2.1 and 2.2.2 will be driven by an ecosystem-based adaptation approach, in the sense that they will protect, restore or use sustainably the ecosystems to ensure the continuous provision of critical ecosystem services, as suggested by UNEP VIA (2013)²⁸. In this sense the approach will ensure

²⁶ This might include the construction of windbreaks and/or firebreaks, reforestation with native species, enrichment with other species and natural regeneration, among others.

²⁷ During the consultation process, the communities of Toro Pampa, Maria Auxiliadora, Bahia Negra, San Carlos, Campo Aceval, Pozo Hondo and General Diaz were identified as possible beneficiaries. In Toro Pampa the boarding school Monseñor Alejo Avelar has been identified as a potential beneficiary. Increasing food production would not only help students cover their nutritional needs, but could also help them develop technical skills.

²⁸ The UNEP (2013) report advocates for an ecosystem-based approach both for improving water availability and increasing agriculture and livestock productivity. In this sense, it proposes integral

agricultural production and food security using and without causing harm to the surrounding ecosystems, so that they may continue to provide the ecosystem services that are critical to food security, and thereby reduce vulnerability to climate change. Indeed robust land use plans will ensure that each activity is fitted to the specific capacity and potential of the geographic area where it will be implemented, protecting for instance the non-modified ecosystems presented in Figure 7, and taking into account UNEP's VIA recommendations for each of the selected communities²⁹. The activities under 2.2.2 will be carried out in coordination with MAG, SEAM, IPTA, the department and district governments and the communities.

In addition, water harvesting, conservation and distribution infrastructure for both human consumption and agriculture will be built in some communities. This will be the case in the two communities studied by UNEP in 2013. In the other eight, this will depend on the results of the vulnerability to be conducted in component 1. Best practices in the region will be followed³⁰. The efficient use of water will be promoted by installing tools to measures water availability, which together with improved weather forecasts will inform how available water is used. This will be coordinated with the National Environmental Sanitation Services (SENASA by its initials in Spanish), SEAM, MAG, the department and district governments and the communities.

Furthermore, the recommendations provided by output 1.6 will be implemented, to ensure regulations include the necessary compulsory tools and at the same time they provide adequate incentives for the private sector to favor further work towards adaptation. This will be implemented involving SEAM, MAG, the department and district governments and the communities.

Finally, training will be provided for each of the activities included in output 2.2, that is, conservation and restoration of forest, agro-ecological management and water management, based on the knowledge gathered in output 1.5. Training will focus on understanding the need of adaptation measures and showcasing approaches and

watershed managed, conservation and restoration of forests, silvopastoral practices, and an agro-ecological approach to agriculture, all of which are promoted in this project.

²⁹ For Toro Pampa, UNEP (2013) recommended i) formalizing production and market access and reactivating local producers organization; ii) ecosystem-based adaptation, improving agricultural and livestock practices; and iii) constructing and maintaining water harvesting and distribution systems for human and livestock consumption. For Campo Aceval, UNEP (2013) recommended i) providing financial support to small farmers, through promotion of cooperatives, credit, which further consultation for this proposal have suggested not to include; and ii) promoting participatory adaptation planning, involving communities and institutions. For Yalve Sanga, UNEP (2013) proposed i) regenerating degraded areas with carob trees and the sustainable management and processing of agricultural and forest products; ii) diversifying, providing technical assistance, basic tools and seeds; iii) building water harvesting infrastructure and promoting efficient use of water; and iv) training and participatory planning.

³⁰ To ensure water availability for production during shortages, rain water has been harvested and routed from the producers fields to artificial ponds (tajamares) and then to tanks, usually Australian tanks. Windmills are typically used to move water from ponds to tanks, which are usually above the ground level. Water routes by gravity from the tanks to the places that on which it is used (houses, fields, barns). Water is treated with chlorine or boiled before human consumption and filter are used to prevent pathogens.

practices that have demonstrated to be efficient. Given that increasing the adaptive capacity is a social process, rather than a series of isolated activities implemented by isolated individuals, bi-annual community meetings will be organized at activity level and annual community meetings will be organized at the level of the adaptation plan. These meetings would allow social learning and allow identifying any relevant way of improving the implementation of the project. As will be explained in section G, the project will promote in this sense a learning by doing approach. All individual farmers and herders and indigenous populations and all groups will be actively involved in vulnerability assessment and adaptation planning, implementation, monitoring and evaluation. Training will be conducted in coordination with SEAM, UNA/FCA and other universities, IPTA and the department and district governments, the communities, NGOs and the private sector.

Component 3. Capacity development and awareness to implement and upscale effective implementation of adaptation measures at national and local levels

The third component addresses the third barrier by increasing the technical capacity of national and local stakeholders to implement climate change adaptation projects. The project will ensure that the SEAM receives detailed training on mainstreaming climate compatible development across sectors, with a specific focus on ecosystem-based approaches. In addition, the project will provide training to partner agencies at the national and local levels. This training will be more general than the one provided to the SEAM. Stakeholders will include ministries and agencies from different sectors to integrate climate change adaptation in all laws, policies and plans, departmental and district governments and other stakeholders, such as universities, NGOs and the private sector. At the beginning of the consultancy services, consultants will develop a detailed training plan, which will be approved by the SEAM. This plan will specify the objectives, scope and materials to be used for capacity building. Table 6 describes the awareness raising and training activities to be carried out with the different stakeholders and the skill to be developed at this stage.

Table 6. Capacity building activities and skills developed

Beneficiary	Activity	Skill to be developed
SEAM	Targeted training	<ul style="list-style-type: none"> - Technical and analytical skills to assess the impacts of climate change in different sectors and scales - Planning skills to mainstreaming adaptation into different sectors, and develop specific sectoral and multi-sectoral proposals - Communication and negotiation skills to promote consideration of adaptation issues by third parties, through awareness raising campaigns, training

		materials and activities, and policy instruments, including both compulsory and voluntary elements (informed by the output 1.3)
<p>Other national, regional and district stakeholders:</p> <p>National Ministries and Secretariats:</p> <p>Technical Secretariat of Economic and Social Development Planning; Ministry of Finance, SEN; MAG, INFONA, Ministry of Public Works and Communications, National Secretariat for Housing and Habitat, Ministry of Public Health and Social Welfare, Ministry of Education and Culture, Ministry of Industry and Commerce, Ministry of Labor and Social Protection, Secretariat of Indigenous Peoples.</p> <p>Departmental and District Governments:</p> <p>5 representatives of the three selected departments</p> <p>2 representatives of the other departments of the country</p> <p>3 representatives of the six selected districts</p> <p>Other stakeholders:</p> <p>Representatives of the 10 most important universities in the country</p> <p>Representatives of the 10 most important NGOs in the country</p> <p>Representatives of 10 private</p>	<p>Awareness raising</p> <p>General training</p>	<p>- Technical and analytical skills to assess the impacts of climate change in different sectors and scales</p> <p>- Planning skills to mainstreaming adaptation into different sectors and scales, with emphasis on the local level</p> <p>- Communication skills to promote consideration of adaptation issues by third parties, through awareness raising campaigns, training materials and activities, and policy instruments</p> <p>- Adaptation and mitigation-related opportunities for the private sector</p> <p>- Adaptation and mitigation-related research opportunities for the academic community</p>

sector associations		
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Moreover, the project will ensure that the lessons of the project are identified, systematized, exchanged and, when possible, mainstreamed. At least the lessons from the project will be mainstreamed in the training programs and efforts will be made to mainstream them also in any new planned field programs to ensure the sustainability of project results and continued long-term support to the community adaptation plans and land use plans developed. In addition, as explained in section G, the project will benefit from UNEP’S experience in other countries through its Regional Gateway for Technology Transfer and Climate Change Action in Latin America and the Caribbean (REGATTA). This output will involve SEAM, other selected Ministries, Governments of Presidente Hayes, Boqueron and Alto Paraguay, other selected departmental governments, selected district governments, other selected district governments, other selected communities and UNEP. The three activities under component 3 will increase the capacity of the Paraguayan stakeholders to implement robust adaptation strategies, reducing the vulnerability of the country to the impacts of climate change.

To conclude it is important to highlight that the three components of this project are tightly linked. Component 1 develops the information and knowledge needed to plan and implement robust adaptation actions in the region, component 2 uses that information to design community adaptation plans and land use plans and implement priority actions in different fronts and component 3 ensures that the technical, analytical and communicational skills are available to conduct the studies and plan and implement the adaptation measures. Together the three components overcome the barriers for climate resilience in the Paraguayan Chaco and establish the conditions to replicate successful adaptation projects in other regions, for other ecosystems and even for other sectors in the country.

- B.** Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.

The project ensures the provision of significant environmental, social and economic benefits. The ecosystem-based approach results in considerable environmental benefits. The project will conduct studies to assess the characteristics of different ecosystems and based on these will develop adaptation plans and land use plans and implement adaptation actions that ensure the continuous provision of the critical supporting, provisioning, regulating and cultural services included in Figure 8. In this sense, the project will design and implement measures that will preserve, restore or use ecosystems in a sustainable way, having in mind the importance of not hampering the

ability of ecosystem to provide ecosystem services. This will be true for different ecosystems and natural resources, from water to soil, from forest to pasture. This approach will entail adaptation benefits, which are the main focus of this project, but will also contribute to mitigating climate change by reducing deforestation and degradation of forest and conserving them. The project will also protect biodiversity, therefore providing global environmental benefits. In addition to the immediate and global environmental benefits, the project will have regional environmental benefits. All the downstream human settlements along the Pilcomayo and Yacare rivers will benefit from more and cleaner water resources.

The project will also offer substantial social benefits. The project is designed to increase the resilience of selected farmer and indigenous communities in the Paraguayan Chaco to the impacts of climate change in food security. The actions to support the continuous provision of ecosystem services and the development of water infrastructure will ensure the access to water and food, and reduce the vulnerability to the impacts of climate change. The project will reduce the impact of higher temperatures, increased evapotranspiration and longer and more severe dry spells on the availability of water by building water infrastructure and promoting a more efficient use of available water. In addition, it will improve the productivity of farming and livestock, promote more diversified livelihoods and will ensure that communities can access food resources provided directly by ecosystems, which is particularly important for indigenous communities. In addition, some other human settlements will indirectly benefit from increased food security, as some of the products of the target communities will access their markets.

Importantly, the project will respect social diversity. Each cultural and ethnical group will be taken into careful consideration to help preserve and value the traditional knowledge, practices and customs of each community. Special attention will be given to the several indigenous communities to ensure that all their rights and customs are respected. In this sense, the project will take into account the guidelines elaborated by SEAM for implementing projects with indigenous communities. Among other things, this will involve obtaining informed consent from their organizations, reflecting their cosmovision, traditional rights and specific regulatory frameworks. To facilitate this, the project will conduct preliminary visits to the communities to provide them with sufficient information and to allow community leaders and its members to discuss the project among themselves prior to the workshops, thus respecting their own processes and timing in regards to internal consultation and decision making. Activities will be adapted for each linguistic and ethnic context as needed.

Moreover, this project will have a gender sensitive approach, taking into account women's role in food security according to the different target groups (indigenous and non-indigenous). Equal participation of women will be ensured in planning exercises, participatory research and field trials, exchange of information with project technicians, consultation and training workshops, field days and other activities.

In addition to significant environmental and social benefits, the project provides considerable economic benefits. To begin with the project will contribute to the

continuous provision of ecosystem services, such as water availability, on which farming and livestock directly depend. Moreover, the specific agro-ecological practices it will support have demonstrated to provide important economic returns. A study carried out in 2011 by MAG/GiZ on the Eastern region demonstrated the economic benefits of implementing minimum tillage, green fertilizers and agroforestry³¹. The study found that minimum tillage not only requires less human labour, thus reducing costs and allowing for greater profit margins (labour is the greatest expense of producers), but it also improves the condition of the soil and thus its productivity. The same report proved that green fertilizers are effective in decreasing unwanted weeds and increasing soil nutrients, helping obtain higher yields. The surveys reported increases in yields of 55% for maize, 18% for manioc, 20% for beans, 14% for sesame, and 33% for cotton as a result of the application of the promoted practices. Higher yields generate more food for self-consumption, for animals and for the market. It was observed that with more food for farm animals, families were able to keep more livestock as a source of meat and other goods, and even trade or sell these smaller farm animals in times when agricultural yields were less reliable or during non-harvest months. In addition, the study demonstrated that pineapples grown in shaded areas mature at a slower rate, thus enabling sale towards the end of the harvesting season at higher prices. Not only incomes increased between 55% and 75%, as a result of lower cost, increased yields and better prices, but livelihoods became also more resilient to climate variability through diversification. The introduction or strengthening of economic incentives for adaptation into the different elements of the regulatory framework will contribute to boost resilience practices, and therefore multiply the economic benefits discussed in this paragraph.

Table 7 summarizes some of the environmental, social and economic benefits discussed above.

