



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
1818 H Street NW
MSN P4-400
Washington, D.C., 20433
U.S.A
Fax: +1 (202) 522-3240/5
Email: afbsec@adaptation-fund.org

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
CNCC	National Commission on Climate Change (SP)
CONAM	National Environmental Council (SP)
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
IIAC	Inter-American Institute for Cooperation in Agriculture
INAN	National Food and Nutrition Institute
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)
INTN	National Institute of Technology, Standardization and Metrology
IPCC	International Panel on Climate Change
IPTA	Paraguayan Institute of Agrarian Technology (SP)
LCC	Local Coordination Committees
MAG	Ministry of Agriculture and Livestock (SP)
MIC	Ministry of Industry and Commerce
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
PNCC	National Climate Change Program (SP)
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)
SISNAM	National Environmental System (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



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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)

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Project / Programme Background and Context

General context

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.

The country has nearly 7 million inhabitants, 60% urban . 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 2025.

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 Caribbean¹. Between 1980 and 2014, Paraguay's HDI value increased significantly (23%). The growth in GNI per capita was particularly high in the period, increasing

¹ United Nations Development Programme (UNDP) (2016): 2015 Human Development Report. Work for human development. Briefing note for Paraguay, p. 2.

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)².

Map 2. Departments in Paraguay



Project context

The project aims to contribute to reducing the vulnerability of food security to the impacts of climate change in El Chaco region of Paraguay. Concrete interventions will be implemented in seven communities, General Diaz, Pozo Hondo and Campo Loa in the Department of Boquerón and Toro Pampa, Colonia Maria Auxiliadora, San Carlos and Bahía Negra in the Department of Alto Paraguay.

The following describes the social, developmental and environmental economic context in which the project would operate as well as the problem that the proposed project aims to solve. For this purpose, human, cultural, social, political, natural, economic and physical capital in the

² 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.

region are described as key elements of its adaptive capacity, with special emphasis on specific aspects of the target communities.

Human capital: population, poverty and food security

The region of El Chaco. Area and geographical location: The Western Region or Chaco of the Republic of Paraguay is divided into three departments: Alto Paraguay (8,234,900 ha), Boquerón (9,166,900 ha) and Presidente Hayes (7,290,700 ha). It is located geographically between the parallels 19 ° - 24 ° and the meridians 57 ° - 63 ° respectively.

A low population density characterizes the region. Despite representing 60% of the country's surface, it only accommodates 2.7% of the population (see table below):

Table 1.- Total population, relative distribution, density and growth rate, according to department

	Population (hab)	Density (hab/km2)
Pdte. Hayes	108.520	1,5
Boquerón	62.784	0,8
Alto Paraguay	11.057	0,1
Country	6.783.374	16,7

Sources: National Population and Housing Census. Year 2013.

Paraguay has a high rate of food insecurity. According to the Permanent Household Survey 2013, the Paraguayan population considered to be in poverty represents 23.8% of the country's total population, which means that about 1.6 million people live in households whose income is lower than the cost of a basic basket of consumption estimated for that year. For the same year, in the rural area, total poverty affected approximately 33.8% of the population, while the urban area had a lower proportion of (17.0% of its inhabitants). As a consequence of poverty levels, the overall food vulnerability rate of the Paraguayan population would be 40%, and affecting mostly rural families (PLANAL, 2009). According to the report on the Food Insecurity Situation of FAO (2013), Paraguay has a high rate of food insecurity, with approximately 22% of the population suffering from malnutrition³.

In El Chaco, the government is forced to distribute water and food in situations of prolonged drought. The governments usually provide three meals a day to children through school lunch, as well as to adults during emergencies, as well as potable water distributed with cisterns.

Cultural Capital: Indigenous, farming and Mennonite Population

The region is home to Paraguayan, indigenous and latin Mennonite farmers. Latino Paraguayan farmers, with scarce economic resources, are generally self-sufficient in their own lands with family farms, some income and livestock crops. The Germano Mennonitas settled during the first half of the last century in the Chaco. Through their well organized cooperativism (mainly beef and milk cattle) they have reached a good level of well-being. The indigenous were nomadic and lived on hunting and gathering. The Chaco region concentrates almost half of the country's indigenous population, as shown in Table 2. They live mainly from subsistence

³ <http://www.fao.org/paraguay>

agriculture, from simple cattle raising with rustic breeds, non-timber forest products (for example Pods of carob), beekeeping and hunting in a smaller scale.

One of the beneficiary communities of the project is indigenous, belonging to the Nivaclé group (Campo Loa community). In the rest of the beneficiary communities of this project the population is Lation Paraguayan.

Table 2.-. Indigenous population

Departament	Indigenous population (inhabitants)	Proportion with respect to the total population
Pdte. Hayes	25.789	22,9
Boquerón	23.950	21,2
Alto Paraguay	4.140	3,7
Total Country	112.848	100,0

Source: National Population and Housing Census for Indigenous Peoples 2012.

Social capital: Existing organizational structures

In global terms, both Chaco farmers and indigenous people have little organizational accumulation. However, although their political influence is not very relevant, and cannot be considered as a pressure factor capable of influencing public policies, there are some farming and indigenous organizations in the region:

- **Farming organizations:** Small family farmers are organized into various types of organizations and associations. The associations are as well generally members of national organizations such as the National Federation of Small Farmers. For example, in the Department of Alto Paraguay there are five associations of small producers.
- **Indigenous organizations:** Indigenous communities in the three departments are organized in various ways. These organizations, as well, are members of organizations at the national level such as the Federation for the Self-Determination of Indigenous Peoples (FAPI) and the Federation of Associations of the Guaraní People of Paraguay. In recent years, indigenous peoples' organizations in Paraguay have become increasingly active at the international level. Organizations such as the Federation of Associations of the Guaraní People of Paraguay participated in the United Nations Permanent Forum on Indigenous Issues in New York.

Non-governmental organizations: Several NGOs are very active in promoting biodiversity conservation and forest restoration in the Chaco region. WWF Paraguay supports initiatives that address the conservation and sustainable use of ecosystems through environmental education and awareness raising and implements forest restoration programs. The mission of Guyra Paraguay is to conserve and promote the sustainable use of biodiversity; is well known for its conservation efforts that address the identification and promotion of important bird areas and the monitoring of deforestation in the Chaco Region. Survival also plays an important role and is associated with indigenous people, particularly in regards to habitat conservation, but also in

advocacy campaigns that address the effects of deforestation on the environment and people. The objective of the Moisés Bertoni Foundation is to improve the quality of life through the preservation of biodiversity, conservation of the environment and promotion of sustainable development. The Paraguayan Network for Conservation in Private Lands promotes the establishment of natural reserves by private owners for the protection and sustainable use of biodiversity. The “Association of Services of Indigenous - Mennonita Cooperation” (Short Name: ASCIM Asociación de Servicios de Cooperación Indígena - Mennonita) works with different indigenous ethnic groups in the Central Chaco area for their socioeconomic development. There are several networks of NGOs at the national level that develop initiatives in the environmental and social spheres within the Chaco Region. Key networks include the Network of Environmental NGOs and the Rural Network of Private Development Organizations.

The existence of these organizations in the area is important since the project will publish calls for proposals for the implementation of some activities under component 2.

Political capital: Relationship between selected communities and government institutions

There are different institutions with relevant mandates in the environment, climate change, agriculture and livestock at the national level. In terms of environment and climate change, we can mention the Secretariat of the Environment (SEAM), its National Office of Climate Change (ONCC) and the National Forestry Institute (INFONA). In particular, SEAM and INFONA are responsible for giving consent to environmental licenses for land use change, under Law 294, which regulates legal forest clearance in the Chaco. In agricultural matters, we can mention the Ministry of Agriculture and Livestock (MAG) and the National Institute of Rural and Land Development (INDERT). Finally, the department of Meteorology and Hydrology (DMH) and the Indigenous Paraguayan Institute (INDI), also have relevant competences. Section III A describes in detail their mandates and the role they will play in this proposal, together with other agrarian research institutions and academia.

At the subnational level, there are 3 departments and 15 districts or municipalities in the region whose authorities (mayors) and members of the municipal council (councilors) are elected every five years.

The selected communities belong to the Departments of Boquerón and Alto Paraguay, and to the municipalities of Mariscal Estigarribia, Fuerte Olimpo and Bahía Negra:

Table 3.- Departments and Municipalities of selected communities

Departament	District	Comunity	Population (inhabitants)	Type of Beneficiary
Boquerón	Mariscal Estigarribia	General Diaz	300	Farmers
		Pozo Hondo	1,000	Farmers
		Campo Loa	1,861	Indigenous (Nivaclé)
Alto Paraguay	Fuerte Olimpo	Toro Pampa	600	Farmers
		Colonia Maria Auxiliadora	500	Farmers
		San Carlos	300	Farmers
	Bahía Negra	Bahía Negra	3,900	Farmers

The department governors have among their competencies to prepare a departmental development plan, in coordination with the National Development Plan, as well as the coordination with the national institutions and the Municipalities of the activities to be implemented in their territories. The two Departments in which the project will operate (Boquerón and Alto Paraguay) have already elaborated their Departmental Development Plans, as well as Productive Planning. Although these plans integrate sustainable development considerations, they do not specifically mention adaptation to climate change. The Government Departments are organized in Secretariats, among which are the Secretariats of Environment and Sustainable Development with the responsibility of promoting environmental and productive policies. They offer support to small producers by putting, for example, at their disposal machinery to prepare plots or repair water infrastructure (artificial ponds (tajamares) and tanks (particularly Australian ponds) in exchange for returns. Government departments depend on funds transferred from the national budget.

The municipal governments have among their competencies the elaboration and execution of integral and harmonic development plans of the Municipality and its programs and projects. The municipalities are accountable for the responsibilities of the environment and productive sectors, namely the development of sustainable development plans and land zoning; conservation and restoration of natural resources; and the implementation of national standards (through agreements with national authorities). The municipalities of the Department of Boquerón have both Municipal Development Strategic Plans 2011-2025 and annual municipal development plans, although as in the previous case, these do not specifically integrate climate change considerations. The degree of strengthening of the Municipalities is directly related to their ability to collect taxes. Therefore, they are generally stronger in areas where agricultural production is highly developed.

Both departments and municipalities will be the institutions responsible for following the activities after the project period.

Communities are governed by neighborhood committees, whose leaders are democratically elected, and are recognized to address the municipalities and departmental governments in representation of their community.

Natural capital: climate and climate change, vegetation and water resources. Risk of loss of ecosystem services

In El Chaco, the climate is subtropical to sub-humid to sub-humid with summer rain. The climate of Chaco is dry and hot, with average temperature of 25 C ° in the center and north of the region. Rainfall varies between 1,200 mm on the coast of the Paraguay River, with humid to subhumid climate up to 400 mm per year in the extreme west, Dpto. De Boquerón, with semi-arid climate. In terms of distribution, most of the precipitation occurs in the 6 months of summer (October to April), where 80% of the annual precipitation is concentrated.

Due to climate change, temperature increases, extreme events and rainfall spacing are expected. According to the Vulnerability and Impact Study of Climate Change in the Great American Chaco (UNEP, 2013)⁴, for the average annual temperature in the last decade of study (2030-2040), increases above 1 ° C are expected in Alto Paraguay , Boquerón and Presidente Hayes corresponding to percentage increases between 5% and 6% with respect to the baseline

⁴ <http://www.cambioclimatico-regatta.org/index.php/es/>

1961-1990. The annual mean precipitation presents greater uncertainty in its projections within this study. The climatic models used indicate a slight but progressive increase in the average annual rainfall in the three departments of the Paraguayan Chaco: Presidente Hayes, Boquerón and Alto Paraguay. It is important to mention that while annual mean precipitation may not vary, extreme events and rainfall spacing can be considerable. These changes would have greater effects on crops than variations in annual mean precipitation.

Information on climate variables and their impacts is insufficient. The network of meteorological stations in Paraguay is poor. According to the Directorate of Meteorology and Hydrology (DMH) of the National department of Civil Aeronautics (DINAC), in the Chaco, region with 246,925 km², only 5 stations operate, limiting the reliability of climate information. Although there are some collection points in the Yacare river basin, the situation is particularly critical in the Pilcomayo river basin. Existing information is also poorly disseminated and used, without a system to inform farmers and pastoralists so that they can make more strategic decisions.

The Paraguayan Chaco still maintains an extensive area of unmodified areas with a natural vegetation of forests and savannas. In the Paraguayan Chaco the predominant formation (excluding the cultivated areas) is the arboreal, followed by predominantly herbaceous types of formation (savannah / grasslands / pajonales)⁵. The percentage of land used for agricultural holdings, represented by both natural and cultivated pastures, reaches 21.4%, the amount of land covered by forests represents 57.0%, while the area covered by bushes and savannas is 12.3%. The rest of the surface corresponds to floodable fields and bodies of water, with 9.2%⁶. However, some regions are heavily disrupted, particularly in the areas of Philadelphia (Boqueron Department) and surrounding areas.

There is an important risk of loss of ecosystem services due to changes in land use, logging, desertification and salinization. In the Paraguayan Chaco, in recent years, there has been an accelerated process of production growth, expanding the cattle border. Three million hectares of forest have undergone systematic logging in the last ten years, transforming mainly into pastures for cattle and more recently also for soybeans in the department of Alto Paraguay. These logging and clearing are for the most part legal. They are governed by Law No. 422/73, which stipulates that owners and farmers of more than 20 hectares must protect 25% of the forests on the property. In the Chaco biosphere reserve area, the required forest reserve amounts to 50% of the property. The Ministry of the Environment (SEAM), responsible for issuing environmental licenses for land use change, performs monitoring with satellite images for monitoring. A recent UNEP study⁷ has used different types of deforestation models to identify areas with the highest risk of deforestation in Paraguay, including the Central Chaco. Destruction of forests leads to loss of soil fertility and biodiversity, as well as loss of hydrological regulation and threatens the livelihoods of the communities, especially indigenous groups. Access to water resources is the main limiting factor, since surface water is sparse and intermittent, and groundwater is brackish. In the El Chaco region, water supply is a limiting factor and there are strong deficits in terms of quantity, quality and continuity in water supply. The local sources of water supply are: (i) Río Pilcomayo system, (ii) Yrendá aquifer system, (iii) Parapití aquifer system, and (iv) fossil aquifer system, northern Chaco.

⁵ Atlas geográfico del Chaco paraguayo. Informe y 12 mapas temáticos Unidad GIS – REDIEX Mayo de 2009 Asunción – Paraguay.

⁶ VIA Gran Chaco, UNEP-REGATTA 2013

⁷ Escenarios de deforestación futura en Paraguay. UNEP, 2016

The selected communities are in two river basins, the Pilcomayo River and Yacaré Creek (both intermittent).

Table 4.- Watersheds and precipitation in selected communities.

Watershed	Departament	District	Comunity	Precipitations (mm/year)
Pilcomayo	Boquerón	Mariscal Estigarribia	General Díaz	600-700
			Pozo Hondo	600-700
Yacaré	Alto Paraguay	Fuerte Olimpo	Campo Loa	700-800
			Toro Pampa	1000-1200
			Colonia Maria Auxiliadora	1000-1200
	San Carlos	1000-1200		
	Bahia Negra	Bahía Negra	1000-1200	

The problem of the Pilcomayo River profoundly affects the region. The Pilcomayo river basin covers an estimated area of 272,000 km², which extends over the national territories of Argentina, Paraguay and Bolivia; Forming part of the river system of the River Plate basin. The Pilcomayo River is an unstable water course that begins in Bolivia and flows into the plains of the Chaco, forming part of the border between Paraguay and Argentina, where its course becomes unpredictable, depending also on the climatic phenomenon it goes through, whether there are large rains or prolonged droughts. The hydrological regime of this river is very seasonal, basically there is a wet quarter between January and March followed by three dry quarters.

Another of the main features of the Pilcomayo is the massive transport of sediments, and a consequence of this phenomenon is the recoil of the river in upstream direction at an accelerated rate, which is due to the accumulation of logs carried by the floods that form dykes initially Permeable, but together with the sediment, silt and mud contributed by the flow of the river, they form extensive hydraulic fillings, causing great concern in the two countries of the low basin in aspects such as the affectation of riparian populations, the environment (due to a Trend towards desertification), the migration of fish and the distribution of water.

To all this, anthropocentric action is added, manipulating the currents of water diverting them from their normal course, in some cases creating small dams for local benefits. This instability represents a potential change of the river to a new channel, according to the characteristics of the terrain or the accompaniment of human labour which can even lead to the extinction of the old channel and to the ecosystem that depends on it⁸.

⁸ In 1991, the "Pantalón" project began, an agreement between Argentina and Paraguay that provided for the distribution of the Pilcomayo River in equal parts between the two countries. To this end, it was agreed to construct shifting channels that will carry the waters into each of the countries. However, water was never equitably distributed, causing in each flooding problems for one of the two countries in the lower basin.

The drought that affected the entire Pilcomayo river basin in 2016 was the second largest in the last 30 years, according to official records, and affected both the Chaco communities producers and wildlife, producing a high mortality of fish, Capybaras, yacarés and other animals.

Economic capital: Livelihoods mainly based on subsistence farming systems

The Chaco is the main cattle region of the country, with approximately 8.2 million heads (according to data from the National Agricultural Census 2008). It includes milk and meat cattle in a mainly extensive and semi-extensive regime, with the average animal load being 4.6 hectares per animal (Rural Association of Paraguay, 2010). Bovines and sheep are the most produced in the region.

The menonitas own the great cooperatives of agricultural production. The livelihoods of indigenous and farming communities can be described as follows:

- **Indigenous Communities:** As mentioned, they live from subsistence agriculture, partly from small-scale income agriculture, from a simple stockbreeding, with rustic races, from non-timber forest products (eg carob pods), from Beekeeping and small-scale hunting. Because of their knowledge of practical ecology they are very efficient hunters. They have 60 to 100ha of land per family.
- **Farming communities:** In many cases they have some employment, mainly working in other farms. Despite scarce economic resources, farmers are self-sufficient in their own land with family farms (maize, beans, cassava) and some income crops (i.e. sesame). Additionally some have cattle in a smaller or greater scale. Generally they own farms of 100-200 ha of surface.

Small farmers grow mainly beans, corn, and yams. The cultivated area totals around 23,252 hectares according to data from the National Agricultural Census (2008), which represents 0.69% with respect to the total national territory, with the Department of Boquerón having the largest crop area.

Table 5.- Crops areas in Paraguay.

Crops	Chaco (ha)	Paraguay (ha)	Crops	Chaco (ha)	Paraguay (ha)
Garlic	4	446	Sugar cane	30	81,830
Rice	-	22,025	Groundnut	9,513	24,113
Cassava	143	170,000	Orange	2	7,457
Beans	934	55,424	Banana	6	7,434
Soybean	-	2,463,510	Tangerine	1	1,824
Maize	689	858,101			

Source: Ministry of Agriculture and livestock (MAG, 2008).

The production of vegetables and fruits, which are associated with small and medium-scale horticultural producers, add together considerable volumes for self-consumption and income production.

Access to credit is very limited. In Paraguay, on average, of the 264,047 farms of less than 50 hectares identified in the National Agricultural Census (CAN) of 2008, 13% receive technical assistance, 16% have access to productive credits and 28% are associated with some

organization of agricultural producers. Service coverage is lower for smaller farms. However, in El Chaco, the farms have a larger area and small indigenous and farmer producers only use credit for access to housing, they do not access productive credits.

Access to agricultural extension services is insufficient, as institutions have few staff and communities are isolated and distant from one another. In order to be able to receive assistance from the Agrarian Extension Department of the Ministry of Agriculture and Livestock (MAG), farmers must form committees, draft statutes and register with the municipality. In the Department of Boquerón there is only one agrarian extension agent of MAG. In Paraguay high, there are no agents of MAG, the departmental government itself takes care of it. On the other hand, INFONA also provides extension services for the sustainable management of forests, however it has only one agent for the entire El Chaco region. In indigenous communities the problem is that they are very closed communities, which do not readily accept technicians, so that a member of their community is usually trained.

Resistance to change in production techniques is high among small farmers and indigenous producers. Lessons learned from other experiences show that (i) techniques such as soil conservation, composting, crop rotation, green manure, etc. require some time to show positive results, so more success is obtained when these results are evident through model producers and demonstration plots; (ii) traditional knowledge is key to adapting to climate change in terms of soil, water and wind management (in relation to pollinators for honey production).

Physical capital: Infrastructures and communications

The provision of access to water and sanitation services in the Chaco is practically non-existent. There are no responsible entities because of the scarcity of fresh and surface fresh water, the supply is mainly made through individual and collective water collection systems (artificial ponds (tajamares), Australian tanks and cisterns), which are highly vulnerable to rainfall and, in many cases, exposed to high levels of pollution. The tajamares serves a dual function, providing water for consumption and for production.

Access to water for agricultural and livestock production is a limiting factor. Residents of communities with the least installed infrastructure identify as a threat animal mortality due to high temperatures and water shortages. Traditional reservoirs or tajamars with Australian tank are traditionally used⁹. These are reservoirs whose excavated earth is used to construct an Australian tank that allows to carry the water to relatively great distances taking advantage of the gravity (height of water in the Australian tank). Generally Australian tanks are filled with windmills. The traditional system of water collection consists of channels with which the water is taken to the tajamar.

