



## **Binational and integrated water resources management in the Merín Lagoon Basin and Coastal Lagoons**

### **Part I: Project Information**

#### **GEF ID**

10550

#### **Project Type**

FSP

#### **Type of Trust Fund**

GET

#### **CBIT/NGI**

☐ CBIT

☐ NGI

#### **Project Title**

Binational and integrated water resources management in the Merín Lagoon Basin and Coastal Lagoons

#### **Countries**

Regional, Brazil, Uruguay

#### **Agency(ies)**

FAO

#### **Other Executing Partner(s)**

#### **Executing Partner Type**

**Other Executing Partner(s)**

National Water Directorate (DINAGUA; Uruguay); Agency for the Development of the Lagoon Merín Bay (ALM; Brazil)

**Executing Partner Type**

Government

**GEF Focal Area**

International Waters

**Taxonomy**

International Waters, Focal Areas, Transboundary Diagnostic Analysis, Freshwater, Lake Basin, Climate Change, Climate Change Mitigation, Agriculture, Forestry, and Other Land Use, Climate Change Adaptation, Climate information, Climate resilience, Biodiversity, Protected Areas and Landscapes, Terrestrial Protected Areas, Land Degradation, Sustainable Land Management, Sustainable Agriculture, Improved Soil and Water Management Techniques, Sustainable Pasture Management, Influencing models, Demonstrate innovative approaches, Strengthen institutional capacity and decision-making, Stakeholders, Communications, Public Campaigns, Education, Awareness Raising, Behavior change, Local Communities, Civil Society, Trade Unions and Workers Unions, Academia, Non-Governmental Organization, Community Based Organization, Type of Engagement, Participation, Consultation, Beneficiaries, Gender Equality, Gender results areas, Knowledge Generation and Exchange, Participation and leadership, Capacity Development, Access to benefits and services, Gender Mainstreaming, Sex-disaggregated indicators, Capacity, Knowledge and Research, Enabling Activities, Knowledge Exchange, Knowledge Generation, Innovation, Learning, United Nations Framework Convention on Climate Change, Biomes, Wetlands, Grasslands, Lakes, Rivers, Mainstreaming, Fisheries, Tourism, Agriculture and agrobiodiversity, Pollution, Nutrient pollution from Wastewater, Persistent toxic substances, Nutrient pollution from all sectors except wastewater, Strategic Action Plan Implementation, River Basin

**Rio Markers****Climate Change Mitigation**

Climate Change Mitigation 0

**Climate Change Adaptation**

Climate Change Adaptation 1

**Duration**

60 In Months

**Agency Fee(\$)**

460,750

**Submission Date**

3/23/2020

A. Indicative Focal/Non-Focal Area Elements

Programming Directions	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
IW-3-6	GET	4,850,000	77,113,000
	Total Project Cost (\$)	4,850,000	77,113,000

**B. Indicative Project description summary**

**Project Objective**

To strengthen public and private sector capacities in Brazil and Uruguay for joint and integrated water resource management (IWRM) in the Merin Lagoon Basin, Yaguaron River and Coastal Lagoons, with emphasis on the sustainable and efficient use of water, preservation of ecosystems and their services, and adaptation to climate change, through the development of a Transboundary Diagnostic Analysis and Strategic Action Programme.

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
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Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
1. Transboundary Diagnostic Analysis (TDA) of the Merin Lagoon basin and Yaguaron river	Technical Assistance	<p>1.1. Main transboundary environmental problems identified and agreed upon by both countries in the Merin Lagoon and Yaguaron River, including causes, drivers and impacts.</p> <p><i>Indicator IW 7.1: Level of Transboundary Diagnostic Analysis and Strategic Action Programme (TDA/SAP) formulation and implementation.</i></p> <p><i>Baseline: 1</i> <i>Target: 2</i></p>	<p>1.1.1 Key weaknesses and barriers identified, through participation, environmental, social (gender, ethnicity and youth) and economic assessment, including ecosystem services valuation.</p> <p>1.1.2. Collective and public consultation process carried out through workshops and digital media.</p> <p>1.1.3. Transboundary Diagnostic Analysis formulated - with emphasis on the Yaguaron river problems - supporting participatory natural resource management<sup>[1]</sup>.</p> <p><sup>[1]</sup> Based on the principles of the water /food/ energy/ land nexus, and Integrated Watershed and Coastal Area Management.</p>	GET	320,000	1,718,000

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
2. Design of a Strategic Action Programme (SAP) for the Merin Lagoon Basin and Yaguaron river	Technical Assistance	2.1. The existing cooperation mechanism (Joint Commission for the development of the Merin Lagoon Basin) and participatory national organs (Merin Lagoon Basin Commission in Uruguay and the Merin Lagoon Agency in Brazil) are strengthened to enable integrated and effective regional cooperation and management of the Lagoon and Yaguaron river.	<p>2.1.1. Analysis for the alignment of legislative instruments (national and sub-national) and institutional frameworks for water and land governance and tenure.</p> <p>2.1.2. System for data generation and management, information and knowledge between countries for an integrated and participatory water resources management.</p> <p>2.1.3. Inventory and development of common criteria for the design, operation and regulation of water infrastructure and promotion of nature-based solutions (NBS) for conservation, sustainable use, restoration of natural resources and ecosystem services, and mitigation of undesired impacts.</p> <p>2.1.4. Common criteria developed for the design and implementation of the Ecosystem Approach to Fisheries (EAF) applied to artisanal fisheries.</p> <p>2.1.5. Capacity strengthening programme for relevant stakeholders in national and regional governments and other relevant actors to plan and develop prioritized actions (supported by IW - LEARN).</p> <p>2.1.6. Regional offices strengthened for the bi-national management of Merin Lagoon Basin and Yaguaron river.</p>	GET	886,806	28,104,000
		<i>Indicator IW 7.1: Level of Transboundary</i>	2.2.1. Decision-making system based on participation, integration and dissemination of data and information, their analysis and planning.			