Table 7. Environmental, social and economic benefits of the project

Environmental Benefits³²	Social Benefits: increased resilience	Economic Benefits
<ul style="list-style-type: none"> - Climate regulation - Protection from strong winds and storms - Increased water quantity and quality - Increased levels of soil humidity, stability and fertility - Pest and disease regulation - Biodiversity conservation - Carbon Storage 	<ul style="list-style-type: none"> - Decreased exposure high temperatures - Increased availability of water - Increased availability of food - Increased availability of wood and other products, such as medicinal plants - Decreased exposure to pest and diseases 	<ul style="list-style-type: none"> - Increased crop yields - Increased milk and meat production - Increased production of crafts - Diversified production available for selling throughout the year - Lower production costs - Higher incomes

³¹ MAG/GiZ (2011): Manejo Forestal y Agricultura de Conservación: Experiencia de pequeños productores en la Región Oriental de Paraguay.

³² This table does not include all the environmental benefits obtained by conserving, restoring and using ecosystem sustainably. This project will strengthen the provision of the ecosystem services included in Figure 8.

	<ul style="list-style-type: none"> - Increased knowledge and means to respond to climate change - Increased ability to carry on traditional practices (especially for indigenous peoples) - Maintenance of aesthetic, spiritual, educational and recreational values 	<ul style="list-style-type: none"> - Lower income fluctuations - Regulatory framework adjusted to incentivize adaptation (removing economic disincentives for this, strengthening the existing incentives and introducing new ones)
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C. Describe or provide an analysis of the cost-effectiveness of the proposed project / programme.

The benefits of this project greatly exceed its costs, given both the nature of its activities and the way in which they have been designed and will be implemented.

Financial matters are discussed in more detail in Section I below. International literature proves that adaptation is a cost-effective investment³³. The ECLAC (2014) study found that the costs of the damages caused by climate change are huge for Paraguay without adaptation. This project will significantly reduce the full costs of climate change by increasing resilience and reducing damage costs. Indeed, the costs allocated to this project by the AF are by many times smaller than the costs of the damages it avoids. The UNDP (2011) report shows that the Government of Paraguay cannot however fund alone all the public investment flows needed for adaptation. In short, the project helps Paraguay implement cost-effective adaptation measures that will not happen otherwise.

The project’s ecosystem-based approach further increases its cost-effectiveness, in the sense that costs are small and the benefits are massive. Figure 8 presented the services provided by ecosystems, some of which have been summarized in Table 7. This project will contribute to the continuous provision of these ecosystem services, benefiting not only the direct beneficiaries of the project but also other stakeholders along the watershed and at the global scale. Increased water quantity and quality will benefit people living in human settlements downstream, while increased carbon storage and biodiversity conservation represent global benefits. Many of these benefits are long-

³³ See, for instance, Stern, N. (2006): Stern review: the economics of climate change. London, United Kingdom: HM Treasury; World Bank (2010): Economics of adaptation to climate change. Synthesis report. Washington DC, USA: The World Bank; UNFCCC (2011): Assessing the costs and benefits of adaptation options. An overview of approaches. Bonn, Germany: UNFCCC; and Chambwera et al. (2014): Economics of adaptation; In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change Cambridge, UK: Cambridge University Press, pp. 945-977.

term. Awareness raising and increased capacities of stakeholders will allow maintaining these services.

It is important to note in any case that the concept of cost-effectiveness is a bit tricky in this case, as it is linked to assigning an economic value to human life. The project helps satisfy basic needs (food security) of vulnerable populations, including indigenous populations.

The cost-effectiveness associated with these essential features (focus on adaptation, ecosystems and food security) is combined with that resulting from project design. To begin with, the project alignment with government priorities, as demonstrated in section D below, and its consonant consistency with public investments result in economies of scale, synergies and complementarities that increase the cost-effectiveness of both this project and other government current and planned projects in the topic and the area.

Project design has also taken care of building the project upon existing best practices and local and international knowledge to increase its cost-effectiveness. Outputs 1.3, 1.5 and 1.6 will carefully identify and characterize regulatory frameworks, approaches and practices that work, which will be used to implement concrete adaptation measures in output 2.2. The active involvement of a wide range of stakeholders will also contribute to ensure that practices that work are promoted to increase food security in a climate change context.

Furthermore, the different elements of the project have been carefully integrated to exploit synergies between activities. Research will inform planning, which will guide action, with training and lessons being identified, systematized, exchanged and mainstreamed along the way to ensure cost-effectiveness. In this sense, as noted in section I below, taken solely, without additional funding from other donors, and regardless of the success of other complementary projects, the activities of this project will extraordinarily help reduce the damage costs related to climate change in a holistic manner.

Moreover, the project includes a technically robust, institutionally clear and adequately funded monitoring and evaluation plan. This will ensure that the progress of the project and the results of its activities are closely tracked and adjustments are made when needed so that the project achieves its outcomes efficiently.

Cost-effectiveness is also ensured by the institutional arrangements that are proposed. These have demonstrated to be efficient in other projects funded by multilateral climate change funds, such as the Global Environmental Facility. Crucially, the project will be managed with the active involvement of all the stakeholders that are relevant for this specific project (international, national, regional and local) in the levels and functions that are appropriate (Multilateral Implementing Agency, National Executing Agency, Steering Committee, Local Coordination Committee, contractors for executing specific activities), as is explained in Section A below.

Finally, the cost-effectiveness of the project is related to the inputs it can provide for other projects in the Chaco, Paraguay, Latin America and other developing regions. An activity has specifically designed to draw and exchange lessons from this project, in order to inform other relevant projects during and beyond its life span.

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

The project is in harmony with Paraguay's Constitution (1992), which recognizes the right to a healthy environment and guarantees environmental protection (articles 7 and 8). The project is also consistent with Paraguay's National Development Plan 2014-2030, which prioritizes 12 strategies. This project directly contributes to 8 strategies, namely 1.1 Equitable social development, in terms of reducing poverty; 1.3 Participatory local development, in terms of strengthening social capital, promoting strategic participatory process and increasing coordination between stakeholders at local level; 1.4 Adequate and sustainable habitat, in terms of improving the physical state of human habitats; 2.1 Employment and social security, in terms of investing in the human capital of vulnerable groups; 2.3 Regionalization and productive diversification, in terms of expanding the productivity of family agriculture and increasing household income in the Chaco; 2.4 Valorisation of natural capital, in terms of afforestation and reforestation; 3.3 Attracting investment, trade and country image, in terms of strengthening Paraguay's position as a leading exporter of agricultural products; and 3.4 Global sustainability, in terms of promoting biodiversity conservation, climate change mitigation and the sustainable use of aquifers.

In addition, the project is aligned with the country's climate change policies. In particular, the project is congruous with the objective of the National Climate Change Policy (2012) of mainstreaming climate change issues at national level and promoting the implementation of coordinated measure. More specifically, the three components of the project contribute to the four pillars of the policy, namely strengthening institutional capacities; financing; education, communication and participation; and management of knowledge and technology. The project focuses as well in some of the policy's priority sectors, namely food sovereignty and security, water resources, forest and biodiversity.

Moreover, the project is in accordance with the recent National Climate Change Adaptation Strategy (2015). Not only it follows its vision and mission, but also it directly contributes to its three specific objectives, namely creating and disseminating information and technologies, strengthening stakeholders' adaptive capacity and promoting concrete adaptation strategies. More specifically, the project contributes to lines of action 1.1 on monitoring climate variables, 1.2 on vulnerability assessments, 2.2 on disseminating that information, 3.1, 3.2 and 3.3 on capacity building, 4.2 on mainstreaming adaptation in development plans and land use planning, in addition to a

general contribution to component 5 on implementing adaptation policies. Moreover, the project clearly follows its principles, such as sustainability, precaution, subsidiarity, solidarity, equity and responsibility, and takes into account its cross-cutting issues, such as rights-based approach, gender equity, cultural diversity and risk management.

Less relevant but nevertheless also important, the project as well harmonious with the National Climate Change Mitigation Strategy (2014), mainly by contributing to its fourth and fifth strategies related to reducing emissions from deforestation and forest degradation, conserving and using forest sustainably, and enhancing forest carbon stocks.

Likewise it is in tune with the National Policy on Managing and Reducing Risks (2013), which seeks to mainstream disaster risk management into development planning.

Furthermore, the project is accordant with the country's environmental strategies. It is consistent with the National Environmental Policy (2005), which seeks to adjust the use of the country's natural and cultural capital in order to ensure sustainability, the equitable distribution of its benefits, environmental justice and the current and future quality of life of the population. In this background, the project will implement several strategies contained in the policy, such as the restoration of protective ecosystems and safekeeping and management of water resources. The project is also in tandem with SEAM's goals and policies on safeguarding and restoring ecosystems and the corresponding instruments, such as the Chaco Environmental System.

By the same token, the project is consonant with the country's agricultural and forestry policies. In particular, the project is in tune with the country's Agrarian Strategic Framework 2010-2018. Specifically, it contributes to strategic axes 2, regarding improving food security and developing family agriculture, and 5, regarding the design and implementation of an agriculture and livestock information system that provides climatic information to different users for decision-making. The project is in line with two of its programs (the National Programme to Support Food Production by Family Agriculture (PPA) and the National Programme for Indigenous People Economy and Agriculture (PAI)), with which, as explained below, it will coordinate activities. The project is also in harmony with the National Plan for Food Sovereignty and Security (PLANAL), which seeks to reduce food insecurity and malnutrition.

In addition, the project is consistent with the National Forest Policy, the National Forest Action Plan and the National Afforestation and Reforestation Plan in regards to forest conservation, restoration and management. The measures implemented on-ground will be also aligned with the Forest Law, the Afforestation/Reforestation Law, and the Law for Forest Conservation in the Chaco.

The project is also congruous with the country's social development policies. Specifically, the project is in line with the national Social Development Public Policy, which prioritizes the attention to vulnerable groups, among them small holders and

indigenous people through food security among other strategies, and puts forward gender considerations.

Departmental and district level development plans are currently being developed in Paraguay. Significant consultation with governments at these scales ensures the project is in tune with their priorities. The project will ensure that this alignment continues once the departmental and district level development plans are formally approved.

Last but not least, the project is in accordance with Paraguay's commitment to international policy frameworks. The project is harmonious with the country's Intended Nationally Determined Contributions to the United Nations Convention Framework on Climate Change, contributing to both the adaptation and mitigation commitments. By protecting and restoring forests and promoting agro-forestry the project will help Paraguay meet its commitment to unilaterally reduce 214.5 MtCO₂ eq by 2030, and to additionally reduce the same amount by the same year conditional to receiving international support³⁴.

In addition, the project is in tune with the Sustainable Development Goals. It will directly contribute to Goal 1. End poverty in all its forms everywhere; Goal 2. End hunger, achieve food security and improve nutrition and promote sustainable agriculture; Goal 5. Achieve gender equality and empower all women and girls; Goal 6. Ensure availability and sustainable management of water and sanitation for all; Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all; Goal 12. Ensure sustainable consumption and production patterns; Goal 13. Take urgent action to combat climate change and its impacts; and Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably managed forests, combat desertification and halt and reverse land degradation and halt biodiversity loss.

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

There are currently no relevant national technical standards for agriculture, water and forest protection and restoration in Paraguay. However, as indicated above, the project is in line with the national laws and policies on these issues. The involvement of government officials from different sectors at all levels will ensure that the guidelines provided in the country's legal and policy framework are followed when implementing the project on the ground. In this sense, the project will adhere to all technical national specifications. As explained in section K, the project is categorised within Category C, considering there are not adverse environmental or social impacts. The project complies with the environmental and social principles as outlined in the Environmental and Social Policy of the Adaptation Fund.

³⁴ 214.5 MtCO₂eq represents 10% of the emissions of Paraguay in the year 2000.

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

The specific adaptation activities proposed in this project are not duplicated by other projects or initiatives. Nevertheless, there are several programs and projects with which the proposed project will seek complementarity.

Table 8. Synergies and complementarities with ongoing projects

Implementing Organization	Project Name	Source of Funding	Budget (USD)	Starting & Ending Date (mm/yyyy)	Project Objective	Implementation Site.	Additional Comments	Linkage
SEAM/Guyra Paraguay NGO	Innovative Use of a Voluntary Payment for Environmental Services Scheme to Avoid and Reduce Greenhouse Gas Emissions and Enhance Carbon Stocks in the Highly Threatened Dry Chaco Forest Complex in Western Paraguay	GEF Trust Fund	7,015,500	03/2016 03/2020	To promote conservation and enhancing carbon stocks through sustainable management of land use, land-use change, and forestry	Dry Chaco Forest Complex (Alto Paraguay department)		The implementation of the scheme will serve as a pilot of a system that can be recognized in the voluntary market of Certified Emission Reductions. Results from this project can then be used in other regions included the sites of the adaptation proposal presented here.
UNDP, WFP, PAHO	Strengthening human security in the central municipalities of the Paraguayan Chaco	UN Trust Fund for Human Security	3,000,000	01/2015 12/2016	To facilitate the creation of a coordination platform for the territorial development of the	Municipalities: Irala Fernandez, Puerto Pinazco, Filadelfia and Mariscal Estigarribia.		This project is working in three of the municipalities selected in this proposal, which will benefit from

	(Human Security)				Paraguayan Chaco, promoting multi-sectoral efforts to improve human security with social equity in four municipalities. Activities include water management and food production.			the lessons learned in these municipalities in implementing specific adaptation activities.
WWF	“Forest Conservation Agriculture Alliance (FCAA)”	USAID	4,000,000	10/2015 09/2019	Reducing deforestation related to production of key commodities (soy and meat) in Paraguay increasing productivity and sustainable agriculture.	Municipality of Filadelfia and Alto Paraguay department	90% of the Project will be implemented in the Chaco Region and 10% in the Atlantic Forest Ecoregion of Paraguay.	Collaboration between this project and SEAM will help reinforce the ecosystem approach of this proposal, in the sense that they are complementary. While the proposed project focuses on family agriculture, this other project will work closely with big land owners.