Health services are insufficient. The table below shows the number of health facilities in the Departments of Boquerón and Alto Paraguay. Some of them are located in very remote populations, which had never had access to health care. They also cover assistance to indigenous communities.

⁹ "Colecta, almacenamiento, utilización y reciclaje de agua en el Chaco central" (Wilbert Harder, Harold Thiessen y Norman Klassen, 2004).

Table 6.- Number of Health Establishments

	Total number of Establishments of MSPyBS Health (year 2013)	Total number of Establishments with Internment of MSPyBS (year 2013)
Boquerón	41	4
Alto Paraguay	25	7
Country	1403	225

Source: Basic Health Indicators Paraguay 2015, Ministry of Public Health and Social Welfare (MSPyBS)

The region is characterized by its limited road infrastructure, accentuated by eventual floods, which restricts access and communication of communities. The only asphalted road in the region is the Transchaco road, which runs through it. In the department of Boquerón the road network is better maintained since private cooperatives are responsible for 50% of the maintenance. Communities are connected by primary and secondary rural land roads.

Radio is the main way of news dissemination and is commonly used to call communities to workshops and other events, as well as for training, mainly through the community radio Pa'i Puku. Moreover, the region has 100% coverage of mobile telephony.

Vulnerability to climate change, problem to be addressed and project approach

The **vulnerability** (extent to which a system is capable or unable to cope with the negative effects of climate change, including climatic variability and extreme events) is assessed by the following factors:

- **Exposure** or degree of climatic stress: As mentioned, although droughts and floods are regional events due to climate change, they will be accentuated in magnitude and frequency.
- **Sensitivity** or degree to which a system is positively or negatively affected by climate-related stimuli: Livelihoods in the region (and in particular in selected communities) are based on livestock and agriculture, depending directly on natural resources and ecosystem services. Variations in the spatial and temporal distribution of precipitation as a consequence of climate change will compromise the availability of water for human consumption and agricultural production. This, together with the degradation of soils and salinization of bodies of water, linked to the degradation of the Chaco forest, represents a limiting factor for its development. Therefore, their sensitivity to climate change is very high.
- **Adaptive capacity** or ability of a system to adjust to climate change: From the previous analysis of the different types of capital that determine adaptive capacity (human, cultural, social, political, natural, financial and physical capital), it can be inferred that the adaptive capacity in the region is low, since it has threats at all levels.

In particular, it is noted that:

- At the community level, the impacts of climate change on water resources and agricultural systems will reduce availability and access to food. Recurrent droughts will also affect the stability over time of both factors, weakening their food security.
- At the ecosystem level, deforestation linked to the current production model could accentuate the impact of climate change on the region in the future. Given the different scenarios of climate change with maintenance of precipitation or small decrease, and temperature increase, in addition to increased extreme events, all ecosystem services will be affected, mainly with a reduction in the quantity and quality of goods and services provided.
- At the institutional level, there is limited capacity to (i) generate and disseminate agro-climatic information with the aim of increasing knowledge to reduce vulnerability; (ii) to ensure the diffusion and compliance of existing regulations and (iii) to link different jurisdictions and levels of government to ensure that the adaptation of climate change is adequately mainstreamed into local development plans.

In this context, the approach of Ecosystem-based Adaptation (EBA) is of great interest. As mentioned, the Paraguayan Chaco still maintains an extensive area of unmodified areas that can contribute to reducing the vulnerability of communities to climate change. These ecosystems need to be preserved as they determine areas of high value for the conservation and provision of environmental goods and services and are a relevant factor in mitigating the effects of climate change. This project aims to propose solutions to exemplify the need for an Ecosystem-based Adaptation (EBA) that will reduce the impact of climate change on the territories.

Selection of intervention sites

The project will implement concrete interventions in six communities, General Diaz, Pozo Hondo and Campo Loa in the Department of Boquerón and Toro Pampa, Colonia Maria Auxiliadora, San Carlos and Bahía Negra in the Department of Alto Paraguay. The communities are located along two watersheds, the one of the Pilcomayo River and the one of the Yacare River. Map 3 illustrates the location of the selected communities in the Chaco region of Paraguay.

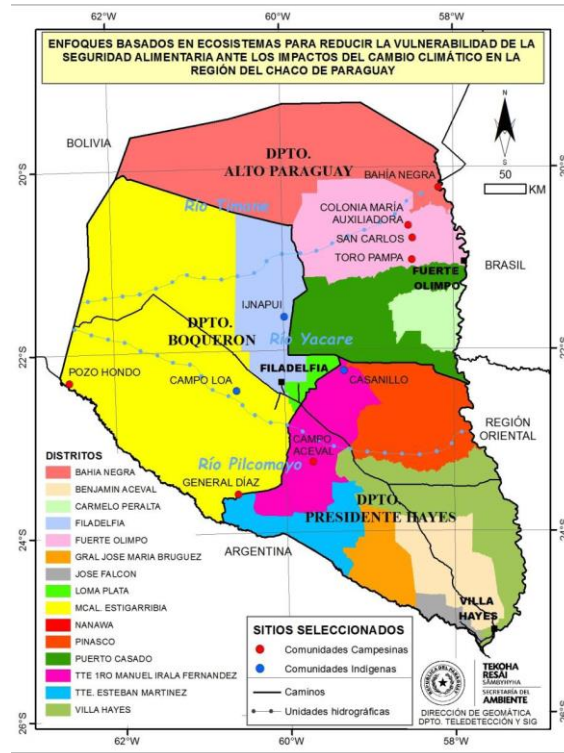
The selection of communities is based on local priorities. The selection was conducted through consultations with local authorities (departments and districts). They reflect local priorities, as indicated in Departmental Plans and other planning tools. At the national level, the SEAM and its Planning Division, responsible for coordinating projects and programs, ensured that communities that did not benefit from other interventions were prioritized in order to avoid duplication.

Selected communities are highly vulnerable: As described in previous sections, communities are highly vulnerable to climate change (high exposure and sensitivity to climate change) and have low adaptation capacity. They are also characterized by low availability of relevant information¹⁰ (production systems, agricultural practices, non-existence of ongoing programs and projects), excepting for Toro Pampa, that was analysed by the UNEP VIA analysis. All

¹⁰ A complete assessment of community vulnerability regarding food production will be carried out for each community as part of the Project.

these communities are environmentally integrated. They face similar problems in terms of forest and habitat transformation, water availability and food production.

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



- In **Boquerón**, Campo Loa, is the community with better access in term of roads and some basic infrastructure. However, for this reason, the forest is under great pressure. For example, the community sells wood of high commercial value species such as *quebracho* at low prices due to lack of sustainable forest management criteria and information for economic decision-making. The communities of General Díaz and Pozo Hondo are located in the ecotone between the Dry and Wet Chaco. These two communities face similar challenges in terms of access to water resources and both are very affected by the seasonal fluctuations of the Pilcomayo River, which will be even greater due to climate change, affecting food production. Also, they face problems to secure land for agricultural settlement.
- The selected communities of the **Alto Paraguay** department (Toro Pampa, Colonia Maria Auxiliadora, San Carlos and Bahía Negra) are all within the Pantanal ecoregion and face the same problems in terms of (i) very limited road infrastructure and difficult access, (ii) pressure on natural resources due to the expansion of the agricultural and livestock frontier and (iii) dependency of the Paraguay River and food production.

The inclusion of these communities in two departments and three municipalities will also help increase collaboration among local governments, which is crucial to face the challenges that extreme climatic events can bring to the whole region. This is also key to achieve the sustainability of the project activities. Furthermore, the work in each of these

communities will serve as pilots that can be later replicated in other communities with similar characteristics.

Selecting communities that are representative not only in terms of vulnerability but in terms of their ecosystem is crucial for SEAM in order to help departments and municipalities to implement local adaptation plans with an ecosystem approach. Furthermore, the project has great replication potential. As noted in section G below, 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 Objectives:

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. 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.

Project / Programme Components and Financing:

Table 7.- Project components and financing

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
<p>1. Knowledge management on vulnerability and resilience to climate change improved with tools and instruments to implement cost-effective adaptation measures</p>	<p>NATURAL CAPITAL: BASIC INFORMATION ON ECOSYSTEMS AND ECOSYSTEM SERVICES</p> <p>1.1 Detailed mapping of ecosystems, including agro-ecological zones, water resources, forests and other ecosystems to enable ecosystem-based adaptation and the prioritization of restoration areas and practices that will ensure provision of vital services for food security</p> <p>1.2 Information and monitoring system for agro-climatic risk assessment.</p> <p>ECONOMIC CAPITAL: STUDIES FOR IDENTIFYING GOOD PRODUCTION PRACTICES FOR ADAPTATION</p> <p>1.3. Assessment of the vulnerability to climate change of specific plants and animals used as food source to contribute to the design of strategies for ecosystem and community-based adaptation.</p> <p>1.4 Study of the Ecology, Management and Nutritional components of Algarrobo and Viñal (<i>Prosopis</i> spp.) to contribute to the design of strategies for ecosystem and community-based adaptation.</p> <p>1.5 Research on traditional practices that contribute to climate resilience, including crop varieties.</p> <p>1.6 Development of specific protocols for implementing good forest and agricultural management practices in farmers and indigenous communities</p> <p>POLITICAL CAPITAL: ANALYSIS OF INCENTIVES AND DISINCENTIVES FOR THE ADOPTION OF CLIMATE-RESISTANT PRODUCTION PRACTICES</p> <p>1.7 Elaboration of an analysis of incentives and disincentives for the adoption of climate-</p>	<p>Scientific information available to better understand vulnerability to climate change at the local level and implement climate change adaptation measures</p>	<p>893,483</p>

	<p>resilient practices in El Chaco region</p> <p>HUMAN CAPITAL: VULNERABILITY STUDIES AND ESTABLISHMENT OF THE BASELINE IN BENEFICIARY COMMUNITIES</p> <p>1.8 Vulnerability studies (including water) for the communities to contribute to the design of strategies for ecosystem and community-based adaptation) and baseline studies.</p>		
<p>2. Adaptive capacity in rural areas of greatest vulnerability strengthened through concrete adaptation measures favouring an ecosystem-based approach.</p>	<p>2.1 Planning: Participatory design of Community-based adaptation plans for Communities, that contain concrete actions for adaptation that strengthen ecosystem resiliency, as well as draw on climate-resilient traditional and other natural practices</p> <p>2.2 Implementation of Community-based adaptation plans for communities that contain concrete actions for adaptation that strengthen ecosystem resiliency, as well as draw on climate-resilient traditional and other natural practices, including:</p> <p>Human Capital: Technical Assistance to Strengthen Extension Services</p> <p>2.2.1 Training and exchange of knowledge among stakeholders and awareness building in project intervention areas to implement key adaptation strategies.</p> <p>Physical capital: Support for access to inputs and improved infrastructures for water management</p> <p>2.2.2 Conservation and restoration of forests (including "protective forest") and other ecosystem</p> <p>2.2.3 Agro-ecological production in farming and livestock, including agroforestry, apiculture, community seed banks and silvopastoral management</p> <p>2.2.4 Implementation of improvements in the efficient use, catchment, harvesting and storage of rainwater</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 farmers and indigenous people's communities</p>	<p>4,585,466</p>

3. Capacity development and awareness to implement and upscale effective implementation of adaptation measures at national and local levels	3.1 National level: Detailed training plan for SEAM and partner agencies at national level (ministries and agencies, including but not limited to MAG and INFONA), on mainstreaming climate compatible development across sectors 3.2 Local level: Training plan for partner agencies at local level (including but not limited to departmental and municipal governments) 3.3 Identification, systematization and exchange of lessons learned of the project	Stakeholders enabled to effectively respond to long-term climate change impacts	494,650
4. Project/Programme Execution cost			596,400
5. Total Project/Programme Cost			6,569,999
6. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)			558,451
Amount of Financing Requested			7,128,450

Projected Calendar:

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

Table 8.- Project Calendar

Milestones	Expected Dates
Start of Project/Programme Implementation	June 2017
Mid-term Review	July 2019
Project/Programme Closing	November 2021
Terminal Evaluation	December 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.

A. Project components

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

Natural Capital: Basic Information on ecosystems and ecosystem services

Detailed ecosystems mapping

- **Objective:** The objective of this activity is to analyze the natural capital in intervention areas, including the ecosystem services they provide, along with their current state and the threats against them.
- **Expected Result:** The project will prepare detailed maps of the ecosystems in relevant areas for the selected communities, identifying water resources, forests, agricultural lands and other ecosystems along with the threats they face. This will be integrated into GIS. As part of this exercise, the existing development plans for these areas will be analyzed as well.
- **Parties Involved:** Under the coordination of the SEAM this activity will rely on the participation of the Ministry of Agriculture and Animal Husbandry, the National Forest Institute, the pertinent departments and districts, and communities, who will provide key information along with civil documents.

Hydraulic Assessments and Hydrometeorological Bulletins

- **Objective:** As mentioned in Part I, the hydraulic flow regime of the Pilcomayo River greatly affects the communities and agricultural producers of the Gran Chaco area just as much as it affects the ecosystem and the services they provide, principally in the regulating the hydrology of the area. This project seeks to deepen the understanding of the behavior of the Pilcomayo basin in Paraguay. At present, the only available information is from model-based hydrological studies¹¹. The objective is to obtain hydrologic and meteorological daily readings (water level and water temperature, precipitation, temperature and solar radiation) in order to be able to calibrate the water resource assessment obtained from the theoretical models¹. The data will also be used to create hydrometeorological bulletins,

¹¹ Via the support from the projects of the Marco Cuenca del Rio De La Plata program (GEF PNUMA y OEA) and the work of PMSAS in the modernization of the areas of water and sanitation (World Bank).

which will provide information such as accumulated precipitations and comparisons with data from previous years, the monthly and annual accumulated precipitation in the Pilcomayo basin, maximum water level, the hourly mean and minimum levels, predicted events, and recommendations for communities. This agro-climatic information is particularly important for those individuals in agriculture and animal husbandry, as emphasized in the analysis carried out by the UNEP-REGATTA VIA analysis.

- Expected Result: This Project:
 - Will finance the acquisition and installation of 3 meteorological stations in the Pilcomayo river basin, at the locations specified in the table provided below (see footnote below for the suggested locations and technical specifications of the equipment.)
 - Will train the technical workers of SEAM in the management and interpretation of data along with the creation and dissemination of bulletins.
 - Will specify a protocol for the distribution of information, in a fashion that is compatible with the needs of the interested institutions (for example through online communications) as well as the affected communities (for example through radio or cellular messenges).

Table 9.- Location of Hydrometeorologic Stations in the Pilcomayo River Basin

Station	Latitude	Longitude
Canal Paraguayo Km. 6	-22.697569°	-62.156644°
Mistolar	-23.169273°	-61.624327°
Gral Díaz	-23.577066°	-60.579894°

- Parties Involved: Following the Paraguayan regulations on the subject, the data will be stored in the DINAC and be made available to the General Directorate of Water Resource Conservation and Protection of the SEAM for their usage. The maintenance of the equipment will also be the responsibility of DINAC. The facts that (i) the locations where the equipment will be installed are difficult to access and (ii) that the river flow changes seasonally will be taken into account in order to choose robust equipment amenable to these conditions.
- To implement this activity, specific contracts for the training of the interested national parties on the management of data and the creation and distribution of bulletins as well as for the acquisition installation of the equipment will be required. The installation requires (i) the realization of a feasibility study for the location of the equipment and (ii) the construction of security fencing¹².

¹² Design specifications could be as follows (or similar): 16 m² plot, 2 meters high, secured by galvanized 2-inch (diameter) steel posts, 1.5 inch galvanized steel support, and chain-link fencing with an access 1.2 m wide access gate. Installation of security compartment on a 6.7 meter - 2" diameter galvanized steel pole set into a concrete cube of 40x40x70 cm (length, width, depth). The setup of the station will also include appropriate fasteners, electric cables, and security devices.

Economic Capital: Preliminary studies for the identification of best adaptation practices

Vulnerability study of the undomesticated plants and animals utilized by indigenous communities

- **Objective:** As mentioned, indigenous communities rely largely on the flora and fauna of the forest as sources of food, construction materials, energy, and medicine. Given the fragility of the forests of the Chaco region, the study is intended to analyze their vulnerability (identifying if there are currently abundant/threatened species and their vulnerability in the face of climate change) in order to be able to create forest management plans that are comprehensive, resilient, and sustainable as part of the adaptation strategy of these communities. The study will be carried out during the wet and dry seasons in areas of practical importance for the selected communities. The results of the study will be applied for the specific use of the pilot communities and will be capitalized on by public institutions in inform their management plans for the Chaco region.
- **Expected Results:** As a result of the study it will be possible to obtain recommendations about the usage of these resources, indications of which resources can be exploited and under what conditions, which resources should be protected, and how to integrate the use of these resources into management plans.
- **Involved Parties:** SEAM will provide 5 technical consultants to direct support this activity. The Paraguayan Institute for Agrarian Technology, the Paraguayan Institute for Indigenous Communities, governments of pertinent departments, and the communities will all be important sources of information and will also review and contribute to the study through the Mechanism of Technical Support as indicated in the corresponding section.

Study of the aspects of ecology, management, and nutrition of Carob and Prosopis (Prosopis spp.) trees for the optimization of silvopasture (agroforestry)

- **Objective:** The Carob (*algarrobo*) and *Prosopis* are nitrogen fixing trees whose activities contribute to the enrichment of the soil, while at the same time providing shade and nourishment (in the form of leaves and seed pods) for livestock. The project will complete a study on the ecology, management, and the nutritional components of these trees. This study aims to analyze and quantify the benefits of integrating these trees into agroforestry systems and to provide direction for the management of pastures that integrate them, particularly in the context of climate change which forecasts longer spacing between rainfall and thus prolonged and more frequent periods of drought.
- **Expected Result:** As a result, the study will help create the means of guiding management plans for agroforestry systems that have integrated these trees. The results of the study will be applied for the specific use of the pilot communities and will be capitalized upon by public institutions to inform their development plans for the Chaco region. The specific area of investigation will be the Central Chaco.
- **Involved Parties:** This study will be brought about in cooperation with the National University of Asuncion's Department of Agrarian Science, who maintains a branch in the Chaco Region and the **IPTA**, who will supervise the results of the study. The communities will also be consulted with as sources of information.

Study of traditional practices that contribute to climate resilience

- **Objective:** In the Chaco Region, the cycle of drought and floods are a part of the way of life for its inhabitants. Therefore, there exists empirical knowledge about surviving in these conditions, including how to manage the breeze and the bees to produce honey, knowledge of the behavior of the soil to identify the optimal moment for cultivation or sowing seeds after a rain event, the mixed use of specific cultivars, and rotation of cultivation plots.
- **Expected Result:** The project will examine traditional practices in agricultural management, animal husbandry, and more thoroughly look at practices of manipulating the environment in order to identify which of these practices reduce community vulnerability to the variability of climate change. This could include practices like agroforestry, beekeeping, crop selection, and crop rotation among other practices. The results will be applied specifically to the pilot communities and will be capitalized on by national and local government institutions to keep in mind when forming development plans for the region.
- **Involved Parties:** This project will take place with the active participation of the SEAM, MAG, INFOMA, and INDI; pertinent departmental and district governments; the pilot communities; the university; ONG; and the private sector and will be centered in locations relevant to the selected communities.

Development of specific protocols for implementation and best practices of forest management and agriculture in indigenous and rural communities

- **Objective:** In order to facilitate the application of the results of these studies, the knowledge gathered will be used to develop specific implementation protocols for best practices of forest management, agriculture, and animal husbandry in rural and indigenous communities. Amongst other topics, this guide will include technical criteria about species to be utilized for restoration along with specific measures for the conservation of protective forests in order to increase the resiliency of these communities.
- **Expected Result:** Directions to implement best forest management and agriculture practices in these rural and indigenous communities. These instructions, compiled in the form of a guidebook, will be published and will serve as the foundation of the activities throughout module 2.
- **Involved Parties:** This goal will involve **SEAM, INFONE, INDERT, INDI**; the departmental and district governments, and the communities. The activity will increase the implementation of the Forest Act 422/73 and the Environmental Evaluation and Impact Act 294/93, especially in relation to rural and indigenous communities.

Political capital: Analysis of the incentives and deterrents to the adoption of best practices for climate resilience (agriculture and agroforestry systems, land use change)

- **Objective:** The project will examine the laws, regulations, politics and plans at the national, state, and district levels that regulate the usage of natural resources including forests, water bodies (rivers, lakes, wetlands), farms, and pastures to strengthen the implementation of legal and economic aspects that could help effectively apply adaptation practices related to food production.

As mentioned in Part I, in the Paraguayan Chaco, in recent years, there has been an accelerated process of production growth, expanding the cattle border. Three million hectares of forest have undergone systematic logging in the last ten years, transforming mainly into pastures for cattle and more recently also for soybeans in the department of Alto

Paraguay. These logging and clearing are for the most part legal. They are governed by Law No. 422/73, which stipulates that owners and farmers of more than 20 hectares must protect 25% of the forests on the property. In the Chaco biosphere reserve area, the required forest reserve amounts to 50% of the property. The Secretariat of the Environment (SEAM), is responsible for issuing environmental licenses for land use change.

The objective is to identify how to incentive practices that allow an increase of production and income per hectare, in order to reduce the need for logging while increasing food security.