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
3. SAP implementation	Technical Assistance	<p>3.1. Benefits of integrated basin management demonstrated as the first stage of SAP through the implementation of pilot projects</p> <p><i>Indicator IW 7.1: Level of Transboundary Diagnostic Analysis and Strategic Action Programme (TDA/SAP) formulation and implementation:</i></p> <p><i>Baseline: 1.</i> <i>Target: 4</i></p>	<p>3.1.1. Water efficient and sustainable and climate-smart agriculture practices adopted</p> <p>3.1.2. Reduced contamination of the basin's water resources from municipalities located in the Yaguaron river watershed</p> <p>3.1.3. Tourism and fishery development programme in place for the Merín Lagoon, its tributaries (Yaguaron river mainly) and coastal lagoons.</p> <p>3.1.4. Common regulatory framework established to coordinate: i) water demand and supply mechanisms; ii) community integration; iii) tourism and food routes based on sustainable fishery and quality water.</p> <p>3.1.5. Monitoring programme established for water quantity and quality in the Merín Lagoon basin, Yaguaron river, and coastal lagoons</p> <p>3.1.6. Hydrodynamic model created for the Merín Lagoon and tributaries (Yaguaron river mainly)</p> <p>3.1.7. Identification of degraded lands and proposal for recovery</p> <p>3.1.8. Wetland monitoring system established</p>	GET	3,125,530	41,554,350



Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
4. Project Monitoring, Communication and Evaluation	Technical Assistance	<p>4.1. Relevant project stakeholders learned about the benefits of pilot activities and integrated basin management.</p> <p>4.2. M&amp;E programme is developed and implemented.</p> <p>4.3 Knowledge shared between Brazil, Uruguay, other countries and GEF IW projects in partnership with IW-LEARN</p> <p><i>Indicator IW 7.4: level of engagement in IW LEARN through participation and delivery of key outputs: Baseline: 1.</i></p>	<p>4.1.1. Communication, education and awareness plan on the outcomes, supporting the activities of the project developed.</p> <p>4.2.1. Continuous monitoring of project activities, knowledge and results.</p> <p>4.2.2. Mid-term review and final project evaluation.</p> <p>4.3.1 Website in line with IW: LEARN guidance updated, with integrated environmental and socio-economic information.</p> <p>4.3.2 Officials of both governments participate in IW LEARN training/twinning events.</p> <p>4.3.3 Production of at least one experience note and one results note in IW-LEARN.</p>	GET	286,712	1,881,000

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
Sub Total (\$)					4,619,048	73,257,350
Project Management Cost (PMC)						
GET					230,952	3,855,650
Sub Total(\$)					230,952	3,855,650
Total Project Cost(\$)					4,850,000	77,113,000

**C. Indicative sources of Co-financing for the Project by name and by type**

<b>Sources of Co-financing</b>	<b>Name of Co-financier</b>	<b>Type of Co-financing</b>	<b>Investment Mobilized</b>	<b>Amount(\$)</b>
Government	Ministry of Regional Development (Brazil) - ALM	In-kind	Recurrent expenditures	3,000,000
Government	Federal University of Pelotas (Brazil) - ALM	In-kind	Recurrent expenditures	2,000,000
Government	National Water Agency (Brazil)	Public Investment	Investment mobilized	1,750,000
Government	National Department of Infrastructure and Transportation (Brazil)	Public Investment	Investment mobilized	7,500,000
Government	Government of the State of Rio Grande do Sul (Brazil)	Public Investment	Investment mobilized	23,010,000
Government	Government of Uruguay	In-kind	Recurrent expenditures	39,853,000

**Total Project Cost(\$)**    **77,113,000**

**Describe how any "Investment Mobilized" was identified**

Brazil: The co-financing has been estimated considering the following: • Resources included in the PAC (Growth Acceleration Programme) to be used in the Merín Lagoon dredging, the preparation of Nautical Graphics and the Signage • Investment budget lines of the Strategy for Development of the State of Rio Grande do Sul. By CEO endorsement, the Government of Brazil will provide more detailed informed on how the investment mobilized was identified and will issue the related co-financing letters. Kindly consider this as preliminary information.

D. Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
FAO	GET	Regional	International Waters	International Waters	4,850,000	460,750	5,310,750
Total GEF Resources(\$)					4,850,000	460,750	5,310,750

E. Project Preparation Grant (PPG)

PPG Required

☐

PPG Amount (\$)

150,000

PPG Agency Fee (\$)

14,250

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
FAO	GET	Regional	International Waters	International Waters	150,000	14,250	164,250
Total Project Costs(\$)					150,000	14,250	164,250

## Core Indicators

**Indicator 7 Number of shared water ecosystems (fresh or marine) under new or improved cooperative management**

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
<b>Shared water Ecosystem</b>	Merin			
<b>Count</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Indicator 7.1 Level of Transboundary Diagnostic Analysis and Strategic Action Program (TDA/SAP) formulation and implementation (scale of 1 to 4; see Guidance)**

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Merin	2			<input type="checkbox"/>
<b>Select SWE</b>				

**Indicator 7.2 Level of Regional Legal Agreements and Regional management institution(s) (RMI) to support its implementation (scale of 1 to 4; see Guidance)**

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Merin	4			<input type="checkbox"/>
<b>Select SWE</b>				

**Indicator 7.3 Level of National/Local reforms and active participation of Inter-Ministeral Committees (IMC; scale 1 to 4; See Guidance)**

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Merin	4			<input type="checkbox"/>
<b>Select SWE</b>				

**Indicator 7.4 Level of engagement in IWLEARN through participation and delivery of key products(scale 1 to 4; see Guidance)**

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Merin	3			<input type="checkbox"/>
<b>Select SWE</b>				

**Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment**

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	2,000			
Male	2,000			
Total	4000	0	0	0