	<p>Pantanal-Chaco (PaCha)</p> <p>Alliance to promote climate resilience water and food security.</p>	WWF-Netherlands/ IUCN-Netherlands	1,384,000	01/2015 12/2020	In the Chaco Pantanal landscape the ecosystem-based on International Private Goods (IPGs) such as water provisioning, food security and climate resilience are secured for the future through multi-stakeholder governance systems through strengthening local stakeholder community organizations.	Alto Paraguay and Boqueron departments	Includes Bolivia	SEAM and WWF will work closely to ensure activities of this project can be complementary to this proposal. Synergies between this project and the adaptation proposal on the ground will be ensured by the conformation of the Local Coordination Committees.
	“Taking Land Use Change Out of Savannahs and Grasslands through Policy Engagement, Land Use Management and Zoning	Germany/Ministry of Environment, Conservation and Construction. WWF	1,107,500	09/2016 09/2019	Fostering climate smart land use management and zoning for savannah and grasslands and hence maintaining carbon,	Alto Paraguay department.	The full project includes Colombia.	Collaboration between this project and SEAM will help reinforce the Ecosystem-based approach of this proposal.

	and Best Management Practices”				biodiversity and water regimes, and meeting sustainable agricultural production.			
	Collaboration for Forest and Agriculture (CFA)	WWF-US/Moore Foundation	2,415,250	02/2016 02/2021	Delivering robust deforestation-free sourcing commitments from the relevant leading companies purchasing, distributing and processing soy and beef in an effort to eliminate deforestation resulting from these commodity supply chains, without displacement by 2021	Presidente Hayes, Boqueron and Alto Paraguay departments	Project Partners: The Nature Conservancy & National Wildlife Federation. The project includes Brazil and Argentina.	Collaboration with this project will ensure that local communities and their needs are taken into account during the supply chain analyses.

Besides the alliances and complementarities mentioned above, the project includes coordination with local governments at departmental and municipal level. In this regard each Department and Municipality has its own agriculture and environmental secretariat and their own budget. The project local coordination committees will help coordinate actions at the local level in order to increase efficiency and ensure that activities are not being duplicated.

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

The project has been conceived as a demonstration mechanism to enhance the adaptive capacity of project and other stakeholders. In this regard, the identification of lessons learned will be a neuralgic element of the project.

To begin with, the project is built on lessons learned from previous and ongoing projects and initiatives. Section F above has briefly described the most relevant ongoing projects at the time of project design, and how they inform this process. A more detailed exercise will be conducted during project implementation under component 1. At that stage, the project will examine traditional agricultural, livestock and more broadly environmental management practices in the area, identifying those that contribute to reduce the vulnerability to climate variability and change, and will review all laws, standards, policies and plans at national, departmental and district level regulating the use of natural resources. The first exercise, that is, output 1.4, will allow identifying lessons learned at practical level, while the latter exercise, that is, output 1.5, will allow identifying lessons learned at institutional, policy and regulatory level. Both exercises will involve all relevant stakeholders, and their recommendations will be implemented in Component 2, at planning level under output 2.1 and at very concrete, on-the-ground scale, under output 2.2.

In addition, significant awareness raising and training activities will be conducted. Under component 2, farmers, herders and indigenous populations will be trained on specific issues such as climate change and its impacts and specific adaptation strategies, such as agroforestry or silviculture, among others. As presented in Section A, and in particular Table 6 above, significant training activities will also be conducted for the SEAM and other stakeholders, including national ministries and agencies³⁵, departmental and district government authorities, universities, NGOs and the private sector. As noted there, training will be tailored to the existing knowledge, institutional function and potential contribution of each institution, developing a particularly strong capacity building plan for the SEAM, given its crucial role in the climate change system of the country.

³⁵ Technical Secretariat of Economic and Social Development Planning; Ministry of Finance, SEN; MAG, INFONA, Ministry of Public Works and Communications, National Secretariat for Housing and Habitat, Ministry of Public Health and Social Welfare, Ministry of Education and Culture, Ministry of Industry and Commerce, Ministry of Labor and Social Protection, Secretariat of Indigenous Peoples.

Furthermore, the project favours a learning by doing approach. Lessons learned will be identified and systematized during implementation and mainstreamed in the following phases. These lessons will be drawn with the participation of different stakeholders through semi-annual and annual meetings. Taking that into consideration and its own experience, the project management unit (PMU) will prepare a lessons learned document every six months. An independent international consultants will also analyze the project and draw his/her own lessons at mid-term, which will then be taken into account for the implementation of ongoing and planned activities. These lessons will also be used in training, in both components 2 and 3. In addition, an independent international consultant will evaluate the project at its end, drawing lessons that can be used in future projects in the region, the country, Latin America or other developing regions in the world. The final report will also include a section on lessons learned. In any case, a specific report on lessons learned, integrating the inputs from all the different analyses, will be prepared at the end of the project. These lessons, which will be published, will be communicated to other ongoing initiatives, so that they can benefit from the knowledge gained through this project during its implementation.

The information of the project, with its most important documents (i.e. project document, mid-term review, terminal evaluation, final report and lessons learned report) will be disseminated through UNEP's website and information sharing mechanisms and platforms, including, but not limited to REGATTA. A briefing note or news will be prepared every quarter by the project team from the start of third quarter of implementation.

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

A broad consultation process has taken place in the development of the concept note and this detailed project proposal. At the concept note stage, 3 workshops were organized between November 2011 and March 2012. The 2011 workshop counted with the participation of the Environment Secretariat, the National Emergency Secretariat, the Ministry of Agriculture and Livestock, the Agrarian Technology Institute, the National Forest Service and the National Plant Health Service. The two 2012 workshops involved SEAM, SEN, the Ministry of Finance, the Ministry of Industry and Commerce, the National Institute for Rural Development and Lands, the Meteorology Directorate, the Women's Secretariat, the NGOs Mingara, Sobrevivencia and Tierra Libre, and the Association of Rural Producers of Paraguay. The workshops focused on discussing the climate change scenarios and vulnerabilities and the criteria to select the areas of intervention.

At the detailed project proposal stage, three types of consultations were carried out. On July 8th 2016 a workshop was organized with the SEAM to review the concept and

update it. Table 9 shows the staff that participated in this meeting (firms are presented in Table 21). Specific results included:

- Confirmation of the compliance of the project with the National Development Plan 2030 and other relevant documents produced since 2012, such as the National Adaptation Strategy, the Second National Communication, the Intended Nationally Determined Contribution and the National Adaptation Plan (under elaboration).
- The prioritization of the Chaco Region as the intervention region of the project.
- The identification of relevant stakeholders to be consulted to prepare the final project proposal.

Table 9. List of SEAM staff that attended the consultative meeting on July 8th 2016

Name	Position
Ethel Estigarribia	Director of the National Office of Climate Change.
David Fariña	General Director of Protection and Conservation of Water Resources
Dario Mandelburger	General Director of Protection and Conservation of Biodiversity
Gualberto Echagüe	Planning Director.
Carlos Monges	Coordinator of the PAS-Chaco Project.
Karem Elizeche	Coordinator of the NCSA (National Capacity Self-Assessment) Program.
Maria Jose Lopez	Consultant (UNEP/SEAM)

Based on the identification of the stakeholders conducted with the SEAM, the proposal was discussed with representatives of the national and local governments, NGOs working both at the national and local level, universities and the private sector.

Consultations included bilateral interviews, on which every aspect of the proposal was discussed, with special attention being paid to gender-based considerations on selecting sites. Table 10 presents the stakeholders that were interviewed (firms are presented in Table 22).

Table 10. List of interviewed stakeholders

Name	Date	Position	Organization
Pablo Gonzalez	July 11, 2016	Agricultural and Livestock Secretary.	Government of Alto Paraguay Departmental.
Ismael Arias	July 11, 2016	Environment Secretary.	Government of Alto Paraguay Departmental.
Damiana Mann	July 14, 2016	Technical Advisor	National Forest

			Institute (INFONA)
Angelica Villalba	July 14, 2016	Director of Forest Planning.	INFONA

Finally, a workshop was organized on July 20, 2016 by the National Office for Climate Change (ONCC by its initials in Spanish). Table 11 provides a summary of the stakeholders that attended the workshop, while a complete list of the 41 stakeholders that attended it is included in Table 23. Its main objective was to present the project to relevant stakeholders both at the national and local level. As part of the methodology, participants completed a survey regarding the main activities to be promoted by the project. Specific results of the workshop included:

- Presentation and revision of the project proposal to relevant stakeholders both at the national and local level.
- Stakeholder discussion of the criteria for community selection, and its selection.
- Prioritization of adaptation activities on which the project will focus on.

Table 11. Summary list of the stakeholders that attended the consultative meeting on July 20th 2016

Name	Organization
Sebastian Rios	Ministry of Agriculture and Livestock. Planning Direction (MAG/DGP)
Teodoro Nuñez	Paraguayan Institute of Agriculture and Livestock Technology (IPTA)
Antero Cabrera	National University of Asuncion/Faculty of Agrarian Science (FCA)
Esteban Beconi	National Institute of Rural Development and Lands (INDERT)
Ismael Arias	Government of Alto Paraguay. Agriculture Secretary
Pablo González	Government of Alto Paraguay. Environment Secretary.
Alberto Herrera	Hogapypegua (Local NGO)
Oscar Rodas	World Wildlife Fund (WWF)
Delia Nuñez	Rural Association of Paraguay (ARP)
Sonia Samaniego	VMG/PNUD
Mirta Pereira	Federation for the Self-determination of Indigenous Peoples (FAPI)
José Cartes	PROMESA Project (SEAM/Guyra Paraguay)
María Hermosa	Paraguayan Institute of Indigenous Peoples (INDI)
Julián Báez	National Direction of Civil Aeronautic. Direction of Meteorology (DINAC)
Luvis Cañete	Global Chaco (Local NGO)

Carlos Monges	PAS-CHACO/SEAM. Project Coordinator
Mario Villalba	Secretary of Technical Planning (STP)
Violeta Verdejo	World Conservation Society (WCS)
Milciades Pacce	Government of Boqueron. Agricultural Secretary
Oscar Vargas	Third National Communication (TCN/SEAM)
Nora Paez	National Office for Climate Change (ONCC/SEAM)

The designed project reflects the agreements reached during the consultation process at all levels, from selection of communities to prioritization of activities via institutional arrangements. In this sense, it can be stated that the project is totally agreed by all relevant stakeholders.

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

The funding requested will make a significant contribution to reduce the full costs of climate change. Full climate change costs without adaptation are made of damage costs. Full climate change costs with adaptation are made of cost of adaptation and residual costs. Mitigation costs can be included in both. As noted above, international literature suggests that the full cost without adaptation are significantly greater than the full costs with adaptation.

The ECLAC report quantified in 2014 the cost of damage of climate change in agriculture and livestock, health, water resources and biodiversity in Paraguay³⁶. The study estimated the total cost of damage by climate change in these sectors by the end of the century to range between USD 14.3 billion and USD 80.2 billion, in the case of a continuous increase in the average temperature equivalent to 4.2 degrees Celsius by 2100 (A2 scenario), and between USD 9.7 billion and USD 50.5 billion in the case of a 3.4 degree Celsius rise in average temperature over the same period (B2 scenario)³⁷. Overall, adding the impacts on agriculture, livestock and health, by the end of the century costs would range between USD 80,200 million (1% of the discounted GDP) and USD 14,300 million (0.4% of the discounted GDP) in the A2 scenario, and between USD 50,500 million (0.6% of the discounted GDP) and USD 9,700 million (0.3% of the discounted GDP) in the B2 scenario³⁸. The costs would be even greater if other important sectors, such as infrastructure, including housing, productive infrastructure, transport and energy, would be included. This project will significantly reduce the full

³⁶ The report refers to the economics of climate change but technically assesses the cost of damages by climate change. ECLAC (2014): La economía del cambio climático en el Paraguay, Santiago de Chile, Chile: ECLAC.

³⁷ Ibidem, p. 12.

³⁸ Ibidem, pp. 12-13.

costs of climate change by increasing resilience and reducing damage costs. Although this comparison has not yet been conducted in Paraguay, based on international evidence, it is sensible to indicate that the costs allocated to this project by the AF are by many times smaller than the cost of the damages it avoids.