This analysis bases its importance on strengthening the synergy with the regulatory framework, focusing on food security. This inspection will include, but is not limited to, the Forest Act, The Afforestation/Deforestation Act, the Forest Services Act, and the Fiscal Reorganization Act as well as the development plans of the selected departments and districts.

- **Expected Results:** Recommendations about how to improve resilience to climate change in the different areas of focus. The result of this analysis may also be utilized to inform the current governance on Payment for Ecosystem Services (PES) – (Forest Services Act 3001/06) to include adaptation measures based on ecosystem service benefits under the PES.
- **Involved Parties:** This project will be carried out with the participation of the **SEAM**, the Secretary of National Emergency Services, **MAG**, **INFONA**, the National Seed and Vegetable Health and Quality Service, the departmental and district governments, communities, universities, **ONG**, and the private sector.

Human Capital: Vulnerability studies and the establishment of the baseline indicators in the beneficiary communities

- **Objective:** The beneficiary communities will be carefully studied to identify their vulnerabilities, the number of beneficiaries, and the initial measurements for the procedure.
- **Expected Result:** General vulnerability studies and evaluations (including water impacts) will be carried out in the eight communities not covered by the UNEP (2013) (VIA analysis will be done to contribute to the creation of reports on ecosystems and community adaptation).
- **Involved Parties:** Local governments and communities.

Component 2: Specific ecosystem and community-based adaption measures

Development of community adaptation plans

- **Objective:** The adaptation plans will strategically utilize the products of the first module. This will guarantee that the most relevant measures are prioritized based on the individual, group, sector, geographic area, and calendar. It will also capitalize on the synergy between the different elements, favoring the design and application of profitable measures. In general, the adaptation plans will carefully keep in mind the territorial/spatial aspects of the ecosystems and will align themselves with this boundary or will suggest adjustments to the current land usage plans. The proposed plans will come from a viewpoint that keeps in mind that the project/intervention sites are made of a mosaic of natural areas, agricultural areas, and communities. Consequently, the plans will account for the conditions and trends in

natural resource usage; the natural and manmade influencing factors; and the opportunities for conservation, restoration, and development.

- Expected Result: A community adaptation plan will be developed in each of the selected communities that will include a follow-up and monitoring framework.
- Involved Parties: The community adaptation plans will be developed in coordination with the SEAM, UNEP, departmental and district governments and, above all, with the actual communities. This involvement will be discussed and approved by each of the interested parties. Each plan will reflect the priority of a specific community. Therefore, it is probable that the plans will vary slightly in accordance with the context of each community and the differences between them.

Implementation of community adaptation plans

As soon as the plans are approved by the relevant interested parties, the adaptation measures will be implemented on-site.

In close coordination with the departmental and district governments, the project will provide (i) technical assistance (cooperative extension services); (ii) supplies such as seeds, tools, and materials to implement the activities; and (iii) will provide support for the construction or improvement of water collection, conservation, and distribution infrastructure for both human consumption and agriculture.

In particular, the project will also include the promotion of beekeeping, since there is an elevated and increasing demand for honey (in part because the government has recently introduced it to the school lunch program) and because the honey produced in the region is of high quality (it was recently selected as the third-best produced in the country)

Social capital: Technical assistance to strengthen cooperative extension services for agriculture and agroforestry

- Objective: Reinforce the capacity of the members of these communities to implement the best practices identified in module 1. The training will be done in coordination with the extension services of **MAG and INFONA**, with the aim of strengthening these extension services and avoiding duplications.
- Expected Result: Assistance will be offered to the communities, providing (i) technical advice for the improvement of agricultural production techniques, with special emphasis on the production of ecosystem-based adaptation measures, and (ii) advice and support for the creation of enterprising and innovative initiatives that could create jobs, promoting the diversification of activities in the communities.
- Involved Parties: **ONG** with accompaniment from **MAG and INFONA** in order to strengthen cooperative extension services so that the basic information concerning best production practices is distributed in the pilot communities, in conjunction with local government (city and departmental).

Given that the increase in adaptation capacity is a social process, in place of a series of isolated activities carried out individually, biannual community activity meetings will be organized along with yearly community meetings concerning the adaptation plans. These meetings will allow for social learning to take place and will allow for opportunities to identify any means of improving the execution of the project. As detailed in section G, in this sense the project will promote a focus on “learning by doing.” All of the farmers, indigenous populations, and support groups will actively participate in the evaluation of vulnerability and in the planning, application, follow-up,

and evaluation of the adaptation measures generated by their own efforts. The training will take place in coordination with **SEAM, UNA/FCA** and other universities, **IPTA** and the departmental and district governments, the communities, the **ONG**, and the private sector and will be structured according to the specific needs of the communities.

The service contract will follow **SEAM's** procedures for public contracting. There are reliable **ONG's** in this area who can handle the demands of this contract. Agents of **MAG and INFONA** will be directly involved in this work.

Physical Capital

Support for access to supplies

- **Objective:** This activity seeks to contribute to agro/ecologic production in both agriculture and animal husbandry by way of the facilitating access to resources. This includes agrosilvoculture and agroecology through the development of activities to be identified in module 1 (such as community seed banks, minimal/zero tillage, crop and land rotations, diversification measures, reduced use of chemical fertilized and activities as well as the promotion of seasonal gardens that could contribute to increasing food security).
- **Expected Result:** Facilitation of access to supplies such as seeds, tools, and materials to implement these activities, in exchange for compensations from beneficiaries.
- **Involved Parties:** Local governments and communities (the hope is to reinforce the support given by local governments by involving them.)

Improvement of water management infrastructure

- **Objective:** As in the previous case, this activity hopes to contribute to the promotion of agroecology production in both agriculture and animal husbandry, as a measure of ecosystem-based adaptation.
- **Expected Result:** This will support the construction or maintenance of water collection, conservation, and distribution infrastructure through artificial ponds (tajamares) and tanks (particularly Australian ponds) for both human consumption and agricultural production, based on the results of the vulnerability analysis and the baseline study which will be carried out in module 1, in exchange for compensations from beneficiaries. This will also be in accordance with the best practices for the region.
- **Involved Parties:** The National Environmental Sanitation Services, **SEAM, MAG**, the departmental/district governments, and the communities.

The average size of the planned community investments is showed in table 10 below.

Table 10.- Stimated average size of the planned community investments

	Average investment per community (USD)						
	General Díaz	Pozo Hondo	Campo Loa	Toro Pampa	Colonia María Auxiliadora	San Carlos	Bahía Negra
Stimated number of beneficiary families	50	167	310	100	83	50	650
Smart agriculture (*)	35,714	119,286	221,429	71,429	59,286	35,714	464,286
Apiculture (*)	23,214	77,536	143,929	46,429	38,536	23,214	301,786
Resilient livestock (*)	14,742	49,238	91,400	29,484	24,472	14,742	191,646
Conservation and restoration of forests.	464	23,214	77,536	143,929	46,429	38,536	23,214
Improvement of water management infrastructure (**)	53,571	178,929	332,143	107,143	88,929	53,571	696,429
Stimated average investment	127,242.00	424,988.28	788,900.40	254,484.00	211,221.72	127,242.00	1,654,146.00

(*) Including technical assistance and support for access to supplies.

(**) Including feasibility studies, design (if needed) and construction/repairation in each area.

Component 3: Training

National Level

- **Objective:** In the short term, this activity aims to strengthen the capacities of key institutions from the Technical Support Mechanism of the project to exercise their monitoring role in the project. In the middle and long term, the training will enable these key institutions to integrate climate change adaptation into plans, strategies, and development processes, especially to mainstream climate change adaptation within the process of environmental licensing processes.
- **Expected Result:** Technical aspects of adaptation planning are familiar and perfectly understood by target audience, including vulnerability analysis including climate scenarios (the ability to identify and interpret data)., prioritization and cost-benefit analysis of adaption options, indicators, monitoring and evaluation plans, financing options, training for interpreting
- **Involved Parties:** Key institutions from Technical Support Mechanism of the project, with a particular focus on SEAM, MAG and INFONA, which are the institutions in charge of analyzing the environmental management plans during the licensing processes. (Law 294/93).
- The Terms of Reference for this activity will include:
 - Elaboration of a needs assessment, including the development of a methodology to prioritize the gaps and necessities for a training program using transparent criteria.
 - Production of a training plan that summarizes the results of the assessment and plans actions in response, including (i) in-person workshops and (ii) the productions of guides and manuals.

- Creation of materials (including a protocol for the integration of climate change adaptation in the process of enacting environmental permits).
- Organization of workshops and train-the-trainer programs.

Local Level

- **Objective:** To integrate climate change adaption in plans, strategies, and processes of local development. To accompany the small producers of the region in the adaption and consolidation of sustainable, and climate-resistant production techniques.
 - **Expected Result:** Best practices for agriculture and water-resource management, demonstration areas/plots, and train-the-trainer programs.
 - **Involved Parties:** Key institutions from the **Local Coordination Committees** of the project: districts; communities; and **SEAM, MAG, and INFONA** agents at a local level.
 - The Terms of Reference for this activity will include:
 - Needs Assessment: A needs assessment will be carried out that will include (i) the development of a methodology to classify the gaps and needs of a training program using transparent criteria and (ii) the creation of a workshop to establish priorities.
 - Creation of a training plan that encompasses the results of the assessment and plans actions in response, including (i) in-person workshops and (ii) the creation of manuals and guides if necessary.
 - Creation of materials: It will be valuable if new guidance material can be created or at least if materials previously made by other institutions can be modified or updated such as the **MAG** manual on risk management.
 - Organization of workshops and train-the-trainer sessions.
- 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.

B.Economic, social and environmental benefits

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 implement adaptation actions that ensure the continuous provision of some the critical supporting, provisioning, regulating and cultural ecosystem services¹³. 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

¹³ The impact of the project in regulating the micro-climate (and decreasing the exposure to higher temperatures) will be limited given the available resources and the wide geographical scope of the project.

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.

The full project focuses on increasing the resilience of communities, working at different scales to achieve this, including generating information in component 1, prioritizing actions in output 2.1 and building capacity to design and implement climate change projects in component 3. In any case, output 2.2 related to implementation of activities on the ground, amounts alone to almost 4,380,000 USD, that is, 73% of all the funds allocated to the three components. In average, about 438,000 USD will therefore be available for investment on the ground in each of the ten selected communities. This will be enough to make a significant impact, given that funds will be used strategically and synergies will be identified and exploited, as noted in section C below. 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 cosmo-vision, 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.

The project provides considerable economic benefits

In addition to significant environmental and social benefits, the project provides considerable economic benefits.

There are no quantitative data published specifically for the Chaco region on harvest increases and other benefits anticipated from the measures to be implemented by the project. This highlights the relevance of the studies and analysis to be carried out under Component 1. Nonetheless, based on the experience of other projects in the region or in other regions, under similar conditions, similar benefits to those summarized in table 10 below can be expected.

For example, support for the construction and repair of artificial ponds (tajamares) and tanks (particularly Australian ponds) will avoid losses resulting from the death of animals during times of drought. Sylvopastoral practices will allow raising the cattle load per hectare by 50%. The associated costs are low, since (i) the planting of trees is not required in the Chaco region (the silvopastoral system is achieved by leaving beneficial trees (carob, prosopis) uncut); (ii) initial investment (weeding, estimated at 60 USD / ha) and annual work (clearing and preparation of the ground with roll pass, estimated at 30USD / Ha) have low costs compared to benefits estimated at 258 USD/ ha. Additionally, these leguminous trees fertilize the ground, and offer shade and additional food (pods) for animals. The diversification of crops and the promotion of beekeeping will also provide an increase in the communities' cash income, although their quantification will depend on each community.

Table 11.- Expected harvest increases and benefits to food security

Measure	Climate threat	Corresponding impact	Economic benefits	Benefits to ecosystems
1. Sustainable forest management	High winds, heavy rainfall, heat extremes	Drought, increase of pests, phenological changes, landslides, erosion, less availability of water	Extraction, processing, and commercialization of forestry products results in annual income of US\$1,000 to US\$2,000	i) Benefits of ecosystem services and biodiversity on provision, regulation, and support (soil generation, pollination) ii) Economic value per 1 ha of forest estimated at approximately US\$17,227
2. Permaculture	Changes in rainfall patterns, heat extremes, abrupt changes in temperature, freezes	Diminished food security, phenological changes, need for more inputs, erosion, diminished productivity, less availability of water, drought	One hectare of polyculture of agricultural land with permaculture design produces up to three times more than conventional monoculture. There is a reduction of 30% per hectare in the need for fertilizers and pesticides.	Microbial activity increases, resulting in optimal fertile soil in three years. Up to 80% of rainwater can infiltrate into the ground, avoiding erosion from runoff.
3. Ecological agriculture	Changes in rainfall patterns, heat extremes, abrupt changes in temperature, freezes, heavy rainfall	Need for more inputs, erosion, phenological changes, loss of productivity, drought	i) Stabilizes agricultural production. ii) The yield per unit area is greater than or equivalent to conventional systems	i) In soil on a slope of 1 to 15% with a mulch rate of zero (0) (t/ha), soil losses of up to 76.6 (t/ha) may occur, while in soil with a mulch rate of 6 (t/ha) soil loss is on the order of 0.04 (t/ha) of

Measure	Climate threat	Corresponding impact	Economic benefits	Benefits to ecosystems
				soil.
4. Conservation agriculture	Freezes, abrupt changes in temperature, changes in rainfall patterns, heavy rainfall, heat extremes	Increase of pests, need for more inputs, erosion, phenological changes, loss of productivity, drought	<p>i) Production of one kilo of potatoes with minimal labour is up to 20% more economical compared to traditional methods.</p> <p>ii) Production of one kilo of peas, direct seeded after green manure, is up to 30% more economical.</p> <p>iii) Production is up to between 18 – 25% more profitable than traditional methods.</p>	<p>i) Reduces the concentration of sediment released into water sources by 70%</p> <p>ii) Soil structure is strengthened, biodiversity</p> <p>iii) Conservation techniques in agriculture could capture between 50 and 100 million tonnes of carbon annually in some soils.</p>
5. Fish farming	NA	Diminished food security, need for more inputs, less availability of water	Offers an alternative for diversification with a monthly income of at least 140USD	Once cubic metre of residual water replaces one kilogramme of agricultural chemicals, which reduces contamination of agricultural areas.
6. Rainwater reservoirs	NA	Drought, less availability of water, crop loss	A 500 m3 reservoir can meet the water needs for 80 animals or up to 2500 square metres of vegetable crops during a period of low water levels. Placement in the marketplace of the 60,000 vegetable plants produced would be equivalent to an annual income of 3 to 5,000USD	Reservoirs act as a water source for local species and support the restoration of biological cycles due to increased relative humidity and access to water
7. Agrosilvo-pastoral system	Heat extremes, high winds, heavy rainfall, abrupt changes in temperature	Loss of productivity, drought, need for more inputs, diminished food security	<p>i) Particularly beneficial for small producers.</p> <p>ii) Diversification of labour inputs and farm system products.</p> <p>iii) Economic benefits can be obtained from firewood, posts, wood, and fodder.</p>	<p>i) Diversification of productive activities on the farm reduces the risk of financial crisis.</p> <p>ii) Associating livestock with crops benefits between 60 and 70% of biomass production. Plant material may be used for livestock feed without resulting in competition with human food.</p>

Measure	Climate threat	Corresponding impact	Economic benefits	Benefits to ecosystems
8. Silvopastoral system	Heat extremes, high winds, heavy rains, abrupt changes in temperature	Loss of productivity, drought, need for more inputs, diminished food security	<p>i) The planting of trees is not required in the Chaco region. The silvopastoral system is achieved by leaving beneficial trees (carob, prosopis) uncut. These leguminous trees fertilize the ground, and offer shade and additional food (pods) for animals.</p> <p>ii) This system enables 50% more animals per hectare to be fed.</p> <p>(ii) initial investment (weeding, estimated at 60 USD / ha) and annual work (clearing and preparation of the ground with roll pass, estimated at 30USD / Ha) have low costs compared to benefits estimated at 258 USD/ ha.</p>	<p>i) Recovery and improvement of the soil</p> <p>ii) Strengthens local water and nutrient cycles conserves biological diversity and captures CO₂.</p> <p>iii) Comparisons of open-pasture grazing with silvopastoral systems found that after 5 years of implementation, the latter presented a positive variation of 90% in the presence of migratory species, and a drop in ambient temperature of 4°C.</p>
9. Seed bank	Abrupt changes in temperature, changes in rainfall patterns	Drought, phenological changes, loss of productivity, diminished food security, increase of pests.	In one crop cycle, the average return for the sale of organic seeds exceeds 50%.	Services including climate regulation and soil conservation, among others.
10. Apiculture	NA	Phenological changes, loss of productivity, diminished food security	i) In terms of cost to benefit relationship, apicultural production can obtain a return of 38 cents for every dollar invested.	<p>i) Pollination of wild or cultivated flowering plants</p> <p>ii) Production of honey, beeswax, and other derivatives, which are a significant source of income for some families.</p> <p>iii) Production of pollen, propolis, and royal jelly</p>

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.

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.

The table below summarizes some of the environmental, social and economic benefits discussed above.

Table 12.- Environmental, social and economic benefits of the project

Environmental Benefits ¹⁴	Social Benefits: increased resilience	Economic Benefits
<ul style="list-style-type: none"> • 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"> • 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 • 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"> • Increased crop yields • Increased milk and meat production • Diversified production available for selling throughout the year • Lower production costs • Higher incomes • Lower income fluctuations • Regulatory framework adjusted to incentivize adaptation (removing economic disincentives for this, strengthening the existing incentives and introducing new ones)

C. Describe or provide an analysis of the cost-effectiveness of the proposed project / programme.

C. Cost-effectiveness

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 investment¹⁵. 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. This project will contribute to the continuous provision of the ecosystem services, benefiting not only the direct beneficiaries of the project but

¹⁴ 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.

¹⁵ 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.

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-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 under component 1 will carefully identify and characterize incentives and disincentives for the adoption of climate-resilient agricultural practices, 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.

D.Consistency with national or sub-national sustainable development strategies

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 the **national efforts to promote sustainable agriculture and forestry**. The strategic framework that establishes the main guidelines for the development of a sustainable and resilient to climate change agriculture and forestry is the **National Development Plan Paraguay 2030**¹⁶ (PND 2030) of December 2014. The PND 2030 indicates that the great challenge for the sustainable development of the agricultural sector is to increase the competitiveness of agricultural production on the basis of market demands, with a focus on sustainable agro-food and agroindustrial systems, in a socially inclusive and equitable way. To this end, its priorities include: (i) developing family agriculture and food security, (ii) developing the forestry sector and the environmental services it provides, (iii) developing the livestock sector and (iv) manage the risks associated with variability and climate change through the development of risk forecasting and mitigation mechanisms.

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. Within this legal framework, two laws of particular importance for this proposal can be highlighted:

¹⁶ Paraguay's National Development Plan 2014-2030 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.

- **Forest Law 422/73**, establishes the obligation to maintain a legal reserve of natural forests - commonly called asidios, and riparian forests (called protective forests in the law). Until recently, there were serious problems regarding the correct interpretation of this law, due in large part to the unclear wording of its article 42, which indicated the proportion of land to be restored in totally deforested areas. Eliminated this problem by issuing Resolution SEAM No. 531 in 2008, one of the first provisions of the Environmental Services Act 3001/06. On the other hand, landlords who have not complied with these obligations must compensate for this responsibility by reforestation with native species or acquiring certificates of environmental services under the Environmental Services Act. This reasonable interpretation of the provisions of Article 42, coupled with the opportunities offered by the Environmental Services Act 3001/06 of certification areas additional to the legal reserve for the provision of ecosystem services, has created the legal conditions for those owners who do not have complied with the forest law to compensate financially those owners who still have additional forest areas. At the same time it opens the way to invest in reforestation with native species, in order to certify and take advantage of the regime of environmental services. However, correct implementation will be difficult without adequate capacity to enforce the law and administer the regime of environmental services.
- The newly regulated Law 3001/06 "**Valuation and Payment for Environmental Services**" constitutes the legal basis for substantially increasing the demand for Environmental Service Certificates (ESC) of native forests. The CES of the owners that comply fully with the legal provisions in force will be eligible to negotiate in the National Stock Market, where they can be acquired by another owner who does not comply with the legal obligation in force to maintain 25%.

The institutional framework responsible for implementing these laws includes SEAM, INFONA and MAG (see section A part III for further details on the mandate and role of these institutions).

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..

As indicated in its **National Determined Contribution** (NDC), for Paraguay adaptation is a priority established in the National Development Plan 2014-2030. Priority sectors include (i) Water resources, (ii) Forests, (iii) Agricultural and livestock production; and (iv) land use planning.

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.

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 adaption 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 support¹⁷.

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.

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

Barriers: Implementation and enforcement of the legal framework that could help farmers and indigenous communities to sustainably manage their natural resources is hampered by the low level of knowledge of the technical staff of institutions, decision makers and society. In general, as regards the content and scope of the different regulations. In addition, there are no manuals or guidelines that can help farming communities and indigenous peoples follow the regulations to manage their forests and enter into the Payment for Environmental Services system.

