ANEXO 1

DEVELOPMENT BANK OF LATIN AMERICA (CAF)

PROJECT DOCUMENT

ON A

PROPOSED GLOBAL ENVIRONMENTAL FACILITY TRUST GRANT

IN THE AMOUNT OF US $ 1.995 MILLION

TO THE

FOR A
MEDIUM SIZED PROJECT

PREPARING THE GROUND FOR THE IMPLEMENTATION OF THE LA PLATA BASIN STRATEGIC ACTION PROGRAM

September 9th, 2017

Green Business Unit Office for Environment and Climate Change	
Executive President:	Luis Carranza
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CURRENCY EQUIVALENTS
(Exchange Rate Effective)

Currency Unit = US$

FISCAL YEAR
January 1 – December 31

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PROJECT DATASHEET

Countries: Argentina, Bolivia, Brazil, Paraguay, Uruguay

Project Title: PREPARING THE GROUND FOR THE IMPLEMENTATION OF THE LA PLATA BASIN STRATEGIC ACTION PROGRAM

GEF Project ID:

CAF Project ID:

GEF Agency: Development Bank of Latin America (CAF)

Project Executing Organization: CIC

Other Executing Partners:

GEF Focal Area: International Waters

GEF Strategic Objective: IW 1, Program 1; IW 2, Program 3

CAF Priority Environmental Sustainability and Climate Change

Duration: 1,5 years

Estimated Starting Date: 01/2018

Estimated Completion: 06/2019

Financing Plan: **USD**

GEF Allocation:

GEFTF

1.995M

Co-financing:

Governments (In Kind)	2.700M
CAF (In Kind)	0.250M
Sub-Total Co-Financing	2.950M
Total Project Budget	**4.945M**

Estimated Disbursements (CAF FY/US$M)	FY1	FY2	Total
Annual	3.296	1.649	4.945
Cumulative	3.296	1.649	4.945

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Project Title: PREPARING THE GROUND FOR THE IMPLEMENTATION OF THE LA PLATA BASIN STRATEGIC ACTION PROGRAM

GEF Project ID:

CAF Project ID: CAF-GEF 006

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1. STRATEGIC CONTEXT AND BASELINE SCENARIO

1.1 REGIONAL CONTEXT

*On February 21th 2017, high level government representatives of the member countries of the Intergovernmental Coordination Committee of the Plata Basin Countries (CIC) met in Buenos Aires to analyse the results of the GEF-UNEP-OAS project "Sustainable Management of the Water Resources of the la Plata Basin with Respect to the Effects of Climate Variability and Change". Having approved the Strategic Action Program (SAP) for the Plata Basin in July 2016, which consolidates the outcomes and priority recommendations emerging from the project, the countries instructed the CIC Secretariat to pursue further assistance from the GEF and other funding sources in order to accelerate the implementation of the SAP. In line with this decision, the Plata Basin countries also approved the further development of the medium sized project named: "*PREPARING THE GROUND FOR THE IMPLEMENTATION OF THE LA PLATA BASIN STRATEGIC ACTION PROGRAM*" submitted by the CIC Secretariat during the meeting.*

The La Plata – Paraná River is one of the great rivers of the world. Draining approximately one-fifth of the South American continent, extending over some 3.1 million km2, and conveying waters from central portions of the continent to the south-western Atlantic Ocean, the la Plata River system rivals the Amazon River system in terms of its biological and habitat diversity, and far exceeds that system in its economic importance to southern and central South America. The La Plata Basin includes almost all the southern part of Brazil, the southeastern part of Bolivia, a large part of Uruguay, the whole of Paraguay, and an extensive part of northern Argentina. It accounts for 17 per cent of the surface area of the South American continent. The Basin is comprised of three large river systems; namely, the Paraná River, the Paraguay River, and the Uruguay River. Each of these waterways has

unique characteristics that reflect the source waters of the rivers as well as the human influences that define their flow patterns and environmental status. In addition, water that infiltrates into the groundwater systems from within the Basin provides recharge to numberless aquifers, including the Guarani Aquifer, one of the largest groundwater reservoirs in the world.

The La Plata River system is among those watersheds of the world having the highest numbers of endemic fishes (in the Paraguay River sub-basin), the highest numbers of endemic birds (the Parana River sub-basin), and the highest numbers of major dams (the Parana River sub-basin). The diversity of fishes and bird life illustrates the diversity of landforms within the La Plata Basin. Arising on the eastern slopes of the Andes Mountains, at altitudes above 4,000 m, the Paraguay River sub-basin extends across the vast expanse of the central plains of South America, including the diverse *Chaco* ecosystem and globally significant *Pantanal* wetlands. The South American *Chapada de Parecis* and *Planalto*, or highlands, with elevations of about 500 m, that separate the La Plata Basin from the Amazon Basin, form the headwaters of the Parana River and Uruguay River sub-basins which rise in the east. Superimposed upon this geography, the Plata Basin with its unique natural resources is the economic heartland of Latin America. Thirty-one large dams and twenty large cities, each with populations in excess of 500,000 persons and including the capital cities of Brazil, Paraguay, Argentina, and Uruguay, are to be found within this Basin. The total human population of the Basin is estimated to be approximately 110 million individuals.

Issues of transboundary concern[1]

Future climatic scenarios obtained from different models are consistent in showing a trend of increasing precipitation over the La Plata basin. Whenever these hydrologic trends exist, the assumption of a stationary state is inappropriate, and the consequent impossibility to rely on the statistics of the past to predict the future climate impacts on our ability to manage land and water resources, plan and design infrastructure, sustain food security and biodiversity.

In most of the immense Plata Basin there are clear manifestations of important climatic and hydrological trends related with the Global Climate Change. Southern South America has shown the largest positive trend in precipitation during the last century. Increased annual precipitation observed during the last 30 years, together with changes in land use, has led to significantly increased river discharge.

The most adverse effect of this trend is the greater frequency and severity of flooding, particularly in the extensive flat areas of the Pampas. Despite the improving reliability of hydro-meteorological forecasts, damages due to intense rainfalls and consequent flooding have been growing as a result of the increased occupation by settlements and agriculture of areas that until recently had relatively low risk of flooding. Due to increased rainfall in semiarid regions of the basin, the agricultural land extent has increased bringing socio-economic benefits, but at the same time creating new ecological problems. In other regions, flooding is more frequent and in certain cases some areas have been left under water for long periods of time.

In the flat landscapes of the Pampas, shallow groundwater can waterlog soils making them unsuitable for crop production. In wet years, it can reach the surface causing floods. The flat sedimentary soils of the Pampas store rainfall surplus of wet years as groundwater. If such surpluses increase, the groundwater table can become so shallow that the land floods. Cyclic floods have taken several years to develop and retreat. The most recent 1997-2003 floods covered 27% of the western

[1] For a detailed description of the current situation of the Basin, please refer to: [http://cicplata.org/es/documentos-principales/http://cicplata.org/es/documentos-tematicos

Pampas as average groundwater levels rose 2.3 meters, causing great economic loss.

> In early January 2017 extreme weather events affected several Provinces of Northern Argentina: Santa Fe, Chaco, Corrientes, Formosa and parts of Jujuy, Misiones, Salta y Santiago del Estero. Rainfall reached the record level of 310mm in Santa Fe during the first week of January causing huge disruptions, and in Montevideo thunderstorms wounded 17 persons. The agricultural areas that have been flooded are estimated in 800.000 km2, with huge damages to the soya production cycle and milk production. At the same time, in the Provinces of La Pampa, Rio Negro and Buenos Aires, extreme drought caused multiple fires, with a total of 1.000.000 hectares affected. In the region of Confluencia in Paraguay during the period January – May 2017 rainfall reached 1200mm, equivalent to the entire year average, causing major damages to agriculture, livestock and populations.

Increased climatic variability and unpredictability impact on, and compound the environmental changes driven by forces external to the water and biological domains since the early 70s, when the regulation of the Parana for hydroelectricity started. Water in reservoirs of the upper Parana Basin currently represents more than 70 percent of the mean annual discharge at its confluence with the Paraguay River, and the primary goal of hydropower engineers is now optimizing flood protection vs. energy generation. The expansion of hydroelectric generation in the upper basin brought with it an increase in industry, agriculture, transport and settlements, which in turn have resulted in significant increases in deforestation, soil erosion, navigation, changes in water quality and reduced fisheries opportunities in both the upper and lower basins. Further, the rapid urbanization and trend toward mechanized agriculture has altered both surface and groundwater flow patterns and increased the sources and rates of delivery of contaminants to streams and aquifers. These changes are not limited by the national frontiers, but have clear transboundary consequences that must be addressed at the Basin scale. The science based Transboundary Diagnostic Analysis completed in 2015 by the Basin countries as part of the GEF funded project "*Sustainable Management of the Water Resources of the la Plata Basin with Respect to the Effects of Climate Variability and Change*", has clearly identified the major issues of transboundary concern in the Basin, reported in the Table below.

Issues of concern	General causes
Impacts of extreme climatic events	Lack of adequate land use and urban planning; scarce and non-coordinated flow of relevant information; lack of regional disaster prevention policies, and of awareness raising.
Loss of water quality	Discharges of untreated wastewaters and other contaminants, including POPs; lack of capacity of environmental managers; lack of sustainable consumption and production, and of clean production policies.
Excess sedimentation in water bodies	Lack of adequate soil management policies/practices in the agricultural sector (growing use of marginal soils, excess grazing, elimination of natural pastures); lack of government incentives and capacity for the introduction of sustainable agricultural practices.
Loss of habitats and biodiversity	Destruction of natural habitats; lack of incentives for ecosystems conservation; lack of alien species control protocols.
Hotspots of unsustainable groundwater exploitation	Lack of groundwater governance; hotspots of pollution from domestic, industrial and agricultural waste; lack of transboundary coordination.
Water use conflicts	Scarce awareness of water nexus conflicts; lack of inter-sectoral management bodies; asymmetries in the legal-institutional setting for integrated water resources management.

1.2 SECTORIAL AND INSTITUTIONAL CONTEXT

In 1969, the governments of Argentina, Bolivia, Brazil, Paraguay, and Uruguay signed the La Plata Basin Treaty, the main legal instrument governing the Basin. It was through this treaty that the Intergovernmental Coordinating Committee of the Countries of the La Plata Basin (CIC) was formed as the official body to promote its objectives. The CIC was created in February 1967 during the First Meeting of Foreign Ministers of the La Plata Basin, wherein participating governments agreed to conduct a joint comprehensive study of the area with the intention of collaborating on multinational, bilateral, and national projects for the progress and development of the region.

The institutional framework for regional integration was later strengthened by the Asuncion Treaty, which created the Common Market of the South (Mercosur) in 1995, intended to encourage intraregional and international trade amongst the countries involved.

Since its inception, the CIC has focused on areas of common interest in the five countries, facilitating studies and programs in the areas of hydrology, natural resources, transportation, navigation, soil, and energy. In particular, the comprehensive study of natural resources in the La Plata Basin conducted by the OAS in the '70s was very important because it allowed for countries to gear their actions toward taking advantage of energy and transportation potential and to identify environmentally critical areas, such as the sub-basins of the Pilcomayo and Bermejo Rivers-—characterized by the highest rates of erosion and sediment transport in the world—or the Upper Paraguay sub-basin (Pantanal), which is known for the value of its wetland ecosystem and its key role in water regulation in all of the La Plata Basin.

During the IV Inter-American Dialogue on Water Management (Foz do Iguacu, Brazil, 2001), the countries of the La Plata Basin agreed to carry out a regional program to advance integrated management of the water resources of the Basin in relation to climate. From this initiative and within the scope of the CIC, funding was obtained from the Global Environment Facility (GEF) for the preparation and implementation of the *Framework Program for the Sustainable Management of La Plata Basin's Water Resources, with respect to the Effects of Climate Variability and Change* (hereinafter the *Framework Program*). These activities received technical and operational support from the Department of Sustainable Development of the General Secretariat of the Organization of American States (DSD-GS / OAS), within the framework of a collaborative agreement signed by the CIC and the United Nations Environment Programme (UNEP), as the GEF implementing agency. The principal objective of the Framework Program was to strengthen cross-border cooperation between the governments of Argentina, Bolivia, Brazil, Paraguay, and Uruguay to ensure that the shared water resources in the Basin would be managed in an integrative and sustainable way, in the context of climate variability and change, capitalizing on opportunities for development.

The Framework Program included a first draft of the formulation (2003-2005), and then a preliminary analysis of the main environmental problems and the challenges to overcome in the La Plata Basin was carried out. Through a process of broad institutional participation, the state and behaviour of water systems was characterized, synthesizing the main Critical Transboundary Issues (CTIs) both current and emerging with their respective associated causal chains. Preliminary proposals were identified as well as gaps in information. Subsequently, Stage 1 of the Framework Program was carried out (2010-2016), allowing for the deepening of knowledge about various aspects of the Basin and analysing the Transboundary Diagnostic Analysis (TDA), considering the effects of climate variability and change and formulating the Strategic Action Program (SAP) for the La Plata Basin.

The most accurate and detailed characterization of the CTIs, based on the results of the various components on which the project was organized, facilitated the design of strategies for integrated water resources management in the whole Basin. The activities were carried out with the active involvement of specialists and authorities from various government institutions and academia related to water resource management, environment, and climate in each country. An important aspect of Stage 1 of the project was the development of future climate projections in greater detail in order to identify the potential impact of climate change on different socioeconomic sectors (agriculture, energy, health, water resources, etc.)[2]

[2] A simulation with the Eta-20 kilometres regional climate model was initially performed using the initial conditions and borders of the HadGEM2-ES model (UK Met Office Hadley Centre Global Environment Model, version 2 with components of the Earth System (ES)), and the CO_2 emissions scenario of RCP 4.5. The initial conditions and outline from the Eta-20km were subsequently used to

The results of the climate projections provided input for the preparation of the updated version of the Transboundary Diagnostic Analysis (TDA), guiding the management recommendations for each of the CTIs analysed.

The results of the TDA and of the SAP formulation processes were analysed in national and regional meetings, and then presented and validated at the Project Steering Committee in June 2016.

Networks and Information Systems

In accordance with the TDA studies, the La Plata Basin has a network for monitoring hydraulic parameters and water quality with marked asymmetry, with respect to both qualitative and quantitative aspects. The number of stations, their characteristics, distribution, and density of the network present characteristics/degrees of development differentiated in each country. In general, a significant number of stations are observed, principally in terms of rainfall and hydrometric measurements, with a series of registries reflecting varying longitude, which will allow for the evaluation of resource availability and multipurpose use planning. Nevertheless, when these networks are considered at the sub-basin level, significant differences are observed. For example, the sub-basins of Paraná possess the network with the best characteristics, meanwhile the networks of the Uruguay River and the Paraguay River present the greatest deficiencies. The hydrometric and rainfall stations always take into account the depth of the water and eventually measure the flow of liquids and solids. It is important to highlight that various stations within these networks are not active. Data on sediment transport is relatively scarce, which is the data essential to validating and measuring the predictive models, principally in basins with a prevalence of erosion.

There are also global/regional initiatives of reference, oriented towards the development of environmental information systems. WIGOS is an integrated proposal to improve and develop the observation system of the WMO. It promotes the systematic evolution of the current observation systems (GOS, GAW, WHYCOS), operated by their member countries, towards an integrated and coordinated observation system. This will meet the observation requirements of the members of the WMO in a sustainable way, improving the coordination of the observation systems with associated international organizations. WIGOS, supported by the WMO information system (WIS), will provide reliable and timely observations and products related to climate, water, and environment for all members and programs.

The authorities of the meteorological and hydrological management bodies of the Basin agreed during the Sixteenth Session of the Regional Association III, WMO (Asuncion, September 2014) to develop the WIGO-SAS/LPB program in the LPB, whose principal objective is "to create a homogeneous hydro-meteorological network in the south of South America, in which the five countries of the Basin and their respective meteorological and hydrological services participate, as well as organisms that deal with hydraulic matters, the CIC, and the WMO." [3]

One of WIGOS-SAS/LPB's objectives is to adapt the existing networks, optimize their distribution, expand the radar network, introduce common quality control processes, and exchange best practices regarding analysis. The possibility of expanding and interconnecting meteorological radar networks in La Plata Basin entails enormous benefits in terms of improving hydro-meteorological alert systems at the regional level. Likewise, it is important to promote the development of individual geostationary satellites for hydro-meteorological applications.

With respect to regional information systems, the Mercosur Information System (SIAM), the FAO's land mapping, and UNESCO's ISARM Americas information regarding transboundary aquifers represent valuable resources. Other projects that can provide a frame of reference are those being carried out in the Bermejo River Basin, the Guaraní Aquifer, the Pilcomayo River Basin, the Pantanal region, the Gran Chaco Americano region, and the La Plata River Maritime Front.

Climate and extreme hydrological events

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perform a simulation with the Eta-10km regional climate model, also using the HadGEM2-ES version 2, the components of the Earth System (ES - Earth system), and CO_2 emissions scenario 4.5.

[3] A first meeting of the directors of the Water Agencies and Meteorological Services of the countries for the establishment of WIGOS-CDP has already been held, with the creation of a Commission formed by representatives of the hydrologic and meteorological institutions of the countries.

Floods are the greatest natural threat in the LPB. Since 1970, floods have been occurring more frequently, on average every four years. The greater frequency is associated with the El Niño phenomenon and the impact of land use on the upper basins. Floods are caused by the natural increase of river flows and groundwater levels in rainy seasons, and by the disorganized urban sprawl that occupies flood plains. Most of the rivers in the Basin have large floodplains that have been occupied by both the population and agricultural activities. The Paraguay River has large plains with a slow-flowing runoff when flooding occurs on its banks. On the banks of the Paraná River and its tributaries, such as the Iguazú River, there are important cities that are flooded with great frequency. This is the case with the cities of Resistencia, Corrientes, Rosario, and Santa Fe, which suffer major impacts. The Uruguay River also has significant flooding, mainly in São Borja, Itaquí, and Uruguaiana. In the lower part of the Basin shared by Argentina and Uruguay, flooding downstream of the Salto Grande dam was observed at the end of 2015, coinciding, in turn, with the historical flood of Artigas and Quaraí, cities included in the pilot project carried out in the Cuareim/Quaraí river basin.

On the other hand, in recent years there has been an increase in the groundwater level in the Pampa region of Argentina, associated with natural and anthropogenic causes. In urban and suburban areas, the increase in the water table causes damage to the underground infrastructure and increases the possibility of groundwater contamination. In rural areas, the reduced depth and upwelling of water cause flooding in large areas intended for agricultural use.