The AF funds allocated to this project also make sense in terms of the costs of adaptation. The UNDP study on the investment and financial flows for climate change found that the agriculture and livestock sector would require USD 115.5 million³⁹ additional public investment in the period 2010-230 for climate change adaptation⁴⁰. This means that every year around additional USD 6 million, around 1.5% of the GDP, would need to be additionally invested by public institutions in adaptation in this sector, almost all of it (99%) for family agriculture. If adaptation on the sector health sector is also considered a total of USD 198,6 million would be needed, that is, an average of additional USD 10 million per year. Furthermore, additional USD 61,7 million would need to be invested for promoting mitigation strategies in the forestry sector. The costs would be even greater including other financial costs⁴¹; all agricultural, livestock, health and forestry subsectors; the costs related to other critical sectors; and the costs to be borne by the private sector. The AF funds allocated to this project are critical to provide the public investment flows needed for adaptation, which the Government of Paraguay cannot fund alone.

Furthermore, the AF funds allocated to this project are sensible in terms of achieving its objective. Taken solely, without additional funding from other donors, and regardless of the success of other complementary projects, the activities of this project will extraordinarily help reduce the damage costs related to climate change. As noted also in section A above on the contribution of this project to increase the resilience of target population, the three components address existing barriers and significantly reduce vulnerability.

Component 1: Knowledge management of vulnerability and resilience to climate change improved to implement cost-effective adaptation measures

Baseline: Although climate change has been taken into account in public policy and development practices for some years now, there is still limited information and knowledge on the subject, particularly at local level and on certain topics, such as how ecosystem-based approaches can contribute to increase the resilience of local populations.

³⁹ Constant at 2005 prices and with 3% annual discount rate.

⁴⁰ UNDP (2011): Assessment of the investment and financial flows in agriculture, health and forestry, Asuncion, Paraguay: UNDP, p. 15. The assessment focuses on the flows required for adaptation in agriculture, livestock and health and the flows related to mitigation in forestry. Agriculture covers family agriculture (consumption crops (i.e. mandioca, peanuts and poroto) and income crops (i.e. cotton, sugar cane and sesame)) and business agriculture (i.e. corn, soya and wheat), while livestock covers meat and milk cows.

⁴¹ The cost of adaptation would reach USD 432 million if financial, investment and operation and maintenance costs are included. 32.6% of this would need to be provided through international development assistance.

Additionality: The project will contribute to address this gap by providing robust analyses of the state of the different ecosystems, the impacts of climate change and the vulnerability to these of the local populations in the region. These studies constitute a crucial input to develop adaptation plans and implement specific adaptation strategies in pilot sites in Chaco under Component 2.

Component 2: Adaptive capacity in rural areas of greatest vulnerability strengthened through concrete ecosystem services and agro-ecosystem based adaptation measures.

Baseline: A number of projects have been implemented in the Chaco in recent years, such as the *Conservation and Sustainable Management of the Chaco and Atlantic Forest* project and the *Sustainable Forest Management in the Transboundary Gran Chaco Americano Ecosystem* project, among others. As noted in section F above, a number of projects are also being implemented currently. However, these projects have failed to take into account the importance of the services provided by ecosystems and the value of relevant traditional agricultural practices, and there is limited understanding on how these can be integrated in climate change adaptation in practice. This situation reduces the uptake of adaptation measures by local population, contributes to the degradation of ecosystems, reduces income in the short, medium and long term and increases vulnerability of local population. At national level, it also reduces the adaptation alternatives that are considered.

Additionality: The funding requested will result in the design and implementation of concrete adaptation actions on the ground that can showcase the importance of ecosystem services and the integration of traditional practices to reduce vulnerability to the impacts of climate change in Paraguay. The project will illustrate how protecting water bodies, soils and forests increase the resilience to climate change, increase yields and improve quality of life by increasing the availability and quality of freshwater, controlling floods, regulating the climate, improving the fertility of the soil and ensuring the provision of culturally valued services.

Component 3: Capacity development and awareness to implement and upscale effective implementation of adaptation measures at the national and local levels.

Baseline: As stated, there is a lack of awareness, knowledge and skills related to climate change adaptation, particularly in ecosystem-based approaches. This situation affects all levels of government (central, departmental and municipal) and relevant stakeholders (e.g. policy makers, universities).

***Additionality:* To tackle this situation, the project will develop and implement training programs on climate change adaptation, with a focus on ecosystem-based adaptation, hence strengthening the capacity of government agencies and other key stakeholders involved in project execution to implement the activities foreseen by the project. The project will also collaborate with ongoing and planned field programs and projects mentioned in**

Table 8 to mainstream the experience and lessons learned into their work-plans, thereby contributing to up-scale adaptation measures in the Chaco. In the long term, enhanced stakeholder capacities will enable them to effectively respond to climate change impacts in the country, including the implementation of ecosystem-based approaches in the Chaco and other regions.

In summary, the activities funded by the Adaptation Fund through this project significantly contribute to reduce the cost of the damages caused by climate change in a cost effective way reducing the overall cost of climate change, as the cost of the damages without adaptation clearly outweigh the cost of adaptation and the cost of any residual damage. This is true irrespective of the success of complementary projects.

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

The project has been crafted to ensure sustained resilience against climate change. This is promoted through several design decisions. First, the project is comprehensive, developing all the capacities required to implement climate adaptation strategies in the region and the country in the future. In particular, it develops the most crucial theoretical and practical skills of the stakeholders. These will be provided with conceptual frameworks and institutional approaches and will learn by doing. This will allow them up-scale the activities of the project, replicate them in other areas and/or design and implement different adaptation projects (in other topics or sectors) in the Chaco or elsewhere.

Second, the project has a demonstrative focus, as it seeks to prove that this kind of measures provide significant benefits, and are cost-efficient. To that end the project is strategic, focusing on issues that really matter and can make a difference, based on the solid evidence gathered by the UNEP (2013) report. Moreover, the project put forwards a robust process, in which sound research informs planning, this guides action, this is tightly monitored and scrupulously evaluated and action is carefully adjusted to obtain planned results. The selection of practices with proven track record goes in the same line. Once achieved, the results, such as higher and more constant production, will demonstrate the convenience of continuing the implemented practices and expanding them.

Finally, the projects has mainstreamed the participation of project stakeholders, recognizing their rights and skills and understanding that this will also generate ownership and therefore contribute to sustained actions and sustained results. In this sense, stakeholders (men, women; farmers, herders and indigenous populations) will have a crucial role in decision making, from identifying the problems to planning solutions and implementing, monitoring and evaluating them. Although children themselves won't have a key participation in the project, for obvious reasons, women's participation and empowerment will contribute to reproduce and instill cultural values and other practices into children. By empowering women through training, awareness

and engagement in activities that promote adaptation and resiliency, the next generation will be better equipped to deal with climate change and food security issues. This will aid the project in being more sustainable and allow it to endure during and beyond its completion.

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

The project is categorised within Category C, given that it does not generate any adverse environmental or social impacts. As presented in sections D and E it is consistent with all applicable laws, policies, standards and regulations. It focuses on vulnerable populations, has a gender-sensitive approach and pays particular attention to respect the rights and culture of indigenous populations. All project beneficiaries will participate in the project voluntarily, their human and labour rights carefully respected. The adaptation measures will be decided by them. When applicable, as the procedure will be different with indigenous communities, a formal agreement will be signed between each landowner and the official representative of the project on their land being used for demonstrative purposes, explicitly indicating obligations and compromises between parts and the mechanisms for conflict resolution. Stakeholders will actively participate in monitoring and will be consulted during evaluations. The project plans no resettlement whatsoever. Regarding ecosystems and biodiversity, the project favours an ecosystem-based approach. In this sense, it will be particularly careful in preserving and restoring natural habitats and biodiversity, and using sustainably any other ecosystem, conserving land and soil, preventing pollution and promoting resource efficiency. The project seeks to increase resilience, but will contribute to climate change mitigation by protecting forests and promoting reforestation. Finally, the project does not entail any risks for public health and physical and cultural heritage. As noted in section C risks are low and as discussed in section B benefits are significant.

Table 12. Environmental and social impacts and risks of the project

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
<i>Compliance with the Law</i>	X	
<i>Access and Equity</i>	X	
<i>Marginalized and Vulnerable Groups</i>	X	
<i>Human Rights</i>	X	
<i>Gender Equity and Women's Empowerment</i>	X	
<i>Core Labour Rights</i>	X	

<i>Indigenous Peoples</i>	X	
<i>Involuntary Resettlement</i>	X	
<i>Protection of Natural Habitats</i>	X	
<i>Conservation of Biological Diversity</i>	X	
<i>Climate Change</i>	X	
<i>Pollution Prevention and Resource Efficiency</i>	X	
<i>Public Health</i>	X	
<i>Physical and Cultural Heritage</i>	X	
<i>Lands and Soil Conservation</i>	X	

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project / programme implementation.

UNEP will be the Multilateral Implementing Agency, while the SEAM will be the national executing agency. Both institutions have proven record of excellent management of this type of projects. SEAM has implemented several projects funded by international climate change funds, including recently one regional project funded by the GEF in the Chaco.

The project will be managed by a National Steering Committee (NSC) and a Project Management Unit (PMU) in this order of hierarchy. The NSC will be chaired by the SEAM and composed of representatives of SEAM and UNEP. The main function of the Steering Committee would be to provide political strategic leadership to the Project, creating effective coordination among the highest level environmental authorities involved at the national and provincial levels. This will ensure the alignment of the Project with the government strategies and programs underway in the territory ensuring the consistency of the interventions at both jurisdictional levels. In addition, this Committee will ensure transparency with regard on the Project's intervention processes. Members of the Steering Committee will be designated during the first quarter of the project. The Steering Committee will meet at least once a year and when required.

SEAM will establish a PMU that will operate at the National Office for Climate Change. The PMU will be composed of a project coordinator, three project officials (one per department), one administrative and financial officer and two drivers. All these will be hired full time. The selection of the project officials will have in mind the need to cover specific experience in adaptation and indigenous communities.

The PMU will be supported by technical and territorial supervision and assistance mechanisms.

Each of the relevant institutions will designate a technical focal point for the project. Each of the outputs will involve some of these focal points, one or two of which will take the lead. Figure 10 indicates which institution will take the lead in each output. Table 13 explains with more detail who will be involved in each output.

In parallel, at territorial level, a local coordination committee will be created in each of the departments. Each LCC will be comprised of representatives of SEAM, MAG, INFONA and INDI, representatives of the local governments (both departmental and district level) and community leaders from the pilot sites. Local Coordination Committees (LCC) could also include other relevant stakeholders at the local level. During the first year of the project the incorporation of additional LCC members will be assessed. To support implementation on the ground the project will have fund 75% of the time of one official in each department.

It is important to note that the activities of the project will be implemented by individuals or institutions. These are not selected at project design in order to ensure that the procurement processes are transparent and competitive. For each post a call will be opened and individuals and/or institutions will be encouraged to apply, sending a technical and financial offer. UNEP or SEAM will then select the contractor according to their regular selection procedures, which will follow AF's principles of transparency.