In response to these barriers, the project will focus specifically on:

- Capacity building (activities 3.1 Detailed training plan for SEAM on mainstreaming climate-friendly development in all sectors and 3.2 Training plan for partner agencies at local level).
- Development of tools (1.6 Development of specific protocols for implementing good forest and agricultural management practices in farming and indigenous communities).
- Systematization of lessons learned, which provide feedback to SEAM, INFONA and MAG on best practices for the successful implementation of these laws (3.3 Identification, systematization and exchange of lessons learned from the project).

- 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.

E.Compliance with national technical standards

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.

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

F.Coordination with other initiatives

The project incorporates good practices and lessons learned from other projects and initiatives

First, the project is based on the information provided by the *Vulnerability, Impacts and Adaptation analysis* financed by the Regional Portal for Technology Transfer and Action on Climate Change in Latin America and the Caribbean (REGATTA), funded by the Governments of Spain and Norway and implemented by the United Nations Environment Program (UNEP) in 2013. This study aimed to analyze the impact of climate change on the Great American Chaco. In Paraguay, the Development Institute and the NGO Guyra Paraguay analyzed the vulnerability to climate change in four communities of the Paraguayan Chaco (Campo Aceval, Lolita, Yalve Sanga and Toro Pampa) and identified possible adaptation measures with the collaboration of the key stakeholders.

Second, the GEF Project "*Sustainable Management of Forests in the Transboundary Ecosystem of the Great American Chaco*" (PAS-Chaco) aims to reverse the trend of degradation of lands and forests in the Gran Chaco Americano (Argentina, Bolivia and Paraguay) by supporting sustainable land management in the productive environment. Although it is in the closing stage, it should be noted that this project is in a phase of replication of the best practices. Information on best practices from this project relevant to the identified vulnerable zones have been used for the design of this project and will be also incorporated during implementation.

The project will seek complementarity with several ongoing programs and projects

To ensure that the specific adaptation activities proposed in this project are not duplicated by other projects or initiatives, the Secretariat of the Environment ensures their coordination through the Project Planning Unit of the Strategic Planning Department (DPE).

In addition, the project includes coordination with local governments at the departmental and municipal levels. In this sense, each Department and Municipality has its own secretariat of agriculture and environment and its own budget. Local project coordination committees will help coordinate actions at the local level to increase efficiency and ensure that activities are not duplicated.

The project "*Strengthening human security in four municipalities of the Paraguayan Chaco* (UNDP, PAHO / WHO, PMA)" is being implemented with the Government of Boquerón. It aims to contribute to the development of a multisectoral, holistic and replicable model for the empowerment and development of resilience strategies to protect local communities living in vulnerable conditions and to develop the capacities of local institutions in four municipalities of the Chaco Region to overcome the health, food, environmental and economic insecurities of their communities. It is funded by the United Nations Trust Fund for Human Security (UNTFHS). It is also in the final phase and its counterparts are the National Emergency Secretariat (SEN) and 4 Municipalities of the Paraguayan Chaco (Teniente Irala Fernández, Puerto Pinasco, Philadelphia and Mariscal Estigarribia).

The *Green Commodities Programme*, has been providing assistance since 2014 to implement the National Sustainable Beef and Soy Platform as part of a wider Global Environment Facility and UNDP project "Paisajes de Producción Verde". This project is helping producers to change their practices, with the ultimate goal of taking deforestation out of soy and beef supply chains.

The project "*Innovative Use of a Voluntary Payment for Environmental Services Scheme to Avoid and Reduce GHG Emissions and Enhance Carbon Stocks in the Highly Threatened Dry Chaco Forest Complex in Western Paraguay*" approved in March 2016 is complemented by the project in that Conservation with this type are projects, with the other projects is promoted adaptation with appropriate practices.

Lastly, the project "*Development of capacities for decision-making related to the Global Environment*" emphasizes a long-term approach to institutionalizing capacities to meet the obligations of the Multilateral Environmental Agreements (MEAs). The "*Third National Communication on Climate Change Project*" aims at strengthening national institutional capacities for the preparation of periodic information (National Communications and Biennial Update Reports as well as other reports on climate change), under the UNFCCC. Both projects will develop technical capacities and information management systems that will contribute to facilitate environmental planning.

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The table below lists several ongoing programs and projects with which the proposed project will seek complementarity.

Table 13.- 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 (Human Security)	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 Paraguayan Chaco, promoting multi-sectoral efforts to improve human security with social equity in four municipalities. Activities include	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 the lessons learned in these municipalities in implementing specific adaptation activities.

					water management and food production.			
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.
	Pantanal-Chaco (PaCha) Alliance to promote climate resilience water and food security.	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	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.

					organizations.			
	“Taking Land Use Change Out of Savannahs and Grasslands through Policy Engagement, Land Use Management and Zoning and Best Management Practices”	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, biodiversity and water regimes, and meeting sustainable agricultural production.	Alto Paraguay department.	The full project includes Colombia.	Collaboration between this project and SEAM will help reinforce the Ecosystem-based approach of this proposal.
	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.

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

G. Learning and knowledge management

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 Part II, Section A significant training activities will also be conducted for the SEAM and other stakeholders, including national ministries and agencies, 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.

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

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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.

H.Consultative process

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. The table below shows the staff that participated in this meeting (firms are presented in Table 1). 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.
- 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 14.-. 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. The following table presents the stakeholders that were interviewed.

Table 15.- 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). The table below 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 3. 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 16.- 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.

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Name	Organization
	Direction of Meteorology (DINAC)
Luis 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)

In December 2016 bilateral meetings were held with the following stakeholders:

- Ethel Estigarribia- Director of the National Office of Climate Change.
- Nora Paez - National Office for Climate Change (ONCC/SEAM)
- Gabriela Huttemann - National Office for Climate Change (ONCC/SEAM)
- David Fariña - General Director of Protection and Conservation of Water Resources
- Karem Elizeche -Coordinator of the NCSA (National Capacity Self-Assessment) Program.
- Ismael Arias - Secretary of Environment of the Governorate of Alto Paraguay.
- Pedro Pintos - Financial Advisor of the Governorate of Boquerón.
- Víctor Salinas - Secretary General of the Government of Boquerón.
- Ing. Edgar Mayeregger - Coordinator of the Risk Management Unit of MAG.
- Ing. Salvadora Chaparro - Head of Division of Climate Risks of the Agrarian Extension Division (DEAg).
- Eng. Karen Romero - Technician in climatic risks of the DEAg.
- Ing. Damiana Mann - Director of Strategic Planning at the National Forestry Institute (INFONA).
- Lic. Julián Báez - Director of the Department of Meteorology and Hydrology of DINAC.
- Antero Cabrera Coordinador de la Facultad de Ciencias Agrarias (Sección Chaco)
- Daniel Paredes – Beneficiario del proyecto GEF PAS-Chaco
- Milciades Javier Pacce – Secretario de Medio Ambiente de la Gobernación de Boquerón
- David Fariñas – Director General de Recursos Hídricos SEAM
- Antero Cabrera Coordinator of the Faculty of Agrarian Sciences (Chaco Section)
- Daniel Paredes - Beneficiary of the GEF PAS-Chaco project
- Milciades Javier Pacce - Secretary of the Environment of the Government of Boquerón
- David Fariñas - General Director of Water Resources SEAM

Specific results of this consultations include:

- Redefinition of the intervention sites.
- Redefinition of the activity on monitoring hidrometeorological data.
- Redefinition of the training activities.

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. As mentioned above, special consideration about gender was taken into account during the consultation process. It is important to mention that a more extensive consultation process will be carried out during the first year of the project.

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

I. Justification for funding requested

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 costs 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 Paraguay¹⁸. 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)¹⁹. 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 scenario²⁰. 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 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 million²¹ additional public investment in the period 2010-230 for climate change adaptation²². 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 costs²³; all agricultural, livestock, health and forestry

¹⁸ 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.

¹⁹ Ibidem, p. 12.

²⁰ Ibidem, pp. 12-13.

²¹ Constant at 2005 prices and with 3% annual discount rate.

²² 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.

²³ 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.

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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.

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

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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 9 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.

J.Sustainability

The project has been crafted to ensure sustained resilience against climate change. This is promoted through several design decisions.

The **financial sustainability** of the project will be ensured by the affordability of the proposed ecosystem-based adaptation measures. The studies carried out in component 1 for the identification of EbA measures based on the best available scientific knowledge will take into account this aspect. All good practices promoted under component 2.2 will be low cost (for example, the seeds and seedlings distributed can be easily reproduced by farmers, or activities such as apiculture, which do not have high maintenance costs, will be fostered). The sustainability of activities to support the repair and implementation of infrastructures or that require the use of machinery will be ensured by a compensation system. Local Governments (Departments and Municipalities) have specific budget allocation and own machinery to implement activities on the ground for the Neighborhood Commissions. They will be the institutions that will continue the work after project period, in exchange for fuel payment and a contribution to a common fund for maintenance and repairs. The governorates, through their environmental secretariats, are responsible for providing technical and infrastructure support, within their possibilities, framed in their annual budgets, allocated from the general budget of the Nation.

In terms of the **sustainability** of the EbA **technologies** fostered by the project, besides its affordability, it should be noted that the agricultural extension scheme that will be implemented includes farmer to farmer learning methodologies that will contribute to the strengthening and amplification of the work of the state and local extension agents.

The **environmental and social sustainability** issues are integrated into the project design. The intervention aims to promote measures that help to improve community resilience for food production and income generation without having to resort to the clearing of the fragile Chaco forest, putting in value the goods and services it provides.

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The project considers the participation of the communities and the institutions involved as a key aspect, by recognizing their rights and abilities, and realizing that this will also generate ownership and, therefore, contribute to sustained actions and sustainable results. In this sense, the stakeholders (men, women, farmers, stockbreeders, and indigenous people) will play a crucial role in the decision making process, from problem identification to planning, implementation, monitoring and evaluation of solutions.

Specifically, as indicated in Section K below, particular attention will be given to aspects relating to the integration of the developing gender approach and the indigenous people. The participation and empowerment of women will help to reproduce and instill in children cultural values and other practices. By empowering women through capacity building, sensitization and participation in activities that foster adaptation and resilience, the next generation will be better equipped to meet the challenges of climate change and food security.

Furthermore, **institutional sustainability** is ensured through the activities of component 3, which include capacity building and awareness-raising to implement and improve the effective implementation of the adaptation measures at the national and local scales.

Component 3 addresses the most crucial theoretical and practical skills of the stakeholders. They will be provided with conceptual frameworks and institutional approaches. This will allow them to expand project activities, replicate them in other areas and / or design and implement different adaptation projects (in other issues or sectors) in the Chaco or in other places.

It should be noted that 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, the knowledge management activities under component 1 are designed to contribute to the design of strategies for ecosystem and community-based adaptation, envisaged in component 2. This component includes planning activities (development of local adaptation plans) and implementation of concrete actions for adaptation that strengthen ecosystem resiliency, as well as draw on climate-resilient traditional and other natural practices. In order to ensure institutional sustainability, component 3 includes capacity development and awareness to implement and upscale effective implementation of adaptation measures at national and local levels.

In addition, the project has a **demonstrative approach**, as it seeks to demonstrate that such measures are profitable and provide significant benefits. For this, the project is strategic and focuses on key issues, and can make a difference, based on solid evidence through the component 1 studies. The project foresees a robust process in which a solid research provides insight to planning, guides the action, closely monitors and scrupulously evaluates, and in which the actions carefully adjust to achieve results. Once the results are achieved, these will demonstrate the desirability to continue with the implemented practices and to expand them.

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

K. Overview of the environmental and social impacts and risks

The project design has explicitly included consideration of potential environmental and social impacts of the project's activities, as well as mitigating measures to reduce the likelihood and severity of any unforeseen negative impacts. The project's activities were evaluated against AF Environmental and social principles to identify potential negative impacts.

Environmental risks

This process indicated that the potential social and environmental risks of activities under components 1 (knowledge management) and 3 (capacity building) are low enough to be considered negligible. Component 2 includes planning activities (development of local adaptation plans, low risk) and implementation. Among the activities to be implemented, reforestation and forest conservation, agro-ecological management measures (good agricultural practices) and water storage and irrigation systems are included.

Water storage and irrigation systems, as general rule, consist of the roofs of the houses. Pipes and filters are used to conduct the rainwater to a cistern or reservoirs used as a storage place. In addition, artificial ponds (tajamares) and tanks (particularly Australian ponds) are used. The construction of artificial ponds (tajamares) in particular cases could be classified as medium risk activities (category B)²⁴. In these cases, prefeasibility studies will include relevant environmental impact assessments in compliance with the Environmental Impact Assessment (EIA) Law 294/93. However, most of the project activities in this regard will focus on improving the infrastructure in order to make it more efficient, which in itself constitutes a reduction of the impact of these systems.

As presented in sections D and E the project is consistent with all applicable laws, policies, standards and regulations.

The project will examine the laws, regulations, politics and plans at the national, state, and district levels that regulate the usage of natural resources including forests, water bodies (rivers, lakes, wetlands), farms, and pastures to strengthen the implementation of legal and economic aspects that could help effectively apply adaptation practices related to food production.

As mentioned in Part I, in the Paraguayan Chaco, in recent years, there has been an accelerated process of production growth, expanding the cattle border. Three million hectares of forest have undergone systematic logging in the last ten years, transforming mainly into pastures for cattle and more recently also for soybeans in the department of Alto Paraguay. These logging and clearing are for the most part legal. They are governed by Law No. 422/73, which stipulates that owners and farmers of more than 20 hectares must protect 25% of the forests on the property. In the Chaco biosphere reserve area, the required forest reserve amounts to 50% of the property. The Secretariat of the Environment (SEAM), is responsible for issuing environmental licenses for land use change.

The objective is to identify how to incentive practices that allow an increase of production and income per hectare, in order to reduce the need for logging. Hence, no economic losses that could trigger the involuntary resettlement policy of the fund are expected.

This analysis will include, but is not limited to, the Forest Act, The Afforestation/Deforestation Act, the Forest Services Act, and the Fiscal Reorganization Act as well as the development plans of the selected departments and districts.

The project 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. Indeed, the assessment of the needs, the identification of successful practices, their prioritization and implementation will be

²⁴ $V < 12.000 \text{ m}^3$ = small Tajamar; $12.000 \text{ m}^3 \leq V < 120.000 \text{ m}^3$ = mediem size tajamar, $V \geq 120.000 \text{ m}^3$ = big size Tajamar.

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carried out with the active participation of relevant stakeholders. 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 protocol produced by FAPI for free prior and informed consultation will be used during this project as a guide to work with indigenous peoples (see annex). The project plans no resettlement whatsoever given the involvement of the community, their demand for these activities and the vastness of the region.

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. In addition, technical feasibility studies will be conducted for physical infrastructure such as meteorological stations and water infrastructure. For these the project will take into account models that have proved to be adapted to the region. 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 17.- 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
Compliance with the Law	x	
Access and Equity	x	
Marginalized and Vulnerable Groups	x	
Human Rights	x	
Gender Equity and Women's Empowerment	x	
Core Labour Rights	x	
Indigenous Peoples	x	
Involuntary Resettlement	x	
Protection of Natural Habitats	x	
Conservation of Biological Diversity	x	
Climate Change	x	
Pollution Prevention and Resource Efficiency	x	
Public Health	x	
Physical and Cultural Heritage	x	
Lands and Soil Conservation	x	

Regarding environmental impacts and risks:

- The project will not affect a protected area or other areas classified as vulnerable
- The project will not require the acquisition or conversion of significant areas of land that are important for environmental services
- The project will not require (during or after implementation) significant amounts of water, energy, materials or other natural resources

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- The project is not likely to result in the production of significant quantities of wastes, especially of hazardous or toxic wastes.
- The project will not produce significant volumes of effluents or air pollutants, including greenhouse gases
- The project will not affect important water bodies or significantly affect water regimes
- The project is not located in a site where it can significantly affect surface waters or groundwater (in quantity and/or quality)
- The project will not require significant accommodation or service amenities to support the workforce (during or after construction)
- The project will not require significant use of fertilisers, pesticides or other chemicals. On the contrary, the project will promote an agro-ecological approach and the use of integrated pest management / organic pesticides.
- The project will not include the introduction of genetically modified organisms or alien species. The project will promote an agro-ecological approach and will promote crop diversification and staggered planting, seed selection as well as the use of varieties adapted to climate variability of species already used in the region.
- The project will not attract or displace a significant population and economic activities and will not promote new settlements. The project plans no resettlement whatsoever given the involvement of the community, their demand for these activities and the vastness of the region.
- The project is not located in a densely populated area and likely to produce significant nuisances such as air pollution, noise, vibration and odours (on the contrary, the region has a very low density of population).
- The project is not likely to cause important soil erosion or degradation, considering its activities and its location. On the contrary, the project activities related to forest restoration will enhance tree cover that retains soil moisture and protects from wind erosion.
- The project will not significantly affect particular ecosystems, such as natural forests, wetlands, coral reefs, mangroves. On the contrary, the project activities are expected to have a positive impact on ecosystems resilience to the effects of climate variability and change.
- The project is located in or close to a site of high culture or scenic value, as it is near El Chaco Biosphere Reserve. Similarly, all communities have by law forest reserve areas. The project will take into account these considerations in the development of local adaptation plans. As mentioned, the proposed project will adhere to Environmental Impact Assessment (EIA) regulations as defined by Paraguayan law.

Social aspects

Regarding **social aspects**, project design and implementation will encompass cross-cutting social, ethnical and cultural approaches in all its main criteria, objectives, components and sub-components.

The purpose of this is to ensure a holistic approach in all project activities. The main cross-cutting approaches of this project are reflected from the ones in the National Climate Change Policy, which are: gender equality, cultural diversity and an approach to ensure fair and equal human rights.

The project will consider the ethnic-cultural background of each group – indigenous peoples, rural, semi-rural and urban groups - that may be impacted in any form by actions undertaken by this project. The consistent and equal application of human rights should be aligned to that of the Paraguayan Government and be reflected in the Declaration of Human Rights. The project will take into account cultural diversity, different societal constructions, demographics and gender equality issues in the application of adaptive actions to climate change. This includes

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initiatives on agriculture, restoration and preservation of forests and protective environments and others.

The development of sound, respectful and effective communication will be encouraged and maintained as an important human factor in the interaction with the different communities, individuals, and entities related to this project.

It is important to note that SEAM encourages a socio-environmental approach that takes into account the relationship between human populations and their social, economic and cultural activities with the surrounding ecosystems in which they live.

Within this framework, and as advocated by SEAM, the following key aspects will be taken into account in this project:

- The participation of local stakeholders is critical, especially in the case of indigenous communities and in recognizing their human and cultural rights. SEAM will ensure the active participation and a strong representation of indigenous groups throughout the implementation of this project.
- SEAM has a socio-environmental policy which is inclusive of all indigenous rights and other non-indigenous communities. The approach moves beyond strict environmental conservation and takes into consideration human rights and the intrinsic and delicate relationship that everyone has with the ecosystem in which they live in. In particular there is a strong relationship between indigenous peoples' culture and the environment. This approach is supported by a comprehensive set of laws that advocate and protect indigenous peoples. Further descriptions of these laws are in the annexed document.
- Many indigenous communities typically have their own governing structures based on traditional rights and a specific regulatory framework;
- Indigenous peoples' organizations should be regularly informed about the project and all prior, and informed consent processes will occur.
- The role of women as active participants and their vital role in society will be taken into account according to the standard human rights, and also in consideration of each local indigenous cultural and ethnic background.
- The unique indigenous all-encompassing cosmo-vision, which is not always aligned with other views, should and needs to be respected.

The project activities that will be implemented within a indigenous community will take into account their rights and culture, and therefore activities may need to be adapted for each linguistic and ethnic context. Furthermore activities will be based on up-to-date information on the status of ecosystems, land uses and other aspects to allow adequate selection of activities to be implemented in the field. The most adequate methodologies and human resources for the project implementation will be identified.

In this context, SEAM has elaborated guidelines for implementing projects with indigenous communities, and will be taken into account by the AF project when designing, planning and carrying out its activities.

With this in mind, the project takes into account systematization, dissemination and use of traditional knowledge and practices as a key strategy to reduce the vulnerability of food production to a changing climate.

Traditional practices by both indigenous peoples and farmer communities include the use of local flora and fauna, food harvesting from native trees, collection of fruits and honey, natural medicines, raw materials for shelter building, aesthetic and spiritual values.

In addition to enhancing and protecting ecosystem services to provide indigenous and farming communities with the means to restore and increase the use of traditional practices, the project will seek to identify which of these practices are most suitable in terms of their resilience and adaptability to a changing climate according to ecosystem types and conditions, water availability, soils, etc. Traditional knowledge can also help identify types of soil that do not drain easily in drought prone areas, can be used to implement rainwater reservoirs for irrigation in a more natural, sustainable and cost efficient manner. Some communities carry out small-scale cultivation of medicinal and food gardens under trees that benefit from shade and protection from weather events and can be used as examples of good practices. A number of species have several traditional uses ranging from food, wood for shelter, fire, fiber, clothing, utensils, medicine, and spiritual practices (e.g. wild beans, cactus fruits, and several types of watermelons, wild pumpkins and potatoes, local varieties of maize, trees such as algarrobo and karanday, etc.). Traditional knowledge enables them to identify which types of fruits, roots and animals are available based on each season of the year, the maturation rate and weather conditions. Traditional knowledge also includes, recognizing the chirping, noises, movements and flight direction of birds to predict changes in weather condition. Traditional knowledge serves to determine when to harvest, according to the weather, which affects the maturation of crops or wild foods.