Although this problem is associated, above all, with natural causes (mainly the increase in rainfall since 1970), there are anthropogenic causes such as inadequate territorial planning and the construction of infrastructure works, such as roads which obstruct surface runoff and increase infiltration as a consequence of increased irrigated area.

According to specific studies, during the El Niño event of 1982 to 83, the estimated losses in the La Plata Basin were more than a billion dollars. In Argentina, the direct and intangible damages of the floods between 1987 and 1998 were estimated at 2,640 million dollars, with more than 235,000 people evacuated. In the period from 1991 to 1992, flooding created a loss of 513 million dollars, more than 3 million hectares flooded, and 122,000 people evacuated. Recent studies undertaken in Paraguay within the framework of the Strategic Planning and Institutional Development of the Pluvial Drainage Sector Support Program estimated that the baseline cost of a flood in an intermediate city is in the neighbourhood of 5 million dollars, a value that arose from considering, among other variables, losses in GDP due to hours of work stoppage, loss of workers' income per hour of work stoppage, temporary shelters, provision of emergency facilities, reconstruction of average housing, reconstruction of social housing, rehabilitation of waterways and waterworks, and operations to return victims to their homes.

Climate Scenarios: Flooding

In general terms, there is an increase in rainfall mainly in the south and southwestern areas of the LPB (although there is a decrease in the northern area), an increase in the frequency of intense rains, an increase in river flows, and an increase in dry periods. All these factors indicate a current trend towards an increase in riparian flooding in the LPB.

In terms of the analysis of possible future scenarios, according to the available precipitation studies, the following conclusions can be drawn:

• For the period 2011 to 2040, there is an increase of up to 1 mm/day in the southern area and a decrease of up to 3 mm/day in the northern part of the Basin.

• For the period 2041 to 2070, there is an increase of up to 1 mm/day in the south, southwest, and western zones, while in the north and northeast there is a decrease of up to 1 mm/day

• In the period 2071 to 2099, the increase continues for the southern, western, and northern areas and there is a decrease in the eastern zone for the December-January-February quarter. Subsequently, this signals a moderate or neutral increase for the rest of the months of the year.

If the current trend continues, the southern and southwestern part of the Basin could have greater river flooding problems, while in the northwest zone, even with less precipitation, this problem will depend on whether the seasonal distribution is homogeneous or if, on the contrary, the current trend continues, where the rains accumulate in fewer days.

In much of its territory, the Basin does not present significant water deficiencies for current uses. In some of the largest urban centres, low levels of water are commonly found in sources used for human consumption. This is because some of these cities are located in the headwaters of the tributaries of the main rivers, which limits the availability of sources. San Pablo and Curitiba are two good examples of this situation. Argentina devotes a large part of its territory to agricultural, livestock, and forestry activities, generating strong pressure on its natural resources, particularly on the soil. In the province of Buenos Aires, the most severe droughts occurred in the early 1970s, with a reduction in extreme events after 1972. This trend towards a reduction in the risk of severe droughts and an increase in precipitation, particularly in the western part of the Pampa plain, has led to a shift from agriculture and ranching to a primarily agricultural system. In the Gran Chaco region (shared by Argentina, Bolivia, Brazil, and Paraguay) the semi-arid zone is subject to erosive processes and loss of fertility resulting from over-ranching and unsustainable agriculture. This situation is aggravated towards the west, where the arid Chaco region presents the most extreme conditions of aridity, observing a process of desertification.

There is a general consensus on the existence of significant adverse economic consequences due to the occurrence of droughts, and these consequences are reflected on a national scale, as they affect important sectors of the economies of LPB countries, such as agriculture and livestock production, agribusiness, hydropower generation, and navigation, among others. However, it is a complex task to quantify the effects of drought economically, taking into account all its direct and indirect implications. In the framework of the TDA's activities, the incidence of drought was analysed by relating the occurrence of a dry year to the variation in the GDP growth of the sub-basin affected by drought. Although the GDP growth value in each of the sub-basins depends on the economies of the countries that make them up, as well as on many other factors that are independent of the drought situation, it is also a constant in most regions that the economic sectors related to the availability of water resource have a large influence on the GDP. On average, the dry years identified have meant an average GDP decrease of 5 percent (between 3 and 7 percent).

An initial assessment of the spatial-temporal distribution of droughts was carried out. It was observed that for periods with a good spatial representation of the pluviometric network in operation, the surface area with water deficit varies between five and 20 percent of the total area of the Basin annually, with some unique years, such as 1962 with 55 percent, the years 1968 and 1988 with 33 percent, and the year 2008 with 48 percent. When analysing the situation by sub-basins, it was noticed that there is an important variability between them, reaching values of 70 to 80 percent surface area in a dry year, although in those same years the situation differs in the other sub-basins.

Climate Scenarios: Droughts

Upper Paraguay and upper Paraná: There is an increase in dry periods, both in their duration and in their magnitude and average intensity. The same applies to the spatial coverage of dry periods. In the period from 2007 to 2040, the worst situation occurred, gradually improving but not reaching the levels of the control period (1961 to 2005).

Lower Paraguay: Dry periods increase considerably in duration, magnitude, and spatial coverage for the period from 2007 to 2040, but without reaching the levels of the upper Paraguay and upper Paraná basins. From the period from 2041 to 2070 the situation improves, although the situation of the control period is not reached. The spatial coverage of drought also begins to decline, although it remains above the levels of the control period.

Lower Paraná: In the control scenario, the basin presents a normal to slightly humid climate, with brief dry periods of low intensity. In future scenarios, the climate gradually becomes more humid over time, decreasing the dry periods and their magnitude, intensity, and spatial coverage. Therefore, future scenarios would present greater water resources than the control scenario.

Upper Uruguay: The climate in the period from 1961 to 2005 alternates between dry and wet periods. In the period from 2007 to 2040, there are fewer dry periods, although with longer duration and intensity. In the 2041 to 2070 scenario, the humid climate predominates, decreasing the number of dry periods, their duration, intensity, and coverage.

Lower Uruguay: The signal clearly indicates an increase in water resources as the most distant scenarios are analysed over time. Dry periods decrease in quantity, duration, intensity, and spatial coverage.

La Plata River: The period from 1961 to 2005 was characterized by the alternation of dry and wet periods. In the future scenario from 2007 to 2040, there is a strong decrease in dry periods, their duration, and magnitude, as well as their spatial coverage. In the rest of the scenarios, although with a predominance of normal to humid climates, short dry periods are observed. In all cases, dry periods are fewer than those observed in the control scenario.

While the issue is poorly developed at the country level, there is a broad national and regional umbrella consisting of several treaties—that include all or some of the five countries—that support the adoption of a harmonized framework. In Paraguay, there is a national policy on disaster prevention and risk management and reduction, carried out by the Secretariat of National Emergencies and the National Commission, composed of several institutions. The treaty of San Ramón de la Nueva Oran (1995) between Argentina and Bolivia establishes a system of hydrological alert that could be taken as a model. There is an WMO-CIC Agreement (2000) that could relate to the WIGOS project at the development stage. Harmonization of regulations is required; the countries could start from a common base and adjust their legislation to the additional protocol of the Mercosur Framework Agreement on Environment in the area of cooperation and assistance in the event of environmental emergency.

Water quality

The main threats to water quality are point-source pollution - a consequence of sewage and industrial effluent discharge and, in some specific areas, agricultural POPs stockpiles, mining and oil production - and diffuse pollution, resulting from agricultural and livestock activity, in addition to the municipal solid waste that is discharged by drainage networks to the main river courses. Moreover, sewage effluents contribute a great deal of what have been called emerging pollutants, such as antibiotics, tranquilizers, and other pharmaceutical drugs that are ingested daily by the population and whose metabolites in the end are discharged to surface water bodies by sanitation networks, posing a threat to aquatic ecosystems.

Throughout the LPB as a whole, it can be observed in general terms that diffuse nutrients contamination—mainly as a consequence of agricultural/livestock activities—predominates over that of point sources. However, they have parity in the case of the Paraná sub-basin, and the predominance is inverted in the La Plata River sub-basin. This can be explained by the presence in these sub-basins of a large metropolis, like São Paulo and Buenos Aires, respectively.

The impact generated by nutrients is more relevant in the case of point sources in low flow courses, typical of the headwaters of the basin, in contrast with the large rivers, which are characterized by their high capacity of self-purification. However, the appearance of harmful cyanobacteria algae blooms—for example, in the waters of the Uruguay River, the Uruguayan banks of the La Plata River, and the Santa Lucía River sub-basin (Uruguay)—as a consequence of nutrient inputs from agricultural/livestock activities is increasingly recurrent. The tambos, pig and chicken farmers, also represent another important source of organic matter inputs, their impacts depending on the sub-basin or area under consideration[4].

In terms of heavy metals, the contributions are mainly a consequence of industrial and mining activity. For example, contamination due to the presence of heavy metals in the Pilcomayo and Bermejo rivers has as its origin in the strong mining activity in the headwaters of their respective basins in Bolivian territory. It is an emblematic case considering that it is an activity that has been taking place since pre-colonial times.

This issue is addressed in all of the national legislations with varying degrees of intensity, so that there is a broad national and regional umbrella constituted by several treaties—some that include all five countries and others with just some of them. There is a methodological guide approved in 1991 by the five countries and a further update is in process. Argentina and Uruguay have carried out joint monitoring in the common area of the La Plata River within the framework of the GEF FREPLATA project; some qualitative objectives were agreed upon for that area. In addition, Argentina, Bolivia, and Paraguay carry out joint monitoring in the Pilcomayo river basin, having defined reference values for metals between the three countries, given the priority of this problem for the sub-basin.
There is no coordination between central and local governments, nor municipalities that have jurisdiction within their territory. Institutions are weak and there are insufficient human resources.

[4] The highest levels of N-P have been calculated for in Brazil and Argentina and, to a lesser extent, Paraguay (at a scale of 700,000 tons/year for Brazil, 200,000/year for Argentina, and 20,000/year for Paraguay in terms of nitrogen in the Paraná river basin).

Paraná River

The Paraná River is characterized by its great power of dilution and capacity for self-purification. However, degradation or loss of water quality is observed in the riparian areas of urban-industrial conglomerates and in the rivers and streams of the sub-basin, such as in the areas of São Paulo, Brasilia, and Curitiba, with great demand for water and the corresponding increase in the load of contaminant discharges. In the lower Paraná basin, pollution problems are observed, mainly in large urban conglomerates, such as the cities of Rosario and Santa Fe, and areas with industrial development, such as the city of Esperanza, which is characterized by the presence of tanneries that pour their effluents into the northern part of the Salado river basin, a tributary of the Paraná.

Paraguay River

Particular attention should be given to mining activity in the upper basin of the Paraguay River in Bolivia and Brazil. Discharges of water used in extraction and processing, as well as the erosion and dissolution of mining waste, contaminate rivers and groundwater. The information on aquifer impact is still preliminary and the information relating to surface water pollution as a result of acid drainage from open-pit mining is not entirely accurate. Hence, the importance of actions to prevent and control post-closure pollution from a mining enterprise. Also in the Brazilian sector of the upper basin water resources are contaminated as a result of mining activities, mainly in the state of Mato Grosso. Pesticides used in annual crops in the Planalto region are another important source of contamination. Downstream, in Paraguay, the highest contaminant load comes from agricultural activity (crops and pastures) and from domestic and industrial effluent discharges in areas close to large urban centers, such as Concepción, Asunción, and Pillar. A high concentration of phenols was observed—indicating probable contamination from industries, including timber—in the course of the Paraguay River in Humaitá and one of its tributaries, the Apa River. Phenols are compounds highly toxic to aquatic species that cannot be degraded biologically. In the Pilcomayo River high levels of heavy metals have been detected. At Mision La Paz (province of Salta), high concentrations of lead, arsenic, copper, mercury, zinc, and silver were found.

Uruguay River

In the upper basin of the Uruguay River, the largest sources of industrial pollution are found in the tributaries, the Peixe and Canoas rivers, which receive high pollution loads of point source and diffuse origin due to the industrial activity in the state of Santa Catarina. Effluents from the paper, tannery, and food industries from the cities of Cacador and Videira (the Peixe River basin) and Lages (the Canoas River basin) represent an important source of contamination by heavy metals and other substances, as well as organic matter. These loads have increased due to the growth in production, the outsourcing of industrial production, and the difficulty in treating small loads, which leads to the production of diffuse loads for the basin. Most urban-industrial effluents are discharged into river systems with little or no prior treatment, which generates inadequate environmental conditions in most of the urban rivers that drain from these cities. In this sub-basin there is an increase in the occurrence of noxious algae blooms (cyanobacteria) resulting from eutrophication processes associated with increases in nutrient discharges. In some cases these blooms may pose a threat to drinking water sources, since conventional treatments do not remove cyanotoxins. These events of harmful algal blooms also move to the Uruguayan banks of the La Plata River.

La Plata River

More than 97 percent of the freshwater inflow to the La Plata River comes from the Paraná and Uruguay rivers, with the rest corresponding to numerous rivers and streams that drain into the coastal strip. Three sources of pollution have been identified as responsible for the pollution in the La Plata River coastal strip: sewage effluent discharge, the dumping of industrial effluents, and urban solid waste discharge. The first two are declining due to the extension of the sewage network and to greater control of industrial effluents. The asymmetry in urban and industrial development between the two coastal zones (Uruguay and Argentina) is reflected in the quality of water and the sediments. As an example, while on the western banks of the La Plata River there are more than 15,000 industries, on the eastern banks there are about 200. Thus, the greatest contamination of urban-industrial origin comes from the city of Buenos Aires and its suburban area, and from La Plata and Gran La Plata. The river basins of Matanza-Riachuelo and Reconquista, as well as numerous streams and pipelines, stand out due to their high degree of contamination. As in other transition systems, there is a turbid or "maximum turbidity" zone of water where there is interaction between the freshwater of the La

Plata River and the salt water of the Atlantic Ocean, where sediments accumulate (many of them contaminated, for example, with heavy metals and persistent organic compounds) and solid waste from coastal sources in the metropolitan area of Buenos Aires and the La Plata Basin. Salt water from the sea enters at depth because of its greater density and weight and acts as a wedge, forcing the light material seated in the bottom to enter again in suspension, increasing the bioavailability of contaminants "trapped" in the sediments. There is a danger that, if the observed levels continue to increase, the accumulated contaminants may enter the food chain with harmful consequences. In this area, several species of demersal and pelagic fish group together to feed, spawn, and develop in their first stages of life.

Sedimentation

The sedimentation process alters and compromises the structure and functioning of ecosystems, and thus of the environmental goods and services they provide. In the La Plata Basin, as a result of the large-scale development of agriculture and agro industries, about half of the natural vegetation has been changed to fields. Deforestation caused by agriculture has reduced the ability of the land to capture and store carbon and water and to anchor the soils, leading to increases in erosion rates in some sites and sedimentation in others, causing changes in water availability. Large-scale farming practices, due to the intensification of soybean production since the early 1990s and the development of one of the world's largest cattle breeding industries, have also led to compaction of the soil, reduction in water infiltration, increased surface runoff, and sedimentation problems. The high production of fine sediments in the upper basin is the characteristic feature of the Bermejo River, which contributes approximately 100 million tons of sediment per year to the Paraguay-Paraná Delta and La Plata River systems. The fine sediments are transported to and deposited in areas with very calm waters, from the Lower Paraná to the La Plata River. The sediment production in the upper basin of the Pilcomayo River is somewhat larger than that of the Bermejo River. With mean annual flow rates of 210 m^3/s and an annual contribution of sediments of the same magnitude as the Bermejo, it does not have enough energy to transport its solid cargo to the Paraguay River, so it deposits the sediments in the wetlands of the Gran Chaco plain in the vicinity of the border between Argentina and Paraguay. This solid contribution of 110 million tons annually causes morphological changes in the channels, in the bodies of water, and in the annual altimetry of the floodplain.

Key facts

• The highest specific production of sediment is verified in the Andean sector of the Basin. The most notable sources of sediment are the high basins of the Bermejo and Pilcomayo rivers. In the rest of the Basin, erosion and sedimentation problems resulting from agricultural/livestock activities also deserve special consideration because they cause productivity losses and deterioration of the porous structure and space.

• The Bermejo River discharges an average annual flow of 446 m^3/s, representing 2.5 percent of the section of the Paraná River in Corrientes. In contrast, the contribution of solid flow to the Paraguay-Paraná Delta system of the Paraná-La Plata River is very important, since the 100 million tons/year of suspended sediment constitutes about 75 percent of the total present in the Paraná River. In recent decades this percentage was increasing due to the construction of dams in Brazil in the upper basin of the Paraná River, which retain the sediments.

• The Pilcomayo River has an average annual flow of 203 m^3/s and an annual sediment contribution of the same magnitude as the Bermejo, but it lacks sufficient energy to transport its solid cargo to the Paraguay River.

• The average annual concentration of sediments in the LPB (150 mg/l) is moderate for a river in a basin in a tropical zone, but it is a decisive parameter for the treatment of river water and in the sedimentation of navigation channels with very low speeds (below 30 cm/s).

• The average annual concentration of 500 mg/l has been recorded in the Paraguay River tributaries in the Pantanal region, corresponding to an average erosion rate of 146 t/km^2/year in watersheds with an average area of 17,000 km^2.

• In southwestern Brazil near the border with Argentina, the average annual concentration is around 100 mg/l and the specific production of sediments is around 95 t/km^2/year.

The contribution of silt and clay from the Bermejo River constitutes 90 percent of the fine sediment transported by the Paraná River, which is deposited predominantly in the upper La Plata River, adjacent to the Delta, where the annual amount of silt and clays dredged in the navigation channels is equivalent to 23 percent of the total contribution of the Bermejo River. Management measures in the upper Bermejo basin that substantially affect the amount of sediment generated for the entire basin have been identified. The areas that produce the most sediment in the upper Bermejo basin are not significantly affected by current anthropogenic actions, but specific sediment production problems in the basin could be resolved through structural and non-structural measures.

There is little legislative regard for the joint management of river sediments. However, there are already accepted international regulations, such as the Conventions on Biodiversity, Desertification, and Climate Change ratified by all countries at the 1992 Rio Earth Summit. The Environmental Handbook for the Gran Chaco Americano, considering soil resources, biodiversity, and water, among other aspects, was also validated through various workshops. This environmental framework could be applicable to other areas of the Basin. Internal legislation has been created in some countries, which should be taken as a model for harmonization among them; and land and water management plans, such as those in Uruguay, have been implemented, which could be taken as a guide for their application in the remaining countries of the Basin.