## **Part II. Project Justification**

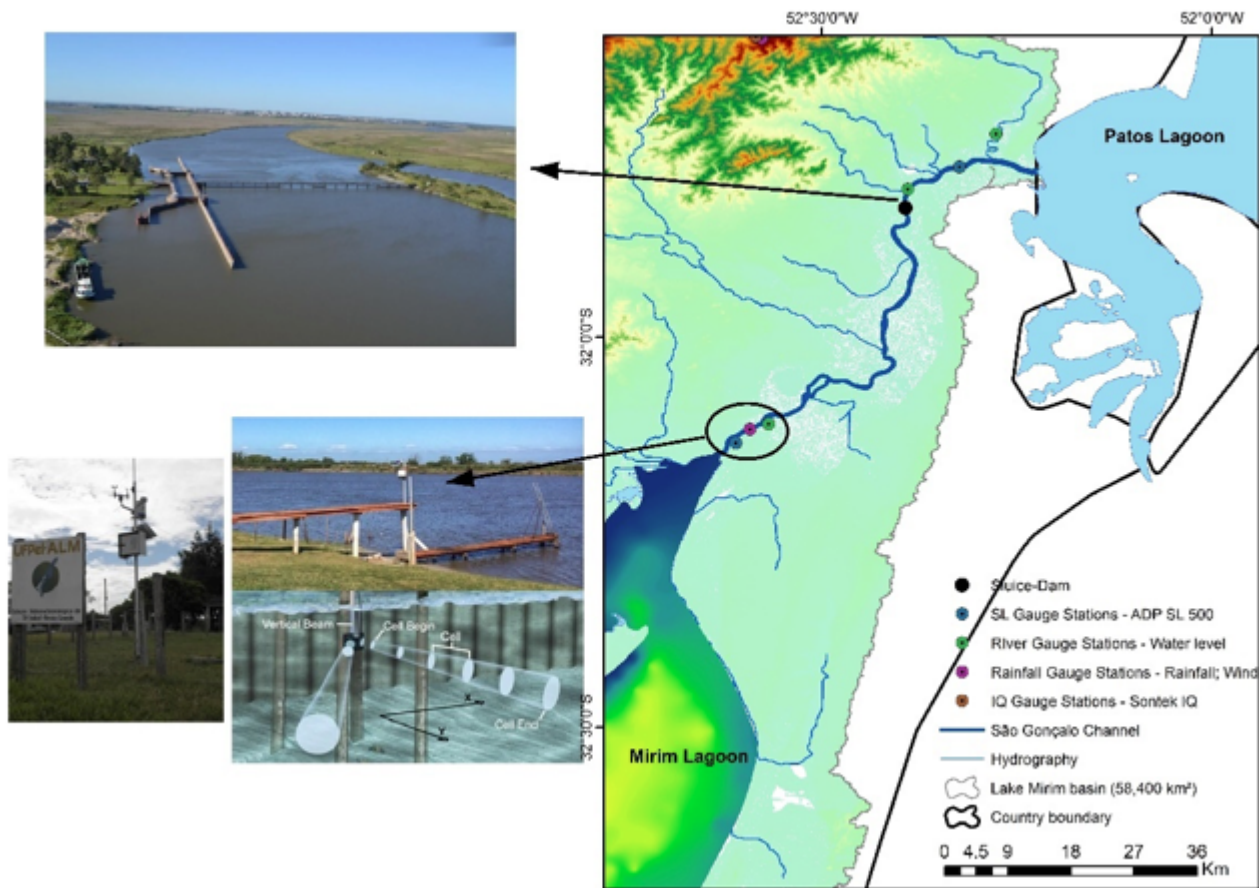
### **1a. Project Description**

#### **1) The global environmental problem and adaptation, root causes and barriers to be addressed**

The geographic scope of the project corresponds to the entire watershed of the Merín Lagoon *basin*, which is located in eastern Uruguay and southeastern Brazil and covers 62,250 km<sup>2</sup>; 33,000 km<sup>2</sup> of the basin (53%) is located within Uruguay and 29,250 km<sup>2</sup> (47%) within Brazil. The basin in turn is divided into eight smaller hydrographic basins. Three of these basins are entirely within Brazil: the São Gonçalo basin (9,147 km<sup>2</sup>), whose main tributary is the Piratini River; the Arroyo Grande basin (4,080 km<sup>2</sup>), which incorporates the Arroyo Grande itself, the Arroyo Chasqueiro, and other smaller watersheds; and the Litoral basin (6,416 km<sup>2</sup>), which includes the Bañado de Taim, Lake Mangueira, and other smaller areas. Four of the basins are entirely within Uruguay: the Tacuari basin (5,143 km<sup>2</sup>); the Cebollati river basin (17,328 km<sup>2</sup>); the Sarandi basin (1,266 km<sup>2</sup>); and the São Miguel basin (6,933 km<sup>2</sup>), made up of São Miguel and other smaller rivers. Finally, the Yaguaron river basin (8,188 km<sup>2</sup>) is a transboundary area on the border between Brazil and Uruguay. The project geographic scope also includes the catchment areas of two nearby coastal lagoons (Laguna Negra and Laguna de Castillos) in Uruguay, which are linked to the Merín Lagoon basin through a canal constructed in the 1970s that allows the flow of water between the coastal lagoons, the Atlantic ocean, and the Merín Lagoon basin. This hydrologic linkage enables the movement of fish and other aquatic animals between the areas, and during times of heavy precipitation, also results in flows of pollution among the water bodies.

At present, the Merín Lagoon is a fresh water lagoon, but it was not always so. A regional development project was carried out from 1960 to 1970, funded by FAO, to build a lock to eliminate intermittent intrusions of brackish water from Patos Lagoon through San Gonzalo Canal into Merín Lagoon. This work guaranteed a drinking water reserve for more than half a million people in Uruguay and Brazil and fostered the development of agricultural crops, mainly rice, and also helped to prevent flooding. On the other hand, this lock has had impacts not yet measured on the ecosystems, changes in the hydrological cycle, an obstacle for the migration of estuarine and oceanic fishes through the Canal, and others.