The project will use effective and culturally adapted ways to effectively involve and empower farmers and indigenous communities towards using their traditional practices and adapting them to a changing climate with an approach to improve the health of their ecosystems and livelihoods and make the resiliency of their habitat. The proposed activities of this project are strongly linked to women's role in society and within the family in terms of food production, since rural women are in charge of securing food for the family. In fact, women contribute to family agriculture by tending small home gardens, feeding of small farm animals and gathering edibles from the forests and other ecosystems. As such, women play a significant role for the successful adoption and implementation of adaptation practices.

Gender considerations

In regards to the project contributions to the generation of equitable gender benefits, the project will emphasize an approach that takes into account gender differences in the roles and responsibilities of men and women in the farming and indigenous communities of the Chaco.

In both types of communities there are clearly defined divisions of work between men and women. As indicated in the Gender Technical Note of Paraguay (IDB, 2014), farming women combine through the year reproductive tasks involving the transportation of water and firewood, the purchase of inputs including food, and the transportation of their sons and daughters to the health posts or schools, with their own productive tasks (nursery of small animals, family gardens and crops for consumption). Seasonally, women also work on the family farm in tasks that are considered to be typical of men.

Furthermore, under equivalent socio-economic conditions when the main producer is a woman there is less access to modern implements and machinery, to technology and to credit. This is explained by socio-cultural perceptions that make invisible the contribution of farmer women to the economy and development, and consider all women forms of work as tasks determined by their biological nature that do not require technical support or investments.

Indigenous women are responsible for water and food preparation, under much more precarious conditions in terms of quality of housing and access to services, with consequences on work overload, opportunity reduction for social and economic participation and leisure time.

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The project will seek to increase women's availability and access to resources through the implementation of ecosystem-based adaptation (EbA) measures under the component 2, which will provide technical assistance and inputs to improve the productivity of both ecosystems and agricultural landscapes. Through these measures, the project will seek to reduce the workload of women, increase the productivity and generate income through trading.

A part-time consultant (sociologist or anthropologist) will be hired to analyze and contribute to ensure the integration of gender aspects, in particular, in the activities to be implemented under component 2, in coordination with the government Secretariats of Women, Children and Adolescents and with the participation of the organized groups of women that already exist in the region.

Within the capacity building area (Component 3), local capacity-building activity 3.2 will integrate coaching actions for trainers to train women in planning, implementing and managing EbA investments. The project results framework includes disaggregated targets by gender for the number of beneficiaries of training activities. The Monitoring and Evaluation (M&E) expert will be responsible for monitoring the application of the gender disaggregated indicators.

These approaches are in harmony with Paraguay's Third National Plan for Equal Opportunities between Women and Men 2008-2017, particularly in the area of "Access to Economic Resources and Labor".

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project / programme implementation.

A. Arrangements for Project 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.

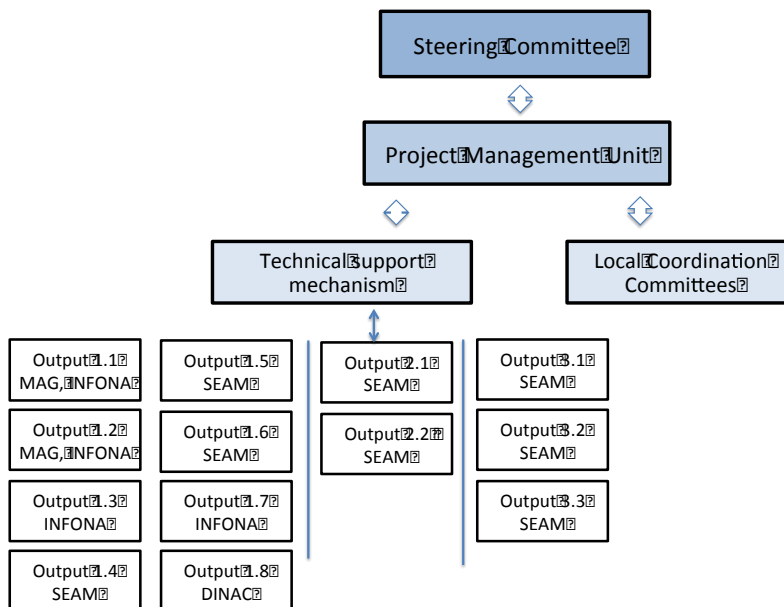
The project will be managed by a National Steering Committee (NSC) and a Project Management Unit (PMU) in this order of hierarchy. The NSC will be chaired by the SEAM and composed of representatives of SEAM and UNEP. The main function of the Steering Committee would be to provide political strategic 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 18 explains with more detail who will be involved in each output.

Figure 1. Organizational Chart



The mandate and role in the project of each of the involved institutions are indicated below:

Implementing National Entity: the Ministry of the Environment (SEAM)²⁵

Mandate: the Ministry of the Environment (SEAM), has among its functions the formulation of policy, the supervision and the implementation of environmental actions, plans, programmes and projects framed in the Plan of National Development, concerning the preservation, conservation, rehabilitation and management of natural resources. Also it is charged with environmental planning in general, aiming for the permanent betterment of conditions of economic growth, social equality, and environmental sustainability in the long term. It contains the National Commission of Climate Change, the National Bureau of Climate Change, and the National Programme of Climate Change.

Role in the project:

- Will act as Implementing National Agency.
- Will chair and coordinate the **Executive Committee**, whose main function would be to enable strategic and political leadership in the Project, maintaining effective coordination between high-level environmental authorities at national and provincial levels. This will assure the alignment of the Project with government programmes and strategies throughout the territory, guaranteeing the consistency of interventions at both jurisdictional levels. Also, this Committee will safeguard transparency regarding the processes of intervention of the Project. The member of the Executive Committee will be designated during the first trimester of the project. The Executive Committee will meet at least once a year and whenever necessary.

²⁵ <http://www.seam.gov.py>

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- Will establish and lead a **Project Management Group** (UGP) that will operate in the National Bureau for Climate Change. The UGP will be composed by a project coordinator, three project staff (one for each Department), one administrative and financial and two drivers. All these will be hired full-time. The selection of project staff will account for the need to cover specific experiences regarding adaptation and indigenous communities. The UGP will be supported by (i) a Mechanism of Technical Support and (ii) three Local Coordination Committees (one for each Department).
- Will coordinate, through the UGP, the **Mechanism of Technical Support**, composed by the focal points of the institutions involved in the project, whose roles are detailed afterwards.
- Will coordinate, through the UGP, the three Local Coordination Committees (LCL) (see below).
- Will approve the deliverables elaborated by the consultancies planned in the project as well as works of investment.

Executive Committee and Mechanism of Technical Support. Participating Institutions

Several national institutions have mandates related to the objectives of this project. With the objective of ensuring coherence between activities of distinct national entities, leverage their specific knowledges, and build synergies, these institutions have participated in the design of this proposal through national consultations and have committed to participated in its implementation, given that it contributes to their goals, according to their mandates.

The participation of these institutions will be articulated through the Executive Committee and the Mechanism of Technical Support, composed by the institutions to be detailed afterwards. For each one of them their mandate in relation to the present intervention and role to be performed in it is specified.

The Executive Committee and the Mechanism of Technical Support developed their procedures and guidelines for the development of their work, conflict resolution, and other important aspects of management at executive and technical levels.

National Bureau for Climate Change (ONCC)²⁶

Mandate: Has among its functions (i) facilitating the definition, implementation and inter-sectoral and inter-institutional evaluation of a National Policy for Climate Change, (ii) Propose actions for the definition and effective implementation of policy and measures to face climate change, (iii) Promote the creation of national capacities for the effective management of policies and measures facing climate change and (iv) Promote the scientific development of earth and atmospheric sciences, as well as the establishment of technology transfer schemes for mitigation and adaptation to climate change.

Role in the project:

- Host the Project Management Group.
- Design focal points for the project that participate in (i) the Executive Committee, (ii) the Mechanism of Technical Support, and (iii) the three Local Coordination Committees (LCL).
- Provide comments and approve the deliverables produced in the framework of activities mentioned.

National Forestry Institute (INFONA)²⁷

²⁶<http://www.seam.gov.py/direcci%C3%B3n-general/oficina-nacional-de-cambio-clim%C3%A1tico-oncc>

²⁷<http://www.infona.gov.py>

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Mandate: The INFONA has as its objective the administration, promotion, and sustainable development of the forestry resources of the country, inasmuch as its protection, improvement, increase, and rational utilization.

Role in the project: Under the leadership of SEAM, INFONA will contribute to the implementation of the following activities: 1.1 (Detailed mapping of ecosystems), activity 1.5 (Investigation of traditional practices contributing to climate resilience), activity 1.6 Development of specific protocols for implementing good forest and agricultural management practices in farming and indigenous communities and activity 1.7 (Elaboration of an analysis of incentives and disincentives for the adoption of climate-resilient farming practices in the Chaco region). In particular, INFONA:

- Will designate focal points for this project that participate in (i) the Executive Committee, (ii) the Mechanism of Technical Support, and (iii) the three Local Coordination Committees (LCL).
- Will provide comments and approve the deliverables produced in the framework of activities mentioned.
- Will lead the development of activity 1.7 through direct engagement with consultants.
- Will participate in capacity-building as provided under activity 3.1.

Ministry of Agriculture and Livestock (MAG)²⁸

Mandate: The mandate of MAG includes the strengthening of family, community, and indigenous agriculture, and promotion of improvement of the competitiveness of the rural sector with a diversified, sustainable, and inclusive approach.

Role in the project: Under the leadership of SEAM, the MAG will contribute to the implementation of activity 1.1 (Detailed mapping of ecosystems), of activity 1.5 (Investigation of traditional practices contributing to climate resilience) and activity 1.7 (Elaboration of an analysis of incentives and disincentives for the adoption of climate-resilient farming practices in the Chaco region). In particular, the MAG:

- Will design focal points for the project that participate in (i) the Executive Committee, (ii) the Mechanism of Technical Support, and (iii) the three Local Coordination Committees (LCL).
- Will provide comments and approve the deliverables produced in the framework of activities mentioned.
- Will participate in capacity-building as provided in activity 3.1.

Directorate of Meteorology and Hydrology (DMH) in the National Directorate of Civil Aeronautics (DINAC)

Mandate: Promote the study and development of meteorology and hydrology in all national territory, in coordination with related state institutions, administrate and operate the network of official meteorologic observatories, and provide the required services to satisfy the needs of distinct activities dependent on atmospheric conditions such as livestock; farming; terrestrial, pluvial, and aerial transportation; construction; industry; human settlements; conservation of hydric resources; protection of the environment; sporting activities and the needs of the Armed Forces.

Role in the project: Under the leadership of SEAM and UGP, the DMH will contribute to the implementation of activity 1.2 (Information and monitoring system for agro-climatic risk assessment). In particular:

- Design focal points for the project that participate in (i) the Executive Committee, (ii) the Mechanism of Technical Support, and (iii) the three Local Coordination Committees (LCL).

²⁸ <http://www.mag.gov.py>

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- Provide comments and approve the deliverables produced in the framework of activities mentioned.
- Participate in capacity-building as provided in activity 3.1.

Paraguayan Institute for Indigenous People (INDI)²⁹

Mandate: The mandate for INDI includes, among others, “promotion of technical and professional training of indigenous peoples, especially for farming, forestry and crafts activities, and capacitation for organization and administration of communities”.

Role in the project: Under the leadership of SEAM, INDI will contribute to the implementation of activity 1.8 (Evaluation of vulnerability to climate change), activity 1.5 (Investigation of traditional practices that contribute to climate resilience), activity 1.7 (Guidance on sustainable practices of forestry management), activity 2.2. (Implementation of Community-based adaptation plans). In particular, INDI will:

- Design focal points for the project that participate in (i) the Executive Committee, (ii) the Mechanism of Technical Support, and (iii) the three Local Coordination Committees (LCL).
- Provide comments and approve the deliverables produced in the framework of activities mentioned.
- Participate in capacity-building as provided in activity 3.2.

Paraguayan Institute for Agricultural Technology (IPTA)³⁰

Mandate: The Paraguayan Institute for Agricultural Technology, IPTA, has as its main objective the creation, recovery, adaptation, validation, diffusion and transference of agricultural technology, and the management of agricultural and forestation genetic resources, through the development of research programmes and technologies augmenting productivity of outputs with agricultural and forestry origins, aiming to empower competitiveness for domestic and export markets.

Role in the project: Under the leadership of SEAM, the IPTA will contribute to the implementation of activity 1.2 (Evaluation of vulnerability to climate change), activity 1.4 (Study of the ecology, management, and nutritional value of Algarrobo and Viñal), activity 1.5 (Investigation of traditional practices that contribute to climate resilience), activity 2.2 (Implementation of Community-based adaptation plans). In particular, IPTA will:

- Design focal points for the project that participate in (i) the Executive Committee, (ii) the Mechanism of Technical Support.
- Provide comments and approve the deliverables produced in the framework of activities mentioned.
- Participate in capacity-building as provided in activity 3.1.

Chaco Division of the School of Agricultural Sciences of the National University of Asunción – UNA/FCA/Chaco Division³¹

Mandate: The School of Agricultural Sciences (FCA) is one of the Schools of the National University of Asunción. It has a division located in Chaco Central (Cruce Pioneros). The agricultural activity is the mainstay of the economy of the region and possesses particular characteristics. Graduate training in the Paraguayan Chaco is an initiative being advanced in cooperation by the National University of Asunción (UNA) and the Ministry of Agriculture and Livestock (MAG). The main activity is the university track for Agricultural Administration being

²⁹<http://www.indi.gov.py>

³⁰<http://ipta.gov.py>

³¹<http://www.agr.una.py/seccion-chaco.htm>

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developed in the Chaco Central Experimental Station (MAG) of Cruce Pioneros. This activity has three specific objectives: (i) shape professionals with a Chaco profile; (ii) Recover and socialize regional know-how; (iii) Offer the opportunities for graduate education to local youth.

Role in the project: In coordination with the IPTA, UNA/FCA, from its Chaco division, will lead the implementation of activity 1.4 (Study of the ecology, management, and nutritional value of Algarrobo and Viñal). In particular:

- Will design focal points for the project that participate in (i) the Executive Committee, (ii) the Mechanism of Technical Support.
- Will lead the formulation of the mentioned study, in direct engagement with consultants and in coordination with the IPTA.

National Service of Vegetable and Seed Quality and Health (SENAVE)³²

Mandate: Support the agricultural policy of the State, contributing to the increase in competitiveness levels, sustainability and equality of the rural sector, through the improvement of the productive resources regarding quality and phytosanitary conditions, genetic purity, and the prevention of harmful effects to men, animals, plants and the environment, ensuring its safety.

Role in the project: Under the leadership of SEAM, SENAVE will contribute to the implementation of activity 1.7 (Elaboration of an analysis of incentives and disincentives for the adoption of climate-resilient farming practices in the Chaco region). In particular:

- Will design focal points for the project that participate in (i) the Executive Committee, (ii) the Mechanism of Technical Support.
- Provide comments and approve the deliverables produced in the framework of activities mentioned.

National Institute of Rural and Land Development (INDERT)³³

Mandate: INDERT is responsible for promoting the harmonious integration of the rural population to the economic and social development of the nation, adapting agrarian structures, promoting access to farmlands, reclaiming and regulating occupation, coordinating and creating suitable conditions for developments conducive to the consolidation of beneficiary producers, configuring strategies integrating participation, productivity, and environmental sustainability.

Role in the project: Under the leadership of INFONA, INDERT will contribute to the implementation of activity 1.6 (Development of specific protocols for implementing good forest and agricultural management practices in farming and indigenous communities). In particular:

- Will design focal points for the project that participate in (i) the Executive Committee, (ii) the Mechanism of Technical Support.
- Provide comments and approve the deliverables produced in the framework of activities mentioned.

Local Coordination Committees (LCL)

A Local Coordination Committee (LCL) will be established in each of the three Departments. Each LCL will be composed by representatives of SEAM, MAG, INFONA, and INDI, representatives of local governments (at departmental and municipal level), and community leaders for pilot sites. The Local Coordination Committees (LCL) could also include other

³²<http://www.senave.gov.py>

³³<http://www.indert.gov.py>

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interested parties at local level. During the first year of the project the incorporation of additional members will be evaluated. To support the implementation over the territory, the project will have a baseline of 75% of the time of one staff in each department. Each LCL will develop its procedures and guidelines for resource allocation, conflict resolution, and other relevant aspects of management at community level.

Departmental and Municipal Governorates

Mandate: The Departmental governorates have among their competences the preparation of a **plan of departmental development**, in coordination with the National Plan. Municipal governments have among their competencies the formulation and implementation of the harmonious and **integral plan of development** for the Municipality and its programmes and projects.

Role in the project: The departmental and municipal governments will designate their representatives in the Local Coordination Committees for each of the three Departments. Their role is to:

- Participate in all stages of the design of interventions.
- Lead, in coordination with SEAM, activity 2.1 (Participatory development of adaptation plans) and 2.2 (Implementation of Community-based adaptation plans).
- Approve deliverables produced by the consultancies provided in the project as well as the works of investment. Both departments and municipalities are charged with keeping track of activities after the project period.

Communities

Role in the project: Are the ultimate beneficiaries of the project. Communities will designate representatives in the Local Coordination Committees (LCL) in each of the three Departments. Their role is to (i) participate in all stages of planning of interventions and (ii) approve deliverables produced by consultancies provided in the project as well as investment works. The following table summarizes what institutions will be involved in following and approving each of the deliverables or activities.

Table 18.- 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 Department Governments of Boqueron and Alto Paraguay District Department governors Communities
1.2 Information and monitoring system for agro-climatic risk assessment	DINAC/DMH SEAM SEN Department Governments of Boqueron and Alto Paraguay District governments Communities
1.3. Assessment of the vulnerability to climate change of specific plants and animals used as food source to contribute to the design of strategies for ecosystem and community-based adaptation.	SEAM Universities IPTA, INDI Department Governments of Boqueron and Alto Paraguay District governments Communities

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Output / Activity	Stakeholders
1.4 Study of the Ecology, Management and Nutritional components of Algarrobo and Viñal (Prosopis spp.) to contribute to the design of strategies for ecosystem and community-based adaptation.	UNA/FCA / Chaco Branch. IPTA Communities
1.5 Research on traditional practices that contribute to climate resilience, including crop varieties.	SEAM MAG, INFONA, IPTA, INDI Department Governments of Boqueron and Alto Paraguay District governments Universities, NGOs and the private sector Communities
1.6. Development of a guide to implement sustainable forest management practices on rural and indigenous peoples communities.	SEAM INFONA, INDERT. INDI Department Governments of Boqueron and Alto Paraguay District governments Communities
1.7 Elaboration of an analysis of incentives and disincentives for the adoption of climate-resilient agricultural practices in El Chaco region	SEAM, SEN, MAG, INFONA, SENA Department Governments of Boqueron and Alto Paraguay District governments Universities, NGOs and the private sector Communities
1.8 Vulnerability studies (including water) for the communities to contribute to the design of strategies for ecosystem and community-based adaptation) and baseline studies.	SEAM Department Governments of Boqueron and Alto Paraguay District governments Communities UNEP
2.1 Participatory developed integrated adaptation with a watershed management, ecosystem-based approach	SEAM Department Governments of Boqueron and Alto Paraguay District governments Communities UNEP
2.2.1 Training and exchange of knowledge among stakeholders	SEAM UNA/FCA, IPTA Department Governments of Boqueron and Alto Paraguay District governments Universities, NGOs and the private sector Communities
2.2.2 Extension services and acces to inputs for the conservation and restoration of forests (including "protective forest") and other ecosystem	INFONA SEAM Department Governments of Boqueron and Alto Paraguay District governments Communities
2.2.3 Agro-ecological production in farming and livestock, including agroforestry, apiculture, community seed banks and pastoral management	MAG SEAM, IPTA Department Governments of Boqueron and Alto Paraguay District governments Communities
2.2.4 Implementation of improvements in the efficient use, catchment, harvesting and storage of rainwater	MAG SEAM SENASA Department Governments of Boqueron and Alto Paraguay District governments Communities
3.1 Detailed training plan for SEAM and national	Key institutions from Technical Support Mechanism

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Output / Activity	Stakeholders
partner agencies on mainstreaming climate compatible development across sectors	of the project, with a particular focus on SEAM, MAG and INFONA.
3.2 Training plan for partner agencies at local level	Key institutions from the Local Coordination Committees of the project: Governments, districts; communities; and SEAM, MAG, and INFONA agents at a local level.
3.3 Identification, systematization and exchange of lessons learned of the project	SEAM Other selected Ministries Department Governments of 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.

B. Financial and project 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 19 presents the type, characteristics and level of risks and the strategies that have been and will be undertaken to mitigate them.

Table 19.-. 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 executing agencies delays project implementation	Low	Operational agreements between implementing partners and agencies have been detailed with adequate definition of roles and responsibilities. A constructive, pro-active and consensus building approach will guide interactions between stakeholders.