Biodiversity

The LPB is a region of extraordinary ecological value. Its wide climatic and geological variety, coupled with the great availability of water in much of its territory has allowed for a great diversity of ecosystems and species. However, there is great concern about the threat to ecosystem integrity as a result of the rapid economic development of the region.

The main problems that have emerged from the TDA work are:

• Habitat loss/alteration, fragmentation, and loss of connectivity, which may be aggravated by the effects of climate change on critical or more vulnerable areas by rising water levels.

• Loss of integrity (goods and services) due to environmental risk, with impacts on biodiversity throughout the LPB, especially in the Pantanal and in the SMP.

• The low percentage of protected areas, including those with some type of protection, endangers the environmental goods and services that ecosystems provide.

• Dams have affected some floodplains and interrupted migratory corridors.

• The bivalve molluscs of the genus *Corbicula* and the golden mussel *Limnoperna fortunei* are some of the species that demand the most attention for their remarkable distribution throughout the Basin and their proven impacts on the native fauna, the ecosystem, infrastructure works (such as water intakes), and other human activities.

Selva Misionera Paranáense (SMP)

The topography of the SMP comprises relatively flat areas with deep soils near the Paraná and other main rivers, with altitudes between 150 and 250 masl, to a relatively flat plateau with altitudes between 550 and 800 masl. The areas that are between the main rivers and plateau, with altitudes between 300 and 600 masl, have relatively steep slopes and are very exposed to soil erosion when forest cover is removed. Their soils are relatively rich in nutrients. The red soils, which are deep near the rivers, become less deep and rockier at higher altitudes. There is a great difference in soil types, which vary in texture, chemical composition, and acidity.

The ecoregion has a subtropical climate (with an average temperature of 16-22°C). In the southern part, frost is common (June-August), especially in the highlands. Precipitation in the region ranges from 1,000 to 2,200 mm per year, generally with less precipitation in the north than in the south.

Rainfall is not uniformly distributed throughout the year, and some areas have up to five dry months. Increased rainfall during El Niño events produces large inter-annual variations. Precipitation and high seasonality of temperature and light determine a seasonal pattern of primary forest productivity and an associated seasonality in the availability of food for folivore, frugivore, and insectivore animal species.

More than 3,000 species of vascular plants, numerous mammals, a rich diversity of amphibians, reptiles, invertebrates, and marsupials have been registered in the SMP, as well as more than
550 species of birds, with a large concentration of endemic species. The predominant vegetation is the semi-deciduous subtropical forest. Variations in the local environment and soil type allow for the existence of different plant communities, gallery forests, bamboo forests, palmetto forests (*Euterpe edulis*), and Paraná pine forests (*Araucaria angustifolia*). Most of the forests have been exploited to obtain wood; some secondary forests are recovering from deforestation. Thus, forest fragments are composed of primary and secondary forests at different stages of succession.

The main issues associated with land degradation also affect the populations of the three countries that share this ecosystem: loss of soils because of deforestation and conversion to agricultural or livestock land, alteration of biodiversity, water quality loss, and the socio-economic conflicts associated with these processes. Climate variability and change and the consequent alteration of the rainfall system, can increase water erosion, resulting in a greater impoverishment of the soils, an increase in sedimentation in the river beds (with the loss of water quality), and desertification.

These processes of land degradation in the SMP have been addressed by different countries through different action and response strategies. Conservation measures for SMP sections focus mainly on the implementation of a network of conservation areas.

Biodiversity issues still have little presence on the political agenda. The LPB countries have signed the Convention on Biological Diversity, which would make it easier to legislate or implement lines of action by having a common standard. This legislative text should be the basis for regional regulation. Although there has been progress in recent decades, the systematic implementation of international commitments is very heterogeneous or disjointed. The problem should be dealt with in an integrated manner at the regional level, which would allow them to strengthen measures, give them solidity and territorial support, and promote their sustainability over time, so as not to encourage the development of specific, isolated measures without continuity.

Upper Paraguay: The Pantanal

The Pantanal, the world's largest wetland, is located in this sub-basin and is one of the most transcendent wetlands for the Basin's aquatic biodiversity. This sub-basin has suffered a considerable loss of terrestrial ecosystems (40 percent) and presents an environmental risk of loss of integrity. Sixty-one protected areas covering 12.6 percent of its area have been created. There are six Ramsar sites (46,500 km^2), two MAB Biosphere Reserves (326,492 km^2), and 19 important bird areas (IBA). It is the least populated sub-basin, with 2.4 million people.

Lower Paraguay

This sub-basin has suffered a 15 percent loss of terrestrial ecosystems. Three important water reservoirs have been planned in the sources of the Bermejo River. It is one of the least-populated sub-basins (2.8 million inhabitants). Sixty-six protected areas have been set up covering 7.4 percent of its area, representing a low level of protection since it does not meet the 10 percent target set by the CBD by 2010. The designation of nine Ramsar sites (11,384 km^2), six Biosphere Reserves (21,097 km^2), and 94 important bird areas (IBA) is a clear indication of the high international priority received by this sub-basin.

Upper Paraná

This sub-basin has suffered a very high loss of terrestrial ecosystems (75 percent). There are no Ramsar sites, which indicates the absence of major wetlands of international relevance. The upper Paraná and its tributaries have undergone major modifications to control flooding and hydroelectric power generation (43 large reservoirs), which affect the respective floodplains. It is the most populated sub-basin, with 61.8 million

inhabitants, with a high population density (6.9 inhabitants/km^2) and six important cities, including the capital of Brazil, Brasilia. There are a large number of protected areas (313), but they cover only 7.7 percent of the sub-basin area. The Biosphere Reserve (MAB-Unesco), Mbaracayú Forest (2,800 km^2), is partly included within this sub-basin. There are 32 IBA within its limits.

Lower Paraná
There are several important wetlands, such as the Ramsar Lagoons and Iberá Estuary, the Chaco Wetlands, Jaaukanigás, Otamendi Reserve, and the lower Paraná floodplain, Paraná Delta (Argentina) in this sub-basin. Three reservoirs associated with dams have been built, one in the Juramento River (Cabra Corral, Salta, Argentina) and two in Paraná: the Yacyretá and Itaipú dams. Other works that impact the ecosystem are the Rosario-Victoria road connection, the real estate expansion over wetlands, and their loss to the construction of hills for the use of agriculture and cattle breeding. The population amounts to 9.5 million (1.6 inhabitants/km^2), with seven major cities. Eighty-two protected areas covering only 5.6 percent of the area have been created, a level of protection well below the CBD's 10 percent target for 2010. The designation of five Ramsar sites (10,950 km^2), two Biosphere reserves (10,619 km^2), and 78 (Important Bird and Biodiversity Areas (IBAs) show that it is a high international priority.

Upper Uruguay
There are no noteworthy wetlands. Three large reservoirs associated with dams with hydroelectric power plants have been built on the Uruguay River (Machadinho, Itá, and Passo Fundo) and there are plans for the construction of three new ones, which will increase the respective alteration of the fluvial environments. It is a sub-basin with a relatively small population, with 1.7 million inhabitants and without any large cities. Twenty-nine protected areas have been created covering only 4.4 percent of the sub-basin area, a low level of protection with regard to the 10 percent target imposed by the CBD. While there are important wetlands, such as the Moconá Falls, there are no Ramsar sites. There is a Biosphere Reserve, Yabotí (2,366 km^2), and 12 IBAs have been identified.

Lower Uruguay
The most important wetlands are: Uruguay River plains and islands, Farrapos Estuary Ramsar site, Villa Soriano, and Palmar de Yatay Ramsar Site. There are four large reservoirs associated with dams with hydroelectric power stations, one on the Uruguay River (Salto Grande) and three on the Negro River (Palmar, Rincón del Bonete, and Baygorria), with their respective alterations of river environments. It is a sub-basin with an intermediate population level, with 3.8 million inhabitants and a population density of 1.6 hab/km^2), with three important cities. Thirty-nine protected areas covering only 1.8 percent of its area have been created. Three Ramsar sites (849 km^2), a Biosphere Reserve (997 km^2), and 20 IBAs have been identified.

La Plata River
The important wetlands are Samborombón Bay and the Santa Lucía swamps. It is the second most populated sub-basin, with 24.9 million inhabitants, five major cities, including the capitals of Argentina and Uruguay—Buenos Aires and Montevideo, respectively. Eleven protected areas covering only 0.8 percent of the sub-basin area have been created, the lowest of the entire LPB, far away from the 2011 to 2020 Aichi target of 17 percent. Two Ramsar sites (Costanera Ecological Reserve and Samborombón Bay, 4,883 km^2) and two MAB Biosphere Reserves (1,289 km^2) have been designated on the Argentine banks, and nine IBAs have been identified.

Groundwater resources

At the regional level, there has been an increase in the use of subterranean water resources due to urban and rural population development and the sharp increase in agricultural and industrial activities in the LPB region. Several causes have led to an unsustainable use of groundwater: There is a lack of knowledge about the vulnerability of recharge areas, and there are deficiencies in well inventories, as well as their monitoring and exploitation. As an exception, it should be noted that Brazil has some monitoring networks, mainly in the state of São Paulo, and Paraguay monitors the Patiño aquifer, which is of great importance at the local level.

In the lower Paraná sub-basin, the lowest well density of the Basin is observed, with only 1.5 wells/ 10 km^2, corresponding to the Mesopotamian area of Argentina, an area with low demographic density and an abundance of surface water. At the same time, the La Plata River sub-basin, after the confluence of the Paraná and Uruguay

rivers, and also with low population density and good surface water availability, has a density of 1.8 wells/10 km^2. The area with the highest level of groundwater exploitation today is the upper Uruguay sub-basin, where a density of 70 wells/10 km^2 is observed. With regard to vulnerability low to medium natural vulnerability is observed in the area comprising the Paraná sedimentary basin, and high vulnerability in the Gran Chaco area (YTTAS aquifer system), while those of deeper confined aquifers (Guarani) are low to very low.

The Yerenda – Toba – Tariqueno Aquifer System (YTTAS) is an aquifer system of great regional importance due to the expectations that exist in a region with water scarcity, a semi-arid climate, and other brackish or saltwater aquifers not suitable for human consumption or agricultural production. It represents one of the most important transboundary freshwater and groundwater reservoirs in this region, and one of the most significant in the South American continent. It has been studied in greater detail than other aquifers due to lack of existing information on drilling and the quality and quantity of water in addition to a lack of maps and the delimitation of the area. In this context, during the TDA a geological map of YTTAS was elaborated and studies were carried out to create national hydrogeological maps. From a geological point of view, the GAS consists of a sequence of predominantly sandy rocks, whose sedimentation occurred in fluvio-lacustrine and windy environments in the Triassic and Jurassic periods. These rocks saturated with water were later covered extensively by basaltic laminar flows of the Upper Cretaceous, coverage that can exceed 1,000 m. In the uppermost part of this sequence, under a desert climate system, eolic-fluvial sands have been deposited, giving rise to layers of thick, porous, and permeable sandstones with a wide geographic distribution.

The Guarani Aquifer (SAG) is a huge hydrogeological system that underlies an area of about 1,100,000 km2 mainly – but not exclusively - in the Paraná River Basin of Brazil (with about 62% of its known area), Paraguay, Uruguay and Argentina. It has an average thickness of about 250 m (but varying from < 50m to > 600m) and reaches depths of over 1,000 m. The total volume of freshwater it contains in storage is estimated to be around 30,000 km3 – equivalent to 100 years cumulative flow in the Paraná River. The aquifer extends across a number of international political boundaries, as well as those of many individual states of Brazil and provinces of Argentina, which are federal countries with groundwater resources essentially under state/provincial-level jurisdiction.

> In August 2010, the four states signed the Agreement on the Guarani Aquifer, which is the first agreement for a transboundary aquifer in Latin America. The Agreement on the Guarani Aquifer is unique in many ways: (i) it was the first signed under the influence of the United Nations (UN) Resolution 63/124: the Law of Transboundary Aquifers[1]; (ii) there are no regional conflicts over the use of its waters because the aquifer has been the subject of many cooperation initiatives since the 1990s; and, (iii) a range of actors have participated in these initiatives, including regional academic research networks, governments, international organizations, and private companies.

Most actual and potential groundwater resource management and protection needs of the SAG do not have an 'transboundary character' – although local 'transboundary hotspots' both between nations, and indeed between individual states of Brazil, that share the aquifer do exist. The predominant need for international and federal cooperation arises from the benefits of sharing advances in scientific understanding and positive management experiences – thus a clear commitment from the countries involved would help to continue developing research and spreading knowledge. Current transboundary groundwater issues are limited to the border regions, and essentially local in character, and do not have major 'upstream-downstream' implications. They thus require resolution through agreement and action at the corresponding local scale. Only with extensive intensification of groundwater use for supplementary irrigation are any potential transboundary effects on groundwater likely to expand from local to aquifer scale, and preliminary assessments suggest that this is not yet economic except in recharge areas with shallow water-table.

The countries have a different levels of progress on groundwater resources legislation, its implementation and compliance. On both the constitutional and legal levels, the five countries have established the initial steps toward sustainable groundwater management, but the subject is still not well developed in terms of regulation in some countries. It is therefore important that guidelines for groundwater use and protection in the LPB be harmonized at basin level, while respecting the singularities of the institutional and regulatory framework of each country.

Legal-institutional framework: La Plata Basin System

Guiding Policy Frameworks	• The Plata Treaty • Multilateral Environmental Agreements • The Strategic Action Program for the Plata Basin, 2016
Knowledge Base and Identification of Priority Areas and Hot Spots	Results achieved by, and recommendations for action of the Transboundary Diagnostic Analysis of the Plata Basin, 2015

The La Plata Basin System is formed by the La Plata Basin Treaty, the Meeting of Ministers of Foreign Affairs of the riparian countries, and by three permanent bodies: the Intergovernmental Coordinating Committee of the Countries of La Plata Basin (CIC), the Intergovernmental Committee of the Paraguay-Paraná Waterway (CIH), and the La Plata Basin Financial Development Fund (FONPLATA).

The La Plata Basin Treaty (TCP), made up of eight articles, came into force in
1970. The objectives are defined in the Preamble, among other things: (i) to permit the harmonious and balanced development and optimal utilization of the principal natural resources of the region and will ensure the conservation of those resources for future generations if they are utilized rationally, (ii) establish firmer institutional arrangements for the La Plata Basin System.
It is worth mentioning Article 1 of the TCP, which highlights the search for a better and more appropriate utilization of water resources and their sustainable development, according to the following: "The Contracting Parties agree to join forces to promote the harmonious development and physical integration of the La Plata Basin and its zones of direct and measureable influence. To that end, they shall promote, in the region of the Basin, the identification of areas of mutual interest, the carrying out of studies, plans and works, and the formulation of such operating arrangements legal instruments as they may deem necessary to achieve the following objectives:

- Facilitating and assisting navigation;
- The rational utilization of water resources, in particular by the regulation of watercourses and their multipurpose and equitable development;
- The conservation and development of animal and plant life;
- The improvement of road, rail, river, air, electrical, and telecommunications interconnections;
- Regional complementarity, by promoting and establishing of industries for the development of the Basin;
- The economic complementarity of areas bordering on the Basin;
- Cooperation with respect to education, health, and disease control;
- The promotion of other projects of mutual interest, in particular those relating to the surveying, evaluation, and development of the natural resources of the area;
- A comprehensive knowledge of the La Plata Basin."

The Intergovernmental Coordinating Committee of the Countries of the La Plata Basin (CIC)

The CIC was created in February 1967 during the First Meeting of Foreign Ministers of the LPB, at which time the participating governments agreed to carry out a joint and comprehensive study of the area, with the aim of identifying multi-national, bilateral, and national policies aimed at the progress and development of the region. According to Article 3 of the La Plata Treaty, the CIC became the permanent body of the Basin, " . . . responsible for promoting, coordinating, and following the progress of multinational efforts to ensure the integrated development of the La Plata Basin and of the technical and financial assistance which it may organize with the support of such international agencies it deems appropriate, and for implementing the decisions adopted by the Ministers of Foreign Affairs."

Since its inception, the CIC has concentrated on areas of common interest in the five countries, facilitating studies, programs, and infrastructure works on hydrology, natural resources, transport and navigation, soils, and energy. In particular, the comprehensive study of natural resources of the LPB conducted by the Organization of American States (OAS) in the 1970s was instrumental in guiding the actions of the countries towards the utilization of energy and transport potential and, because of this, critical environmental zones were registered, such as the sub-basins of the Pilcomayo and Bermejo rivers—characterized by the highest global erosion and sediment transport indices and the Upper Paraguay-Pantanal sub-basin, for the value of its wetland ecosystem and its key role for water regulation in the LPB as a whole.

Other organizations and programs in the La Plata Basin

In addition to the CIC, a number of complementary agreements have been integrated and signed within the framework of the TCP, which led to the creation of different institutions and agencies with specific competencies in the Basin, such as FONPLATA, its financial instrument, and the CIH, in charge of the Paraguay-Paraná Waterway. The Treaty also recognizes the possibility of other independent binational or tri-national agreements to address issues of specific interest to its members. The institutional framework for regional integration was then strengthened by the Treaty of Asuncion, which created Mercosur in 1995, aimed at encouraging the intraregional and international trade of its member countries.

The baseline situation includes a number of long-term development programs (10–15 years in duration) being executed by the individual Basin countries under their national economic development programs, which cover aspects relevant for the Plata Basin SAP. These programs include investments in: i) sanitation, water supply and transportation which are the responsibilities of various levels of government; ii) hydroelectric power generation which is the responsibility of several binational and/or tri-national entities; and iii) other environmental management activities that are being executed by governmental and non-governmental organizations. These latter activities include ongoing environmental monitoring programs, informational programs, and related activities at the national and local levels. In addition to these investments, the governments of the Basin countries are investing in the creation of institutional capacity within the sub basins of the la Plata Basin within their national jurisdictions. The creation of Basin Committees in Brazil, and the development of environmental impact assessments of the effect of agro-industrial activities on surface and ground waters throughout the Basin, are examples of this type of investment.

Cooperation in the La Plata Basin and Relevant International Agreements

Cooperation over the use of shared waters has predominated within the La Plata Basin, as shown by the number of international agreements signed and supra-national agencies established to carry out the cooperation processes.