The abundance of fresh water contributing to Merín Lagoon is the origin of the Basin's wealth in economic and environmental terms: wide water availability in terms of quantity, regime and quality, is the basis for agricultural, forestry, livestock, fishing, aquaculture, tourism, together with other services in both countries. A stronger articulation between the governments of Uruguay and Brazil is required for effective territorial management of the basin, taking into consideration the national legislation and international commitments undertaken by both countries, which will increase the complexity of an integrated and decentralized management as well as the institutional interfaces. Through the TDA and the SAP, this articulation will facilitate the harmonization of strategies, integrate development and financing programmes, improve collaboration and cooperation

mechanisms between institutions, and mitigate current and future problems such as climate change, pollution, urban development, rural-urban migration, pressure on wetlands and coastal areas, while equitably benefiting the various water users and the population of the basin in the short and long term.

Hydrodynamics - The abundant fresh water of the Basin constitute a closed ecosystem, with very limited communication to the outside through the San Gonzalo Canal. The contribution of water from the tributaries of the Lagoon (30,000 m<sup>3</sup>s<sup>-1</sup>) is much higher than the flow towards Patos Lagoon through San Gonzalo Canal (4,000 m<sup>3</sup>s<sup>-1</sup>), allowing the Merín lagoon to function as a large fresh water reservoir. The hydrodynamics in the Lagoon is controlled by the discharge of its tributaries, which determines the volume of water, and by the wind, which controls water evaporation and circulation. The connection with Patos Lagoon, and the reverse flows in San Gonzalo Canal represent elements of fragility for the water resources.

Ecosystems and Biodiversity – The basin ecosystems are also important for their biodiversity and conservation because of the various landscapes and ecologies, namely: (1) the Atlantic coastal areas and coastal lagoons behind the coastal dune belt in both countries – they are separated from the ocean although connected with it intermittently; (2) the flat landscapes and wetlands associated with the biodiverse lagoons, forests and plains; (3) the Atlantic forest area in the extreme north-east of the Brazilian sector and the densely vegetated rainforests and wetlands associated with rivers that flood every season in the Uruguayan sector, (4) extensive landscapes of undulating grasslands characterized by a carpet of short grasses with patches or corridors of other ecologies such as seasonal wetlands or woods and (5) the mountains or steeply undulating highlands with slopes ranging from 5% to 30%, characterized by forested hills and rocky outcrops, valleys and narrow gorges.

Wetlands are very important because of the diversity of flora and fauna and the habitat they provide for migratory fauna species. Likewise, they are natural regulators of river runoff, buffering floods, promoting aquifer recharge, contributing to the improvement of water quality, and have socio-cultural value, for their outstanding scenic and landscape beauty, among other ecosystem services.

#### **Map of land use in the basin - based on remote sensing analysis**



Climate - The area of influence of the Binational Project is characterized by a temperate humid subtropical climate with a hot summer (UNESCO (IHP – LAC)<sup>[1]</sup> i.e. temperature of the coldest month between 0 and 18° C; temperature of the hottest month above 22° C; no dry season, more than 60 mm of rain in the driest month), with four distinct seasons, and rainfall distributed throughout the year, with high yearly and year-to-year variability in terms of frequency and intensity. Average annual rainfall varies between 900 and 1,200 millimetres in Uruguay, and between 1,300 and 1,900 millimetres in the Brazilian basins. In the highlands and inland areas of Brazil, short snowfall events can occur every year, most frequently in the highland plateaux above 1,000 meters above sea level. Frosts are frequent throughout the territory during the winter.

The climate variability, in particular, rainfall in terms of frequency, values (daily, monthly) and intensity is an important feature in the region. There are periods of intense droughts, as well as years with heavy rainfall with subsequent floods. These extreme events are generally known as 'La Niña' and 'El Niño' phenomena.

The annual and daily temperature range is moderate, due to the influence of the ocean and the lagoons in the coastal area, and increases with altitude. The relative humidity is high in the different seasons. Temperature and vary across the basins. The average annual temperature in the Uruguayan part of the territory varies between 15° and 18° C and average potential evapotranspiration values of 1,150 millimetres per year are observed, of which two thirds occur between October and March, with a maximum of 160 mm in January and a minimum of 40 mm in June and July (PROBIDES, 1999). . In the Brazilian basins, the annual average temperature varies between 12° and 24° and potential evapotranspiration varies between 771 millimetres and 994 millimetres a year.

#### Uruguay:

In 1984, the Government of Uruguay designated the Bañados del Este and the Coastal Areas on the west bank, as a Ramsar site (Wetlands of International Importance) that extends over an area of approximately 640,000 ha, and the eastern wetlands, in the departments of Cerro Largo, Treinta y Tres and Rocha, as part of a Biosphere Reserve (MAB - defined by UNESCO in 1976). In 1993, the Biodiversity Conservation and Sustainable Development Programme in the Eastern Wetlands (PROBIDES, acronym in Spanish) was created, to develop an environmental management plan for the area. This landscape comprises plains that are found at an average altitude ranging from 0-50 meters, associated with depressions, in which the extensive seasonal wetland ecosystems develop. Among the latter, the Bañados de India Muerta, San Miguel and Rincón Bravo stand out.

In the year 2000, the Law No. 17,234 was passed in Uruguay, which states the creation of the National System of Protected Areas (SNAP, acronym in Spanish) as an instrument for the implementation of national policies and plans for environmental protection in areas with ecosystems, geomorphological sites and habitats of special scientific, educational and recreational interest or comprising natural landscapes of exceptional scenic beauty. Within this framework, the Uruguayan territory of the Merín Lagoon Basin and the coastal area has 5 protected areas with different levels of entry into the SNAP.

Natural drainage and water balance: In Uruguay there are water regulation works in the basin of Negra Lagoon that altered its natural drainage towards Merín Lagoon. Fresh water was diverted from the lagoon to the Atlantic Ocean, by means of artificial canals causing great damage to La Coronilla beaches. At present, this process is under review because it led to significant conflicts with local tourism. Other phenomena, such as sand extraction, dune stabilization, risks of modification of the water balance, landscape disruption and habitat fragmentation are processes that occur in the coastal areas of this region. The coastal areas face a significant additional risk, related to sea level rise forecast due to climate change. In the coastal lagoons, there are also conflicts due to the presence of informal settlements, uncontrolled water sports, concentration of fishers and illegal fishing, increase of pollutants due to lack of sanitation, strong pressure on a specific commercial species, invasive alien species, and sand extraction.