No.	Type of risk	Description of risk	Level	Mitigation Strategy
3	Institutional	Frequent rotation of staff in local implementing agencies may affect availability of qualified staff	Medium	<p>Decisions ,best practices and lessons learned will be documented throughout the project to support institutional memory that will sustain project activities. This memory will also be strengthened through activity 3.3 Identification, systematization and exchange of lessons learned of the project.</p> <p>Furthermore, several officials from each institution will be trained by the project, as well as non-government stakeholders – such as scientists, engineers, planners and village leaders – thereby strengthening the institutional capacity to plan and implement adaptation activities within and outside of implementing institutions and government bodies.</p> <p>Where possible, the project will make use of established government structures to capitalize on well-established practices and systems that are familiar to government staff.</p>
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	<p>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.</p>
5	Environmental	Climate variability and change, including extremes, are greater than projected by the studies	Low	<p>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</p>

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No.	Type of risk	Description of risk	Level	Mitigation Strategy
				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.
6	Financial	The use of financial resources involves many government levels and is not efficient	Low	The coordination team will be seated at the SEAM, ensuring coordination with different sectors and government levels working on climate change. For each of the activities an open call will be made and the best technical and financial offer will be selected, ensuring that the provision of services is efficient and available financial resources are properly used. Different stakeholders, from private companies to NGOs and CBOs would be able to apply, the technical proposal being evaluated against the specific terms of reference of each activity.
7	Financial	The use of financial resources is not transparent	Low	The project will follow UNEP's and Paraguay's procurement process, which ensures transparency. Furthermore, the budget includes financial resources to conduct audits every year, so that any potential deviation can be shortly identified and acted upon.

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.

C.Environmental and social risk management

As presented in section K, 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

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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.

D. Monitoring and evaluation arrangements

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)³⁴. The workshop will be crucial to ensure ownership and effective implementation to reach the intended outcomes.

Inception Workshop Report:

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:

³⁴ 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.

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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.

Household surveys:

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Household surveys will be conducted in order to measure the degree of adoption of diversified, climate resilient livelihood options and the average increase in annual cash income. A representative sample will be selected (simple random sampling). Different degrees of adoption of the innovations will be assessed, including awareness, interest, evaluation, trial and adoption. Variables to be measured will also include level of education and number of times the farmer has travelled out of his immediate community to seek agricultural information. In addition to the baseline studies, surveys will be conducted at mid-term and at the end of the project.

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

Table 20.-. 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.

E.Results framework

Table 21.-. 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					

Result	Indicator	Baseline	Mid-term target	Final target	Means of verification
the Chaco Region of Paraguay to the impacts of climate change on food security					
OUTCOMES					
Outcome 1. Knowledge management on vulnerability and resilience to climate change improved to implement cost-effective adaptation measures.	Increase in generation and use of climate information in sustainable development planning	<p>Poor understanding of the impacts of climate change in the area and on some populations, geographical areas, economic sub-sectors, ecosystems and natural species.</p> <p>The region's network of meteorological stations is poor (in a region with 246,925 km², there are only 5 stations in operation).</p> <p>The role of traditional practices, forest standards and economic incentives is neither well understood.</p> <p>Current sustainable development plans at department and district level do not integrate adaptation issues.</p>	<p>Increase in climate change information generation: 100 % of planned knowledge products elaborated</p> <p>Increase in climate change information use: integration of knowledge-based climate change adaptation priorities into community adaptation plans at least for the 6 targeted communities;</p>	Integration of climate change adaptation, including priority actions and strategic options, into at least two departmental and/or district sustainable development plans	<p>Knowledge products elaborated</p> <p>Community adaptation plans</p> <p>Project supervision reports</p>

Result	Indicator	Baseline	Mid-term target	Final target	Means of verification
Outcome 2. Adaptive capacity in rural areas of greatest vulnerability strengthened through concrete adaptation measures favouring an ecosystem-based approach	Number of males and females benefiting from the adoption of diversified, climate resilient livelihood options Average increase in annual cash income among target beneficiaries.	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. Baseline status of participating communities, including quantitative scores, will be assessed by the baseline study.	60% of local stakeholders identified in the baseline study (local officials, farmers, herders and indigenous people) benefit from the adoption of diversified, climate resilient livelihood options by mid-term, resulting in an average increase in annual cash income of 30%	80% of local stakeholders identified in the baseline study (local officials, farmers, herders and indigenous people) benefit from the adoption of diversified, climate resilient livelihood options by the end of the project. resulting in an average increase in annual cash income of 30%	Household surveys and reports Capacity assessment and climate change vulnerability scorecards
Outcome 3. Capacity development and awareness to implement and upscale effective implementation of adaptation measures at national and local levels	Number of assessments and strategic recommendations related to climate change adaptation developed to support environmental licensing processes Number of local development plans, strategies and processes that integrate adaptation to climate change concerns.	Currently, environmental licensing processes do not integrate adaptation issues. Current sustainable development plans at department and district level do not integrate adaptation issues.	N/A.	Integration of climate change adaptation, including priority actions and strategic options, into at least two departmental and/or district sustainable development plans Integration of climate change adaptation, including strategic recommendations, into at least five assessments developed to support environmental licensing processes-	Local development plans, strategies and licensing processes.

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Result	Indicator	Baseline	Mid-term target	Final target	Means of verification
OUTPUTS AND ACTIVITIES					
COMPONENT 1.- Knowledge management on vulnerability and resilience to climate change improved to implement cost-effective adaptation measures.					
Natural Capital: Basic information on ecosystems and ecosystem services					
Output 1.1 Improved mapping of ecosystems, including agro-ecological zones, water resources, forests and other ecosystems	Number of detailed ecosystems maps for the areas of influence of the selected communities	There are currently no detailed ecosystem maps for the areas of influence of the selected communities	6 detailed ecosystem maps (1 map for each of the selected communities) by mid-term	6 detailed ecosystem maps (1 map for each of the selected communities) by the end of the project	Existence of detailed ecosystem maps for the areas of influence of the selected communities
Output 1.2 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 variability and change)	3 new meteorological stations installed by mid-term	3 new meteorological stations functioning by the end of the project	Project supervision reports
	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 ⁵⁵ by mid-term	156 meteorological reports shared with farmers, herders and indigenous communities ⁵⁶ by the end of the project	Project supervision reports
Economic capital: Identification of good productive practices for adaptation					
Output 1.3. 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 1.4 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

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Result	Indicator	Baseline	Mid-term target	Final target	Means of verification
spp.)					
Output 1.5 Increased knowledge on traditional practices that contribute to climate resilience	Existence of a comprehensive and strategic study on local traditional practices that contribute to climate resilience	There are currently no comprehensive and strategic studies on local traditional practices that contribute to climate resilience	1 comprehensive and strategic study on local traditional practices that contribute to climate resilience by mid-term	1 comprehensive and strategic study on local traditional practices that contribute to climate resilience by the end of the project	Existence of a comprehensive study on local traditional practices that contribute to climate resilience by the end of the project
Output 1.6. Development of specific protocols for the implementation of good practices in forest management and agriculture on farming and indigenous peoples communities.	Existence or specific protocols for the implementation of good practices in forest management and agriculture on farming and indigenous people's communities	There are no specific protocols for the implementation of good practices in forest management and agriculture on farming and indigenous people's communities	Specific protocols for the implementation of good practices in forest management and agriculture on farming and indigenous people's communities by mid-term.	Specific protocols for the implementation of good practices in forest management and agriculture on farming and indigenous people's communities by the end of the project.	Existence of specific protocols for the implementation of good practices in forest management and agriculture on farming and indigenous people's communities
Political capital: Analysis of incentives and disincentives for the adoption of productive practices resilient to climate change					
Output 1.7 Increased knowledge on the contribution to adaptation of the existing regulatory framework Elaboration of an analysis of incentives and disincentives for the adoption of climate-resilient agricultural practices in El Chaco region	Existence of a comprehensive and strategic study on incentives for the adoption of climate-resilient agricultural practices in El Chaco region.	There are currently no comprehensive and strategic studies on the incentives for the adoption of climate-resilient agricultural practices in El Chaco region.	1 comprehensive and strategic study on the incentives for the adoption of climate-resilient agricultural practices in El Chaco region	1 comprehensive and strategic study on the incentives for the adoption of climate-resilient agricultural practices in El Chaco regiocon	Existence of a comprehensive and strategic study on incentives for the adoption of climate-resilient agricultural practices in El Chaco region
Human capital: Vulnerability studies and establishment of the baseline in the beneficiary communities					
Output 1.8 Improved understanding of climate change vulnerability and impact of the communities	Number of general vulnerability and impact assessments	There are currently no general climate change vulnerability and impact assessments for the selected communities	6 general climate change vulnerability and impact assessments (1 for each of the selected communities) by mid-term.	6 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

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Result	Indicator	Baseline	Mid-term target	Final target	Means of verification
Component 2.- Adaptive capacity in rural areas of greatest vulnerability strengthened through concrete adaptation measures favouring an ecosystem-based approach					
Development of community adaptation plans					
Output 2.1 Increased participatory adaptation planning	Number of integrated adaptation community plans	Currently there are no integrated adaptation plans in the selected communities	6 integrated adaptation community plans by mid-term (one per selected community)	6 integrated adaptation community plans by the end of the project (one per selected community)	Existence of integrated adaptation community plans
Implementation of community adaptation plans					
Output 2.2 Increased implementation of strategic adaptation measures	Existence of adaptation measures being implemented on forest conservation, agriculture, water, regulatory framework and skills in the ten selected communities Number of critical areas with increased resilience	The implementation of adaptation measures on forest conservation, agriculture, water, regulatory framework and skills in the ten selected communities Number of critical areas with increased resilience forest, agricultural activities, water infrastructure, regulatory framework and skills is currently limited in the ten selected communities	At least 5 adaptation measures are being implemented on forest conservation, agriculture, water, regulatory framework and skills in the ten selected communities by mid-term 5 critical areas (forest, agricultural activities, water, regulatory framework and skills) with increased resilience by mid-term	At least 10 adaptation measures are being implemented on forest conservation, agriculture, water, regulatory framework and skills in the ten selected communities by mid-term 5 critical areas (forest, agricultural activities, water, regulatory framework and skills) with increased resilience by the end of the project	Project supervision reports
Human capital: technical assistance to strengthen extension services					
Activity 2.2.1 Training and exchange of knowledge among stakeholders, training and awareness building in project intervention areas to implement key adaptation strategies	Number of trained local stakeholders	N/A	At least 400 local stakeholders trained by the project by mid-term (at least 80 stakeholders in each of the training sessions: one on climate vulnerability and adaptation, one on forest management, one on smart agriculture, one	At least 800 local stakeholders trained by the project by the end of it (at least 160 stakeholders on climate vulnerability and adaptation, on forest management, on smart agriculture, on resilient livestock, and on efficient water	Project supervision reports

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Result	Indicator	Baseline	Mid-term target	Final target	Means of verification
			on resilient livestock, one on efficient water use)	use)	
Physical capital: support for access to inputs and improved infrastructures for water management					
Activity 2.2.2 Extension services and acces to inputs for the conservation and restoration of forests (including “protective forest”) and other ecosystem	Number of ha of forest conservation/rest oration 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 2.2.3 Extension services and acces to inputs for agro-ecological production in farming and livestock, including agroforestry, apiculture, community seed banks and silvopastoral management	Number of additional hectares applying the agroecological practices promoted by the project	The baseline will be determined for each community.	Increase of 25% in the number of hectares applying the agroecological practices	At least an increase of 50% in the number of hectares applying the agroecological practices	Project supervision reports
	Percentage of increased 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 ³⁵	30% increase in the honey produced by the beneficiaries of the project by its end ³⁶	Project supervision reports
Activity 2.2.4 Increased availability of water for human consumption and productive activities	Number of water harvesting, storage and distribution systems constructed/repaired by the project	N/A	At least 50% of the beneficiary families have 1 water harvesting, storage and distribution infrastructure constructed/repaired by the project by mid-term ³⁷	All beneficiary families have 1 water harvesting, storage and distribution infrastructure constructed/repaired at the end of theproject.	Project supervision reports
Component 3. Capacity development and awareness to implement and upscale effective implementation of adaptation measures at national and local levels					

³⁵ 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.

³⁶ 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

³⁷ 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.

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Result	Indicator	Baseline	Mid-term target	Final target	Means of verification
Output 3.1 National level: Detailed training plan for SEAM and partner agencies at national level (ministries and agencies, including but not limited to MAG and INFONA), on mainstreaming climate compatible development across sectors	Number of SEAM staff trained (by gender)	N/A	At least 60 SEAM staff (at least 30 women) trained by mid-term.	At least 120 SEAM staff (at least 60 women) trained by the end of the project	Project supervision reports
Output 3.2 Local level: Training plan for partner agencies at local level (including but not limited to departmental and municipal governments)	Number of relevant stakeholders trained . (by gender)	N/A	At least 80 relevant stakeholders (at least 40 women) trained 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 7th month)	10 lessons learned documents prepared by the project by its end (one every 6 months from the 7th month and a final consolidated report at the end)	Project supervision reports

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

F.Results framework's alignment with the Adaptation Fund

Table 22.-. Results framework's alignment with the Adaptation Fund

Project Objective(s) ³⁸	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	Increase in generation and use of climate information in sustainable development planning	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	893,483
Outcome 3. Capacity development and awareness to implement and upscale effective implementation of adaptation measures at national and local levels	Number of assessments and strategic recommendations related to climate change adaptation developed to support environmental licensing processes Number of local development plans, strategies and processes that integrate adaptation to climate change concerns.	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	494,650
Outcome 2. Adaptive capacity in rural areas of greatest vulnerability strengthened through concrete adaptation measures favouring an ecosystem-based approach	Number of males and females benefiting from the adoption of diversified, climate resilient livelihood options Average increase in annual cash income among target beneficiaries.	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	4,585,466
		Outcome 5: Increased ecosystem resilience in response to climate change and variability-induced stress	5. Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress	

³⁸ The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

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Project Objective(s) ³⁸	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
		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	
Output 1.8 Improved understanding of climate change vulnerability and impact of the eight communities not covered by the UNEP (2013) VIA analysis report	Number of general vulnerability and impact assessments	<i>Output 1.1:</i> 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)	74,921
Output 1.2 Increased meteorological information available for agro-climatic risk assessment	Number of new functioning meteorological stations in the Paraguayan Chaco		1.2 No. of early warning systems (by scale) and no. of beneficiaries covered	292,000
	Number of meteorological reports shared with farmers, herders and indigenous communities			
Output 3.1 Detailed training plan for SEAM on mainstreaming climate compatible development across sectors	Number of SEAM staff trained (by gender)	<i>Output 2:</i> 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)	115,570

Amended in November 2013

Project Objective(s) ³⁸	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Activity 2.2.4 Increased availability of water for human consumption and productive activities	Number of water harvesting, storage and distribution systems constructed/repared by the project	<i>Output 4:</i> 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)	1,500,000
Activity 2.2.2 Conservation and restoration of forests (including "protective forest") and other ecosystem, taking into account output 1.4	Number of ha of forest conservation/restoration areas created with the support of the project	<i>Output 5:</i> 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)	650,000
Activity 2.2.3 Agro-ecological production in farming and livestock, including agroforestry, apiculture, community seed banks and silvopastoral management	Number of additional hectares applying the agroecological practices promoted by the project Percentage of increased honey produced by beneficiaries of the project.	<i>Output 6:</i> Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	6.2.1. Type of income sources for households generated under climate change scenario	2,239,440

- 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.

G.Budget

Table 23.- Detailed budget.

Component	Output	Type of Input		Cost (USD)	
1. Knowledge management on vulnerability and resilience to climate change improved to implement cost-effective adaptation measures				893,483	
	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 regional 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 Information and monitoring system for agro-climatic risk assessment				285,100
		1 senior international consultant (30 days)	g		19,500
		1 senior national consultant (40 days)	h		16,000
		Software	i		12,000
		1 junior national consultant (42 months)	j		42,000
		3 Stations			137,100
		Installation of equipment			14,000
		Feasibility study of locations			20,000
Maintenance of equipment				4,500	
Dissemination of forecast and agro-climatic reports			20,000		

	1.3 Assessment of the vulnerability to climate change of specific plants and animals used as food source.			74,921
		2 senior National Consultants (6 months)	j	30,000
		DSA national consultant	k	2,400
		Transport (water)	l	2,000
		Transport (fuel)	m	2,621
		DSA SEAM specialists	n	12,000
		Materials and tools	o	15,000
		Publication of the results		10,000
		Workshop national 100 people		900
	1.4 Study of the Ecology, Management and Nutritional components of Algarrobo and Viñal (Prosopis spp.)			82,901
		2 senior national consultant (12 months)	p	24,000
		3 junior national consultants (12 month)	q	25,200
		Lab	r	15,000
		Materials and tools	s	12,000
		DSA national consultant	t	2,880
Mobility (fuel)		u	2,621	
1 regional validation workshop 100 people			1,200	
1.5 Research on traditional practices that contribute to climate resilience			46,668	
	4 senior national consultant (3 month)	v	24,000	
	3 junior national consultants (3 month)	w	18,000	
	Transport (fuel)	x	1,248	
	DSA national consultant	y	1,920	
	3 regional validation workshops 30 people		1,200	
	1 national validation workshop 30		300	

	people		
1.6 Development of specific protocols for the implementation of good practices in forest management and agriculture on farming and indigenous peoples communities.			32,948
	1 senior national consultants (4 months)	z	10,800
	1 senior national consultant (2 months)	ab	5,400
	1 junior consultant (2 month)	ac	3,000
	1 national validation workshop 30 people		300
	Publication (guide)		10,000
	DSA national consultant	ad	2,200
	Transport (fuel)	ae	1,248
1.7 Elaboration of an analysis of incentives and disincentives for the adoption of climate-resilient agricultural practices in El Chaco region			203,635
	1 international senior consultant (30 days)	af	19,500
	1 senior national consultant 35 days		14,000
	International travel	ag	3,000
	DSA international consultant	ah	1,070
	DSA national consultant	ai	540
	1 regional validation workshop 100 people		1,200
	1 national validation workshop 30 people		300
	1 project officer full time	aj	109,350
1 project officer (half time)		54,675	
1.8 General vulnerability and impact assessment for the targeted communities			74,921
	2 senior National Consultants (6 months)	ak	30,000
	DSA national consultant	al	2,400
	Transport (water)	am	2,000

		Transport (fuel)	an	2,621	
		DSA SEAM specialists	ao	12,000	
		Materials and tools	ap	15,000	
		Publication of the results		10,000	
		Workshop national 100 people		900	
				4,585,466	
2. Adaptive capacity in rural areas of greatest vulnerability strengthened through concrete adaptation measures favouring an ecosystem-based approach	2.1 Participatory development of integrated adaptation plans with an ecosystem-based approach			100,698	
		1 senior international consultant 40 days	aq	26,000	
		3 senior national consultant (4 months)	ar	36,000	
		3 junior national consultants (4 months)	as	24,000	
		International travel	at	3,000	
		DSA international consultant	au	1,550	
		DSA national consultant	aw	4,400	
		Transport (fuel)	ay	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			4,484,768	
	2.2.1 Training and exchange of knowledge among stakeholders.				95,328
		5 national consultants (30 days)	az	60,000	
		3 junior national consultants (30 days)	aaa	18,000	
		DSA	aab	1,680	
Transport (fuel)		aac	1,248		

		6 regional workshops 100 people (2 days each)		14,400
	2.2.2 Extension services and acces to inputs for the conservation and restoration of forests.	Service contract	aad	650,000
	2.2.3 Extension services and acces to inputs for agro-ecological production in farming and livestock, including agroforestry, apiculture, community seed banks and silvopastoral management			2,239,440
		Service contract for smart agriculture	aae	1,000,000
		Service contract for apiculture	aaf	650,000
		Service contract for resilient livestock	aag	412,776
		Service contract for gender mainstreaming		176,664
	2.2.4 Implementation of improvements in the efficient use, catchment, harvesting and storage of rainwater	Service contract including feasibility studies and design if needed and construction/repairation in each area.	aah	1,500,000
3. Capacity development and awareness to implement and upscale effective implementation of adaptation measures at national and local levels				494,650
	3.1 National level: Detailed training plan for SEAM and partner agencies at national level on mainstreaming climate compatible development across sectors			115,570
		3 International consultant (40 days)	aai	68,250
		2 senior national consultants (40 days)	aaj	32,000
		International travel	aak	9,000
		DSA International	aal	2,640
		2 national workshops 100 people (2 days)		3,680
	3.2 Local level: Training plan for partner agencies at local level (including but not limited to departmental and municipal governments)			109,740
		3 International Consultants (30 days)	aam	58,500
		2 senior national consultants (30 days)	aan	36,000
		International travel	aao	9,000
		DSA international	aap	2,640
		2 national workshops 100 people (2 days)		3,600

	3.3 Identification, systematization and exchange of lessons learned of the project		269,340
		1 project officials	109,350
		1 project officer (half time)	aaq 54,675
		1 international consultant (30 days) mid-term review	aar 19,500
		International travel	aas 3,000
		DSA International	aat 850
		1 international consultant (39 days) terminal evaluation	aau
		International travel	aaw 3,000
		DSA International	aay 850
		1 international consultant lessons learned report	aaz 13,000
		International travel	aaaa 1,500
		DSA International	aaab 440
		Communication materials	aaac 3,175
		Publication lessons learned	10,000
		Financial Audits	aaad 50,000
Project Execution Costs	Project Management		596,400
		Project coordinator	aaae 164,250
		3 Project officials in the regions	aaaf 118,800
		Administrative and financial officers	aaag 64,800
		2 drivers	aaah 44,640
		8 computers	3,600
		3 printer	1,500
		2 cars (acquisition)	aaai 105,000
		Car insurance	aaaj 26,400
		2 cars (maintenance)	1,600

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		Fuel		11,410
b.	One specialist in flora, one in fauna, one in agriculture and two in GIS. 30 days 3 SEAM specialists could support the development of this output. Only DSA would need to be covered by the project. 20 days, 2 per community. GPS, cameras and other equipment. 6 communities. The furthest from Asunción is 10-300km. Estimated total distance to be covered 8000 km. 12 L of fuel per 100 km.	DSA Project team	aaak	40,500
c.		Survey	aaal	4,000
d.		Inception workshop national		900
e.		Inception workshops regions		3,600
f.		Steering Committee Meetings	aaan	5,400
Total project cost				6,569,999
Project Cycle Management Fee charged by Implementing Agency				558,451
		Overall coordination and management		114,482
		Oversight and management of project development and project implementation		144,081
		Financial management, including accounting, treasury, grant and trust fund management		87,118
		Information and communication management		30,715
		Quality assurance including internal and external audits	aaab	55,845
		Overall administration and support costs		126,210
Amount of financing requested				7,128,450

- g. For capacity building on the use of the software and agricultural risk management system.
- h. To support the definition of the location of the stations, follow up their installation and provide guidelines for agro-climatic reports.
- i. Software for agro-climatic risk management.
- j. In charge of following up the installation of the stations (6 months) and preparing the week reports once the stations are installed (36 months).
- k. One specialist for flora and one for fauna. 15,000 each for the completion of the report.