The La Plata Basin Treaty was signed by Argentina, Bolivia, Brazil, Paraguay and Uruguay in order to "unite efforts with the objective of promoting the harmonious development and the physical integration of the La Plata Basin and of its area with direct and considered influence." The cooperation process established by the states is under the responsibility of the Intergovernmental Coordinating Committee of the Ba- sin countries (CIC).

Within this framework, the Paraná river sub-basin was the object of various treaties signed for the development of its natural resources, especially for electric power generation. The countries' goal of generating electric power jointly is prior to the Basin Treaty, which is observed in the signing of the cooperation Convention for the study and development of the hydro power of the Acaray and Monday rivers (Brazil and Paraguay, 1956) and the Convention for the study and development of the Paraná river resources (Argentina and Paraguay, 1971). The Basin Treaty paved the way for the execution of joint power generation initiatives, expressed in the Itaipú Treaty (Brazil and Paraguay, 1973), the Yacyretá Treaty (Argentina and Paraguay, 1973) and the Corpus hydroelectric power plant project (Argentina and Paraguay) located between the previous two. However, the coordination of these projects brought about different conflicts which were only dissipated with the signing of the tripartite technical and operational cooperation Agreement between Itaipú and Corpus (Argentina, Brazil and Paraguay, 1979).

The Apa river basin was the object of an important international cooperation initiative (A project for the implementation of integrated watershed management practices for the Pantanal and Upper Paraguay river basin, 1999). In 2006, the countries signed the cooperation Agreement for the sustainable development and shared management of the Apa river basin and the Statute of the Brazilian-Paraguayan mixed commission.

For promoting the integration between the Bermejo river basin, riparian countries (Argentina and Bolivia), signed an agreement in 1995 for the development of the upper basin of the Bermejo river and its tributary, the Grande de Tarija river. Another cooperation initiative in the region was the Strategic Action Programme for this basin, established between 1997 and 2000. In addition, a tri-national Commission composed of Argentina, Bolivia and Paraguay was created for the development of the Pilcomayo river basin. The Agreement for the regulation, channeling, dredging, buoyage and maintenance of the Paraguay river was aimed at maintaining the river's navigation conditions, which entailed carrying out topo-hydrographic and hydrological surveys, surveys of the river-bed and of the amounts of sediment and surveys relating to pollution and climatology. This agreement establishes the creation of a mixed executive technical Commission to carry out the task.

On the other hand, in 1973, the La Plata River Treaty was signed between Argentina and Uruguay with the aim of declaring the exercise of their equal rights and determining their respective maritime juris- dictions. The treaty defines the outer limit of the La Plata River as well as the mari- time lateral limit and the continental shelf of both states. The boundary Treaty of the Uruguay river, signed in Montevideo in 1961 between Argentina and Uruguay, acknowledges the need to establish the border between both countries which, until then, had identical rights over the river.

The binational Salto Grande dam project emerged as a result of an Act signed in 1938 between Argentina and Uruguay in which they decided to set up a mixed technical Commission for the study of the river's hydropower development. In 1946, the countries signed the Convention and its additional Protocol. In 1975, the Statute of the Uruguay River was passed and signed in order to establish the rights and obligations concerning the use of the river and the Administrative Commission of the Uruguay River which would be in charge of setting up the legal and administrative framework of the Salto Grande works.

The boundary line of the Pepirí-Guazú river, a tributary of the Uruguay river, between Argentina and Brazil was delimited by the Boundary Treaty of 1898 and modified by the Supplementary Convention on Boundaries of 1927 between both countries. In 1980, both governments signed a Treaty for the development of shared water resources. In 2007, an additional Protocol for the establishment of a mixed technical Commission was signed and the following year the governments signed a joint Declaration by presidents who ratified the decision to build the Garabí hydroelectric project.

Due to the existence of shared rivers between Brazil and Uruguay, the subject of waters has been included in the delimitation of boundaries signed by both countries since the 19th century. The Merim Lagoon is not within the La Plata Basin; however, it is a transboundary water resource between Brazil and Uruguay. Both countries signed a cooperation Treaty for the development of the natural resources of the basin and a Protocol for the development of the water resources located in the bordering stretch of the Jaguarão river (both in 1997).

The Cuareim/Quaraí river basin is located on the border between Brazil and Uruguay. The cooperation Agreement for the exploitation of the natural resources and the development of the basin was signed in 1991 and supplemented in 1997.

Besides the above-mentioned agreements, there are treaties comprising more than one sub-basin within the La Plata Basin, such as the Convention to cooperate in preventing incidents of water pollution by hydrocarbons and other harmful substances (Argentina and Uruguay); the Agreement on river transport through the Paraguay-Paraná Waterway (all the Basin countries); the Agreement on the conservation and development of the fisheries resources in the bordering stretches of the Paraná and Paraguay rivers (Argentina and Paraguay); the Agreement for the conservation of the aquatic fauna in the courses of bordering rivers (Brazil and Paraguay) and the Agreement on the Guaraní aquifer.

The La Plata Basin countries have signed several global environmental agreements; however, none of them has signed the main global legal framework for international waters protection: the United Nations Convention

on the non-navigational uses of international watercourses.

Taking only into account the international conventions and treaties that are related to the Framework Programme, the Basin countries have signed the following instruments:

Conventions on biological diversity conservation: The Convention on Wetlands of Inter- national Importance (Ramsar); the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); the Convention on the Conservation of Migratory Species of Wild Animals (CMS); the Convention on Biological Diversity and the International Convention for the Control and Management of Ships' Ballast Water and Sediments.

Conventions on the protection of the atmosphere, climate and climate phenomena: The Vienna Convention for the Protection of the Ozone Layer; the United Nations Frame- work Convention on Climate Change; the International Convention to Combat Desertification.

Conventions on pollution control: The Basel Convention on the Control of Trans- boundary Movement of Hazardous Wastes; the Rotterdam Convention on the Prior In- formed Consent Procedure for Certain Hazardous Chemicals and Pesticides in Inter- national Trade; the Stockholm Convention on Persistent Organic Pollutants.

Conventions on natural heritage protection:

The Convention concerning the Protection of the World Cultural and Natural Heritage.

In addition, there are regional treaties that can be classified as follows: Multilateral Agreements (Framework Cooperation Agreement for the Sub-regional Action Programme for the Sustainable Development of the Gran Chaco Americano, the Mercosur Framework Agreement on the Environment and its additional Protocol on the issue of cooperation and assistance in the event of environmental emergencies) and Bilateral Agreements (the Environmental Treaty between Argentina and Bolivia; the Agreement in the field of Natural Resources and the Environment be- tween Bolivia and Paraguay; the Environmental Cooperation Treaty between Argentina and Brazil).

The La Plata Basin Framework Program (Programa Marco)

The need for improved capacity, both technical and managerial, for the overall coordinated management in the La Plata Basin was recognized in December 2001 by the meeting of Foreign Ministers of the Basin held in Montevideo, which approved a new Statute for the CIC that incorporates two representatives per country—one political, with plenipotentiary authority, and a second technical representative. The technical representatives of the countries constitute the Project Unit of the La Plata Basin System. This Project Unit was charged with preparing an Action Program for the Sustainable Management of the Water Resources in the La Plata Basin. This Action Program was approved by the CIC in 2003.

Thanks to the support of the OAS, UNEP and the GEF through a PDF-B grant, the Action Plan led (i) to the definition of a Framework Program based upon a common vision of the five countries, and defining strategies to guide development in the LPB during the short (5 years), medium (10 years) and long term (more than 15 years), and (ii) to the submission to the GEF of a proposal for a full project titled: "*Sustainable Management of the Water Resources of the La Plata Basin with respect to the Effects of Climate Variability and Change"* which was approved in 2009. This project aimed at setting the foundations for improved coordination and collaboration among riparian countries in the sustainable utilization of the Basin's water resources in view of the risks and uncertainties linked with the growing impacts of climate variability and change. The project, which adopted the GEF recommended TDA – SAP approach, was successfully concluded in 2016 with the adoption by the CIC countries of the Strategic Action Program for the La Plata Basin.

The TDA – SAP process

The principal objective of the GEF funded project coordinated by CIC, implemented by UNEP and executed by the OAS, was to strengthen cross-border cooperation between the governments of Argentina, Bolivia, Brazil, Paraguay, and Uruguay to ensure the management of shared water resources in the Basin in an integrated and sustainable way, in the context of climate variability and change, capitalizing on opportunities for development.

During the formulation stage (2003 to 2005) a preliminary analysis was conducted on the principal environmental problems and the causes and challenges to overcome in the LPB. Through a broad participatory process, the state and behaviour of water systems was characterized, summarizing the present and emerging **critical transboundary issues** (CTI), the associated causal chains, information gaps, and preliminary recommendations for their solution. The principal CTIs – that is the degradation causes and trends presently occurring in the basin having a transboundary dimension and being compounded by the impacts of climatic variability and change - identified in the Basin were:

- Loss of water quality; iii) Sedimentation of waterways and bodies of water in the Basin;
- Alteration and loss of biodiversity;
- Unsustainable use of fishery resources;
- Unsustainable use of aquifers in critical areas;
- Water use conflicts and the environmental impact of irrigated crops;
- Lack of water/climate related disaster contingency plans; and
- Unsafe water and the deterioration of environmental health.
- Navigational limitations and developing hydroelectric power were also identified as topics of particular importance, for being two socioeconomic sectors fundamental for regional integration.

Project activities (2010 to 2016) allowed for the deepening of knowledge to more precisely characterize the CTIs, obtaining an integrated vision of the state of the transboundary water system and the development of strategies for the integrated management of water resources. The activities were carried out with the active involvement of specialists and authorities from various government institutions and academia related to water resource management, environment, and climate in each country.

An important aspect of this stage was the development of more detailed climate projections in order to identify the potential impact of climate change on different socioeconomic sectors (agriculture, energy, health, water resources, etc.), providing input for the preparation of the updated version of the Transboundary Diagnostic Analysis (TDA)[5], and guiding the management recommendations for each of the CTIs analysed, as a technical-scientific foundation for the formulation of the Strategic Action Program (SAP).

Main Results of the GEF Foundational Project (2010-2016) (*)

Working Group (WG)	Principal Results
Subcomponent: Strengthening cooperative capacity for integrated water resource management	
1. Legal and Institutional Framework	- Survey of national legislation and international treaties and conventions - Institutional strengthening - Publication of an institutional and legal framework for the integrated management of water resources in the La Plata Basin
2. Decision-Making Support System	- Base Map of the La Plata Basin - Installed hardware infrastructure and system communications - Main software and applications for query and reporting - Human resources for system administration - Publication of the Decision-making Support System for the La Plata Basin. Database and thematic mapping
3. Public Participation, Communication, and Education	- Implementation of the Priority Project Cultivating Good Water in the 3 Binational of the Basin - Execution of 4 Demonstrative Pilot Projects with civil society involvement

[5] For a detailed assessment of the CTIs, their causes and the relevant barriers to be removed see the TDA document at http://cicplata.org/es/documentos-principales/

	- Implementation of the Public Participation Fund, with 12 sub-projects - Dissemination of project information: website - Publication of the document "Public Participation Fund Projects. Replication of the Cultivating Good Water Program
Subcomponent: Integrated Water Resource Management	
4. Integrated Hydraulic Balance	- Diagnosis of water balance information in the La Plata Basin: inventory of cartographic, hydro-meteorological, and climatological information and information on uses and demands in the Basin, integrated in a common format - Surface water balance calculated for the entire Basin at the national level - Implementation of integrated hydrological model in the La Plata Basin - Integrated water balance calculated for the Cuareim/Quaraí Basin - Publication of the document "Water Balance in the La Plata Plate Basin. Availability and uses, considering future scenarios. Management models."
5. Monitoring and Evaluation of Water Quality and Quantity	- Compilation of background and foundational information. - Elaboration of a methodological guide which establishes the stations, the set of parameters, and the protocol for sampling and analysis - Campaigns to monitor water quality and quantity - Analysis of point and diffuse pollution sources - Publication of water quality and quantity in the La Plata Basin
6. Integrated Groundwater Management	- Groundwater diagnostic in the La Plata Basin - Characterization of the YTTAS: integrated hydro-geological diagnosis, the elaboration of geological and hydrogeological maps, and a socio-productive analysis of the study area - Characterization of the aquifers of the La Plata Basin - Guidelines for the joint management of groundwater in the La Plata Basin - Hydrogeological characterization of the Cuareim/Quarai River Basin - Publication of "Groundwater in the La Plata Basin"
7. Management of Aquatic Ecosystems	- Inventory of fish, environments, and protected areas - Inventory of exotic aquatic species, main impacts, and recommendations for their control - Inventory of wetland regions in the La Plata Basin, with identification of priority areas for protection - Diagnosis of aquatic ecosystems and management guidelines for the conservation and management of aquatic biodiversity - Guidelines for a biodiversity management strategy for the La Plata Basin - Corridor proposal for the system of ecological corridors for the La Plata Basin - Geographical information system (GIS) to support biodiversity management: georeferenced database - Publication of the documents "Aquatic ecosystems of the La Plata Basin" and "Inventory of wetland regions of the La Plata Basin"
8. Land Degradation	- Reports with national background on land degradation and desertification, information integration throughout the LPB - Identification of degraded areas and projects on soil conservation and desertification - Diagnosis of the conservation status of the Selva Misionera Paranaense (SMP) and proposals for a management strategy - Maps of land types, current use, and land cover in the LPB - Map of risk of water erosion - Identification of good practices of land use and management

	- Diagnosis of land degradation in the LPB, including scenarios of climate variability and change - Publication of the document "Land degradation in the La Plata Basin and Selva Misionera Paranaense"
9. Opportunities for Sustainable Development	- Diagnostic on clean technologies and opportunities for development in the LPB - Diagnostic on ecotourism and opportunities for development in the LPB - Diagnostic on hydroelectricity - Diagnostic on navigation in the LPB - Publication of the documents "Hydroelectricity and Navigation in the La Plata Basin" and "Clean Technologies and Ecotourism in the La Plata Basin"
Demonstrative Pilot Projects: 10. Biodiversity 11. Confluence 12. Cuareim/Quaraí 13. Pilcomayo	- DPP Biodiversity: Inventory of fish diversity; Identification of strategic areas for conservation and vulnerable zones; Identification of alien species and collection of data on fisheries biology - DPP Confluence: Basic information for generating forecasts and contingency plans; Hydrological warning system for the LPB; Operational system to warn against pollutant spills; strengthening local measurement systems; training and dissemination - DPP Cuareim/Quaraí: Technical evaluation on soil management in the Basin; Proposal and implementation of a binational water quality monitoring program; Proposal for water resources management; Implementation of a flood warning system for the cities of Artigas and Quarai; Establishment of formal coordination mechanisms between the Basin Committee and the Federal State; Strengthening the binational Cuareim/Quaraí River Joint Commission; Creation of the Cuareim River Basin Commission at the national level (Uruguay); Quantification of aggregate extraction in the Cuareim River; Characterization of the groundwater and elaboration of integrated water balance in the Basin. - DPP Pilcomayo: Follow-up and support for the management and control of the environmental liabilities of the mining districts of the Cotagaita river basin; actions to control and reduce soil erosion and clogging of rivers; contributions to the LPB strategic plan - Publication of the four documents with each of the DPP experiences.
Subcomponent: Hydro-climatic Models	
14. Hydro-climatic Models and Adaptation Scenarios	- Implementation of the WMO's WIGOS program in the Basin - National hydro-climatic background reports - Georeferenced inventory of monitoring stations - Flood frequency, impact, and vulnerability maps - Estimates of drought conditions - Modelling of climate change scenarios using the ETA regional climate model (INPE) - Reports with workshop results - Transfer and training of technical representatives from the 5 countries - Hydrological modelling of the LPB from the MGB hydrological model - Hydrological modelling of the LPB incorporating climate change scenarios - Publication of the document "Hydro-climatology in the La Plata Basin"
Subcomponent: Elaboration of the TDA and SAP	
All 14 WG Participated	- Updated TDA for the La Plata Basin - SAP for the La Plata Basin

	- Publication of both documents in Spanish, Portuguese, and English - Proposals for SAP implementation

(*) CIC 2016: Transboundary Diagnostic Analysis (TDA) and Strategic Action Program (SAP) of the La Plata Basin Executive Summary – Table 3.1

The Strategic Action Program (SAP) was designed as an instrument for coordinating policies for water resource management and related environmental issues, in the context of present challenges as well as future problems related to climate variability and change in the La Plata Basin. The SAP has a long-term vision and considers the Critical Transboundary Issues identified to be barriers to overcome in order to promote sustainable development. This La Plata Basin SAP has a planning horizon of 20 years, it includes six (6) strategic areas, 13 components, and 28 strategic actions. The set of strategic actions and the 130 activities that make them up constitute the intervention response and management recommendations to solve or mitigate the impacts of the major Critical Transboundary Issues that affect the Basin (based on the analysis of the causes identified) and to promote sustainable development.

SAP PRIORITIES

STRATEGIC AREA I: INFORMATION MANAGEMENT
Component I.1 Networks and Support System for Decision-making in the Field of Integrated Water Resource Management of the La Plata Basin
Component I.2 Hydro-environmental Monitoring and Hydrological Warning
STRATEGIC AREA II: PLANNING, MANAGEMENT, AND SUSTAINABLE USE OF WATER RESOURCES
Component II.1 Integrated Water Resource Management and Adaptive Measures
Component II.2 Sustainable Production and Consumption
Component II.3 Water Resource Use in the Context of Regional Integration
STRATEGIC AREA III: ENVIRONMENTAL PROTECTION/REHABILITATION
Component III.1 Ecosystem Management
Component III.2 Sustainable Land Management
Component III.3 Environmental Sanitation
STRATEGIC AREA IV: EDUCATION, COMMUNICATION, AND PUBLIC PARTICIPATION
Component IV.1 Environmental Education
Component IV.2 Communication and Public Participation
STRATEGIC AREA V: RESEARCH AND TECHNOLOGICAL DEVELOPMENT
Component V.1 Research and Technological Development
STRATEGIC AREA VI: INSTITUTIONAL STRENGTHENING
Component VI.1 Institutional Framework
Component VI.2 Legal Framework

I. Information management: Incorporates actions related to searching, identifying, integrating, processing, and disseminating the information needed to support decision-making in integrated water resource management in the context of climate variability and change, including early detection systems and hydro-environmental monitoring.
II. Planning, management, and sustainable use of water resources: Includes planning and management actions aimed at strengthening prevention and CTI control mechanisms affecting the Basin, seeking to take advantage of potential water resources to improve the quality of life of the population within the framework of climate variability and change, and also seeking to strengthen the objective to integrate the Basin countries through actions related to the development and sustainability of potential water energy and transport.
III.Environmental protection / rehabilitation: Lays out a vision for correcting environmental liabilities and maintaining still-preserved areas of environmental interest; for cross-border environmental protection in the La Plata Basin through joint actions between the countries, both for the protection of still-preserved or relatively well preserved environments and for the recovery and rehabilitation of environments impacted by human action and aggravated by climate variability and change.