Figure 10. Organizational Chart

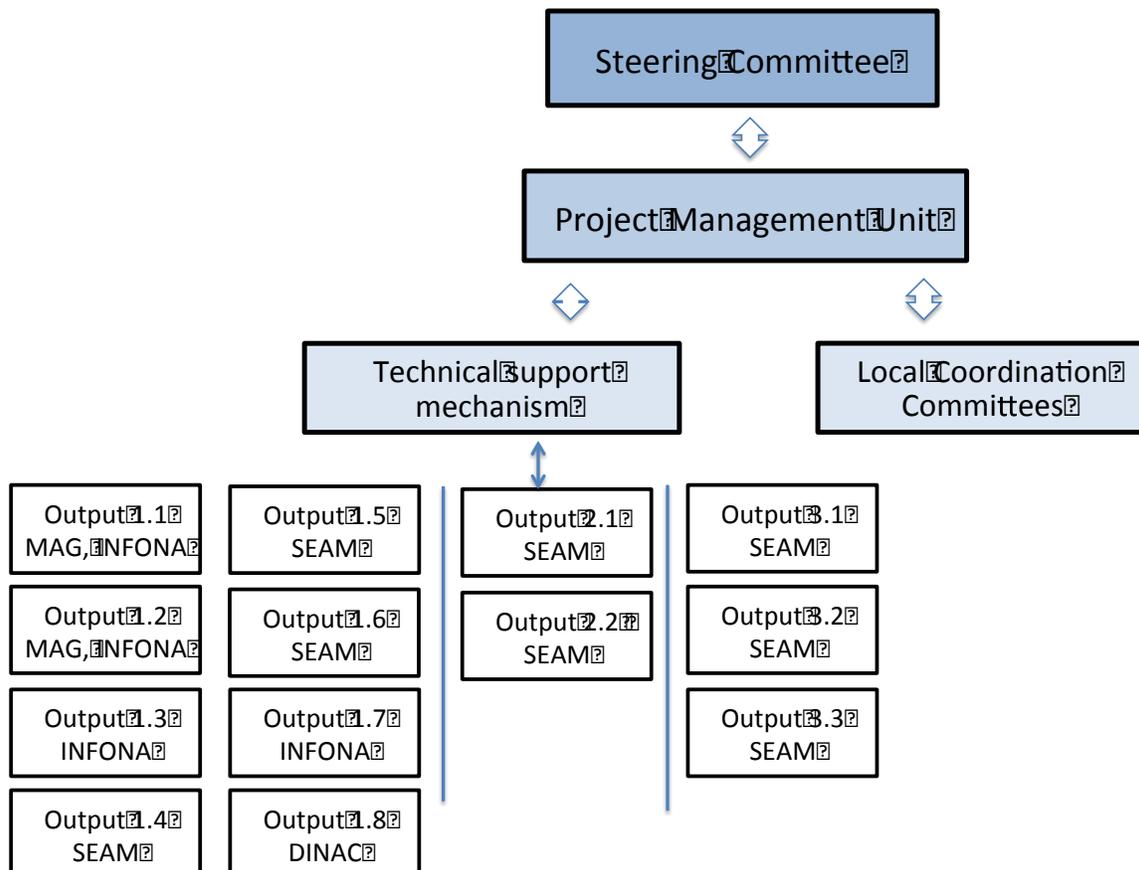


Table 13. Stakeholder involvement by output or activity

Output / Activity	Stakeholders
1.1 Detailed mapping of ecosystems, including agro-ecological zones, water resources, forests and other ecosystems	SEAM MAG, INFONA Governments of Presidente Hayes, Boqueron and Alto Paraguay District governments Communities
1.2. Assessment of the vulnerability to climate change of specific plants and animals used as food source.	SEAM Universities IPTA, INDI Governments of Presidente Hayes, Boqueron and Alto Paraguay District governments Communities
1.3 Study of the Ecology, Management and Nutritional components of Algarrobo and Viñal (<i>Prosopis</i> spp.)	UNA/FCA / Chaco Branch. IPTA Communities
1.4 General vulnerability and impact assessment (including water) for the eight communities not covered by the UNEP (2013) report	SEAM Governments of Presidente Hayes, Boqueron and Alto Paraguay District governments Communities UNEP
1.5 Research on traditional practices that contribute to climate resilience, including crop varieties.	SEAM MAG, INFONA, IPTA, INDI Governments of Presidente Hayes, Boqueron and Alto Paraguay District governments Universities, NGOs and the private sector Communities
1.6 Study on the contribution to adaptation of the existing regulatory framework	SEAM, SEN, MAG, INFONA, SENA Governments of Presidente Hayes, Boqueron and Alto Paraguay District governments Universities, NGOs and the private sector Communities
1.7. Development of a guide to implement sustainable forest management practices on peasant and indigenous peoples communities.	SEAM INFONA, INDERT. INDI Governments of Presidente Hayes, Boqueron and Alto Paraguay District governments Communities
1.8 Information and monitoring system for agro-climatic risk assessment	DINAC/DMH SEAM SEN Governments of Presidente Hayes, Boqueron and Alto Paraguay District governments

	Communities
2.1 Participatory developed integrated adaptation with a watershed management, ecosystem-based approach	SEAM Governments of Presidente Hayes, Boqueron and Alto Paraguay District governments Communities UNEP
2.2.1 Conservation and restoration of forests (including “protective forest”) and other ecosystem	INFONA SEAM Governments of Presidente Hayes, Boqueron and Alto Paraguay District governments Communities
2.2.2 Agro-ecological production in farming and livestock, including agroforestry, apiculture, community seed banks and silvopastoral management	MAG SEAM, IPTA Governments of Presidente Hayes, Boqueron and Alto Paraguay District governments Communities
2.2.3 Implementation of improvements in the efficient use, catchment, harvesting and storage of rainwater	MAG SEAM SENASA Governments of Presidente Hayes, Boqueron and Alto Paraguay District governments Communities
2.2.4 Implementation of measures to improve incentives for adaptation,	SEAM, MAG Governments of Presidente Hayes, Boqueron and Alto Paraguay District governments Local Cooperatives
2.2.5 Training and exchange of knowledge among stakeholders	SEAM UNA/FCA, IPTA Governments of Presidente Hayes, Boqueron and Alto Paraguay District governments Universities, NGOs and the private sector Communities
3.1 Detailed training plan for SEAM on mainstreaming climate compatible development across sectors	SEAM
3.2 Training plan for partner agencies at national and local levels (ministries and agencies (including but not limited to MAG and INFONA), departmental and municipal governments, universities, NGOs)	Technical Secretariat of Economic and Social Development Planning; Ministry of Finance, SEN; MAG, INFONA, Ministry of Public Works and Communications, National Secretariat for Housing and Habitat, Ministry of Public Health and Social Welfare, Ministry of Education and Culture, Ministry of Industry and Commerce, Ministry of Labour and Social

	Protection, INDI, Departmental and District Governments: Universities, NGOs and the private sector
3.3 Identification, systematization and exchange of lessons learned of the project	SEAM Other selected Ministries Governments of Presidente Hayes, Boqueron and Alto Paraguay Other selected departmental governments Selected district governments Other selected district governments Other selected communities UNEP

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

All major risks for the implementation of the project were analysed during the design phase with the participation of all relevant stakeholders. Mitigation strategies were established to ensure that risks are well managed. Table 14 presents the type, characteristics and level of risks and the strategies that have been and will be undertaken to mitigate them.

Table 14. Financial and management risks

No.	Type of risk	Description of risk	Level	Mitigation Strategy
1	Political	Institutions do not attach great priority to the project.	Low	As shown in section D, the project is consistent with country priorities. In addition, it will provide training to all relevant stakeholders and involve them in project planning, implementation, monitoring and evaluation, including the development of community adaptation plans. Furthermore, the departmental and district development plans will be reviewed to mainstream climate change adaptation. There is a strong commitment from all stakeholders. The focus on practices that work will ensure results, which will further commit stakeholders.
2	Institutional	Lack of adequate coordination, collaboration and cooperation among the	Low	Operational agreements between implementing partners and agencies have been detailed with adequate definition of roles and

		executing agencies delays project implementation		responsibilities. A constructive, pro-active and consensus building approach will guide interactions between stakeholders.
3	Institutional	Frequent rotation of staff in local implementing agencies may affect availability of qualified staff	Medium	Several officials from each institution will be trained by the project. In addition, the institutions will request trained officials that leave that they train the person that replace them.
4	Institutional	Lack of buy-in and participation of key stakeholders and target groups, and conflicts or differences between stakeholders/groups may weaken and delay implementation of activities	Low	Project design has been highly participative, ensuring that it focuses on real priorities. Moreover, the project will conduct awareness raising and capacity building activities. In addition, it will involve all interested parties during implementation, including monitoring, evaluation and adjustment, if relevant. The project will put in place mediation processes to prevent and manage any potential conflict between stakeholders.
5	Environmental	Climate variability and change, including extremes, are greater than projected by the studies	Low	The activities of the project have been designed taking into account the latest and most robust information available. Furthermore, the project includes the improvement of the meteorological network and the provision of regular climatic information. This will allow adjusting practices to climate variability. Activities with a long life span, such as water ponds and tanks, will take into account uncertainty regarding climate change.

As a cross-cutting issue, it is important to note that the Project Implementation Unit and at more strategic level the Steering Committee will continuously monitor the project, identifying any risks and designing and implementing adequate mitigation strategies. The Monitoring and Evaluation (M&E) Plan, supported by sufficient financial resources, presented in section D, will ensure that this happens.

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

As presented in section K, the project has a category C with regards to the Adaptation Fund's Environmental and Social Policy. In this sense, the project does not require an environmental impact assessment or complementary analysis of environmental impacts. As already noted in various sections above, the project is based on sound vulnerability and impact assessments, regular provision of climatic information, measures that have demonstrated to work, capacity building and active participation of a wide range of stakeholders, which minimizes the risks of incurring any adverse environmental impact.

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

Monitoring and evaluation activities will follow the Adaptation Fund and United Nations Environment Programme's policies and guidelines for monitoring and evaluation. M&E will be based on the targets and indicators established in the Project Results Framework (see section E below). The M&E system will ensure that the environmental and social aspects are assessed on a regular basis and actions are taken in a timely manner to avoid, minimize or mitigate any risks and achieve the intended outcomes. The M&E system will also facilitate learning and the replication and scaling of the results and lessons of the project. The M&E plan will have a participatory approach, involving all relevant stakeholders in data collection and analysis and in decision-making.

The M&E plan is organized around an inception workshop, an inception workshop report, annual operating plans and budgets (AOP), quarterly reports, annual management or progress reports, a mid-term review, a terminal evaluation, a final report and technical reports.

Inception Workshop:

After project approval by the Adaptation Fund and once the PMU is running, a launch workshop will be held. All relevant stakeholders will be invited to participate. Stakeholders will discuss i) the project's Results Framework, including indicators, baselines and targets, identifying any changes in external conditions since approval that could affect the project; ii) the implementation arrangements, including the monitoring and evaluation responsibilities; and i) the detailed Operation Plan and Budget for the first period (to December 31st of the corresponding year)⁴². The workshop will be crucial to ensure ownership and effective implementation to reach the intended outcomes.

Inception Workshop Report:

⁴² The AOP of the first year will be adjusted to synchronize it with an annual reporting calendar (January 1 – December 31). In the following year the AOPs will follow an annual scheme, in line with the reporting cycle described below.

Immediately after the workshop, the PMU will prepare an inception workshop report presenting the agreements reached at the workshop regarding the results framework, the implementation arrangements and the operation plan and budget for the first period. A draft will be distributed by the Steering Committee for review and comments before the plan is finalized within three months after the start of the project. The report will be approved by the Steering Committee.

Annual Operating Plan and Budget:

An AOP will be prepared every year. With the exception of the first year of implementation, when the AOP will have other timing, the PMU will submit a draft to the Steering Committee before January 20 of each full year of project operation. The AOP will be drafted in accordance with the Results Framework in order to ensure proper compliance and the monitoring of project outputs and outcomes. In particular the AOP will include detailed activities to be executed for each of the project's products in monthly periods, the dates on which the goals and milestones of output indicators will be achieved over the year, the monitoring and supervision activities of that period and the corresponding detailed budget. The AOP will be approved by the Steering Committee.

Quarterly Status Reports:

The PMU will submit quarterly status reports (QSR) to the Steering Committee within 15 days from the end of each quarter. The QSRs will be used to identify constraints, problems or bottlenecks that impede the timely execution of project activities and to take appropriate corrective measures. They shall be drawn up based on the systematic monitoring of performance indicators and products identified in the project's Results Framework. To ensure that these reports are based on sound data, field visits will be organized prior to developing them. These visits will include one project official and one member of the Steering Committee, or two project officials. The PMU will forward these reports to the members of the Steering Committee.

Annual Management or Progress Reports:

The PMU will prepare an Annual Management Report covering the period of the last applicable AOP. This will compare the substantive results (goals, objectives and targets) and financial performance for the period with the AOP and identify measures to correct and improve, which will be incorporated in the next AOP. The Annual Management or Progress report and the AOP of the next period will be evaluated and approved by the Steering Committee.

Mid-term Review:

At the 18th month of project implementation a Mid-Term Review (MTR) will start in order to have a final Mid-Term Review report by 22nd month of project implementation. The MTR will be conducted by one or more independent consultants. The MTR will determine progress made toward the achievement of objectives, outcomes and outputs, and will identify corrective actions, if needed, for the remaining period of the project. It will focus on the effectiveness, efficiency and timeliness of project implementation; will

highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. The Steering Committee will indicate how the recommendations of the MTR are being addressed.

Terminal Evaluation:

Shortly before the completion of the project a Terminal Evaluation will be prepared by one or more independent consultants. The purpose of the terminal evaluation is to describe project impacts, sustainability of results and the degree of achievement of long-term results. The terminal evaluation should also indicate any future actions needed to ensure the sustainability of project results, scale them up and replicate the project in other areas of the country, identifying the key lessons learned. The Terminal Evaluation will follow the Guidelines for project/program final evaluations of the Adaptation Fund and UNEP.

Final Report:

Within three months prior to the date of completion of the project, the PMU will present the Steering Committee a draft of the final report. The main purposes of the Final Report are to provide guidance to ministers and senior officials on political decisions necessary for following up the project and to present the donor information on the use of funds. As such the final report will consist of a brief summary of the main products, findings, conclusions and recommendations of the project. This report shall specifically include the findings of the final evaluation, as described above.

Technical Reports:

Technical reports will be prepared as part of the project outputs. Drafts of all technical reports should be submitted by the PMU to the Steering Committee for review and approval and to the Advisory for their information and possible comments, before they are finalised and published. Copies of finalised technical reports will be distributed to project stakeholders, as appropriate.

Financial Audits:

Financial audits will also be conducted. Resources are allocated for the second, third and fourth year of the project so that the finance of the project is audited.

Table 15 offers a summary of the main monitoring and evaluation reports, those responsible for each and the deadlines.