- l. 20 days each consultant
- m. Transport on water will be required. Boats will be hired for this.
- n. Same as note T
- o. 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.
- p. This includes cameras, GPS, reflectants, "pinzas de colecta", "cintas metricas"...
- q. One specialist in forest management, one specialist in nutrition. Half time during one year.
- r. Supporting personnel for the installation and conducting measurements.
- s. Nutritional studies. It will cover several species.
- t. Inputs such as seeds, plants and tools needed to conduct the study.
- u. 2 days per month for each of the consultants.
- v. One specialist for each of the following areas: adaptation, ecosystems, agriculture, anthropology/sociology.
- w. One junior per department.
- x. same as note F
- y. 32 days
- z. One specialist in forests will work with INFONA to develop a guide to be used by farming and indigenous communities. The consultant will also train these communities how to use the guide.
- ab. One legal specialist for reviewing the forestry and indigenous legislation in terms of forest management by farming and indigenous communities.
- ac. Junior forestry consultant to support the capacity building activities.
- ad. 10 workshops, one per community.
- ae. Same as note F
- af. Adaptation specialist with experience in institutional aspects

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ag	2 return flights
ah	7 days in Asuncion and 5 days in the field
ai	9 days in the field
aj	4.5 years
ak.	One specialist for flora and one for fauna. 15,000 each for the completion of the report.
al.	20 days each consultant
am.	Transport on water will be required. Boats will be hired for this.
an.	Same as note T
ao.	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.
ap.	This includes cameras, GPS, reflectants, "pinzas de colecta", "cintas metricas"...
aq.	Adaptation specialist with experience in Latin America
ar.	Adaptation specialists. 1 per department.
as.	With experience in adaptation. 1 per department.
at.	2 return flights
au.	5 days in Asuncion and 13 days in the field
aw	40 days
ay	Same as F
az	One specialist in each of the following: adaptation mainstreaming, forest, agriculture, livestock (or apiculture) and water
aaa	1 per department.
aab	28 days
aac	Same as F
aad	This will include the maintenance and fuel of the project vehicles used for these activities
aae	This will include the maintenance and fuel of the project vehicles used for these activities
aaf	This will include the maintenance and fuel of the project vehicles used for these activities
aag	This will include the maintenance and fuel of the project vehicles used for these activities
aah	This will include the maintenance and fuel of the project vehicles used for these activities
aai	One specialist in each of the following: mainstreaming climate change, adaptation and mitigation. The selection of consultants will cover rural and urban areas.
aaaj	One specialist in adaptation, one in mitigation.
aak	2 return flights each consultant

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aal	Four days each consultant each mission.
aam	Same as note aaq
aan	Same as note aar
aa0	Same as aas
aap	Same as aat
aaq	The other half time is covered in component 1.
aar	Experience in evaluation
aas	2 return flights
aat	5 days in Asuncion and 5 days in the field
aau	Experience in evaluation
aaw	2 return flights
aaY	Same as aap
aaZ	20 days
aaaa	One return flight
aaab	4 days in Asuncion
aaac	Publications, leaflets...
aaad	15,000 for years 2 and 3; 20,000 for the last year
aaae	4.5 years
aaaf	1 per department. 75% of their time. 4 years.
aaag	4.5 years
aaah	4 years
aaai	Including the cost of the transfer (5,000 USD)
aaaj	3300 USD per year. 4 years. 2 cars
aaak	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
aaal	Household surveys to measure the dregree of adoption of diversified, climate resilient livelihood options and the average increase in annual cash income.
aaam	9 Steering Committee Meetings

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

H.Disbursement schedule

Table 24.- 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 Increased meteorological information available for agro-climatic risk assessment																				
	Output 1.3. Assessment of the vulnerability to climate change of specific plants and animals used as food source.																				

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
	Output 1.4 Increased knowledge on the local ecology, management and nutritional components of Algarrobo and Viñal (Prosopis spp.)																				
	Output 1.5 Increased knowledge on traditional practices that contribute to climate resilience																				
	Output 1.6. Development of a guide to implement sustainable forest management practices on farming and indigenous peoples communities.																				
	Output 1.7 Elaboration of																				

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
	an analysis of incentives and disincentives for the adoption of climate-resilient agricultural practices in El Chaco region																				
	Output 1.8 Improved understanding of climate change vulnerability and impact of the eight communities not covered by the UNEP (2013) VIA analysis report																				
2. Adaptive capacity in rural areas of greatest vulnerability strengthened through concrete adaptation measures favouring an ecosystem-	Output 2.1 Increased participatory adaptation planning																				
	Activity 2.2.1 Training and exchange of knowledge among stakeholders																				
	Activity 2.2.2																				

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
based approach	Conservation and restoration of forests (including “protective forest”) and other ecosystem																				
	Activity 2.2.3 Agro-ecological production in farming and livestock, including agroforestry, apiculture, community seed banks and silvopastoral management, taking into account outputs																				
	Activity 2.2.4 Increased availability of water for human consumption and productive activities																				
3. Capacity development and awareness to	Output 3.1 Detailed training plan for SEAM on																				

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
implement and upscale effective implementation of adaptation measures at national and local levels	mainstreaming climate compatible development across sectors																				
	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)																				
	Output 3.3 Identification, systematization and exchange of lessons learned of the project																				

Table 25.-. 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 government³⁹

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

<p>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.</p>
 <p>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</p>

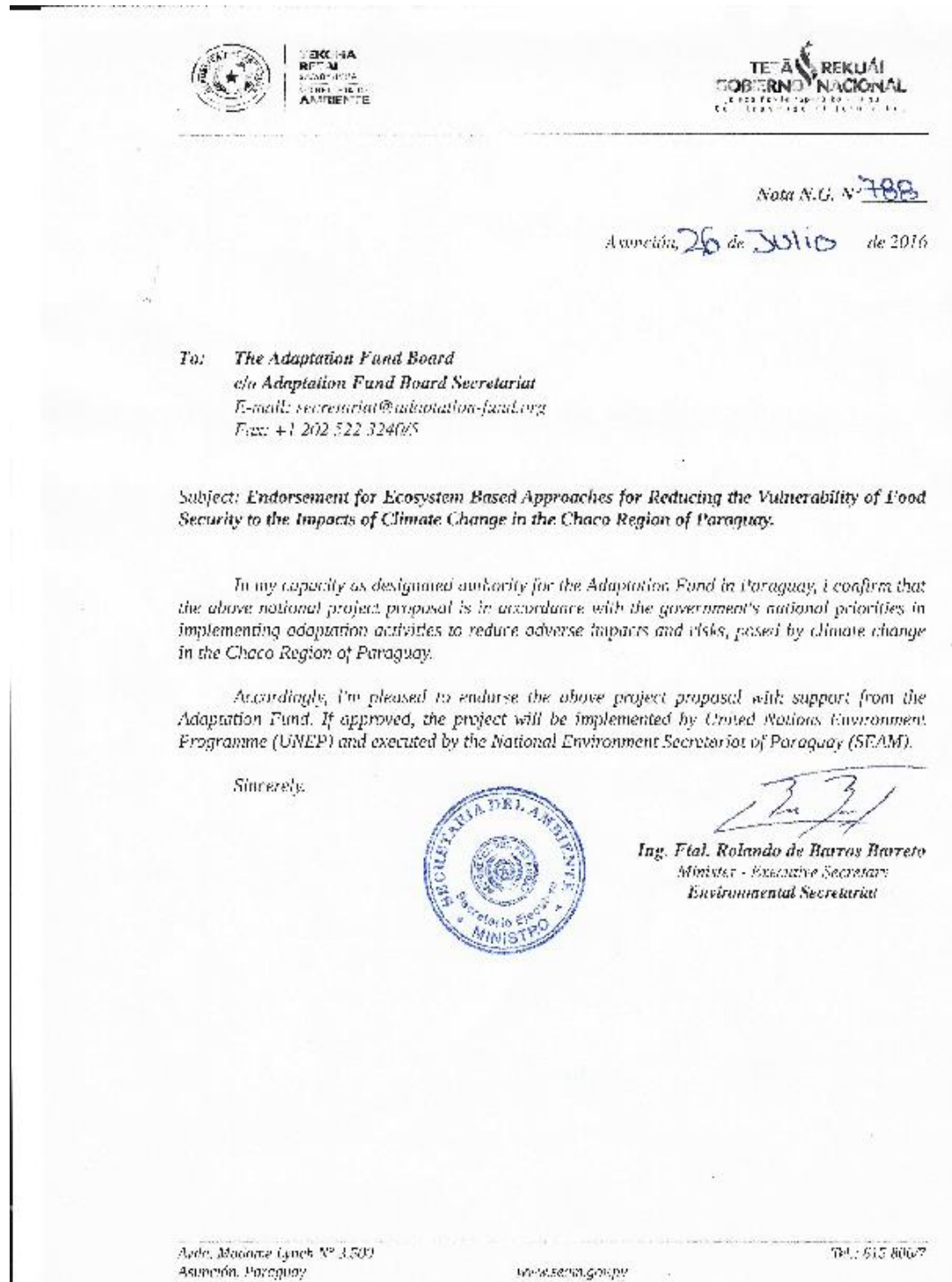
1. ⁶. Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

Date: January 9, 2017	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



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

ANNEX 2. RESPONSES TO THE COMMENTS IN THE REVIEW SHEET

The following corrective action requests (CARs) and clarification requests (CRs) are made: It is recommended that the proposal be revisited to ensure greater consistency between the various planned activities.		
Comments on 22 August 2016	Comments on 12 September 2016	Response
<p>CR 1: Please clarify the following issues related to project design:</p> <p>a) The geographic spread is 10 communities spread across a very large region of the country. It is not clear how these communities were chosen and what the specific vulnerabilities of these communities are, with regard to food security, which is the objective of the project.</p>	<p>CR1: Partly addressed.</p> <p>a) Further information is provided on the criteria for selection and some general information but with few specifics on how the communities fit those criteria. 2 of these communities have previous analysis (VIA) but it is not clear why the project does not start with implementation of these communities. Additionally, while it is stressed that the indigenous communities are more vulnerable, only of the 10 communities are indigenous.</p>	<p>CR1:</p> <p>a) New consultations were conducted by SEAM with local governments in order to reconsider the selection of communities. Finally, seven communities have been chosen. In Part I, page 9, the section on project context describes human, cultural, social, political, natural, economic and physical capital in the region are described as key elements of its adaptive capacity, with special emphasis on specific aspects of the target communities. In page 19, the section on “selection of intervention sites” describes this process.</p>
<p>b) The problem analysis would have to be strengthened. The lack of clarity in problem analysis is reflected in the objectives. The project appears to address a number of objectives (food security, reduction of climate change vulnerability, ecosystem services) simultaneously without deriving the links between them in the specific case (the general case is made using a number of studies quoted extensively and in verbatim) of the communities – how do the investments and actions to be taken by SEAM address food security and ensure ecosystem services. It would be expected that significant investments would</p>	<p>b) Not addressed. The main issue that the project will address by the project is not referred to explicitly till page 28 (where it is done in a clear way). Till then the document has a surfeit of general information (drawn from various documents) that is presented in a somewhat muddled and haphazard fashion. The storyline therefore does not appear strong and coherent. An example is that there is a listing of a number of institutions and regulations in the beginning with little to inform of its relevance to the project. Which institutions are relevant to this project and what they</p>	<p>b) The problem analysis has been reformulated. Please see pages 9-21 (Part I . - Project context).</p>

<p>be needed in forest conservation or installing community infrastructure for water management or for promotion of sustainable agro-pastoral production. It is not clear how the small scale of this project (and even smaller actual investment in community activities) will actually make any significant impact on the proposed objectives. It is noted that water stress is low to moderate and that intact ecosystems are present. It is not clear what integrated ecosystems are being addressed in the 10 communities as they appear to be spread through the region.</p>	<p>will do and which regulations will be affected? An analysis of the institutions and their roles would ideally be presented after the problem description and the description of the project. Another example is a listing of priorities from the 2nd communication under lessons learned.</p>	
<p>c) The institutional picture needs to be clarified, specifically with regard to the mandate of the Environment Secretariat. Is it an executing agency/ministry in the Paraguayan context? The project activities call for implementation as well as for planning. The proposal needs to clarify the mandates of different agencies regarding planning and regulation.</p>	<p>c) Not sufficiently addressed. While there is a lot of text added (somewhat curiously in the general context section), it is not specific to the project, i.e. roles of the different agencies in implementing project activities, sustaining project activities. How will the results be mainstreamed into the agencies for agriculture, water management etc. It appears to be oriented towards SEAM with a number of consultants but it is not clear how this will be embedded into the mainstream agenda of the govt. agencies for development. How is local government planning done for instance and how do these adaptation plans fit into them? Has this been done before in the country? If yes, with what success?</p>	<p>c) Those aspects have been also reformulated. In pages 12-13 (Political capital), there is a brief description of the institutions with relevant mandates for the project at national and local level. In Part III section A (pages 63-71) there is a description of the mandate and role in the project of each institution involved.</p>
<p>d) Which regulatory instruments are to be addressed through</p>	<p>d) Not sufficiently addressed. The references to policies</p>	<p>d) The project will examine the laws, regulations,</p>

<p>this proposal? The proposal needs to strengthen the description of the activity on improving the regulatory framework and incentive structures.</p>	<p>have been replaced en masse with 'incentives and disincentives' with little further on information on what precisely is being undertaken. What would the regulatory framework be to ensure the operation of these Incentives and disincentives?</p>	<p>politics and plans at the national, state, and district levels that regulate the usage of natural resources including forests, water bodies (rivers, lakes, wetlands), farms, and pastures to strengthen the implementation of legal and economic aspects that could help effectively apply adaptation practices related to food production.</p> <p>As mentioned in Part I, in the Paraguayan Chaco, in recent years, there has been an accelerated process of production growth, expanding the cattle border. Three million hectares of forest have undergone systematic logging in the last ten years, transforming mainly into pastures for cattle and more recently also for soybeans in the department of Alto Paraguay. These logging and clearing are for the most part legal. They are governed by Law No. 422/73, which stipulates that owners and farmers of more than 20 hectares must protect 25% of the forests on the property. In the Chaco biosphere reserve area, the required forest reserve amounts to 50% of the property. The Secretariat of the Environment (SEAM), is responsible for issuing environmental licenses for land use change.</p> <p>The objective is to identify how to incentive practices that allow an increase of production and income per hectare, in order to reduce the need for logging.</p> <p>This analysis will include, but is not limited to, the Forest Act, The Reforestation/Deforestation Act, the Forest Services Act, and the Fiscal Reorganization Act as well as the development plans of the selected departments and districts. As a result, recommendations about how to improve resilience to climate change in the different areas of focus will be provided. The result of this analysis may also be utilized to</p>
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		inform the current governance on Payment for Ecosystem Services (PES) – (Forest Services Act 3001/06) to include adaptation measures based on ecosystem service benefits under the PES. (please see pages 28-29)
e) The training component needs further elaboration (the section is non-specific noting technical, planning and communication trainings). What specific trainings will be conducted? How does this component contribute to adaptation and food security?	e) Not sufficiently addressed. While more info on the technical trainings have been added, it is not clear for e.g. whether maps would be produced as an output of the training on mapping. Further work is needed on justifying the training budget (particularly the information on the activities related to communication and planning could be strengthened) and its correlation with the rest of the project.	e) The training component has been reformulated. Please see pages 32-33.
f) The results indicators need to be revisited to have specific targets and clear indicators (additional comments on Results Framework are below).	f) (See below)	f) The results indicators have been revisited (please see pages 77-85): Outcome 1. Knowledge management on vulnerability and resilience to climate change improved to implement cost-effective adaptation measures. Indicator: Increase in generation and use of climate information in sustainable development planning Outcome 2. Adaptive capacity in rural areas of greatest vulnerability strengthened through concrete adaptation measures favouring an ecosystem-based approach. Indicators: Number of males and females benefiting from the adoption of diversified, climate resilient livelihood options and average increase in annual cash income among target beneficiaries. Outcome 3. Capacity development and awareness to implement and upscale effective implementation of adaptation measures at national

		and local levels. Indicators: Number of assessments and strategic recommendations related to climate change adaptation developed to support environmental licensing processes and number of local development plans, strategies and processes that integrate adaptation to climate change concerns.
CR 2: Given the large geographic scope – 10 communities in 3 departments – please clarify how many investments per community can be adequately made.	CR2: Not addressed.	CR2: The average size of the planned community investments are showed in table 10 (please see page 32).
CR3: Please clarify the average size of the actual community investments. Given the kind of investments planned, unless they are of a reasonable scale it is unlikely that they can have significant impact on adaptive capacity.	CR3: Not addressed. While the specifics of each of the sub activities may not be fully developed, the lack of this kind of information (even as an estimate for such a small project) indicates the need for further preparation.	CR3: The average size of the planned community investments are showed in table 10 in page 32.
CR4: However, it is recommended that the section on economic, social and environmental benefits be strengthened considerably by providing more information on expected increase in crop yields and other economic benefits (also info on the current baseline).	CR4: Partly addressed. The table is in Spanish. Crop yields are provided generally for the chaco region. While this is reasonable, it would be useful to know what the expected increase or rate of increase would be. Since the project is focusing on food security, it would be reasonable to expect increase in yield as a likely outcome indicator or some other measure of increase in food security.	CR4: The section on economic, social and environmental benefits has been strengthened, in particular regarding economic benefits. Please see pages 33-38
CR5: Please clarify the baseline in the communities regarding food security etc.	CR5: Partly addressed. Only two communities have had any kind of analysis. Perhaps the project document could provide such info for these two communities, if not for the others?	CR5: The section on project context has been reformulated in order to provide further baseline information. Please see pages 9-21
CR6: It is recommended that the section on benefits be revisited to ensure that the claims made are reasonable. While a number of environmental and social benefits are listed including climate regulation and decreased exposure to higher temperatures, it is not clear from the proposal or the scale of activities, as to how this will be accomplished.	CR6: Not addressed. The table has not been fundamentally changed and needs further work to specify and strengthen	CR6: The section on economic, social and environmental benefits has been strengthened, in particular regarding economic benefits. Please see pages 33-38

<p>CR7: A small proportion of the total project is aimed at addressing community investments of considerable scope. The proposal does provide information at the national level on damages resulting from climate change. Please strengthen. The objective of the proposal is to increase food security. Please clarify in the proposal the current status regarding food security in the 10 communities and discuss the issues regarding the specific vulnerabilities.</p>	<p>CR7: Not fully addressed. This comment is still applicable in the context of the discussion of the weakness of preparation informing the document, the broad design which leaves the preparation, planning and implementation during the project period and also the broad geographical scope, given the small resource envelope.</p>	<p>CR7: The section on project context has been reformulated in order to provide further baseline information. Please see pages 9-21.</p>
<p>CR 8: It is recommended that the environmental and social screening be revisited. The proposal includes a number of activities – investments in water infrastructure, forest conservation, agricultural production, installation of weather stations that could trigger environmental and social policies of the fund. Also, some of the communities are indigenous. In addition, the proposal notes that the project will address environmental compliance regulations, which may have economic impacts. The proposal does not have adequate information on possible economic losses that could trigger the involuntary resettlement policy of the fund. In all, the justification for category C does not appear valid</p>	<p>CR8: Not fully addressed. Potential economic losses are not discussed. While the category c reference has been deleted, little has fundamentally changed in terms of triggering the policies.</p>	<p>CR8: The project will examine the laws, regulations, politics and plans at the national, state, and district levels that regulate the usage of natural resources including forests, water bodies (rivers, lakes, wetlands), farms, and pastures to strengthen the implementation of legal and economic aspects that could help effectively apply adaptation practices related to food production. As mentioned in Part I, in the Paraguayan Chaco, in recent years, there has been an accelerated process of production growth, expanding the cattle border. Three million hectares of forest have undergone systematic logging in the last ten years, transforming mainly into pastures for cattle and more recently also for soybeans in the department of Alto Paraguay. These logging and clearing are for the most part legal. They are governed by Law No. 422/73, which stipulates that owners and farmers of more than 20 hectares must protect 25% of the forests on the property. In the Chaco biosphere reserve area, the required forest reserve amounts to 50% of the property. The Secretariat of the Environment (SEAM), is responsible for issuing environmental licenses for land use change. The objective is to identify how to incentive practices that allow an increase of production and income</p>