IV. Education, communication, and public participation: Incorporates education, training, communication, and public participation in the Basin to improve social capacity to address/solve the CTIs and to seize participatory development opportunities in the La Plata Basin.
V. Research and Technological Development: Actions aimed at strengthening technical and scientific development on issues of interest to resolving the CTIs and development opportunities in the La Plata Basin. VI. Institutional strengthening: Includes proposals aimed at promoting /strengthening the institutional and legal order necessary to address the CTIs and facilitate SAP implementation. Includes strengthening the CIC and participating national agencies acting on water resources and related areas, as well as harmonizing legal standards in developing common or compatible protocols for implementing the strategic actions and SAP activities.

1.3 HIGHER LEVEL OBJECTIVES TO WHICH THE PROJECT CONTRIBUTES

The strategic areas of the SAP are related to the Sustainable Development Goals, which constitute the global agenda for the next few years, because they revolve around actions that strengthen development at the global, national, local, and individual levels, enhancing improvements in thematic areas such as food security, drinking water, energy, urban infrastructure, consumption, and sustainable production, among other things.

The LPB SAP related to the Sustainable Development Goals

1.4 VALUE ADDED OF CAF

CAF will act as the Project Implementing Agency responsible for the administration of GEF funds. CAF was accredited as GEF Project Agency in the year 2015, and since then has received approval for a Full Size regional project in Bolivia, Ecuador, Colombia and Peru, and has two projects in preparation without counting the present project of the Plata Basin. Its task of implementing agency will be carried out taking full advantage of the experience accumulated through the years in the Latin American region and in depth knowledge of the countries.

CAF is presently the main development investment bank in the region. In particular, CAF has a portfolio of more than USD 9 billion in the countries of the Plata Basin, mainly directed to projects of generation and transmission of electricity, water and sanitation works - including hydraulic works for the control of floods; Road projects and others of lower frequency but high impact, such as rehabilitation projects of schools and universities, satellite projects and ICT in general, rehabilitation of railways, ports and emblematic buildings, irrigation works, etc., all of which Is carried out in perfect harmony with the manifest needs of the country in question.

The portfolio is distributed as follows:

CAF- Financing portfolio of development projects in the CIC countries	
Country	Portfolio (USD Million)
Argentina	2.887,14
Bolivia	2.343,25
Brazil	2.519,50
Paraguay	343,20
Uruguay	991,46
TOTAL	9.084,55

The value added of CAF as an Implementation Agency for the proposed project lies primarily in its mandate as a major development agent in the region, and in its commitment to support the Plata basin countries in their efforts to implement the priority actions agreed upon in the SAP, and reach the goals of water security, ecosystem health and climate resilience essential for achieving sustainable development throughout the Basin.

1.5 CONSISTENCY WITH NATIONAL PRIORITIES

The proposed project aims at jump starting the implementation of the La Plata Basin Strategic Action Program (SAP) agreed upon by the countries sharing the Basin in late 2016.

All countries of the Basin place high priority on water resources and environmental protection. The constitutional provisions relevant for the purposes of the project show however in some cases (in particular in Argentina and Brazil) aspects that will require special focus in the process of harmonization between the SAP recommended actions and national/provincial institutional and policy frameworks.

Argentina has a federal organization system in which the provinces “keep all powers not delegated to the federal government.” This characteristic allows the national legislation and the provincial legal regimes to coexist within the Argentine law. The provinces “expressly have original ownership of natural resources existing in their territory.” Environmental protection is provided for in several articles of the Constitution. Article 41, in particular, lays down the constitutional bases for environmental protection in Argentina, turning it into an environmental state which is characterized by the right of every inhabitant to a balanced environment, while imposing the collective duty of taking care of it for present and future generations.
Bolivia: the competence for water and environmental management is distributed among all government levels. The jurisdictional body in charge of controlling constitutionality and coordination is the Multi-National

Constitutional Court. However, some of the environmental conflicts might be solved by the Agro-Environmental Court.

Brazil: In accordance with the Constitution of Brazil all citizens have a right to an ecologically-balanced environment essential for a healthy quality of life. The responsibility to preserve it for present and future generations is of the State and of the people. The Union has exclusive power to legislate over water resources; however, legislation and management of natural resources in an environmentally sound way is a shared responsibility, and all federal entities have a common responsibility and competence is concurrent. Ownership of surface water resources is determined by their boundaries; if they are across provincial boundaries or are transboundary, they belong to the Union; if they are within provincial boundaries, they belong to the province. In the case of groundwater resources, regardless of their boundaries, they are controlled by the Union.

Paraguay is constituted as a "social State of law, which is unitary, indivisible and decentralized", which adopted a "representative, participatory and pluralist democracy" as the form of government. The Constitution makes several references to environmental protection. It establishes the fundamental quality of life right, which will be promoted by the State through plans and policies that acknowledge its determining factors. The fundamental right to a healthy and ecologically-balanced environment is also expressly stated. The concern about the environment extends to other areas, such as economic development, agrarian reform and indigenous peoples. The economic policy and the development promotion will be subject by the State to "the rational use of the available resources."

Uruguay: The Constitution of the Republic adopted the republican democratic form of government, constituting a Unitary State, but a decentralized one. Water resources are an essential element in environmental protection since they are the only environmental resource specifically addressed by the Constitution. Surface and ground waters have been considered to be of general interest and an integral part of the state's public domain, which is called hydraulic public domain. Water management incorporates a considerable portion of the budget allocated to the integrated water resources management.

2. PROJECT DEVELOPMENT OBJECTIVES

The objective of the project is to set the scene for the implementation of the priority national and regional actions identified in the Strategic Action Program (SAP), agreed upon by the countries sharing the La Plata Basin and aimed at improving water security, climate resilience and ecosystem health. It will do so by fostering the consolidation of regional cooperation, the alignment of national and regional priorities, and by promoting the integration across sectors and funding sources.

2.1 PROJECT BENEFICIARIES

The project will accelerate the SAP implementation process by addressing the following categories of issues:

- Consolidating tools for a strengthened transboundary cooperation among riparian countries;
- Fostering the process of translating the priority actions and vision enshrined in the SAP into national actions (reforms and investments), thus aligning regional and national priorities;
- Building consensus among stakeholders in the Basin on SAP priorities and targets;
- Fostering gender equality as part of the proposed project and of the SAP itself.

By doing so, the proposed project will bring significant national and regional socio-economic benefits to the Basin's countries and stakeholders by accelerating and facilitating the SAP priority actions aimed at reducing health and environmental hazards originating from pollution of freshwater, both surface and groundwater, and marine coastal waters, minimizing the risk to its sensitive ecosystems, and strengthening water security and resilience to the impacts of climatic variations and change in the Basin.

The MSP will also result in identification of compatible uses within the same area of development, reduction of conflicts between incompatible uses, improved capacity to plan for new and changing human activities, including emerging technologies and their associated effects, and promotion of the efficient use of resources and space.

2.2 OUTCOME LEVEL INDICATORS

PDO (outcome) Indicators include the following: (i) concrete actions aimed at consolidating the Basin-wide coordination frameworks; (ii) harmonization of national and regional priorities (SAP); (iii) Joining of forces across sectors and funding sources for future SAP implementation.

3. PROJECT DESCRIPTION

3.1 PROJECT RATIONALE

From 2005 to 2016 the countries of the La Plata Basin have engaged in a monumental effort to unravel the multiple causes of degradation, exacerbated by growing climatic stress, which threaten the long term sustainability of the freshwater resources of the Basin, impact ecosystems and livelihoods, and imperil social and economic development. The work carried out so far represents a pioneering experience, where more than 150 institutions and 1,500 specialists from the region managed to articulate the interests and wishes of each country towards a common objective related to the integrated management of water resources in the framework of climate variability and change.

Having agreed upon the most crucial issues of transboundary concern (TDA), and on the priority regional and the national actions that countries need to implement in order to reverse degradation trends and improve the resilience of the Basin's natural and socio-economic systems to climate variability and change (SAP), countries also recognized the imperative of transboundary cooperation and the need to strengthen basin-wide cooperative frameworks and harmonize governance tools, if the vision that informed their decadal effort had to be achieved.

During the meeting of the CIC parties held in Buenos Aires in March 2017, Basin countries agreed to move ahead with the implementation of the SAP under the coordination of CIC. They also decided to seek GEF support through the CAF, and to adopt a two phased approach, the first phase consisting of a medium sized project aimed at setting the scene for the full implementation of the priority national and regional actions identified in the Strategic Action Program (Phase 2).

To do so, the medium sized project (MSP) will respond to three crucial needs:

- consolidating the very successful technical cooperation among riparian countries and the management tools developed so far;
- harmonization of national with regional priorities by internalizing the regional vision into national priorities and plans;
- and last but not least, creating through dissemination and outreach activities the momentum for the joining of forces across sectors, institutional frameworks and funding sources, indispensable to address the diverse yet interlinked factors threatening environmental security in the Basin.

These objectives are fully in line with the GEF 6 Programming Directions for the International Waters focal area, in particular with outcome 1.1: Political commitment / shared vision and improved governance demonstrated for joint, ecosystem-based management of transbiundary waterbodies (IW 1, Program 1); and outcome 3.2: Increased management capacity of regional and national institutions to incorporate climate variability and change, including improved capacity for management of floods and droughts (IW 2, Program 3).

3.2 PROJECT COMPONENTS

The proposed MSP includes three Components:

Component 1: Consolidation of regional cooperation

Expected Outcome: Strengthened capacity of the Basin countries and the CIC to coordinate actions throughout the Basin.

It has to be noted that the success of the foundational GEF project, which produced the TDA and the SAP together with a number of very effective on the ground pilot demonstrations, has been largely attributed to the outstanding cooperative and multi-disciplinary work developed by the multi-country Thematic Groups, composed of country appointed experts and representing relevant agencies and governmental entities, which emerged as key actors in the execution of the project. In view of SAP implementation, this proposed follow up project will support countries as they consider and review feasible options for:

- Promote the of the establishment of Thematic Groups within the context of CIC as a means to consolidate transboundary cooperation;
- Strengthen the CIC by enhancing its role in coordinating technical activities in the domain of freshwater, ecosystems and climate resilience;
- Identify among SAP strategic actions the projects of highest priority.

Outputs:
1) Within the CIC framework, consolidation of the high level of cooperation achieved during the TDA-SAP process through the multi-country Thematic Groups by institutionalizing their role for the implementation of the SAP's different components and projects.

Activities:

- Select the priority "themes" of the SAP and identify the priority projects for its implementation;
- Promote the establishment of Thematic Groups in the context of CIC as the mean to consolidate cross-border cooperation on freshwater, environmental and climate resilience related issues at the regional level in the Basin.
- Strengthen the management of the CIC by promoting its coordinating role of technical activities in the field of freshwater, environment and climate resilience.

2) The Decision-making Support System (DSS) developed during the foundational project consolidated and expanded as a support tool for regional coordination and the integrated management of water resources in the context of climate variability and change, and as early warning system.

This will include part of what foreseen in the Strategic Action I.1.2 of the SAP (Expansion and Integration of Information Systems):

- Updating (in accordance with agreed upon protocol for the five countries) and expanding available cartographic information in DSS-Plata, promoting exchange and coordination among the responsible bodies from each country.
- Expansion and strength national and regional institutional framework of the DSS-Plata's digital library of studies, macro- and micro-regional and territorial plans, hydraulic resource plans, and catalogue of legislation and legal frameworks regarding the shared management of hydraulic resources, among other topics.

It is expected that during project execution exchanges and synergies will be established with the ongoing GEF UNEP project "*Development of tools to incorporate impacts of climatic variability and change, in particular floods and droughts, into basin planning processes*" executed by UNEP DHI and IWA. This project is based on the recognition that (i) climatic variability and change is being increasingly experienced in the form of more frequent, severe and less predictable floods and drought events; (ii) there is a growing sense of urgency among countries, basin organizations and other end users such as utilities, of the need to build resilience towards floods and droughts as an integral part of the management of water resources; (iii) the growing risks related to hydrologic uncertainty are magnified in transboundary contexts, where cooperation among countries is

essential to any coping strategy. All this is in line with the aims of the LPB SAP, and with the hurdles identified by the Plata Basin countries in the TDA.

Activities:

- Consolidate the LPB-DSS thematic group, optimizing its operation through the appropriate tools.
- Strengthen the LPB-DSS incorporating the technological tools to optimize its operation, for example communication protocol, definition of minimum information parameters, use of software, etc.
- Development of tools to incorporate impacts of climatic variability and change, in particular for considered floods and droughts extreme events, into basin planning processes, generating synergy with a GEF project UNEP DHI -IWA.
- Expand the integration of hydro-meteorological information for the Hydrological Warning Systems in the LPB-DSS for generating a common regional framework database.
- Consolidate the cartographic information available in the LPB-DSS, promoting the exchange and coordination among the responsible bodies from each country. Strengthening and expanding the LPB-DSS digital library containing studies, macro and micro-regional and territorial plans, national water resources plans, and catalogue of legislation and legal frameworks for shared management of water resources, among other topics.

Component 2: Facilitating National Actions

Expected Outcome: Harmonization of national policies and plans with SAP priorities.

Output:
3) SAP priorities and vision inform national action plans, reconciling regional with national priorities.

SAP implementation is in the interest of the Basins' counties as they seek management mechanisms promoting transboundary cooperation for the sustainable development of the shared water and other natural resources.

A cluster of regional and national actions nested within a regional strategic framework constitutes the La Plata Basin SAP. Its full implementation will hence require blending regional with national interventions. In addition, such interventions will have to involve not just the water sector, but also other sectors. In fact, water security, protection of ecosystem functioning and biodiversity, energy production, soil conservation, resilience to climate variability and change are all in a number ways controlled by the availability of water resources of sufficient quantity and quality.

Full participation of, and consultations among countries' governments and of major stakeholders, a concept and a practice accepted and encouraged in the Basin by means of law and international agreements, and largely applied during the previous phases of GEF support, is recognized as crucial for the implementation of the SAP priority actions as part of national plans and policies, and will be fully applied by governmental entities and other relevant organizations as a means to achieve the Component's objectives. The Thematic Groups, in consultation with other governmental and non-governmental stakeholders and civil society organizations, will support national governments in the harmonization of the SAP strategic priorities throughout the Basin's various sectors in the effort to breakdown SAP requirements into national and local actions and to identify priority policy, legal, institutional measures, including investment needs for meeting the agreed SAP targets.

Activities:

- Define of a general/common methodology for dialogues in all countries to prepare National Documents showing integration of SAP priorities into national development plans, considering the specific characteristics of each country in an institutional organization and procedures: (i) general/common methodology (ii) country-specific methodologies (iii) special adaptations for each of the SAP strategic areas

- Prepare the analysis of the compatibility of SAP actions in each country, following the agreed methodology, and considering:
    - National plans and policies
    - Agreements, Treaties, Cooperation Agreements, Statutes of Institutions, regional, bi or multilateral in the region
    - International Conventions, Treaties or Agreements-specific methodologies (iii) special adaptations for each of the SAP strategic areas
- Prepare National Documents related with SAP and ready for submission to country´ authorities. Proposals will be developed the country level with the relevant institutions. Consolidate an integrated document at basin level, consolidating the national results.

Component 3: Dissemination and Outreach

Expected Outcome: Countries and all major stakeholders interacting in the Basin join forces and resources to advance sustainability and climate resilience in the Basin.

Outputs:
4) Structured dialogues on SAP priorities among countries and key basin stakeholders and sectors promote consensus on SAP targets and indicators.

The project will support CIC in building capacity and promoting cross sectoral exchanges on SAP vision and priorities among Thematic Groups, countries' relevant agencies in all key sectors involved (water, agriculture and forestry, fisheries, energy, transport, preparedness against natural hazards, etc.) and other non-governmental actors in the basin, to reach consensus on common targets and indicators – including on women empowerment - to be achieved during SAP implementation.

Activities:

- Organized the structured dialogues with a on SAP priorities among countries and key basin stakeholders and sectors promote consensus on SAP targets and indicators
- Consolidate the SAP common targets and indicators, with consensus at basin level.

5) Awareness raising events on, and online dissemination of TDA findings and SAP priorities.

The SAP vision and recommendations will be translated into simple language for dissemination among the Basin's inhabitants, and decision makers at the local level. Outreach and consultation events will be organized by CIC with the aim of fostering synergies with and among:

- GEF focal areas;
- Multilateral and bilateral donors, and development assistance providers.
- the major multilateral environmental agreements.

The consultations will secure the participation of GEF Operational focal points, representatives of GEF focal areas, GEF agencies, development banks, and donors active in the region, and convention secretariats representatives.

Moreover, the project will organize short courses on "Water and Gender" in all Basin countries to promote sex disaggregated data collection and women's empowerment as part of SAP implementation.

Activities:

- Prepare a dissemination material (audio-visuals, documents and others) considering the support of IWLearn
- Organize national face-to-face events plus online activities, amount others communications actions for dissemination of TDA findings and SAP priorities.

6) Training short courses on gender analysis and sex disaggregated data collection at country level.

The project will conduct short training courses to familiarize stakeholders in all Basins' countries on gender analysis and sex disaggregated data collection

Activities:

- Organize at country level training short courses on gender analysis and sex disaggregated data collection and consolidate a basin level report.

7) Upgrading of the CIC website, and participation to IW LEARN activities

The project will share with the IW community and the public at large its advancements and achievements through the enhanced CIC website, and by participating to IW LEARN online and face to face activities and events.

Activities:

- Complete the CIC website with dissemination material on TDA finding and SAP priorities as well as the operational DSS. Participate to IW LEARN activities.

3.3 PROJECT FINANCING

The Project is seeking GEFTF financing for US$1.995 million for the implementation of the activities of Components 1, 2 and 3. GEF resources will be devoted to facilitating future SAP investments.