Table 15. M&E plan

M&E Activity	Responsible party	Frequency/Timeframe	Cost (USD)
Inception Workshops	PMU	1 month from the start of the project	4,500
Inception Report	PMU	1 week after the Inception Workshop	None

Quarterly Reports	PMU	Quarterly	40,500
Annual Operating Plans and Budgets	PMU	Annual	None
Annual Reports	PMU	Annual	None
Meetings of the Steering Committee	Steering Committee	At least once a year	7,710
Technical Reports	PMU External Consultants	When required	To be determined
Mid-Term Review	Independent Consultant(s)	At the middle of project implementation	23,350
Terminal Evaluation	Independent Consultant(s)	At the end of project implementation	29,200
Financial Audits	Independent Services	At the end of every year (starting the second)	50,000
Final Report	PMU	End of project	None
TOTAL			156,550

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

Table 16. Results framework

Result	Indicator	Baseline	Mid-term target	Final target	Means of verification
Project Objective: to reduce the vulnerability of the population (selected family agriculture producers and indigenous communities) of the Chaco Region of Paraguay to the impacts of climate change on food security					
Outcome 1. Knowledge management on vulnerability and resilience to climate change improved to implement cost-effective adaptation measures	Number of critical knowledge gaps for implementing cost-effective adaptation measures	There are critical knowledge gaps in the location and nature of ecosystems; general vulnerability and impact assessment in 8 communities; the local ecology, management and nutritional components of Algarrobo and Viñal (<i>Prosopis</i> spp.); the contribution to climate resilience of different local traditional practices and the regulatory framework; and climate variability.	No critical knowledge gaps for implementing cost-effective adaptation measures by mid-term	No critical knowledge gaps for implementing cost-effective adaptation measures by the end of the project	Project supervision reports
Output 1.1 Improved	Number of	There are currently no	10 detailed ecosystem	10 detailed	Existence of

mapping of ecosystems, including agro-ecological zones, water resources, forests and other ecosystems	detailed ecosystems maps for the areas of influence of the selected communities	detailed ecosystem maps for the areas of influence of the selected communities	maps (1 map for each of the selected communities) by mid-term	ecosystem maps (1 map for each of the selected communities) by the end of the project	detailed ecosystem maps for the areas of influence of the selected communities
Output 1.2. Assessment of the vulnerability to climate change of specific plants and animals used as food source.	Existence of a comprehensive and strategic study on the impacts of climate change on plants and animals used as food source.	There are currently no comprehensive and strategic studies on the impacts of climate change on plants and animals used as food source	1 comprehensive and strategic study on the impacts of climate change on plants and animals used as food source by mid-term.	1 comprehensive and strategic study on the impacts of climate change on plants and animals used as food source by the end of the project	Existence of a comprehensive and strategic study on the impacts of climate change on plants and animals used as food source.
Output 1.3 Increased knowledge on the local ecology, management and nutritional components of Algarrobo and Viñal (Prosopis spp.)	Existence of a study on the local ecology, management and nutritional components of Algarrobo and Viñal (Prosopis spp.)	There are currently no studies on the local ecology, management and nutritional components of Algarrobo and Viñal	1 study on the local ecology, management and nutritional components of Algarrobo and Viñal by mid-term	1 study on the local ecology, management and nutritional components of Algarrobo and Viñal by mid-term	Existence of a study on the local ecology, management and nutritional components of Algarrobo and Viñal
Output 1.4 Improved understanding of climate change vulnerability and impact of the eight communities not covered by the UNEP (2013) report	Number of general vulnerability and impact assessments	There are currently no general climate change vulnerability and impact assessments for 8 selected communities	8 general climate change vulnerability and impact assessments (1 for each of the 8 selected communities without it) by mid-term	8 general climate change vulnerability and impact assessments (1 for each of the 8 selected communities without it) by the end of the project	Existence of general climate change vulnerability and impact assessments
Output 1.5 Increased	Existence of a	There are currently no	1 comprehensive and	1 comprehensive	Existence of a

knowledge on traditional practices that contribute to climate resilience	comprehensive and strategic study on local traditional practices that contribute to climate resilience	comprehensive and strategic studies on local traditional practices that contribute to climate resilience	strategic study on local traditional practices that contribute to climate resilience by mid-term	and strategic study on local traditional practices that contribute to climate resilience by the end of the project	comprehensive study on local traditional practices that contribute to climate resilience by the end of the project
Output 1.6 Increased knowledge on the contribution to adaptation of the existing regulatory framework	Existence of a comprehensive and strategic study on the contribution to adaptation of the existing regulatory framework	There are currently no comprehensive and strategic studies on the contribution to adaptation of the existing regulatory framework	1 comprehensive and strategic study on the contribution to adaptation of the existing regulatory framework by mid-term	1 comprehensive and strategic study on the contribution to adaptation of the existing regulatory framework by the end of the project	Existence of a comprehensive and strategic study on the contribution to adaptation of the existing regulatory framework
Output 1.7. Development of a guide to implement sustainable forest management practices on peasant and indigenous peoples communities.	Existence of a guide to implement sustainable forest management practice on peasant and indigenous people's communities	There is not a guide to implement sustainable forest management practice on peasant and indigenous people's communities.	A guide to implement sustainable forest management practice on peasant and indigenous people's communities by mid-term.	A guide to implement sustainable forest management practice on peasant and indigenous people's communities by the end of the project.	Existence of a guide to implement sustainable forest management practice on peasant and indigenous people's communities
Output 1.8 Increased meteorological information available for agro-climatic risk assessment	Number of new functioning meteorological stations in the Paraguayan Chaco	N/A (the number of currently functioning meteorological stations in the region is insufficient for properly monitoring climate	9 new meteorological stations installed by mid-term	9 new meteorological stations functioning by the end of the project	Project supervision reports

		variability and change)			
	Number of meteorological reports shared with farmers, herders and indigenous communities	Farmers, herders and indigenous communities don't have access to meteorological information	52 meteorological reports shared with farmers, herders and indigenous communities ⁴³ by mid-term	156 meteorological reports shared with farmers, herders and indigenous communities ⁴⁴ by the end of the project	Project supervision reports
Outcome 2. Adaptive capacity in rural areas of greatest vulnerability strengthened through concrete adaptation measures favouring an ecosystem-based approach	Percentage of local stakeholders (local officials, farmers, herders and indigenous people) that claim to have increased resilience	N/A	60% of local stakeholders (local officials, farmers, herders and indigenous people) claim to be more resilient than before the project by mid-term	80% of local stakeholders (local officials, farmers, herders and indigenous people) claim to more resilient than before the project by the end of it	Surveys
Output 2.1 Increased participatory adaptation planning	Number of integrated adaptation community plans	Currently there are no integrated adaptation plans in the selected communities	10 integrated adaptation community plans by mid-term (one per selected community)	10 integrated adaptation community plans by the end of the project (one per selected community)	Existence of integrated adaptation community plans
Output 2.2 Increased implementation of strategic adaptation measures	Number of critical areas with increased resilience	The contribution to adaptation of forest, agricultural activities, water infrastructure, regulatory framework and skills is currently limited	5 critical areas (forest, agricultural activities, water, regulatory framework and skills) with increased resilience by mid-term	5 critical areas (forest, agricultural activities, water, regulatory framework and skills) with increased resilience by the end of the	Project supervision reports

⁴³ 1 per week from the second year, 52 weeks per year.

⁴⁴ 1 per week from the second year, 4 years project in terms of activities, 52 weeks per year.

				project	
Activity 2.2.1 Conservation and restoration of forests (including “protective forest”) and other ecosystem	Number of forest restoration areas created with the support of the project	N/A	10 forest restoration areas (1 per community) created with the support of the project by mid-term	10 forest restoration areas (1 per community) created with the support of the project by its end	Project supervision reports
Activity 2.2.2 Agro-ecological production in farming and livestock, including agroforestry, apiculture, community seed banks and silvopastoral management	Number of additional crops produced by the farmers supported by the project	The baseline will be determined for each community.	At least 2 additional crops produced by the farmers supported by the project ⁴⁵	At least 4 number of additional crops produced by the farmers supported by the project by its end ⁴⁶	Project supervision reports
	Increase in the honey produced by beneficiaries of the project	The baseline will be determined for each community	15% increase in the honey produced by the beneficiaries of the project by mid-term ⁴⁷	30% increase in the honey produced by the beneficiaries of the project by its end ⁴⁸	Project supervision reports
Activity 2.2.3 Increased availability of water for human consumption and productive activities	Number of water harvesting, storage and distribution infrastructure constructed by the project	N/A	10 water harvesting, storage and distribution infrastructure constructed by the project by mid-term (1 per selected community ⁴⁹)	10 water harvesting, storage and distribution infrastructure constructed by the project by mid-term (1 per selected community)	Project supervision reports
Activity 2.2.4 Improved	Number of	N/A	At least 5 policies or plans	At least 5 policies	Project

⁴⁵ The number of additional crops is to be confirmed or modified following studies in component 1 and as part of the development of the community adaptation plans.

⁴⁶ The number of additional crops is to be confirmed or modified following studies in component 1 and as part of the development of the community adaptation plans.

⁴⁷ The target growth is to be confirmed or modified following studies in component 1 and as part of the development of the community adaptation plans.

⁴⁸ The target growth is to be confirmed or modified following studies in component 1 and as part of the development of the community adaptation plans.

⁴⁹ This will depend on the results of the studies conducted in output 1.3. At this stage, it is assumed that every community will require new infrastructure. Budget has been developed accordingly. Potential savings in one community could be used to cover potential increased financial needs in another.

regulatory framework to provide proper incentives for adaptation	policies or plans adjusted as result of the project to provide proper incentives for adaptation		adjusted as result of the project to provide proper incentives for adaptation by mid-term	or plans adjusted as result of the project to provide proper incentives for adaptation by the end of the project	supervision reports
Activity 2.2.5 Training and exchange of knowledge among stakeholders	Number of specific training sessions organized by the project in each district	N/A	5 specific training sessions organized by the project in each district by mid-term (one on climate vulnerability and adaptation, one on forest management, one on smart agriculture, one on resilient livestock, one on efficient water use)	10 specific training sessions organized by the project in each district by the end of it (two on climate vulnerability and adaptation, two on forest management, two on smart agriculture, two on resilient livestock, two on efficient water use)	Project supervision reports
	Number of exchange sessions organized by the project at district level	N/A	10 exchange sessions organized by the project at district level by mid-term (one general at the end of the second year, two per year starting the second year for forest management, smart agriculture and resilient livestock)	18 exchange sessions organized by the project at district level by mid-term (three general at the end of the third, fourth and fifth year, two per year starting the second year for forest management, smart agriculture and resilient livestock)	Project supervision reports
Outcome 3. Capacity development and	Percentage of trained officials	N/A	90% of trained officials and stakeholders claim to have	90% of trained officials and	Surveys

awareness to implement and upscale effective implementation of adaptation measures at national and local levels	and stakeholders that claim to have increased capacity to respond to and mitigate impacts of climate change		increased capacity to respond to and mitigate impacts of climate change by mid-term	stakeholders claim to have increased capacity to respond to and mitigate impacts of climate change by the end of the project	
Output 3.1 Detailed training plan for SEAM on mainstreaming climate compatible development across sectors	Number of SEAM staff trained to respond to, and mitigate impacts of, climate-related events (by gender)	N/A	At least 60 SEAM staff (at least 30 women) trained to respond to, and mitigate impacts of, climate-related events (13 women) by mid-term	At least 120 SEAM staff (at least 60 women) trained to respond to, and mitigate impacts of, climate-related events (25 women) by the end of the project	Project supervision reports
Output 3.2 Training plan for partner agencies at national and local levels (ministries and agencies (including but not limited to MAG and INFONA), departmental and municipal governments, universities, NGOs)	Number of relevant stakeholders trained to respond to, and mitigate impacts of, climate-related events (by gender)	N/A	At least 80 relevant stakeholders (at least 40 women) trained to respond to, and mitigate impacts of, climate-related events by mid-term	At least 160 relevant stakeholders (at least 80 women) trained to respond to, and mitigate impacts of, climate-related events by the end of the project	Project supervision reports
Output 3.3 Identification, systematization and exchange of lessons learned of the project	Number of lessons learned documents prepared by the project	N/A	4 lesson learned documents prepared by the project by mid-term (one every 6 months from the 7 th month)	10 lessons learned documents prepared by the project by its end (one every 6 months from the 7 th month and a final	Project supervision reports

				consolidated report at the end)	
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F. Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund

Table 17. Results framework's alignment with the Adaptation Fund

Project Objective(s) ⁵⁰	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Outcome 1. Knowledge management on vulnerability and resilience to climate change improved to implement cost-effective adaptation measures	Number of critical knowledge gaps for implementing cost-effective adaptation measures	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	<u>1,000,000</u>
Outcome 3. Capacity development and awareness to implement and upscale effective implementation of adaptation measures at national and local levels	Percentage of trained officials and stakeholders that claim to have increased capacity to respond to and mitigate impacts of climate change	Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.1. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased	<u>520,000</u>
Outcome 2. Adaptive capacity in rural areas of greatest vulnerability strengthened through concrete adaptation measures favouring an ecosystem-	Percentage of local stakeholders (local officials, farmers, herders and indigenous people) that claim to have increased resilience	Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets	4.2. Physical infrastructure improved to withstand climate change and variability-induced stress	<u>4,480,000</u>
		Outcome 5:	5. Ecosystem	