		<p>per hectare, in order to reduce the need for logging.</p> <p>Hence, no economic losses that could trigger the involuntary resettlement policy of the fund are expected.</p>
<p>CR 9: It is recommended that the project provide a clear justification for the selection of communities based on their vulnerability, fit with project objectives, impact at scale and sustainability.</p> <p>Most of the project activities are oriented towards knowledge management and learning. Component 1 largely supports technical studies, while component 3 addresses training at the national level (at the environment secretariat and to a lesser degree at partner agencies). Component 2 also has an activity on community training.</p>	<p>CR9: Not addressed. Given that there is little information on the communities, while there are some criteria listed, there is little justification provided.</p>	<p>CR9: In Part I, the project context section has been reformulated in order to provide more information on the communities, including a section on “selection of intervention sites” (please see pages 9-21).</p>
<p>CR 10: An area where information can be strengthened is an outline of national efforts to improve the enabling environment for sustainable agriculture and forestry. How do the efforts of this proposed project fit within the national effort to strengthen enabling environment, with specifics on which regulations will be addressed, what policies are expected to be changed or what targets and plans will be put in at the national level. Which institution has the mandate for planning and how will the project support those plans.</p>	<p>CR10: Not adequately addressed. There is a lot of text on regulations and institutions which does not however provide a clear picture of how the results of this project can be mainstreamed into national or regional programs on agriculture or forestry or affect policy.</p>	<p>CR10: In Part II section D (pages 40-43), national efforts to improve the enabling environment for sustainable agriculture and forestry are described, as well as the barriers for implementation and how the project will contribute to overcome these barriers.</p> <p>Barriers include: Implementation and enforcement of the legal framework that could help farming and indigenous communities to sustainably manage their natural resources is hampered by the low level of knowledge of the technical staff of institutions, decision makers and society in general as regards the content and scope of the different regulations. In addition, there are no manuals or guidelines that can help farming communities and indigenous peoples follow the regulations to manage their forests and enter into the Payment for Environmental Services system.</p> <p>In response to these barriers, the project will focus specifically on: (i) Capacity building (activities 3.1 and 3.2); (ii) Development of tools (1.6 Development of specific protocols</p>

		for implementing good forest and agricultural management practices in farming and indigenous communities); (iii) Systematization of lessons learned, which provide feedback to SEAM, INFONA and MAG on best practices for the successful implementation of these laws (3.3 Identification, systematization and exchange of lessons learned from the project).
CR11: While there is provision in the project for installation of weather monitoring stations (and software) and plans to develop weather forecasts, there is no mention of training on forecasting or capacity of forecasters at present. Given the technical complexity of developing sound forecasts based on a sparse weather monitoring network, the lack of training will render this activity as not useful. It is recommended that the proposal outline the baseline for developing the weather services and include information on relevant needs beyond installation of infrastructure (e.g. How will forecasts be developed and disseminated?)	CR11: Not fully addressed. This activity's design needs to be improved. The document notes some training and the hiring of consultants but does not adequately explain how this will work raising a number of questions (such as the kind of met forecasts to be developed, to how many of the 10 communities would they be available, specific role of the met agency and its capacity, where data would reside, who would develop the forecasts after the project period, how will this activity link with the rest of the project, what impact can 7 AWS have in that region (are they all in one watershed, how many communities will they serve) and so on. The design and justification as presented does not provide a full picture.	CR11: This activity's design has been reformulated. Please see pages 25-27.
CR 12: It is recommended that the proposal note any stakeholder consultations conducted with communities, both farming and indigenous communities and strengthen the gender aspects.	CR12: Not adequately addressed. While it is repeatedly mentioned that gender aspects were given special consideration in the consultations, few details are provided. Community level consultations are expected to take place during implementation.	CR12: As described in Part II Section H (consultative process, pages 50-53), Stakeholder consultation at the community level was carried out both through direct interview with local government officials that are working directly with these communities and through a workshop where several stakeholders were present. It is important to mention that a more extensive consultation process will be carried out during the first year of the project. In Part II Section K, gender aspects have been strengthened (please see pages 62-63).
CR 13: It is recommended that the project assess more carefully the potential impact on adaptive capacity	CR13: Not addressed, the issue remains unclear.	CR13: The problem analysis and the project design are based on the human, cultural, social, political,

<p>of the communities. There is little information on the specific communities. In addition, please clarify if outputs 1.2-3, 5, 7-8 are focused on the 10 communities or have different geographical focus.</p>		<p>natural, economic and physical capital in the region and the communities, as key elements of its adaptive capacity (please see pages 9-22).</p> <p>Adjustments have been made in Section A (part II) to clarify the geographical focus of all outputs.</p>
<p>CR 14: It is recommended that the indicator for outcome 1 be revisited to make it more specific and clear. The 'number of knowledge gaps' is somewhat vague and the target of 'no knowledge gaps by mid-term' seems unrealistic.</p>	<p>CR14: Partly addressed. Outcome 1 indicator has been changed to the number of knowledge products, however no quantified targets are specified. There are 10 output indicators for outcome 1, 9 output indicators for output 2 and 3 output indicators for outcome 3, totalling to 22 output indicators for the project. It is recommended that the RF be revisited to rationalize the number of indicators and use the most useful ones that can monitor the progress and results of the project, as opposed to having a one-to-one ratio of indicators with the activities. In addition, the indicators for outcome 3, output 3.1 and 3.2 are essentially the same. This needs to be reworked.</p>	<p>CR14: The RF has been revisited (please see pages 77-85).</p>
<p>CR 15: It is recommended that output 1.6 be firmed up further to clarify its result. At present, as stated "Comprehensive and strategic study on the contribution to adaptation of the existing regulatory framework" is both non-specific and unclear. Which regulatory frameworks? What kinds of adaptation? What is expected as a result of such a study? Given that there is a recent National Climate Change Adaptation strategy (2015), why is this study needed? What additional information will be sought under this study?</p>	<p>CR15: Not fully addressed. The wording has been changed to incentives and disincentives but there is little discussion in the document about this.</p>	<p>CR15: The RF has been revisited (please see pages 77-85)</p>
<p>CR16: Based on the adaptation strategy, climate change plan, other agriculture sector, forestry, and water sector planning, please strengthen analysis on potential areas for</p>	<p>CR16: Not fully addressed. A clear gap analysis is missing.</p>	<p>CR16: The RF has been revisited (please see pages 77-85).</p>

<p>strengthening the regulatory framework that is likely to be attempted under this project. Without such a gap analysis, the justification for 1.6 seems inadequate. Activity 2.2.4 notes 5 policies or plans will be improved – which ones are these?</p>		
<p>CR 17: For the indicators for Outcome 2 – Percentage of stakeholders claiming resilience. Please note the baseline – how many stakeholders in all? How will they measure or interpret resilience? It is recommended that this indicator be revisited to ensure its measurability and clarity.</p>	<p>CR17: Not fully addressed. A baseline is not available. Please provide the reference for the footnote explaining the measurement of resilience.</p>	<p>CR17: The results indicators have been revisited (please see pages 77-79):</p> <p>Outcome 2. Adaptive capacity in rural areas of greatest vulnerability strengthened through concrete adaptation measures favouring an ecosystem-based approach. Indicators: (i) Number of males and females benefiting from the adoption of diversified, climate resilient livelihood options and (ii) average increase in annual cash income among target beneficiaries.</p>
<p>CR18: While the objective is food security through ecosystem services, there do not appear to be any indicators that monitor these. The indicator on additional crops to be produced is not clear. Are new crops going to be promoted by the project? If yes, which ones? Have these crops been researched and adapted to the local environment? Are market conditions suitable for the production of these crops? If they are for consumption, are they part of the traditional diet?</p>	<p>CR18: Not addressed. The selection of crops to be promoted is expected to be done during implementation. There do not appear to be any quantified outcome indicators that can track progress towards the perceived objective of the project, which raises questions both on the quality of preparation and the likelihood of impact. Honey production is mentioned but its contribution to food security is not discussed.</p>	<p>CR18: The RF has been revisited (please see pages 77-84).</p>
<p>CR19: For community training, please clarify why the number of sessions rather than the number of stakeholders being trained is measured?</p>	<p>CR19: Addressed. The indicator has been changed to number of stakeholders.</p>	<p>-</p>
<p>CR 20: Indicator for output 2.2 - Number of critical areas with increased resilience (in which communities or location). How are critical areas being defined? How is resilience measured here? What ecosystem indicators are to be measured? Please clarify this indicator.</p>		<p>CR20: The RF has been revisited (please see pages 77-84).</p>
<p>CR 21: It is not clear how staff who are trained under component 3 can</p>		<p>CR21: The RF has been revisited (please see pages 77-84).</p>

<p>'respond to and mitigate impacts of climate change by mid-term'. This is very general and unrealistic. What are the staff expected to be able to do? Component 3 would need to be strengthened considerably to ensure training is justified and would contribute to longer term sustainability under the project.</p>		
<p>CR 22: Outcome 2 of the project is linked to outcome 4.2 of the AF results framework (p. 74). However the indicator does not correspond with physical infrastructure but corresponds to number of stakeholders claiming resilience. Please address.</p>	<p>CR22: Addressed.</p>	<p>-</p>
<p>CR 23: A number of indicators require surveys for the monitoring of outcomes. However no surveys are budgeted specifically in the component budget or project execution costs? Without a budget these indicators cannot be adequately monitored. It is not clear further how many surveys will be conducted and what kind of methodology used?</p>	<p>CR23: Not sufficiently addressed. While USD 4,000 is budgeted for the survey, it is not clear, how many surveys will be conducted, given there is no baseline. In addition, household surveys are noted but no further discussion on it is there.</p>	<p>CR23: Note <i>aaa</i> has been added added to the budget (please see page 98). Specific information on the methodology has been added in Part III, Section D. Monitoring and evaluation arrangements (please see page 76).</p>
<p>CR 24: The sustainability of project activities needs to be strengthened. For instance, barring a few instances, the links between studies under component 1, investments under component 2 and training of staff under component 3 needs to be strengthened much more. The contribution of project outcomes (and as measured by the indicators presented) to the objective of the project are also not clear.</p>	<p>CR24: Not fully addressed. It is noted that local governments have budgets to implement project activities (which ones)? Do they lack the technical know-how? If so this is a salient point that should be highlighted upfront.</p>	<p>CR24: Part II -Section J (Sustainability) has been reformulated. Please see pages 55-57.</p>
<p>CR 25: One of the rationales for sustainability is the comprehensiveness of the project. However, this is a critical concern as well since by attempting too much in too many places it is unlikely that long-lasting deep impact can be achieved. The proposal does not elaborate on who project activities will continue after the project period –</p>	<p>CR25: Not fully addressed. Questions remain: How will technical assistance be provided in the post project period, assuming local governments can fund the implementation of the sub-projects? What is the availability of technical capacity in-country?</p>	<p>CR25: Part II - Section J (Sustainability) has been reformulated. Please see pages 55-57.</p>

<p>e.g. are there commitments to budget for these activities in the institutional budgets of the agencies in the post project period?</p>		
<p>CR 26: This section needs to be revisited with a more thorough screening of ES risks and impacts. The project is labelled as category C but includes infrastructure investment, activities involving indigenous communities and natural habitats. The proposal also mentions changes to regulations – it is not assessed if there will be any winners or losers and whether there could be potential for social conflict.</p>	<p>CR26: Please see CR8 above.</p>	<p>CR26: The project will examine the laws, regulations, politics and plans at the national, state, and district levels that regulate the usage of natural resources including forests, water bodies (rivers, lakes, wetlands), farms, and pastures to strengthen the implementation of legal and economic aspects that could help effectively apply adaptation practices related to food production.</p> <p>As mentioned in Part I, in the Paraguayan Chaco, in recent years, there has been an accelerated process of production growth, expanding the cattle border. Three million hectares of forest have undergone systematic logging in the last ten years, transforming mainly into pastures for cattle and more recently also for soybeans in the department of Alto Paraguay. These logging and clearing are for the most part legal. They are governed by Law No. 422/73, which stipulates that owners and farmers of more than 20 hectares must protect 25% of the forests on the property. In the Chaco biosphere reserve area, the required forest reserve amounts to 50% of the property. The Secretariat of the Environment (SEAM), is responsible for issuing environmental licenses for land use change.</p> <p>The objective is to identify how to incentive practices that allow an increase of production and income per hectare, in order to reduce the need for logging.</p> <p>Hence, no economic losses that could trigger the involuntary resettlement policy of the fund are expected.</p>
<p>CR27: One area which could be strengthened is how community representation will be addressed? How will activities be managed at the</p>	<p>CR27: Addressed.</p>	<p>-</p>

community level? How will resource allocation issues and potential conflicts addressed?		
CR 28: Financial risks are not discussed. Please address.	CR28: Addressed.	-
CR 29: Project management risks are discussed. However, some of the mitigation measures for institutional risks need to be revisited. E.g. The mitigation measure for rotation of trained staff out of the agency is ‘to request the departing staff to train replacement staff’. This does not seem adequate.	CR29: Partly addressed. The particular example has been addressed in that the mitigation measure has been changed to have trainers develop training materials for new staff.	<p>CR 29: Reformulated (please see table 19 in pages 71-74)</p> <p>The mitigation measure for rotation of trained staff out of the agency is: “Decisions , best practices and lessons learned will be documented throughout the project to support institutional memory that will sustain project activities. This memory will also be strengthened through activity 3.3 Identification, systematization and exchange of lessons learned of the project.</p> <p>Furthermore, several officials from each institution will be trained by the project, as well as non-government stakeholders – such as scientists, engineers, planners and village leaders – thereby strengthening the institutional capacity to plan and implement adaptation activities within and outside of implementing institutions and government bodies.</p> <p>Where possible, the project will make use of established government structures to capitalize on well-established practices and systems that are familiar to government staff.”</p> <p>.</p>
CR 30: The issue of institutional mandates and any potential risks are not discussed. Agencies do not really act unless it is their mandate and the proposal is not clear on this issue. The Environment Secretariat seems to be operating as an implementation as well as regulatory and planning agency – planning, operationalisation, regulation, evaluation etc.	CR30: Not fully addressed. While there is a section on the various institutions, this comment is not fully addressed. The institutional incentives for the various agencies to participate in the project could be elaborated.	CR30: In Part III section A (pages 61-70) there is a description of the mandate and role in the project of each institution involved.
CR 31: Budget amount is provided but no breakdown of implementing agency management fee is given.	CR31: Addressed.	-

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 two departments of the Chaco.

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.

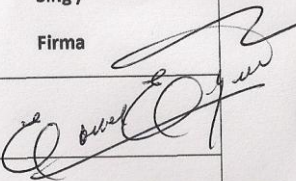
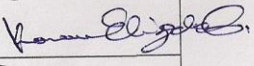
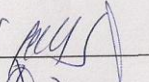
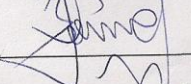
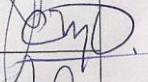
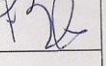

ANNEX 4. CONSULTATION PROCESS

Table 1. 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

Nº	Name/ Nombre	Position/ Cargo	Email.	Sing / Firma
1	Ethel Estigarribia	Directora ONCC	ethelyamiki@hotmail.com	
	Karem Elizalde G.	COORDINADORA NCSA	karemelizalde@gmail.com	
	Dario Mandelburger	Director DOPES	dariomandel@gmail.com	
	David Forino	Director Grial DOPES	dforino@gmail.com	
	Carlos Monges	SECRETARIO/SEAM	mongesgefechaco@gmail.com	
	Gualberto Ettaguz	Director DPE	gualber_ettaguz@hotmail.com	
	María José López	Consultora/SEAM/PNUMA	majolopez@gmail.com	

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.



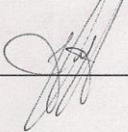
Name/ Nombre	Institution / Institución	Position/ Cargo	Email.	Office phone/ Teléfono	Date/ Fecha	Sig / Firma
MIANA MANN	INFONA	ASESOR TECNICO	dami.mann@gmail.com		14/07/2016	
Angelica Villalba	INFONA	Directora	masodepartillo@gmail.com angelica.villalba@infona.gov.py		"	
Esteban González	ONCC-SEAM	Jefe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

Table 2. Stakeholders 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.

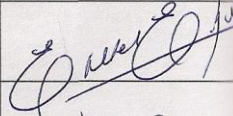
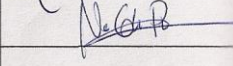
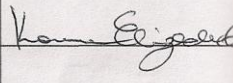
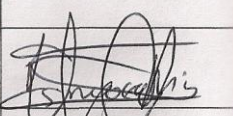
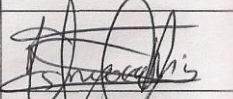
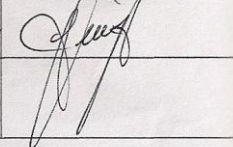
Name/Nombre	Institution / Institución	Position/ Cargo	Email.	Office phone/ Teléfono	Date/ Fecha	Sig / Firma
Ethel Estigarribia	ONCC-SEAM	Directora	ethelyamili@hotmail.com		5/07/16	
Laura Pérez	Adaptation ONCC - SEAM	Departamento Adaptación	hypatia_86@hotmail.com	(0973) 515.814	"	
Karem Elizalde G.	SEPM	Coordinadora	karemelizalde@gmail.com	0991 800 822	- ✓	
Roberto González Parini	Gobernación Alto Paraguay	Secretario de Agricultura y Ganadería	robogparini@gmail.com	(0483) 369 684	11/07/2016	
Maicol Arias Barreto	" " "	Secretario de Medio Ambiente	maicolasv3@gmail.com	(0981) 343 137	11/07/2016	
Yupustó González	ONCC - SEAM	Jefe de Dto de Zonificación y Región	yupustogonzalez@gmail.com	0988-915044	12/07/16	

Table 3. 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.

Nº	Nombre y Apellido	Institución	e-mail	Teléfono	Firma
1	SEBASTIÁN RÍOS	MAG/DGP	scriosmart@yahoo.com.ar	0981-847327	[Signature]
2	Leandro Nunez	IPTA OICC	lbnun@hotmail.es	0981-921966	[Signature]
3	Ismael Adas D	Tab. Alto Py	iasiasv3@gmail.com	(0981)343137/440961	[Signature]
4	Edison Becani	INDELT	edbecani@hotm.com	0981-6215-532	[Signature]
5	Edelina Duarte	SEAM-DECPRA	eddelinaduarte@gmail.com	0981-152847	[Signature]
6	José María Silveira	SEAM-DEVERI	josemariasilveira@gmail.com	0981-977-086	[Signature]
7	Ma Paz Vega D		pazvega100@gmail.com	0981-412	[Signature]
8	Isabel Diaz	SEAM	isabeldiaz@hotm.com	82-342-800	[Signature]
9	Claudia Cuestas	SEAM	precasa.seam.py@gmail.com	91-397929	[Signature]
10	Concepción González	SEAM	lola15way@gmail.com	0971-238-279	[Signature]
11	JERMINI LUJARI	ARIP	tecnicade@arip.org.py		[Signature]
12	Gilda Araujo	DPE	gildaaraujo@gmail.com	0972523654	[Signature]





29	Carlos Maudet	GEFORCO/SEAM	mangas.gf@bop.gov.uy		<i>[Signature]</i>
30	Mario U. Illalbe	STP	mario.u.illalbe@stp.gov.uy	0982.64.9507	<i>[Signature]</i>
31	Violeta Berdejo	WCS	violeta.berdejo@wgui.com.uy	0981.870289	<i>[Signature]</i>
32	MARCOS PACHE	GS-BOFOSAR	gsbofosar@gsbofosar.com.uy	0981.626670	<i>[Signature]</i>
33	Carolina Rouvo	FCA/UNA	carolina.rouvo@fca.com.uy	82.895.110	<i>[Signature]</i>
34	Alice Romero	FCA/UNA	alice.romero@fca.com.uy	0981.246503	<i>[Signature]</i>
35	Emilio Aguero	FCA/UNA	emilio.aguero@fca.com.uy	0983.11.8848	<i>[Signature]</i>
36	José Vargal	FCO	josé.vargal@fco.com.uy	71308416	<i>[Signature]</i>
37	Nora Pérez	OPICC-SEAM	hypatia.se@latam.com	097.85.95.874	<i>[Signature]</i>
38	Blanca Bockez	GEOMETICO	blanca.bockez@geometrico.com.uy	0982.767.588	<i>[Signature]</i>
39	Blanca Manile Solís	ONCC-SEAM	blanca.manile@oncc.com.uy	0983.199.955	<i>[Signature]</i>
40	Pablo Giménez D.	SEAM		0981/251.981	<i>[Signature]</i>
41	Patricia Vargal	SEAM		0982.370.430	<i>[Signature]</i>
42					
43					
44					
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