The counterpart financing of the five governments is of US $ 2.7 million, distributed equally.

CAF as an Implementing Agency will co-finance the project for a total amount of US $ 250,000 in kind.

Summary Budget

Components	GEFTF US$	Co-financing from Governments and others	TOTAL
1: Consolidating Regional Cooperation	1,000,000	1,550,000	2,550,000
Argentina	180,000	310,000	490,000
Bolivia	180,000	310,000	490,000
Brazil	180,000	310,000	490,000
Paraguay	180,000	310,000	490,000
Uruguay	180,000	310,000	490,000
Regional	100,000		100,000
2: Facilitating National Actions	650,000	800,000	1,450,000
Argentina	130,000	160,000	290,000
Bolivia	130,000	160,000	290,000
Brazil	130,000	160,000	290,000
Paraguay	130,000	160,000	290,000
Uruguay	130,000	160,000	290,000
3: Dissemination and outreach	250,000	350,000	600,000
Argentina	30,000	70,000	100,000
Bolivia	30,000	70,000	100,000
Brazil	30,000	70,000	100,000
Paraguay	30,000	70,000	100,000
Uruguay	30,000	70,000	100,000
Regional	100,000		100,000

Project Management Costs	75,000		75,000
Monitoring & Evaluation	20,000		20,000
Co-financing Implementing Agency – CAF*		250,000	250,000
Total Project Cost	1,995,000	2,950,000	4,945,000

* CAF has the commitment to assign USD$ 250,000.00, as direct co-finance, through its funds of technical cooperation that will be approved during the second term of 2018, and executed through 2019-20. See Annex xxx CAF´s Co-finance Report.

3.4 LESSONS LEARNED AND REFLECTED IN THE PROJECT DESIGN

The proposed Project was built on the experience and lessons learnt primarily from the Project "Sustainable Management of the Water Resources of the La Plata Basin with respect to the Effects of Climate Variability and Change" (the so called "Framework Program") which are valuable as many stakeholders in the proposed Project remain the same. In particular, the project will strive to maintain the high level of country ownership experimented in the Framework Program, and recognized by the Mid-term evaluator:
"The project has catalyzed a level of country ownership rarely encountered in GEF IW projects, and tangible strengthening of transboundary cooperation among the riparian country governments of Argentina, Bolivia, Brazil, Paraguay, and Uruguay. These are key achievements that command respect, and strong indications of the project's overall effectiveness, timeliness and relevance to the countries."

The proposed project will continue to set high levels of project ownership in the implementation by the governmental and academic agencies of the countries thus generating tangible strengthening of the cross-border cooperation between the countries involved.

The experiences of the Framework Program provided a series of lessons learned, some of which have informed the proposed project design and will provide guidance during project execution. They are:

a. Project Design

- In a project involving multiple countries, it is necessary to define and come to an agreement from the initial design stage, reaching consensus on the project execution structure and clearly defining the missions, functions, and responsibilities of each hierarchical level involved in the management and supervision of the activities.
- The number of activities and indicators should be adequately defined. It is important to select indicators that clearly represent the progress of the project and the expected results, without over-extending the number and expectations to be reached by each one of them.
- It is important to recognize and address the expectations and needs of each country with respect to the project, integrating them with the common purpose.

b. Project management

- The roles of all hierarchical levels of the project and institutional actors should be defined, reviewed, and confirmed (functions and responsibilities) to ensure compliance with project implementation.
- To have an Implementation Coordination (National Coordinators, Director, Executing Agency, and Coordination Unit) is a key instrument to consolidate the common vision of the countries during the progress of the project and to jointly evaluate the progress in project execution, but the responsibilities should be clear with regard to an efficient decision-making process, as well as its consequences.
- The execution of the various subcomponents through working groups composed of national high-level

technical representatives generates strong national ownership of the project, which translates into a greater role of national institutions in the execution of the project's activities.

- The participation of the National Coordinator - a national technical leader coordinating and articulating the project activities of his country - in the different working groups is essential.
- A high level of national ownership at all levels allows for greater sustainability of future implementation of project results/ proposals.
- At the national level, the active participation of institutions through the Working Groups (organized with high-level government personnel, including the academic sector) and the participation of National Coordinators in the decision-making process will help to internalize the project decisions in the national context.
- Execution through Thematic Groups (WG) acting at the specific level of each subcomponent facilitates the interest of the technical representatives involved in continuing to interact beyond the reach of the project, which gives greater sustainability to the executed actions.

c. Project implementation and results

- The participation process is key to ensuring ownership of the project by the countries. Participation must include all stakeholders defined by each country.
- The treatment of cross-border issues in the framework of an Intergovernmental Committee in which the Ministries of Foreign Affairs participate will ensures the consensus of the agreements reached at the highest institutional level.
- The spaces for joint work in working groups with representatives of the countries involved generate a space for capacity exchanges at a regional level that will go far beyond the scope of the project and expands toward a strengthening in the relationships between institutions and academia in the area of study (e.g. hydrological services, hydro-meteorological services, Engineering Academy, etc.).

- The participation of involved actors through the participatory process, contrasting the local visions with the expected results of the project, must be balanced to achieve a product that meets the expectations of all involved.

- The involvement of local governments in IWRM improves the joint response to emergency situations, such as those occurring during extreme events.

- The integration of information from national networks (for example, hydro-climatic monitoring networks, water quality, forecasting and alert systems, etc.), available and accessible to all countries, generates a space for ex- change that strengthens current and future common action.

- Defining common methodologies for hydro-meteorological measurement, water quality sampling and analysis, well drilling, and the exercise of joint field- work, among other things, generates common benefits for building capacities and exchanging experiences during the campaigns, and benefits later work by allowing for the comparison of results obtained under a common vision.

- Regional meteorological and hydrological models merged and implemented at the Basin level as hydro-meteorological management tools will strengthen the technical capacities of the countries and improve adaptation capacity to climate variability and change throughout the Basin.

- In order to ensure the sustainability of the system, it must be implemented considering the coordination of institutional framework at the Basin level, or any other regional entity that is responsible for operations.

d. Sustainability of joint strategic actions

- The participatory approach is a key factor for country ownership, while providing institutional strengthening and regional integration.

- The strategic areas of the SAP are positively related to the achievement of the Sustainable Development Goals, which is why countries will support these regional and national actions that promote improvements in topics such as food security, drinking water, energy, urban infrastructure, consumption, and sustain- able production, among others.

3.5 COORDINATION WITH OTHER INITIATIVES INCLUDING RELEVANT GEF FUNDED INITIATIVES

GEF has been very active since the its establishment in supporting the La Plata Basin countries through a number of projects, all of them completed, addressing transboundary issues in various sub-basins and in the maritime front:

- *Strategic Action Plan for the Bermejo River (SAP-Bermejo).* UNEP/GEF – OAS The Binational Commission for the Bermejo River and Upper Tarija River (Argentina- Bolivia) is executing a project designed to promote sustainable environmental development of the basin and mitigate natural erosion phenomena exacerbated by human activities. The basin generates 80% of the sediment loads to the La Plata estuary limiting navigation and increasing transportation costs, to the detriment of the development of MERCOSUR. (GEF US $ 11M).
- *Implementation of Integrated Management Practices for the Water Resources of the Pantanal/Alto Paraguay.* UNEP/GEF – OAS The government of Brazil through the Agencia Nacional de Aguas (ANA) is actively working in the development of a program for the integrated management of the water resources of the Upper Paraguay River Basin. Land use changes in this basin affect the world's greatest wetland, the Pantanal, and its biodiversity. This natural reservoir regulates the whole hydrology of the La Plata Basin, retaining water during six months and minimizing potential flooding downstream. (GEF US $ 6,615,000).
- *Environmental Protection of the La Plata River and its Maritime Front, to prevent and control contamination and habitat restoration - FREPLATA.* **UNDP/GEF** The La Plata River and its maritime front, shared by Argentina and Uruguay, have an enormous biological diversity. This is the rationale for a GEF project designed to improve knowledge and protect this important ecosystem. (Two sequential projects, GEF US $ 8,532,000).
- *Environmental Protection and Sustainable Development of the Guarani Aquifer System.* WB/GEF – OAS. Groundwater of the Guarani Aquifer System, which is largely coincident with the La Plata Basin, is being protected with GEF support in agreement with the four countries, which share it: Argentina, Brazil, Paraguay and Uruguay. (GEF US $ 13,400,000).
- *Sustainable Land Management in the Transboundary Ecosystem of the Gran Chaco Americano.* UNEP-UNDP/GEF This project although still in the PDF-B stage will be developing a Sub-Regional Action Program for the sustainable development of the Gran Chaco Americano, within the legal framework of the Convention to Combat Desertification. This Project has been developed by Argentina, Bolivia and Paraguay and will help enhance the knowledge of this semi-arid region and provide remedial actions as input to the Plata TDA/SAP process. (GEF US $ 6,000,000).

In addition to those mentioned above, other projects, such as for example the EU funded Master Plan for the Pilcomayo River basin, have been executed, all without an integrated framework to ensure coherent efforts and an efficient use of human resources and financing applied.

This large effort culminated in the early 2000s with the approval of the foundational project "Sustainable Management of the Water Resources of the La Plata Basin with respect to the Effects of Climate Variability and Change" (the so called "Framework Program"), the first one to embrace the whole basin and to be coordinated by the CIC, aimed at setting the knowledge and institutional foundations for improved coordination and cooperation among countries sharing the basin resources and across sectors, with special emphasis on climate resilience. The success of this project drew heavily from the accomplishments and lessons learnt of

the sub-basins projects, and ended with the riparian countries agreeing within the context of the CIC on a Strategic Action Program for improving sustainability and climate resilience in the Basin.

The proposed project, entrusted by the countries to the CAF, builds on this decadal work done by the countries, and seeks to create the coordination and awareness conditions necessary for accelerating the implementation on the ground of the priority actions and investments agreed upon by the countries.

3.6 INCREMENTAL COST REASONING

With respect to incremental costs, the scope of the baseline conditions are spatially set by the natural limits of the basin, and thematically, the project components and outcomes create the framework for defining the parameters of the baseline. The current baseline conditions for water resources management, in the LPB, fundamentally consist of either:

- individual national economic development programs, such as water supply and sanitation and/or transportation, which are the responsibilities of various levels of government and primarily focus on individual country needs;
- bi-national or tri- national investments for hydropower generation; and/or
- other environmental management activities that are coordinated by CIC, but executed by government and/or private agencies. This activity includes ongoing environmental monitoring programs, informational programs, and related activities at the national and local levels.

The SAP strategic actions include various territorial areas, covering in some cases the entire Basin and in other cases specific areas located in certain sub-basins, including both individual states and provinces, such as regions that spread across several countries. The scope of the interventions will be different as well, as will the diverse beneficiary and/or executing agencies and institutions. The multiplicity of actors involved in the implementation of SAP priority actions—each with their own timetables, priorities, interests, and mechanisms—raises the need to strengthen the Basin-wide cooperation, coordination, integration and monitoring frameworks, which are essential prerequisites for the timely and successful implementation of the SAP.

Alternative scenario

The proposed project seeks to respond to this need by developing a number of incremental regional and national actions focusing on strengthening regional cooperation frameworks and the technical and monitoring capacity of the CIC, reconciling regional and national priorities, fostering stakeholders' participation, women empowerment, and integration among sectors at the La Plata Basin level, and in more general terms, accelerating the implementation of the SAP.

Increased coordination among the Basin's countries will positively reflect on the ability to enhance synergies between the many ongoing fragmented sectoral actions in countries related to water quality, sanitation, hydro-energy, climate hazards mitigation, and the environment in the La Plata Basin, and the more strategically identified actions part of the SAP.

4. KEY RISKS

4.1 OVERALL RISK RATING

The proposed MS project aims to decrease the risks that might be encountered during future SAP implementation, in particular the two following ones, both rated as "moderate":

Cooperation risk (Low). The SAP implementation program presents an opportunity to integrate diverse development parameters, into a sustainable water resources management program. However, the existing diverse, heterogeneous nature of the legal jurisdictions in the five countries as they pertain to water resources

and climate, unto themselves, define risk. Politically, from the national level, to the provincial or state levels, failures to adopt, implement and/or cooperate on the SAP recommendations may negate efforts initiated by the GEF support.
Risk Mitigation Actions: This risk will be mitigated by strengthening institutions responsible for coordination at the basin level (Component 1), and conducting broad stakeholders' participation throughput project implementation.

Geographic-context risk (Low). The SAP implementation presents an opportunity to integrate diverse development variables, including legislation to provide a harmonized legal framework among the countries, to give a solid base for the program sustainability. The diverse, heterogeneous and different jurisdictions, particularly in federal countries, involved as regards water resources and climate, may hinder the project efforts.
Risk Mitigation Actions: Activities of Component 2 have been designed with the purpose to overcome risks related to the diverse governance regimes in the Basin.

Implementation risk (Very Low) -The level of risk associated with the implementation of the project is very low, considering the great interest on, and commitment to the SAP of the countries' governments and institutions, as well as of international organizations and potential partners.
Risk Mitigation Actions: Through activities of Component 3 the project will ensure continuing support from countries and partners.

5. SUMMARY PROJECT ANALYSIS

5.1 ECONOMIC AND FINANCIAL ANALYSIS

During the meeting of the CIC parties held in Buenos Aires in March 2017, Basin countries agreed to move ahead with the implementation of the SAP under the coordination of CIC. They also decided to seek GEF support through the CAF for a medium sized project aimed at setting the scene for, and accelerating the full implementation of the priority national and regional actions identified in the Strategic Action Program (Phase 2).

To do so, the medium sized project (MSP) will respond to three crucial needs:

- consolidating the very successful technical cooperation among riparian countries and the management tools developed so far;
- facilitating national actions through the insertion of SAP priorities into national and regional plans and policies
- and last but not least, creating through communication and dissemination activities the momentum for the joining of forces across sectors, institutional frameworks and funding sources, indispensable to address the diverse yet interlinked factors threatening environmental security in the Basin.

These objectives are fully in line with the GEF 6 Programming Directions for the International Waters focal area, in particular with outcome 1.1: Political commitment / shared vision and improved governance demonstrated for joint, ecosystem-based management of transbiundary waterbodies (IW 1, Program 1); and outcome 3.2: Increased management capacity of regional and national institutions to incorporate climate variability and change, including improved capacity for management of floods and droughts (IW 2, Program 3).

In relation to the financial impact, the project is expected to be cost-effective as a result of its ability to bring together various partners from national economic development sectors such as environment, agriculture, water, forestry, transport and energy sectors. In this way, and with the relatively limited resources available, a far-reaching impact is anticipated, since management/policy instruments affecting multiple sectors will be developed and embraced.

Investments at the level of individual countries in: (i) the generation and exchange of knowledge, technology transfer, institutional strengthening; (ii) mainstreaming of climate change considerations into policies,

strategies and programs; and (iii) the design and implementation of adaptation measures in priority sectors, will provide opportunities for South-South transboundary collaboration, while achieving tangible economy of scale in knowledge management through the maximization of experiences and lessons learned.

The anticipated fiscal impact of the project on the participating countries is expected to be modest. Counterpart contributions are largely in kind, in terms of staff, the provision of office space, and the recurrent costs for fuel, equipment maintenance and consumables, which are already absorbed into the existing budgets of the implementing agency, and should therefore not be a challenge in the future. Finally, the cost-effectiveness of the project is further strengthened through the involvement of CAF as the GEF Implementing Agency and an experienced Executing Agency, together with the National Ministries of Argentina, Bolivia, Brazil, Paraguay and Uruguay. This ensures that an international partner with experience in managing GEF projects is able to support project execution and strengthen the administrative, financial and technical oversight of the project, with priority on efficient execution of funds, achievement of economies of scale, and the maximization of return on project investments.

It is worth mentioning that CAF's role as a Project Implementation Agency could lead to important benefits for the countries, since, at present, it is the main financing institution for infrastructure projects in the region. Therefore, it is considered that the subprojects that arise from the present could initiate an immediate management of financing for the benefit of the member countries of the La Plata Basin.

5.2 TECHNICAL ANALYSIS

The project is considered to be technically sound, for several reasons:

- The Project will be coordinated by the CIC - La Plata Basin Intergovernmental Coordination Committee that guarantees the participation and consideration of the interests of the five member countries. In addition, the institutional reinforcement of the coordination frameworks will be enhanced by the participation of the National Ministries with direct responsibility in the environmental problems included, National Coordinators and Thematic Groups

- The Project is oriented to set the basis for the implementation of the SAP agreed upon by the countries as a results of the previous GEF-UNEP foundational project (the “Programa Marco”), which had the following key characteristics:

  It was carried out on the basis of the direct participation of more than 1500 experts representing more than 150 institutions from the five countries that implement policies on water and sanitation, environmental sustainability, agriculture, urban areas, hydroelectricity and navigation; the realization of 212 events with more than 4000 participants.

  The technical and institutional contributions of the countries for the development of the project activities included 14 Working Groups, covering the themes established in the Project associated with water resources management, variability and climate change and sustainable development.

  Four Demonstrative Pilot Projects, 12 Public Participation Projects and replicability of the Cultivating Good Water Program in 6 micro basins were included in the area of influence of the three binational hydroelectric plants in La Plata Basin.

  The members of each Working Group, based on the realities of their respective institutions and the policies established in each country, accompanied by the Implementation Coordination, implemented the process of updating the Transboundary Diagnostic Analysis (TDA) Developed from the outset based on the consensus of the countries.

- The project includes preparatory tasks that are considered essential for the implementation phase of the SAP, as: Consolidating Regional Cooperation, Facilitating National Actions and Communication and Dissemination.

5.3 FINANCIAL MANAGEMENT

All activities related to financial management will follow the Financial Procedures Agreement (inclusive of all annexes) between the Development Bank of Latin America (CAF) and the International Bank for Reconstruction and Development (IBRD) as Trustee of the Global Environmental Facility Trust Fund (GEFTF), signed on September 28th, 2015. This agreement contains provisions for project operations to meet and exceed all internationally-accepted financial and fiduciary management standards, to be evidenced in annual, final independent audits, and other periodic audits of the project accounts, as may be necessary. Staff of the project's executing agency that are involved in the day-to-day management of project resources will be trained in financial management policies consistent with the provisions of the above-mentioned agreement, during and after the Project's Inception.