Socio-demographic characteristics: The Eastern Region of the country is an area of low population concentration in relative terms. The basin is divided into 8 sub-basins and main watercourses and is located between four departments (Maldonado 3.4% Cerro Largo 20.4%, Rocha 24.2% and Treinta y Tres 29.4% of the basin area). These departments have a total population of 365,220 people, which represents only 11.1% of the national total (INE, 2011). There is a strong urban concentration and only 6.5% of the population of this region lives in rural areas with a density ranging from 1.22 and 1.5 inhabitants/km<sup>2</sup> in the Sarandi Grande and Cebollati sub-basins respectively, up to 9.4 inhabitants/km<sup>2</sup> in Yaguaron and 12.2 inhabitants/km<sup>2</sup> in the Tacuari sub-basin. In Uruguay, rural-urban migration is seen as a challenge. This region represents 4.8% of the GDP. This low figure relates to the low participation of each of the departments in the national total. The primary sector represents on average 36.3% of the total gross value added (GVA) of the region.

#### Brazil:

On the Brazilian side, the Taim Ecological Station, which is part of the Atlantic Forest Reserves network of the UNESCO MAB Programme, preserves one of the most vulnerable ecosystems in Brazil where there are about 230 species of birds, 70 species of mammals, and 60 species of fishes.

Socio-demographic characteristics: Brazilian states are semi-autonomous entities organized in administrative branches and with relative financial independence. The area of the Basin on the Brazilian side corresponds to a part of the State of Rio Grande do Sul and includes 19 municipalities: Arroio do Padre, Arroio Grande, Candiota, Canguçu, Capão do Leão, Cerrito, Chuí, Herval, Hulha Negra, Jaguarão, Morro Redondo, Pedras Altas, Pedro Osório, Pelotas, Pinheiro Machado, Piratini, Rio Grande, Santa Vitória do Palmar and Turuçu. The main urban centers are the municipality of Pelotas, with 350,358 inhabitants, and Rio Grande, with 198,560 inhabitants (UNIVERSIDADE, 2007). In Pelotas, the service sector is the main economic activity, while the fertilizer industry and cargo handling at the port are the main economic activities in Rio Grande, which also has the highest GDP in the region. The population of the basin, almost 950,000 people (8.43% of the State), is concentrated mainly in urban centers, with less than 15% of the population in rural areas. Of this total, 52% are women and about 62.5% of working age (>14 and <65). The state of Rio Grande do Sul, has shown a steady population growth, even though between 2000 and 2010 it had the lowest relative growth rate (all population data presented are estimated for the year 2018, according to FEE 2020). The human development index (HDI) varied from 0.784 in the municipality of Chuí to 0.593 in the municipality of Turuçu (UNIVERSIDADE, 2007). Some of the municipalities in the Mirim São Gonçalo sub-basin have the lowest human development index in the state of Rio Grande do Sul.

Although significant progress has been made regarding basin management in each country and there is also a joint approach, these efforts need to be scaled up and strengthened through a joint identification and analysis of those underlying problems and barriers, which will make it possible to define a strategic framework for integrated and participatory basin management agreed upon by both countries and key stakeholders, to generate environmental and socioeconomic benefits.

#### **Environmental threats and impact**

Economic activities and ecosystems - The expansion and intensification of rice cultivation in the basin has put pressure on the natural vegetation, grasslands and forests in the upper part of the lagoon (20-50 m) and along the rivers, with loss of wetlands due to irrigation expansion on soils with low permeability, water pollution with sediments, nutrients and, in particular, phosphorus due to the use of agrochemicals. Over the last 8 years, in the Uruguayan sector, the productivity of the rice sector has increased from 10% to 14% per hectare (DIEA - MGAP, Survey of Zafra Rice 2016/2017) due to technical intensification (irrigation, seeds and use of agrochemicals) but without adequate regulation in the efficient use of inputs with resulting environmental impact. There are risks of soil and water degradation and loss of habitat, fauna and flora in sensitive ecological areas, such as migratory birds, small mammals, rodents and pollinators, as well as loss of valuable archaeological sites. There has also been an expansion of eucalyptus planting, mainly on the hills, the highest lands in the basin. The planted area in the Uruguayan region of the basin has increased from 606 km<sup>2</sup> in 2000 to 2,250 km<sup>2</sup> in 2015. In addition, the intensification of tourism has had an impact on the coastal area. Brazil is promoting the rural development and strengthening of local and regional production chains based on family farming and irrigation, with associated pressures on natural resources and ecosystem services. Several authors have reported possible negative impacts related to the introduction of new species into the environment, such as changes in habitat and community structure, introduction of pathogens, parasites and pests, growth retardation, hybridization, changes in the structure of marine fauna as a whole, all of which are caused by competition or predation and trophic changes.

Water demand - 97% of the water used in the Merín Lagoon basin is for rice cultivation. A large share (67%) of the surface water for irrigation is taken directly from natural watercourses and Merín Lagoon and 33% from dams built for this purpose. Only 0.17% of the irrigation water comes from groundwater (pumping from wells). In the Brazilian territory alone, at present, more than 700,000 people are supplied with water from the basin (notably the cities of Pelotas, Rio Grande, etc.) for human consumption and for rice irrigation. The demand of the rice sector is the most significant factor for future water resource planning in the Merín Lagoon basin. During the harvesting period, from October to March, the highest water demand is combined with the lowest runoff and river flow, and problems of availability and compliance with environmental flows may occur.