⁵⁰ The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

based approach		Increased ecosystem resilience in response to climate change and variability-induced stress	services and natural resource assets maintained or improved under climate change and variability-induced stress	
		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	
		Outcome 7: Improved policies and regulations that promote and enforce resilience measures	7. Climate change priorities are integrated into national development strategy	
Project Outcome(s)	Project Outcome Indicator(s)	Fund Output	Fund Output Indicator	Grant Amount (USD)
Output 1.4 Improved understanding of climate change vulnerability and impact of the eight communities not covered by the UNEP (2013) report	Number of general vulnerability and impact assessments	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)	<u>174,538</u>
Output 1.8 Increased meteorological information available for agro-climatic risk assessment	Number of new functioning meteorological stations in the Paraguayan Chaco Number of meteorological reports shared with farmers, herders and		1.2 No. of early warning systems (by scale) and no. of beneficiaries covered	<u>292,000</u>

	indigenous communities			
Output 3.1 Detailed training plan for SEAM on mainstreaming climate compatible development across sectors	Number of SEAM staff trained to respond to, and mitigate impacts of, climate-related events (by gender)	Output 2: Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events	2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events (by gender)	<u>115,570</u>
Activity 2.2.3 Increased availability of water for human consumption and productive activities	Number of water harvesting, storage and distribution infrastructure constructed by the project	Output 4: Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability	4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by sector and scale)	<u>1,500,000</u>
Activity 2.2.1 Conservation and restoration of forests (including “protective forest”) and other ecosystem, taking into account output 1.4	Number of forest restoration areas created with the support of the project	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)	<u>650,000</u>
Activity 2.2.2 Agro-ecological production in farming and livestock, including agroforestry, apiculture,	Number of additional crops produced by the farmers supported by the project	Output 6: Targeted individual and community livelihood strategies strengthened in relation to	6.2.1. Type of income sources for households generated under climate change scenario	<u>1,000,000</u>

community seed banks and silvopastoral management		climate change impacts, including variability		
Activity 2.2.4 Improved regulatory framework to provide proper incentives for adaptation	Number of policies or plans adjusted as result of the project to provide proper incentives for adaptation	Output 7: Improved integration of climate-resilience strategies into country development plans	7.1. No. of policies introduced or adjusted to address climate change risks (by sector)	<u>71,198</u>

- G.** Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

Table 18. Detailed budget.

Component	Output	Type of Input	Note	Cost (USD)
1. Knowledge management on vulnerability and resilience to climate change improved to implement cost-effective adaptation measures				1,000,000
	1.1 Detailed mapping of ecosystems, including agro-ecological zones, water resources, forests and other ecosystems.			92,389
		3 senior national consultant (4 month)	a	36,000
		5 junior national consultants (4 month)	b	40,000
		DSA national consultant	c	1,800
		DSA SEAM specialists	d	3,600
		Equipment	e	8,541
		Transport (fuel)	f	1,248
		3 Validation regional workshops 30 people		1,200
	1.2 Assessment of the vulnerability of climate change of specific plants and animals used as food source.			74,921
		2 senior National Consultants (6 months)	g	30,000
		DSA national consultant	h	2,400
		Transport (water)	i	2,000
		Transport (fuel)	j	2,621
		DSA SEAM specialists	k	12,000
		Materials and tools	l	15,000
		Publication of the results		10,000
	Workshop national 100 people		900	
	1.3 Study of the Ecology, Management and Nutritional components of Algarrobo and Viñal (Prosopis spp.)			82,901
		2 senior national consultant (12 months)	m	24,000
		3 junior national consultants (12 month)	n	25,200
		Lab	o	15,000
		Materials and tools	p	12,000
DSA national consultant		q	2,880	
Mobility (fuel)		r	2,621	
1 regional validation workshop 100			1,200	

	people		
1.4 General vulnerability and impact assessment (including water) for the eight communities not covered by the UNEP (2013) report			174,538
	1 senior international consultant 40 days	s	26,000
	4 senior national consultant 40 days	t	64,000
	5 junior regional consultants (6 months)	u	60,000
	International travel	w	3,000
	DSA international consultant	y	1,150
	DSA national consultant	z	2,640
	Transport (fuel)	aa	1,248
	3 regional validation workshops 30 people		1,200
	1 national validation workshop 30 people		300
	Publication of a summary of the 10 vulnerability and impact assessments	ab	15,000
	1.5 Research on traditional practices that contribute to climate resilience		
4 senior national consultant (3 month)		ac	24,000
3 junior national consultants (3 month)		ad	18,000
Transport (fuel)		ae	1,248
DSA national consultant		af	1,920
3 regional validation workshops 30 people			1,200
1 national validation workshop 30 people			300
1.6 Study on the contribution to adaptation of the existing regulatory framework			203,635
	1 international senior consultant (30 days)	ag	19,500
	1 senior national consultant 35 days	ah	14,000
	International travel	ai	3,000
	DSA international consultant	aj	1,070
	DSA national consultant		540
	1 regional validation workshop 100 people		1,200
	1 national validation workshop 30 people		300

		1 project officer full time	ak	109,350
		1 project officer (half time)	al	54,675
	1.7. Development of a guide to implement sustainable forest management practices on peasant and indigenous peoples communities.			32,948
		1 senior national consultants (4 months)	am	10,800
		1 senior national consultant (2 months)	an	5,400
		1 junior consultant (2 month)	ao	3,000
		1 national validation workshop 30 people		300
		Publication (guide)		10,000
		DSA national consultant	ap	2,200
		Transport (fuel)	aq	1,248
	1.8 Information and monitoring system for agro-climatic risk assessment			292,000
		1 International senior consultant (30 days)	ar	19,500
		1 senior national consultant (40 days)	as	16,000
		Software	at	12,000
		1 junior national consultant (42 months)	au	42,000
		9 Stations		180,000
		Installation		18,000
		Maintenance		4,500
				4,480,000
2. Adaptive capacity in rural areas of greatest vulnerability strengthened through concrete adaptation measures favouring an ecosystem-based approach	2.1 Participatory developed integrated adaptation with a watershed management, ecosystem-based approach taking into account outputs 1.1, 1.2 and 1.3			100,698
		1 senior international consultant 40 days	aw	26,000
		3 senior national consultant (4 months)	ay	36,000
		3 junior national consultants (4 months)	az	24,000
		International travel	aaa	3,000
		DSA international consultant	aab	1,550
		DSA national consultant	aac	4,400
		Transport (fuel)	aad	1,248
		3 regional validation workshops 100 people		3,600
		1 national validation workshop 30 people		900

2.2 Participatory implementation of the measures included in the adaptation plans			4,379,302
2.2.1 Conservation and restoration of forests (including “protective forest”) and other ecosystem	Service contract	aaf	650,000
2.2.2 Agro-ecological production in farming and livestock, including agroforestry, apiculture, community seed banks and silvopastoral management			2,062,776
	Service contract for smart agriculture	aag	1,000,000
	Service contract for apiculture	aah	650,000
	Service contract for resilient livestock	aai	412,776
2.2.3 Implementation of improvements in the efficient use, catchment, harvesting and storage of rainwater	Service contract including feasibility studies, design and construction in each area	aaj	1,500,000
2.2.4 Implementation of measures to improve incentives for adaptation			71,198
	1 International Consultant (40 days)	aak	26,000
	1 Senior National Consultant (40 days)	aal	16,000
	3 Junior National Consultants (3 months)	aam	18,000
	International travel	aan	3,000
	DSA International	aa0	1,550
	DSA National	aap	900
	Transport (fuel)	aaq	1,248
	3 regional workshops 100 people		3,600
	1 national workshop 100 people		900
2.2.5 Training and exchange of knowledge among stakeholders, taking into account output 1.3			95,328
	5 national consultants (30 days)	aar	60,000
	3 junior national consultants (30 days)	aas	18,000
	DSA	aat	1,680
	Transport (fuel)	aau	1,248

		6 regional workshops 100 people (2 days each)		14,400	
3. Capacity development and awareness to implement and upscale effective implementation of adaptation measures at national and local levels				520,000	
	3.1 Detailed training plan for SEAM on mainstreaming climate compatible development across sectors				115,570
		3 International consultant (40 days)	aaw	68,250	
		2 senior national consultants (40 days)	aay	32,000	
		International travel	aaz	9,000	
		DSA International	aaaa	2,640	
		2 national workshops 100 people (2 days)		3,680	
	3.2 Training plan for partner agencies at national and local levels (ministries and agencies (including but not limited to MAG and INFONA), departmental and municipal governments, universities, NGOs)				109,740
		3 International Consultants (30 days)	aaab	58,500	
		2 senior national consultants (30 days)	aaac	36,000	
		International travel	aaad	9,000	
		DSA international	aaae	2,640	
		2 national workshops 100 people (2 days)		3,600	
	3.3 Identification, systematization and exchange of lessons learned of the project				294,690
		1 project officials		109,350	
		1 project officer (half time)	aaaf	54,675	
		1 international consultant (30 days) mid-term review	aaag	19,500	
		International travel	aaah	3,000	
		DSA International	aaai	850	
		1 international consultant (39 days) terminal evaluation	aaaj	25,350	
International travel		aaak	3,000		
DSA International		aaal	850		
1 international consultant lessons learned report		aaam	13,000		
International travel		aaan	1,500		
DSA International		aaao	440		

		Communication materials	aaap	3,175
		Publication lessons learned		10,000
		Financial Audits	aaaq	50,000
Project Execution Costs	Project Management			570,000
		Project coordinator	aaar	164,250
		3 Project officials in the regions	aaas	118,800
		Administrative and financial officers	aaat	64,800
		2 drivers	aaau	44,640
		8 computers		3,600
		3 printer		1,500
		2 cars (acquisition)	aaaw	105,000
		Car insurance	aaay	26,400
		2 cars (maintenance)		1,600
		Fuel		11,810
		DSA Project team	aaaz	40,500
		Inception workshop national		900
		Inception workshops regions		3,600
Steering Committee Meetings	aaaa	9,000		
Total project cost				6,570,000
Project Cycle Management Fee charged by Implementing Agency				558,450
Amount of financing requested				7,128,450

- a. Specialists in flora, fauna and agriculture.
- b. One specialist in flora, one in fauna, one in agriculture and two in GIS.
- c. 30 days
- d. 3 SEAM specialists could support the development of this output. Only DSA would need to be

- e. covered by the project. 20 days, 2 per community.
- f. GPS, cameras and other equipment.
- f. 10 communities. The furthest from Asuncion is to 856km. Estimated total distance to be covered 8000 km. 12 L of fuel per 100 km.
- g. One specialist for flora and one for fauna. 15,000 each for the completion of the report.
- h. 20 days each consultant
- i. Transport on water will be required. Boats will be hired for this.
- j. Same as note T
- k. 5 SEAM specialists could support the development of this output. Only DSA would need to be covered by the project. The study will be conducted in dry and wet seasons. 20 days in each season.
- l. This includes cameras, GPS, reflectants, "pinzas de colecta", "cintas metricas"...
- m. One specialist in forest management, one specialist in nutrition. Half time during one year.
- n. Supporting personnel for the installation and conducting measurements.
- o. Nutritional studies. It will cover several species.
- p. Inputs such as seeds, plants and tools needed to conduct the study.
- q. 2 days per month for each of the consultants.
- r. Studies will be conducted in Central Chaco. One trip per month. Each trip 1400km.
- s. Vulnerability and impact assessment specialist with experience in Latin America
- t. One specialist for each of the following areas: ecosystems, agriculture, water resources, community development/sociology/anthropology.
- u. One specialist for each of the following areas: ecosystems, agriculture, water resources, community development/sociology and health.
- w. 2 return flights
- y. 5 days in Asuncion and 8 days in the field
- z. 4 consultants 11 days each
- aa. See note f for distances. 3 trips. One to Alto Paraguay, one to Pozo Hondo and General Diaz and one for Central Chaco.
- ab. Edition and publication costs. It includes also distribution costs.
- ac. One specialist for each of the following areas: adaptation, ecosystems, agriculture, anthropology/sociology.
- ad. One junior per department.

aak	Adaptation specialist with experience in institutional aspects
aal	Adaptation specialist with experience in institutional aspects
aam	Adaptation specialist with experience in institutional aspects
aan	2 return flights
ao	5 days in Asuncion and 13 days in the field
aap	15 days
aaq	Same as F
aar	One specialist in each of the following: adaptation mainstreaming, forest, agriculture, livestock (or apiculture) and water
aas	1 per department.
aat	28 days
aau	Same as F
aaw	One specialist in each of the following: mainstreaming climate change, adaptation and mitigation. The selection of consultants will cover rural and urban areas.
aay	One specialist in adaptation, one in mitigation.
aaz	2 return flights each consultant
aaaa	Four days each consultant each mission.
aaab	Same as note aaq
aaac	Same as note aar
aaad	Same as aas
aaae	Same as aat
aaaf	The other half time is covered in component 1.
aaag	Experience in evaluation
aaah	2 return flights
aaai	5 days in Asuncion and 5 days in the field
aaaj	Experience in evaluation
aaak	2 return flights
aaal	Same as aaad
aaam	20 days
aaan	One return flight
aaao	4 days in Asuncion
aaap	Publications, leaflets...
aaaq	15,000 for years 2 and 3; 20,000 for the last year

aaar	4.5 years
aaas	1 per department. 75% of their time. 4 years.
aaat	4.5 years
aaau	4 years
aaaw	Including the cost of the transfer (5,000 USD)
aaay	3300 USD per year. 4 years. 2 cars
aaaz	For coordination and monitoring purposes. The project officer, plus some one else (from the Steering Committee or an expert from any of the leading technical partners), plus the driver; 5 days; 10 times per year
aaaa	9 Steering Committee Meetings