5.4 PROCUREMENT

All activities related to procurement will follow the Procurement Policies of CAF as defined in the Procurement and Contracting of Goods, Services and Works Manual, published on March 17th, 2015 by the Directorate of Physical Infrastructure, Logistics, and Administration, Version MN/DIOFLA 038 of February 2016. These policies contain provisions for operations to meet and exceed all internationally-accepted financial and fiduciary management standards, to be evidenced in annual and final independent audits of the project's procurement and disbursement processes. Staff of the project's Implementing Agency that are involved in the day-to-day management of project resources will be trained in CAF's procurement policies as described above and in procurement planning during and after the Project's Inception.

5.5 ENVIRONMENTAL AND SOCIAL (INCLUDING SAFEGUARDS)

The implementation of project activities will be in accordance the Environmental and Social Safeguards for CAF/GEF Projects Manual, Version 1 of May 2015. The Project is classified as Category D, according to the Guidelines and Procedures on Environmental and Social Safeguards for CAF/GEF Projects Manual. For more information see Annex VI and Annex VII.

Thus, CAF will not require any environmental and social assessment, although environmental implications need to be reviewed in the next phase of implementation.

ANNEX I: PROJECT RESULTS FRAMEWORK

Project Development Objective: To set the scene for the implementation of the priority national and regional actions identified in the Strategic Action Program (SAP), agreed upon by the countries sharing the La Plata Basin and aimed at improving water security, climate resilience and ecosystem health. It will do so by fostering the consolidation of regional cooperation, the alignment of national and regional priorities, and by promoting the integration across sectors and funding sources.

The Results are:	At the project level			
Project Outcome Indicators				
Component	Outcome	Indicator	Baseline	End of Project Target
1. Consolidating Regional Cooperation	1.1 Strengthened capacity of the Basin countries and of the CIC to coordinate actions throughout the Basin.	Coordination mechanism involving all SAP Strategic Areas and all countries of the Basin established within the framework of CIC.	As part of the GEF IW foundational project the countries of the Basin established and successfully operated multi-country Thematic Groups as means to achieve coordination in the preparation of the SAP. These Groups were however not active after the end of the project.	All countries participate to the coordination mechanisms for the implementation of the SAP put in place within the framework of the CIC.
2. Facilitating National Actions	2.1 Harmonization of national policies and plans with SAP priorities.	Countries include SAP priority actions of national relevance in their development plans and strategies.	SAP vision and priority actions have been approved by technical and political country representatives in the CIC governing body. The integration of the SAP priorities into national development plans has however not yet been achieved.	National documents, showing integration into national development plans of SAP priorities related to transboundary cooperation actions, prepared by all project countries and submitted for approval to national authorities.
3. Dissemination and outreach	3.1 Countries and all major stakeholders interacting in the Basin join forces and resources to	Additional partners and sectors willing to join in SAP implementation.	Notwithstanding notable achievements in cross-sectoral cooperation obtained in the pilot	At least two project countries willing to share their GEF STAR resources

	advance sustainability and climate resilience and gender equality in the Basin.		projects during the previous foundational project, awareness among stakeholders, both at national and international levels, on SAP vision and priority actions is still limited. This hinders broad participation to, and partnerships for SAP implementation across sectors and ODA providers.	for SAP priority actions related to biodiversity and/or land degradation.

Project Output Indicators						
Outcome	Output	Indicator	Baseline	End of Project Target	Verification Source	Responsibility
1. Strengthened capacity of the Basin countries and of the CIC to coordinate actions throughout the Basin.	1) Within the CIC framework, consolidation of the high level of cooperation achieved during the TDA-SAP process through the multi-country Thematic Groups by institutionalizing their role for the implementation of the SAP's different components and projects.	Number of Thematic Groups established	Thematic Groups that were active during the previous GEF IW foundational project have been inactive since the end of the project. No multi-country cross sectoral technical cooperation presently exists within the CIC context.	Thematic Groups established by CIC for all SAP priority Strategic Areas.	Minutes of the meeting of the CIC country representatives establishing the Thematic Groups for the implementation of the SAP.	CIC, National Coordinators
	2) The Decision-making Support System (DSS) developed during the	Number of countries contributing to the optimization and	LPB-DSS operationalized with 6 nodes (Countries + CIC)	Streamlined DSS database, including software enhancement,	DSS interface	CIC, National Coordinators

	foundational project consolidated and expanded as a support tool for regional coordination and the integrated management of water resources in the context of climate variability and change.	operation of the Decision Support System.	GEF LPB geo-referenced information partially uploaded to the DSS. Hydro-meteorological data of Brazil and Uruguay available in LPB-DSS. Regional project documents (Guarani and Bermejo) uploaded to the DSS	completed, and missing data (groundwater, water quality, biodiversity) and selected country contributions uploaded into the DSS. Hydro-meteorological data of all the 5 countries available from the LPB-DSS.		
2. Harmonization of national policies and plans with SAP priorities	3) SAP priorities and vision incorporated into national develppment plans reconciling regional with national priorities.	Number of national documents showing integration of SAP priorities prepared and ready for submission to countries' authorities.	The SAP has been adopted by the CIC countries, but not yet integrated into national planning instruments.	National documents prepared for all project countries and submitted to country authorities for approval.	National documents submitted to relevant country authorities.	National Coordinators, with inputs from CIC (Thematic Groups)

3. Countries and all major stakeholders interacting in the Basin join forces and resources to advance sustainability, climate resilience, and gender equality in the Basin.	4) Structured dialogue on SAP priorities among countries and major basin stakeholders and sectors promote consensus on SAP targets and indicators.	Number of SAP Strategic Areas for which targets and indicators of progress to impact have been agreed upon by basin stakeholders.	SAP does not indicate specific targets or timelines for achievement of SAP Vision.	Targets and indicators defined for at least four SAP Strategic Areas.	Final Report on Stakeholders Dialogues on SAP priorities.	CIC, (Thematic Groups), National Coordinators

	5) TDA findings and SAP priorities disseminated through awareness raising face to face and online events.	Number of events and of participants	The Basin's inhabitants are not aware of the state of the Basin, the impacts of climate variability and change, and of the priority actions identified by the SAP for reversing degradation trends.	At least one major event in each project country, using audio visuals and other dissemination materials;	Final report on the project's dissemination activities and the CIC website.	CIC, National Coordinators
	6) Training short courses on gender analysis and sex disaggregated data collection at country level.	Number of short courses and of participants.	While the importance of gender consideration and equality in water management and supply is recognized by all project countries, capacity is still lacking in the operationalization of corrective measures due to lack of data and analytical capacity.	Trainings implemented in all project countries.	Training reports and materials.	CIC, National Coordinators
	7) Upgrading of the CIC website, and participation to IW LEARN activities.	Upgraded CIC website fully operational. Number of IW LEARN activities to which the project has participated.	CIC online dissemination systems only partially developed and utilized.	Full participation to IW LEARN activities; CIC website upgraded.	CIC and IW LEARN websites	CIC

ANNEX II: DETAILED PROJECT DESCRIPTION

Based on the approved the Strategic Action Program (SAP) for the Plata Basin, which consolidates the outcomes and priority recommendations emerging from the project, the countries decided to pursue further assistance from the GEF in order to accelerate the implementation of the SAP. In line with this decision, the Plata Basin countries approved the further development of the medium sized project structured in 3 components:

omponent 1: *Consolidation of regional cooperation*.

Component 2: *Facilitating National Actions*

Component 3: *Dissemination and Outreach*

During the preparation of the project it has been a key approach to build strong relations between these three project components, aimed at increasing synergies, stronger feedback and validation of expected outputs and results, as well as to boost the interaction between the stakeholders involved. This means that although activities and results will mostly have a normal/classic sequence in each component, they will provide/receive (accordingly) strong feedback and updating from the results achieved by the activities on the ground and through strong participation and discussion with and between national and regional stakeholders. This synergy seeks to ensure that the La Plata Basin will have a strong technical basis in terms of relevance, objectivity and argumentation to the future SAP implementation strategy and its investment instruments.

Component 1 will strengthen capacity of the Basin countries and the CIC to coordinate actions throughout the Basin. Within the CIC framework, it will consolidate the high level of cooperation achieved during the TDA-SAP process through the multi-country Thematic Groups by institutionalizing their role for the implementation of the SAP's different components and projects. The Decision-making Support System (DSS) developed during the foundational project will be also consolidated and expanded as a support tool for regional coordination and the integrated management of water resources in the context of climate variability and change, and as early warning system.

Component 2 will reconcile SAP regional priorities within a national action plans. SAP implementation is in the interest of the Basins' counties as they seek management mechanisms promoting transboundary cooperation for the sustainable development of the shared water and other natural resources. SAP implementation will hence require blending regional with national interventions and will have to involve not just the water sector, but also other sectors. In fact, water security, protection of ecosystem health and biodiversity, energy production, soil conservation, resilience to climate variability and change are all in a number ways controlled by the availability of water resources of sufficient quantity and quality. Full participation of, and consultations among countries' governments and of major stakeholders, a concept and a practice accepted and encouraged in the Basin by means of law and international agreements, and largely applied during the previous phases of GEF support, is recognized as crucial for the implementation of the SAP priority actions as part of national plans and policies, and will be fully applied by governmental entities and other relevant organizations as a means to achieve the Component's objectives. The Thematic Groups, in consultation with other governmental and non-governmental stakeholders and civil society organizations, will support national governments in the harmonization of the SAP strategic priorities throughout the Basin's various sectors in the effort to breakdown SAP requirements into national and local actions and to identify priority policy, legal, institutional measures, including investment needs for meeting the agreed SAP targets.

Component 3 will allow countries and all major stakeholders interacting in the Basin join forces and resources to advance sustainability and climate resilience in the Basin. It will include structured dialogues on SAP priorities among countries and key basin stakeholders and sectors promoting consensus on SAP targets and indicators at basin level. The SAP vision and recommendations will be translated into simple language for dissemination among the Basin's inhabitants, and decision makers at the local level. Outreach and consultation events will be organized by CIC with the aim of fostering synergies with and among GEF focal areas, multilateral and bilateral donors, and development assistance providers and the major multilateral environmental agreements. Moreover, it will include short courses on "Water and Gender" in all Basin countries to promote sex disaggregated data collection and women's empowerment as part of SAP implementation. The project will also share with the IW community and the public at large its advancements and achievements through the enhanced CIC website, and by participating to IW LEARN online and face to face activities and events.

ANNEX III: SUMMARIZED PROJECT IMPLEMENTATION SCHEDULE

Component/Output-Objective/Activities	**Implementation (in semesters)**		
	S1	**S2**	**S3**
Component *1: Consolidation of regional cooperation* Expected Outcome: Strengthened capacity of the Basin countries and the CIC to coordinate actions throughout the Basin.			
Objective/Output 1): Within the CIC framework, consolidation of the high level of cooperation achieved during the TDA-SAP process through the multi-country Thematic Groups by institutionalizing their role for the implementation of the SAP's different components and projects.			
Activities			
• Select the priority issues of the SAP and identify the priority projects for its implementation;			
• Promote activities of the Thematic Groups in the context of CIC as a means to coordinate hydro-environmental and climate change policies at the regional level of the Basin, consolidating cross-border cooperation;			
• Strengthen the management of the CIC by promoting its coordinating role of technical activities in the field of hydro-environment and climate.			
Objective/Output 2): The Decision-making Support System (DSS) developed during the foundational project consolidated and expanded as a support tool for regional coordination and the integrated management of water resources in the context of climate variability and change.			
Activities			
• Consolidate the LPB-DSS thematic group, optimizing its operation through the appropriate tools.			
• Strengthen the LPB-DSS incorporating the technological tools to optimize its operation, for example communication protocol, definition of minimum information parameters, use of software, etc.			
• Development of tools to incorporate impacts of climatic variability and change, in particular for considered floods and droughts extreme events, into basin planning processes, generating synergy with a GEF project UNEP-IWA-DHI.			
• Expand the integration of hydro-meteorological information for the Hydrological Warning Systems in the LPB-DSS for generating a common regional framework database.			
• Consolidate the cartographic information available in the LPB-DSS, promoting the exchange and coordination among the responsible bodies from each country. Strengthening and expanding the LPB-DSS digital library containing studies, macro and micro-regional and territorial plans, national water resources plans, and catalogue of legislation and legal frameworks for shared management of water resources, among other topics.			

Component 2: Facilitating National Actions Expected Outcome: Harmonization of national policies and plans with SAP priorities.			
Objective/Output: 3): SAP priorities and vision inform national action plans, reconciling regional with national priorities.			
Activities			
• Define of a general/common methodology for dialogues in all countries to prepare the national documents related with SAP, considering specific characteristics of each country in an institutional organization and procedures: (i) general/common methodology (ii) country-specific methodologies (iii) special adaptations for each of the SAP strategic areas			
• Prepare the analysis of the compatibility of SAP actions in each country, following the agreed methodology, and considering: o National plans and policies o Agreements, Treaties, Cooperation Agreements, Statutes of Institutions, regional, bi or multilateral in the region o International Conventions, Treaties or Agreements			
• Prepare the national documents related with SAP and ready for submission to country 'authorities. Proposals will be developed the country level with the relevant institutions. Consolidate an integrated document at basin level, consolidating the national results.			
Component *3: Dissemination and Outreach* Expected Outcome: Countries and all major stakeholders interacting in the Basin join forces and resources to advance sustainability and climate resilience in the Basin.			
Objective/Output 4): Structured dialogues on SAP priorities among countries and key basin stakeholders and sectors promote consensus on SAP targets and indicators.			
Activities			
• Organized the structured dialogues with a on SAP priorities among countries and key basin stakeholders and sectors promote consensus on SAP targets and indicators			
• Consolidate the SAP common targets and indicators, with consensus at basin level.			
Objective/Output 5): Awareness raising events on, and online dissemination of TDA findings and SAP priorities.			
Activities			
• Prepare a dissemination material (audio-visuals, documents and others) considering the support of IWLearn			
• Organize national face-to-face events plus online activities, amount others communications actions for dissemination of TDA findings and SAP priorities.			
Objective/Output 6): Training short courses on gender analysis and sex disaggregated data collection atcountrylevel.			
Activities			

• Organize at country level training short courses on gender analysis and sex disaggregated data collection and consolidate a basin level report.			
Objective/Output 7): Upgrading of the CIC website, and participation to IW LEARN activities			
Activities			
• Complete the CIC website with dissemination material on TDA finding and SAP priorities as well as the operational DSS. Participate to IW LEARN activities.			

ANNEX IV: IMPLEMENTATION ARRANGEMENTS

The institutional structure of the project will consist of four main actors:

(i) The Steering committee (SC): senior decision-making authority for the implementation of the project composed of representatives to the countries, the CIC Secretary General, the Implementing Agency (CAF).

(ii) Project Coordination Unit (PCU): composed of the Project Director (CIC General Secretary) and the Technical Coordination team, and supported by the National Coordinators –nominated by each country government.

(iii) Thematic Groups: organized for each SAP Strategic Area, composed by one technical representative per country (five representatives per Group), will act under the oversight of the Project Director (see Project Results Framework, Annex 1) and in coordination with the PCU and NPUs.

(iv) National Project Units (NPU): Inter-ministerial working groups responsible for the implementation of the project activities in each country, made up of all the representatives to the Thematic Groups of each country, led by the National Coordinators.

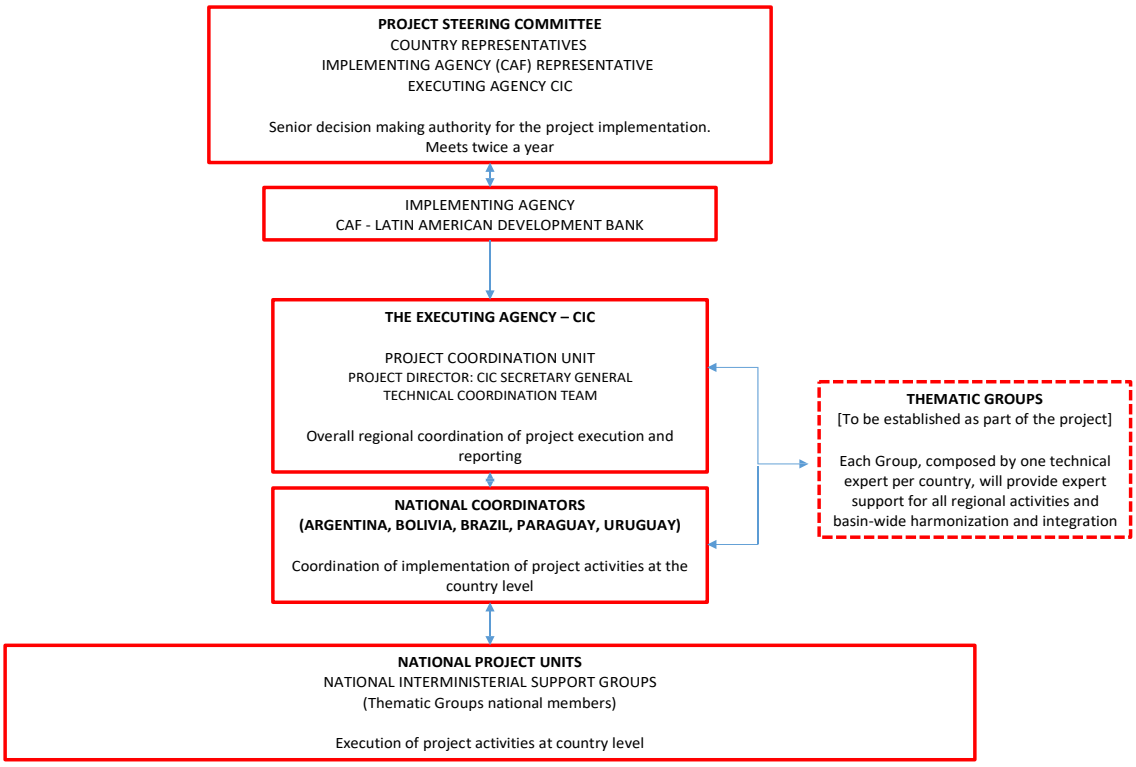
CAF, as the GEF Implementing Agency (IA), will be responsible for overall project supervision to ensure consistency with GEF and CAF policies and procedures, and will provide guidance on linkages with related CAF and GEF-funded activities. The CAF GEF Coordination will monitor implementation of the activities undertaken during the execution of the project and will provide technical and administrative oversight. It will be responsible for clearance and transmission of financial and progress reports to the GEF. CAF retains responsibility for review and approval of the substantive and technical reports produced in accordance with the schedule of work.