Water quality – Because of its nature, Merín Lagoon accumulates organic and inorganic matter (in particular nutrients), being the final destination point of sediments from erosion. The Lagoon is considered oligotrophic for nitrogen and eutrophic for phosphorus in its central and northern part. Untreated wastewater is a source of contamination of the lagoon. In particular, the city of Jaguarao does not have any wastewater treatment and the city of Río Branco has only one treatment pond. As a result, cyanobacterial blooms are frequently observed in Merín Lagoon and surroundings requiring inter alia, an integrated water quality monitoring system between the two countries. High concentrations of nitrogen and phosphorous have also been identified in the tributary rivers to the Laguna Merín.

Fisheries and aquaculture - In Brazil during the last decades, fish farming has undergone constant changes, consolidating as an important activity particularly in the territory of the basin, replacing part of the capture fisheries. Unlike in the past, access to farmed fish is easier for consumers, mainly due to large projects of aquaculture production and harvesting, and supply contracts with hypermarket chains. However, it remains an underdeveloped activity. The entry of new agents into the fish farming production segment must be done with discretion, especially because there are obstacles and bottlenecks that make it difficult to consolidate it as an agro-industrial chain. The production, processing and marketing of farmed fish have specific obstacles to overcome, namely:

- Difficulty controlling and monitoring stored fish (theft and predators);

- Inexperience of newly trained technicians;
- Informality;
- Impacts of climate variability;
- Absence of fish farming research units in the region;
- Lack of specific national technologies (climate-adapted fish lines, equipment, materials and drugs)

In Uruguay, artisanal fisheries include the exploitation of a great variety of resources in the diverse ecosystems: inland (fresh water), coastal lagoons, sandy and rocky coastal areas, and in the sea, in areas close to the coast. Although fishing has varied, it is estimated that Merín Lagoon and coastal lagoons basin contribute some 350 tons/year. Notwithstanding the above, many activities are not recorded, and a better understanding of the productive system and its implications on the ecosystems is needed.

Navigation - Merín Lagoon has natural depths for the use of vessels with draught up to 2.50 meters. However, these conditions are not enough to ensure a sustainable navigability from the Merín Lagoon Basin, an important exit waterway from the point of view of the economic and social development of the Basin. The challenge is to make the construction and operation of commercial navigation systems (which imply, important dredging in the Lagoon and tributaries, among others), consistent with the conservation of the integrity of this large freshwater reserve, the ecosystem services, the great centres of biodiversity associated with the basin, and the subsistence economic activities such as tourism and traditional fishery carried out by the riparian populations in Santa Isabel do Sul, Capilha, among others.

Floods - Due to the flat landscapes, flooding affects the populations close to the Merín Lagoon, since the surface runoff system has been modified by the drainage works and management of irrigation channels, in particular, in the vicinity of the Yaguarón and Cebollatí rivers in Uruguay.

Impacts and climate variability - The Basin is subject to the impacts of sea level rise due to climate change, and rainfall variations from the alternation of El Niño and La Niña. Given the large surface area of the Lagoon, extreme weather events, especially El Niño, interfere with the agricultural production, since windstorms cause large waves and currents, which may carry a high load of sediment and produce flooding along the coastal zone. According to INUMET, the climate trends observed in Uruguay are: i) Increase in minimum and average temperatures, not in maximum temperatures; ii) Slight increase in the intensity of short duration heavy rains (a few hours), not in long duration rains (one day); and an upwards trend in the ETP during the last 40 years of approximately 10%. Climatic scenarios show a decrease in water resources and a shift in river flows towards the wet periods, increasing the problem of water shortage in the growing season, an aspect that deserves in depth analysis to optimize the use of water in agriculture. In addition, climate variability is a critical point for aquaculture and fishery in the region, since the wide thermal range hampers fish production leading to great fluctuations in fishing capacity in the lagoon and adjacent rivers.

Groundwater - Fresh groundwater reserves are strategically important given the increasing climate variability, and its functions to maintain ecosystems and biodiversity. The most important example is the Mangueira Lagoon. This lagoon, which has no tributaries or communication with the ocean, is fed only by rain and by the shallow aquifer that connects it

to Merín Lagoon forming a unique transboundary system. Discharge occurs through evaporation, groundwater flows to the sea, and water for irrigation. The quality of the shallow aquifer water is affected by the presence of nutrients and other elements coming from the Merín Lagoon Basin, which contributes to the contamination of the Mangueira Lagoon water.

Coastal areas - In the coastal areas of Uruguay and Brazil, there are conflicts related to the pressure for urban development and infrastructure linked to tourism, such as increased impermeability of beach areas and the presence of waste, among others. There is also pressure for new development of port and road infrastructure, associated with greater dynamism of the area.

### **Environmental problems in the Merín Lagoon Basin and its tributaries**

*Imbalance between water supply and demand:* Increasing water demand, climate impact and variability, and climate change make it necessary to move towards a more efficient water use and an adaptation and mitigation framework.

*Productive practices causing degradation of ecosystems, without adequate monitoring of the same:* High concentration of nutrients, mainly phosphorus, and pesticides in watercourses. Presence of potentially toxic cyanobacteria, degradation of ecosystems, and water treatment problems. In addition, there is a historical degradation process of the riparian forest and the presence of invasive species, such as the golden mussel. In Brazil, the presence of a non-native fish farming system is enough to put the entire basin area at potential risk of species invasion, where it is observed that 47% of the fish introduced by aquaculture settle in the natural environment. These species have competitive advantages over native species, possibly altering ecological cycles and driving native populations to extinction. Hence, fishery of native species is affected; therefore, effective risk assessment processes are needed to identify potentially invasive species and to restrict their introduction or use in fisheries and aquaculture.

*Urban centers that do not have sewage treatment, and urbanization models that do not consider runoff and rainwater management:* This results in wastewater runoff, deteriorating the quality of watercourses and the lagoon, which can lead to unforeseeable health problems.

### **Barriers:**

*There is no Transboundary Diagnostic Analysis:* Although both countries have made progress in the diagnostic analysis of the socioeconomic and environmental situation of the region, there is no integration of the state of the basin and the actions to be taken.