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

Table 19. Work plan

Component	Output/Activity	Timeframe / Year / Quarter																			
		Y1				Y2				Y3				Y4				Y5			
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
1. Knowledge management on vulnerability and resilience to climate change improved to implement cost-effective adaptation measures	Output 1.1 Improved mapping of ecosystems, including agro-ecological zones, water resources, forests and other ecosystems																				
	Output 1.2. Assessment of the vulnerability to climate change of specific plants and animals used as food source.																				
	Output 1.3 Increased knowledge on the local ecology, management and nutritional components of Algarrobo and Viñal (Prosopis spp.)																				
	Output 1.4 Improved understanding of climate change vulnerability and impact of the eight communities not covered by the																				

	UNEP (2013) report																				
	Output 1.5 Increased knowledge on traditional practices that contribute to climate resilience																				
	Output 1.6 Increased knowledge on the contribution to adaptation of the existing regulatory framework																				
	1.7. Development of a guide to implement sustainable forest management practices on peasant and indigenous peoples communities.																				
	Output 1.8 Increased meteorological information available for agro-climatic risk assessment																				
2. Adaptive capacity in rural areas of greatest vulnerability strengthened	Output 2.1 Increased participatory adaptation planning																				
	Activity 2.2.1																				

Table 20. Disbursement schedule

Concept	Total	Year 1	Year 2	Year 3	Year 4
Component 1	1,000,000	851,244	48,086	52,586	48,086
Component 2	4,480,000	50,349	1,607,091	1,390,216	1,432,344
Component 3	520,000	194,501	51,784	75,134	198,581
Total project cost	6,000,000	1,096,094	1,706,091	1,517,936	1,679,010
Project Execution Costs	570,000	226,294	111,694	112,094	119,919
Total	6,570,000	1,322,387	1,818,654	1,630,029	1,798,929
Disbursement date		Presentation of AOP Est. May 2017	Presentation of AOP est. January 2018	Presentation of AOP est. January 2019	Presentation of AOP est. January 2020

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

A. Record of endorsement on behalf of the government⁵¹ *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

<p><i>Ing. Ftal. Rolando de Barros Barreto</i> <i>Minister-Executive Secretary</i> <i>Environmental Secretariat</i></p> <p><i>Ms Ethel Estigarribia</i> <i>Director of the National Climate Change Office</i> <i>Environmental Secretariat</i></p>	<p>Date: July 26, 2016</p>
--	----------------------------

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

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (In particular the National Climate Change Policy (2012) and the National Climate Change Adaptation Strategy (2015)) and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.

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.



Leo Heilemann
Director y Representante Regional
Programa de las Naciones Unidas para el Medio Ambiente
Oficina Regional para América Latina y el Caribe
Implementing Entity Coordinator

Date: July 29, 2016

Tel. and email: (507) 305-3133
leo.heileman@unep.org

Project Contact Person: Gustavo Mañez Gomis

Tel. And Email: (507) 305-3127 gustavo.manez@unep.org

ANNEXES

ANNEX 1. LETTERS FROM THE GOVERNMENT OF PARAGUAY

Letter from the Ministry of Environment



SECCION
RECURSOS
AMBIENTALES
SECRETARÍA
AMBIENTE

TEKÁ REKUÁI
GOBIERNO NACIONAL
ESTADO PLURILINGÜE Y CULTURAL
DE PARAGUAY

Nota N.G. N° 788

Asunción, 26 de JULIO de 2016

To: *The Adaptation Fund Board*
c/o Adaptation Fund Board Secretariat
E-mail: secretariat@adaptation-fund.org
Fax: +1 202 522 3240/5

Subject: *Endorsement for Ecosystem Based Approaches for Reducing the Vulnerability of Food Security to the Impacts of Climate Change in the Chaco Region of Paraguay.*

In my capacity as designated authority for the Adaptation Fund in Paraguay, 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 and risks, posed by climate change in the Chaco Region of Paraguay.

Accordingly, I'm pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by United Nations Environment Programme (UNEP) and executed by the National Environment Secretariat of Paraguay (SEAM).

Sincerely,




Ing. Ftal. Rolando de Barros Barreto
Minister - Executive Secretary
Environmental Secretariat

Ave. Moisés Gómez N° 3.500
Asunción, Paraguay

www.seam.gov.py

Tel.: 515 8067

Letter from the Director of the National Climate Change Office of Paraguay



NOTA ONCC N.º 028/16

Asunción, 26 de July 2016.

To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat.
Email: Secretariat@Adaptation-Fund.org
Fax: 202 512 3240/5

Subject: **Endorsement for Ecosystem Based Approaches for Reducing the Vulnerability of Food Security to the Impacts of Climate Change in the Chaco Region of Paraguay.**

In my capacity as designated authority for the Adaptation Fund in Paraguay, 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 and risks, posed by climate change in the Chaco Region of Paraguay.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by United Nations Environment Programme (UNEP) and executed by the National Environment Secretariat of Paraguay (SEAM).

Sincerely,



Ms. Estel Estigarribia, Directora
Oficina Nacional de Cambio Climático
Secretaría del Ambiente
Asunción - Paraguay

Av. Madrid: Lynch No. 3500 esq. Reservista de la Guerra del Chaco. Tel. 596 21 618826 - ex.596 21 618807.
Correo-e: gabinete@seam.gov.py

Comment	Response
<p>CR1: Possible partner NGOs should be pre-identified for the full proposal, and their value-added assessed.</p>	<p>As noted in page 57, the individuals and institutions that will implement the activities are not selected at this stage. This approach has been followed to ensure that the procurement processes are transparent and competitive. For each assignment a call will be opened and individuals and/or institutions will be encouraged to apply, sending a technical and financial offer. UNEP or SEAM will then select the contractor according to their regular selection procedures, which will follow AF's principles of transparency.</p>
<p>CR2: The viability of the financial mechanisms could be addressed already in the full proposal by identifying previous experiences and possible barriers.</p>	<p>The inclusion of financial mechanisms was discussed during project design. Stakeholders highlighted that micro-credits have not proved particularly useful in the project areas, with some serious protests being organized against micro-finance institutions. The companies that would provide insurance would be similar, so this was also excluded from the activities. In contrast, economic incentives could be strategic to promote adaptation. Output 1.6 will analyse the existing regulatory framework to identify possible economic incentives, which will be implemented through Activity 2.2.4.</p>

ANNEX 3. CHANGES TO THE CONCEPT NOTE

Two main changes have been carried out. The first major change refers to the location of the project. The concept note had selected two regions, the Eastern Region and the Western Region or Chaco. This proposal includes the Chaco and excludes the Eastern Region. The main reason for this is that the latter is generally less vulnerable, and the San Pedro region, which is vulnerable, is going through processes that do not make it very safe to work there at the moment. In the Chaco region, the concept note included only one department, Presidente Hayes, and one district, Teniente Irala Fernandez. In order to be cost-effective, this proposal works in the three departments of the Chaco, and in six districts, including Teniente Irala Fernandez. Two of the communities were studied by UNEP in 2013. Contextual information of the other eight communities is provided in Table 3.

The second major change refers to the outputs to be produced and the activities to be conducted. This proposal includes all the outputs included in the concept note, except for the micro-credit and insurance elements for reasons explained in Annex 2 just above. Some important studies have been added in component 1, some as stand-alone studies (i.e. the one on Algarrobo) and some as comprehensive studies including certain elements (i.e. study of crop varieties as part of the new output 1.4). Moreover, activities have been prioritized in component 2. This includes stressing the importance of different ecosystems and uses, such as forestry, agriculture, apiculture and livestock, and adding a new component to increase resilience to water scarcity, as recommended by the UNEP report.

It is crucial to highlight that all these changes are the result of a serious process of actively involving a wide range of stakeholders, as explained in section H.

In addition to these major changes, the design of the proposal has updated several sections, given that the concept note was approved in 2012. Among other sections, section D on the consistency with Paraguay's national priorities, legal and policy framework and section F on the projects being implemented in the project area have been updated.

Finally, the project design has developed many important issues that were missing in the concept note, given its nature. Among other issues, the implementation arrangements, the M&E plan, the budget and the disbursement schedule have been detailed.

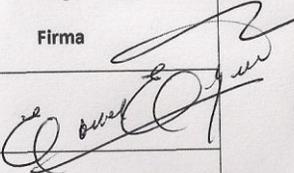
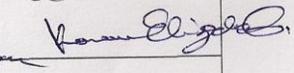
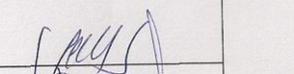
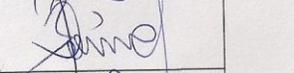
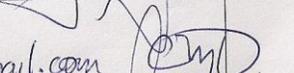
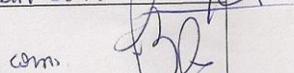
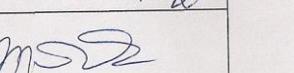
ANNEX 4. CONSULTATION PROCESS

Table 21. Stakeholders that attended the consultation meeting on July 8th 2016

Enfoques Basados en Ecosistemas para Reducir la Vulnerabilidad de la Producción de Alimentos ante los Impactos del Cambio Climático en la Región Oriental y el Chaco de Paraguay.

Formulación de la Propuesta a ser presentada por Paraguay al Fondo de Adaptación

Fecha: 8 de julio de 2016
Lugar: Centro de Informaciones SEAM

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Adaptation Fund project proposal formulation for Paraguay

Ecosystem based approaches for reducing the vulnerability of food production to the impacts of climate change in the Eastern and Chaco Regions of Paraguay.

Enfoques Basados en Ecosistemas para Reducir la Vulnerabilidad de la Producción de Alimentos ante los Impactos del Cambio Climático en la Región Oriental y el Chaco de Paraguay.

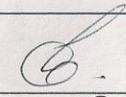
Name/ Nombre	Institution / Institución	Position/ Cargo	Email.	Office phone/ Teléfono	Date/ Fecha	Sig / Firma
MIANA MANN	INFONA	ASESOR TECNICO	dami.mann@gmail.com		14/07/2016	
Angelita Villalba	INFONA	Directora	masodepartillo@gmail.com angelita.villalba@infona.gov.py		"	
Esteban González	ONCC-SEAM	Jefe de Ejecución	yujus70@gmail.com		"	

Table 22. Stakeholders that were interviewed

Adaptation Fund project proposal formulation for Paraguay

Ecosystem based approaches for reducing the vulnerability of food production to the impacts of climate change in the Eastern and Chaco Regions of Paraguay.

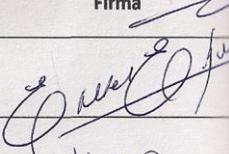
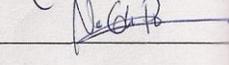
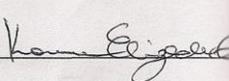
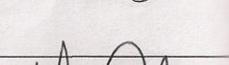
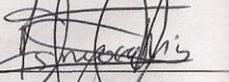
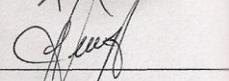
Name/Nombre	Institution / Institución	Position/ Cargo	Email.	Office phone/ Teléfono	Date/ Fecha	Sig / Firma
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Mauro Arias Barreto	" " "	Secretario de Medio Ambiente	mauroariasv3@gmail.com	(0489) 343 137	11/07/2016	
Yopu González	ONCC-SEAM	jefe de DE de Laboratorio y Repro	yopu570@gmail.com	0988-925044	12/07/16	

Table 23. Stakeholders that attended the consultation meeting on July 20th 2016



PLANILLA DE ASISTENCIA

Tema: Taller de socialización de la propuesta "Enfoques Basados en Ecosistemas para Reducir la Vulnerabilidad de la Seguridad Alimentaria ante los Impactos del Cambio Climático en la Región del Chaco de Paraguay"

Local: Salón Auditorio del Centro de Información Ambiental de la Secretaría del Ambiente.

Fecha: 20 de julio del 2016 HORA: 08:00 hs a 10:00 hs.

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28	Luys Castro	Global Cusco	lucastro@gmail.com	0981230724	





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35	Emilio Aquino	FCA/UNA	emilio.aquino@fca.una.edu.ar	0981 2848	<i>[Signature]</i>
36	José Carlos	FCO	josecarlos@fco.gov.ar	7132416	<i>[Signature]</i>
37	Nora Páez	OPICC-SEAM	hypatia_96@hotmail.com	0978595819	<i>[Signature]</i>
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39	Lucía María Solís	ONCC-SEAM	lucia.comunicacion@oncc.gov.ar	0983 199955	<i>[Signature]</i>
40	Pablo Giménez D.	SEAM		0981/251.981	<i>[Signature]</i>
41	María Teresa Vargas	SEAM		0982.370.430	<i>[Signature]</i>
42					
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