CIC is according to the La Plata Basin Treaty, the organization designated to coordinate the implementation of basin-wide programs. This project will ensure that its regional coordination mandate is to be strengthened. CIC will be specifically charged with the enhancement of the Decision Support System (DSS) for the Integrated Management of the Water Resources in the La Plata Basin, which includes the Digital Base Map for the Basin, and will be involved in all Project activities.

The Project Coordinating Unit (PCU), hosted at the CIC, will (i) coordinate and supervise daily project operations in close consultation with CAF and with the support of the National Project Units – NPUs, and of the Thematic Groups; (ii) elaborate detailed terms of reference for project activities, review progress and technical reports according to the overall work plan and its schedule of work, prepare overall progress and financial reports for submission to the IA; (iii) prepare annual detailed budgeted work plan in accordance with the GEF approved project documentation and M&E plan; (iv) ensure adequate coordination with on-going GEF and other initiatives in the region to ensure relevant synergies.
The local execution of the project in each of the LPB countries will be done by national institutions under the coordination of the National Project Units (NPUs), led by the National Coordinator and composed by inter-ministerial working groups.

The Steering Committee (SC) will be established as the highest authority in the decision-making for the conduct of the project. The SC will be responsible for implementation oversight and will decide on the yearly project work plan and budget in accordance with GEF approved project documentation. The SC will include:

- The Representatives from each of the five riparian countries;
- A representative of CAF, acting on behalf of the GEF Implementing Agency; A representative of the Executing Agency;
- The PCU, acting as Secretariat for the meetings.
- The Secretary General of the CIC will chair the SC meetings.



ANNEX V: MONITORING AND EVALUATION

The Project s Results Framework presented in Annex A includes SMART indicators for the expected outcome and end-of-project targets. These indicators along with the key deliverables and benchmarks will be the main tools for assessing project implementation progress. The means of verification are summarized in the log frame. M&E related costs are presented in the costed M&E Plan. These costs are integrated in the overall budget of the project.

Type of M&E activity	**Responsible Parties**	**Budget US$** *Excluding project team Staff time*	**Time frame**
Inception Workshop	• PCU	None	Within first two months of project start up
Inception Report	• PCU and Executing Agency	None	Immediately following workshop
Measurements of Means of Verification for Project Progress and Performance (measured on an annual basis)	• PCU • Executing Agency		Annually
APR and PIR	• PCU and Executing Agencies • CAF	None	Annually

Final External Evaluation	• PCU • CAF • External Consultants	15,000	At the end of project implementation
Terminal Report	• PCU	None	At least one month before the end of the project
Lessons learned	• PCU • External Consultants as required	3,000	Yearly
Audit	• PCU • External Auditor	2,000	Yearly
Total Indicative Cost - *Excluding project team staff time and CAF staff and travel expenses*		20,000	

ANNEX VI CAF´S ENVIRONMENTAL AND SOCIAL PRELIMINAR ASSESSMENT.

Name of the operation	*PREPARING THE GROUND FOR THE IMPLEMENTATION OF THE LA PLATA BASIN STRATEGIC ACTION PROGRAM*
Country	Argentina, Bolivia, Brazil, Paraguay, Uruguay
Analysis Date	22/02/2018
Responsible and business operation area	Mauricio Velásquez, Responsable Salvaguardas GEF-CAF
UNV Regional Coordinatior	René Gomez–García Palau

Operation Type

AREA	Operation Type
	a
Electric Power	☐ Large-scale hydroelectric generation ☐ Thermoelectric generation ☐ Nuclear generation ☐ Others (specify)
Water and sanitation	☐Macro-drainages ☐ Drinking water reservoirs ☐ Use of watersheds ☐ Transport between river basins ☐ Others (specify)

Transport	Construction of: □ Primary roads □ Secondary roads □ Rural and / or tertiary roads □ Railroads □ Metro □ Superficial fast transport systems □ International and national airports □ Maritime and river ports □ Urba|n roads of wingspam □ Others (specify)
Agriculture, livestock and fishing	□ Large-scale irrigation and drainage □ Large-scale agriculture □ Large-scale aquaculture □ Forestry □ Large-scale agro-industrial projects (e.g., industrial plantations for biofuels □ Medium to large-scale cattle raising □ Others (specify)

Environment	□ Facilities for the management of solid and / or hazardous waste □ Forestry production □ Others (specify)
Hydrocarbons	□ Exploration □ Production □ Transport through pipelines □ Refining □ Others (specify)
Mining Development	□ All
Others	□ Specify
AREA	**Operation Type**
	b
Electric Power	□ Rural transmission / electrification □ Medium and small scale hydroelectric generation □ Generation through the use of biomass □ Other (specify)
Water and sanitation	□ Water and / or wastewater treatment plants □ Water transport and distribution networks □ Public sewage □ Others (specify)
Transport	Rehabilitation of: □ Secondary roads □ Rural and / or tertiary roads □ Urban roads □ Others (Airport Modernization)

Agriculture, livestock and fishing	☐ Irrigation and drainage (small scale) ☐ Aquaculture and mariculture (small scale) ☐ Others (specify)
Environment	☐ Medium and small facilities to recycle solid residue ☐ Others (specify)
Hydrocarbons	☐ Distribution of residential gas ☐ Others (specify)
Turism	☐ Medium and large scale tourism infrastructure ☐ Urban revitalization and improvement.
Others	☐ Operations that generate significant electromagnetic fields (specify). ☐ Ecotourism.
AREA	**Operation Type**
	c
Electric power	☐Generation by wind, sun and with other alternative sources to fossils and hydric ☐Comercial distribution of electric power ☐Others (specify)
Telecomunications	☐ Projects that involve the use of optical fiber and minimum generation of electromagnetic fields ☐ Others (specify)
Health	☐ Health programs ☐ Health infrastructure (hospitals) ☐ Others (specify)
Education	☐ Education programs ☐ Infrastructure (schools) ☐ Others (specify)
Environment	☐ Integral management of watersheds ☐ Integral management of protected areas ☐ Restoration of degraded natural areas ☐ Others (specify)
Others	☐ Ecotourism ☐ (specify)
AREA	**Operation Type**
	d
Others	☐ Operations without environmental and social implications ☐ Institutional development. ☒ Advisory services (studies, research, project structuring and management)

Operation Type	IMPLICATION

a	Project that may generate multiple, complex, and significant environmental and social impacts
b	Project that may generate a medium impact, that may significantly affect some characteristics of the natural and/or socio-economic, cultural, and institutional systems
c	Project that may generate non-significant environmental and social impacts
d	Project that probably does not generate relevant environmental or social impacts

Sensibility of the Environment

SYSTEM	SENSIBILITY OF THE ENVIRONMENT High (1)
Physical	☐ Region with uneven relief (> 35% slope) ☐ Region with high seismic activity and active geological faults ☐ Region subject to the El Niño or similar phenomena ☐ Region under the influence of volcanic activity ☐ Region subject to the action of hurricanes and similar meteorological phenomena of great intensity ☐ Region with a high erosive capacity ☐ Region subject to extensive and frequent flooding ☐ Region with strategically important water sources
Biological	☐ Region with coral communities ☒ Region with marine or continental wetlands, in lowlands or highlands, permanent or seasonal ☐ Region with primary or secondary forests with a high successional development ☐ Region with exceptional ecosystems ☒ Region with national, regional, or local protected natural areas ☐ Region with species in danger of extinction ☐ Region with endemic species ☐ Region with paleontological value, with or without legal
Socio-economic, cultural, and institutional	☐ Region with archaeological value, with or without legal protection ☐ Region with historic value, with or without legal protection ☐ Region with indigenous populations or other ethnic minorities, with or without legally protected territories ☐ Region with armed conflicts ☐ Region with conflicts due to access to natural resources and/or their use ☐ Region with populations subject to resettlement ☐ Region with uses that are incompatible with the project's goals ☐ Region with low or very low levels of social equipment

SYSTEM	SENSIBILITY OF THE ENVIRONMENT Moderate (2)
Physical	☐ Región with slightly rolling to flat relief (<15% slope) ☐ Region with moderate seismic activity and active geological faults X Region with moderate erosive capacity X Región subject to extensive occasional flooding
Biologic	☐ Region with secondary forests with medium or low successional development ☐ Region with herbaceous or shrub vegetation, natural and/or with a moderate geographic distribution
Socio-economic, cultural, and institutional	☐ Region with undefined use X Region with a medium level of social equipment

SYSTEM	SENSIBILITY OF THE ENVIRONMENT Low (3)
Physical	X Region with slightly rolling to flat relief (<15% slope) ☐ Region without frequent extreme climate phenomena ☐ Region with very low or no seismic activity and active geological faults ☐ Region with low or no erosive capacity ☐ Region without flooding
Biologic	☐ Region ith herbaceous or shrubby vegetation, intervened and/or wide geographic distribution
Socio-economic, cultural, and institutional	☐ Region with high or very high levels of social equipment ☐ Region with alternative uses or in agreement with the project's goals

SENSIBILITY OF THE ENVIRONMENT	DESCRIPTION
☐ High (1)	Corresponds to an environment with a high potential for effects resulting from the actions of an activity or project.
X Moderate (2)	Corresponds to an environment with an intermediate potential of being affected as a result of the actions of an activity or project.
☐ Low (3)	Corresponds to an environment with a small potential of being affected by the actions of an activity or project.

Environmental and Social Risk

SENSIBILITY OF THE ENVIRONMENT	TYPE OF PROJECT			
	a	b	c	d
1	1a ☐	1b ☐	1c ☐	1d ☐

2	2a ☐	2b ☐	2c ☐	2d ☑
3	3a ☐	3b ☐	3c ☐	3d ☐

☐ *Category A. High environmental and social risk: 1a, 1b o 2a*
☐ *Category B. Moderate environmental and social risk: 3a, 2b o 3b*
☐ *Category C .Low environmental and social risk: 1c, 2c o 3c*
☒ *Category D. Without environmetal and social risk: 1d, 2d o 3d*

Therefore, it is concluded that this Project is categorized as **2d, "Without Environmental and Social Risk".**

ANNEX VII. GENDER RISK ANALYSIS

Preliminar Gender Analysis for Project/Program Operations

Operation Name	*PREPARING THE GROUND FOR THE IMPLEMENTATION OF THE LA PLATA BASIN STRATEGIC ACTION PROGRAM*
Country	Argentina, Bolivia, Brazil, Paraguay, Uruguay
Client	GEF´s Operational Focal Points of Argentina, Bolivia, Brazil, Paraguay, Uruguay
Date	28.02.2018
Executive UIEG	Elena Cardona

OPERATION TYPE (OT)

Project Type	Characteristics
Category A	Those which by their objectives and components can help transform gender relations and to reduce existing inequalities. Projects with potential to transform unequal gender relations to promote the power, control and access to resources and shared decision-making, and support the empowerment of women
Category B	Those which by their objectives and components can be gender sensitive and help to reduce existing inequalities. Projects in which it will be necessary to address standards and gender roles, as well as access to assets and resources as they are necessary to achieve the objectives of the Projects.
Category C	Those which by their objectives and components are not able to introduce the gender perspective.

Category a	Operation(*)

Water and Treatment	-Water purification and water supply and sanitation programs in rural areas or small communities - Institutional strengthening programs for the water and sanitation sector (public administration, service providers, etc.) - Irrigation programs (small scale)	
Health	- Institutional strengthening programs for the health sector - Programs for attention and prevention of gender violence - HIV-AIDS care and prevention programs - Maternal and child health - Programs to expand health coverage	
Education	Programas de fortalecimiento de los sistemas educativos Programas de ampliación de cobertura de educación primaria y secundaria, especialmente en el área rural Educación técnica Educación temprana TICs en Educación	
Electric Power	-Electric power transmission / Rural electrification - Small hydroelectric power plants (PCH) - Use of alternative energies (wind, biomass)	
Agriculture and Fishing	-Agricultural development programs - Agribusiness promotion programs (small producers) - Agriculture, aquaculture and mariculture (small scale)	
Environment	- Facilities for recycling solid waste - Operations financed with Green Funds	
Transport	- Transportation safety - Mobility and urban accessibility - Public transport facilities	
Hydrocarbons	-Home gas distribution	
Productive Development	- Business Development Services - Productive financing - Ecotourism, rural and community tourism	
Urban Development	-Improvement of neighborhoods - Recovery of public spaces and public safety measures	
Others	- Institutional development - Community development - Public policies on gender equality - Promotion of mechanisms of gender defense - Social protection programs - Care economy	
Category b		
Water and Treatment	-Plants for the treatment of drinking water and / or wastewater - Transport networks and distribution of drinking water - Public sewer system - Large-scale irrigation projects	
Health	Public infrastructure for health: hospitals, health centers, mobile units, etc.	
Education	Infrastructure for education (school, universities, other centers)	
Urban Development	- Urban Development Programs - Provision of basic services	
Electric Power	Commercial distribution of electric power	

Environment	-Integral management of watersheds - Comprehensive management of protected areas - Restoration of degraded natural areas	**X**

Agriculture and fishing	Agribusiness promotion programs (medium and large producers) Agriculture, aquaculture and mariculture (large / medium scale)	
Transport	Rehabilitation and / or maintenance of: Back roads Rural and / or tertiary roads Urban road Construction and / or opening, reconstruction of: Primary roads Back roads Rural and / or tertiary roads	
Category c		
Electric power	Hydropower generation plants (large scale) Thermoelectric power generation plants Nuclear power generation plants	
Water and Sanitation	Dams and reservoirs for drinking water Use of watersheds Transfer of basins Macro drains	
Transport	Construction and / or opening, reconstruction of: Railways and subways International and national airports Maritime and river ports Large urban roadway	
Agriculture and fishing	Irrigation and drainage (large-scale) Aquaculture and mariculture (large-scale) Agricultural expansion and development Forestry Major agro-industrial projects (e.g., industrial plantations for biofuels)	
Environment	Facilities for solid and / or hazardous waste management Forest production	
Hydrocarbons	Exploration Production Transportation by pipelines Refining	
Mining developments	Everyone	
Others	Specify	

(*) Mark the one that corresponds

Socio-Economic Context (CSE)

On the other hand, the socio-economic context can be divided into three degrees:

Socio-Economic Context	Characteristics
High Vulnerability (1)	It corresponds to a socio-economic and cultural context whose characteristics reflect high levels of gender inequality and / or strong vulnerabilities that affect one of the two genders. The mere presence of one of the variables considered high sensitivity is determinant and cancels the others classified as moderate or low sensitivity.
Moderate Vulnerability (2)	Corresponds to a socio-economic and cultural context whose characteristics reflect levels of gender inequality and / or vulnerabilities that affect one of the two genders.
Low Vulnerability (3)	It corresponds to a medium where the characteristics or degree of current intervention of the physical, natural, economic, social and cultural environment, determine a scarce or no level of involvement by the intervention.

-Areas with armed conflicts or conflicts about use of natural resources - Urban settlements with low levels of social equipment - Areas with population subject to resettlement (> 20 inhabitants) - High consumption of water in areas of low abundance or intensive use of it - High consumption of energy in areas of low abundance or intensive use of it - Areas or settlements with high levels of Unsatisfied Basic Needs - Areas with presence of indigenous communities - Areas with high rate of gender inequality - Areas with high rate of underemployment and informality - Areas with low access to land ownership (by women) - Areas with high rate of poverty among women - Areas with gender violence - Areas with low labor insertion of women - Areas with low schooling of girls and / or high dropout rates - Areas with high rate of maternal and infant mortality - Areas with high rate of child malnutrition	**X**
Moderate Vulnerability (2)	
- Areas with a moderate level of social conflict - Urban settlements with moderate levels of social equipment - Areas with population subject to resettlement (<20 inhabitants) - Moderate consumption of water in areas of low abundance or intensive use of it - Moderate consumption of energy in areas of low abundance or intensive use of it - Areas or settlements with average levels of Unsatisfied Basic Needs - Areas with moderate rate of gender inequality - Areas with moderate rate of underemployment and informality - Zones with moderate level of access to land ownership (by women) - Areas with moderate rate of poverty among women - Areas with low labor insertion of women - Areas with moderate schooling of girls and / or dropout rates - Areas with moderate rate of maternal and infant mortality - Areas with moderate rate of child malnutrition	

Low Vulnerability (3)	
- Urban settlements with high levels of social equipment - Areas with low level of social conflict - Low consumption of water in areas of low abundance or intensive use of it - Low consumption of energy in areas of low abundance or intensive use of it - Areas or settlements with low levels of Unsatisfied Basic Needs - Areas with low rate of gender inequality - Areas with low rate of underemployment and informality - Zones with low level of access to land ownership (by women) - Areas with low rate of poverty among women - Areas with high labor insertion of women - Areas with high schooling of girls and / or dropout rates - Areas with low rate of maternal and infant mortality - Areas with low rate of child malnutrition	

(*) Marcar los que corresponda

Summary

Operation name	TO	CSE
	A	**3**

The Project is applying for financial assistance from the GEF and other funding sources in order to accelerate the implementation of the Strategic Action Plan (SAP). Therefore the *"operation type"* is considered as *"**a**"*.

The socioeconomic context of the Project is moderate. With an average remaining gender gap of around 30%, the Latin America and Caribbean region scores in the middle of the range of the Global Gender Gap Index. The region is home to two of the top 10 fastest-improving countries in the world since 2006: One of them is Bolivia; while Paraguay is one of the lowest-performing countries in the region.

Five of the 24 countries in the region have fully closed their Educational Attainment gender gap and around ten countries have fully closed their Health and Survival gender gaps. The region has made modest but consistent progress across the Economic Participation and Opportunity dimension, although the latin American region continues to rank among the lower performers on this subindex.

Fostering gender equality as part of the proposed project and of the SAP itself. The MSP will also result in identification of compatible uses within the same area of development, reduction of conflicts between incompatible uses, improved capacity to plan for new and changing human activities, including emerging technologies and their associated effects, and promotion of the efficient use of resources and space

Expected mitigation activities are "Training short courses on gender analysis and sex disaggregated data collection at country level, and consolidate a basin level report".

Preliminary Gender Analysis Matrix

Category	Sensitivity to Gender

TO / CSE	a	b	c
1	1a	1b	1c
2	2a	2b	2c
3	3a	3b	3c

- Category I Gender Transformer (1a,1b, 2a)
- Category II Sensible to Gender (3a, 2b, 1c)
- Category III Neutral to Gender (3b, 2c, 3c)

Category Asignated: 1b. Category I (Gender Transformer Project).