Absence of specific regulations for defence and regulation works: Regulation, channelling and defence works have affected the water regime, altering ecosystems and causing environmental and economic damage, representing a significant risk of human life and economic losses. Protection and defence works are carried out with no specific control, which creates conflict between agricultural producers.

Limited capacities to cope with impacts of extreme events to adapt to and mitigate the effects of climate change, which increases the severity and frequency of droughts and floods. Binational water management procedures need to be agreed upon, and incorporate early warning tools.

Lack of a bi-national Strategic Action Programme and other tools for governance and integrated management: Integrated basin management requires tools and instruments harmonised with regulations, administrative procedures, data collection and analysis and information (hydrometric and meteorological information; water quality including biological indicators; biodiversity and ecosystem services). It is also necessary to strengthen capacities for participatory management and knowledge management.

Transboundary governance schemes are weak: The governance of the Merín Lagoon waters has some weaknesses which require additional efforts and responsible planning to solve some of the basin's transnational problems: i) allocation of competences (e.g. regarding the authority of the national, federal and municipal governments in Brazil) and availability of adequate financial resources; ii) in some cases there is no guidance in terms of public policies, continuity of the actions of the different institutions, alignment of regulatory frameworks and legitimization of public policies by civil society.

Moreover, the institutional base is not yet properly structured to implement a decentralized and efficient participatory management. In addition, the large distances prevent the participation of the population in the different initiatives.

## **2) Baseline scenario and any related baseline project**

The binational cooperation in the basin (governance) has a long history of institutionalization through the Brazil-Uruguay Joint Commission for the Development of the Merín Lagoon Basin (CLM, for its acronym in Spanish), established in 1963 to study the common territorial problems related to this basin. The two States agreed to request technical cooperation from the United Nations Development Programme aiming at studies of the region and a comprehensive development plan for the Merín Lagoon Basin. FAO conducted a broad study of the region in areas such as water resources and infrastructure works for water and soil use for agricultural activity, and socio-economic development. Technical cooperation included regulation and storage reservoirs in high and middle areas, drainage and water management in middle and low areas to protect against flooding and to use water for irrigation. The drainage of the middle and low areas made it possible to recover land with low permeability and high risk of flooding for livestock and agriculture, mainly rice. In 1977 a Cooperation Treaty for the Natural Resources Management and Development of the Merín Lagoon Basin was signed by the two governments., The Commission is the agency, with representatives from the national governments, in charge of ensuring compliance with the agreement and with the treaty's objectives as entrusted to the CLM. At present, the CLM has an office in Treinta y Tres and another in Pelotas. Within this framework, there are important binational agreements in fields such

as the sustainable development of natural resources of the Merín Lagoon, the water resources of the Yaguarón River, the provision of health services, entrance and residence permits to border localities as well as agreements between local bordering governments defining joint actions in some fields of their competence. The drawing up of a joint strategy for the integrated basin management was requested in the last meeting of the Commission (July 2019), paying attention to the following topics:

- Governance and civil society participation in the management of the basin's natural resources
- Binational cooperation in education and training.
- Monitoring water quality and quantity and access to water and support services
- Design and development of grey infrastructure (channels and ports)

The main stakeholders of the Basin are active members of two important water resource management bodies, the Regional Water Resources Council for the Merín Lagoon Basin in Uruguay and the Comité de Gerenciamiento das Bacias Hidrograficas da Lagoa Merim e do Canal de Sao Gonzalo. This has leveraged the activities of the regional agreements, by enabling the organized presence of all stakeholders with an integral vision of the territory in each country.

#### Uruguay - Regional Water Resources Council for the Merín Lagoon Basin

Created by Decree 263/2011, it is the consultative, deliberative, advisory and management support body of the Water Authority, for the formulation and implementation of water resources plans for the Hydrographic Region of Merín Lagoon. The Council is composed of 7 government delegates, 7 users' delegates and 7 delegates from the civil society in a tripartite and equitable manner. It is chaired by the National Water Director (DINAGUA) of the Ministry of Housing, Territorial Planning and the Environment (MVOTMA) and the vice-presidency is chaired by the Ministry of Livestock, Agriculture and Fisheries (MGAP).

#### Brazil - Agência de Desenvolvimento da Bacia da Lagoa Mirim (ALM)

The Merín Lagoon Basin Development Agency (ALM, for its acronym in Spanish) was created by Decree No. 1,148 of 26 May 1994 and supports the Brazilian Section of the Joint Commission for the Development of the Merín Lagoon, in coordination with the ministries represented in the CLM (Foreign Affairs, National Integration and Environment) and with Agriculture, Education, Development and Transport, in specific actions and projects. By means of Decree No 4258, of 4 June 2002, the ALM was ratified as an administrative, technical and financial support institution, complementary to the Ministry of Regional Development, becoming the Executive Headquarters of the CLM Brazilian Section.

Brazil is implementing its National Water Resources Plan, which, among other aspects, establishes how to manage state, federal, and international competences by hydrographic regions and basins. As for Uruguay, the National Law on Water Policy establishes the division of its territory into three transboundary hydrographic regions, coordinated by the respective Regional Councils, which is also reflected in the National Water Plan published in 2018.

Through the national plans, countries have made headway on general guidelines for the construction of integrated basin management plans, including water management, to ensure water availability and provide current and future generations with good quality water for drinking and other uses. In addition, both countries have paid attention to flood water risk management. It should be stressed that any solution to reduce the risk of flooding in the Basin and in the Lagoon, either through hydraulic works in the San Gonzalo Canal itself, or through the construction of dams on the tributaries or a sluice to discharge to the ocean, will always have implications to be regulated according to Cooperation Treaty provisions.

In Brazil there are multiple service providers of drinking water supply in each municipality and the percentage of the population served is highly variable (in some municipalities the service reaches only 20% of the population while in others it reaches more than 95%). In Uruguay, drinking water supply and sanitation services are provided by the State Sanitary Works (OSE). Access to drinking water through supply networks is over 95%, but sewerage and sanitation systems are inadequate in the region.

In recent years, both countries have presented their national sanitation plans, as a basis for policies to provide adequate sanitation conditions in the region. Both Brazil and Uruguay have water quality monitoring programmes for each hemi-basin and are coordinating actions to carry out joint monitoring of Merín Lagoon.

The EUROSocial Programme, established at the initiative of the Congress of Mayors of Uruguay, is currently being implemented in coordination with the Uruguayan delegation to the CLM. The project aims at strengthening social cohesion and local governments in the border areas and assessing the socio-economic and environmental impacts from a Basin perspective. The Project aims at ensuring higher participation of local governments and civil society in the Basin Commissions and Committees, in the dialogue with national, state and provincial authorities and providing technical and territorial foundations to the agreements through formal regional integration. This will serve as the basis for the planning process for integrated and coordinated water resource management by the countries, to contribute to the sustainable development of the region.

#### Projects and Baseline Programmes

This Project is in line with and contributes directly to the following projects and programmes being implemented by national governments:

##### Uruguay:

· National Water Plan (Executive Decree N° 205/017), contributes to the implementation of its 10 programmes, in particular: Programme 01: Water for Sustainable Development; Programme 04: Waterworks Management; Programme 06: Integrated Water Resources Management Plans; Programme 07: Information Systems and Models; Programme 08: Quantity and Quality Monitoring; Programme 09: Interinstitutional Strengthening and Coordination; Programme 10: Water Education, Communication, Research and Capacity Building.

- National Environmental Plan for Sustainable Development (Executive Decree No 222/019), contributes to Dimension 1, Objective 1.3: Preserve water quality, conserve continental aquatic ecosystems, and maintain hydrological processes through models for sustainable basins and aquifers management; Objective 1.4: Conserve and manage coastal areas in a sustainable manner; Objective 1.5: Increase resilience of socio-ecological systems to climate change and variability and other global changes, contributing to the protection of the regional and global environment. Contribution to Dimension 2, Objective 2.2: To promote sustainable production practices that reduce the environmental impact of agricultural activities.
- The National Response Plan to Climate Change (PNRCC, acronym in Spanish) is the main instrument of the national government and the Congress of Mayors to incorporate climate change into the country's long-term sustainable development strategy.
- Agointelligent Uruguay Strategy (MGAP): challenges for sustainable development, aiming at promoting sustainable agricultural production, reduce climate vulnerability of production systems through adaptation, support innovation and ensure the inclusion of all producers in the value chains. Strategic line 2: Promoting intensive production with economic, environmental and social sustainability, has two relevant items for this project: a) land use planning and basin protection and b) best agricultural practices and agrochemicals control.
- Uruguay's National Strategy for the Conservation and Sustainable Use of Biological Diversity, specific contribution to Objective 2: To promote strategies and practices for the sustainable use of biological diversity and natural resources in general, and to Objective 4: To develop mechanisms to improve knowledge management and use regarding to biological diversity.

#### Brazil:

- State Programme for Irrigation and Multiple Water Uses: The objective is to increase productivity and minimize the effects of droughts and environmental impacts.
- Uruguay-Brazil Waterway Project, to facilitate and promote trade exchange between Uruguay and Brazil.
- Fish Farming Development Project, including fishers of the rural credit registry, to strengthen capacities of artisanal fishery to leverage local economy.
- National Water Resources Plan, to ensure current and future generations with water availability with quality standards appropriate to its use.
- National Water Security Plan, to ensure an integrated and consistent strategic and regional water infrastructure up to the year 2035, to reduce the impacts of droughts and floods
- National Basic Sanitation Plan; Integrated Basic Sanitation Planning, including the four components: drinking water supply, sewerage, solid waste management, and urban rainwater drainage.
- ABC Plan - Low Carbon Emissions Agriculture, which aims to organize and plan the actions to be taken to adopt sustainable production technologies to meet the commitments assumed by the country to reduce GHG emissions in the agricultural sector.
- Pro-Committees, Programme of the National Water Agency - ANA (Acronym in Spanish) to promote the improvement of basin committees.
- National Water Resources Information System, to gather, provide consistency and disseminate data and information on the qualitative and quantitative situation of water resources in Brazil.
- State Water Resources Plan, a strategic planning tool for water management in Río Grande do Sul.

### 3) The proposed alternative scenario with a brief description of the expected results and project components

The project will support countries as they go through the Transboundary Diagnostic Analysis - Strategic Action Programme (TDA-SAP) methodology. The project will address water management in a transboundary context to create an enabling environment for coordinated actions and cooperation.

The **objective of the project** is: To strengthen public and private sector capacities in Brazil and Uruguay for joint and integrated water resource management (IWRM) in the Merín Lagoon Basin, Yaguaron River and Coastal Lagoons, with emphasis on the sustainable and efficient use of water, preservation of ecosystems and their services, and adaptation to climate change, through the development of a Transboundary Diagnostic Analysis and Strategic Action Programme.

Integrated water resource management in the context of the project will encompass fisheries, aquaculture, food, energy and other economic sectors in the Merin Lagoon basic, Yaguaron River watershed and Coastal Lagoons.

The **strategy of the project** is the integrated management of the water resources of the basin, which is a process that promotes the coordinated management of water, land and related resources by the two countries, in order to achieve a balance between the basin ecosystems and their social and economic use by the communities. As it is a transboundary basin, its management requires binational agreements which includes (i) short and long term agreements and planning between sectors and all stakeholders (social, technical and political), (ii) agreements, financing, emphasis on subsidiarity, governance and management capacities of local institutions/organizations (basin forums, consortiums and associations), (iii) implementation of research-action processes and appropriate technologies on the basis of local and scientific knowledge, and (iv) resolution of social conflicts over access to and tenure of natural resources.

In such transboundary basins, regional cooperation is an essential instrument for water management, which is increasingly evident when considering factors related to water quality and quantity, and focusing on the different uses and distribution of this resource.

Participatory governance including a wide range of actors is a basic condition for effective management of the shared basin. Resources management should ensure the preservation of ecosystems, considering the adverse impact of human activities on the environment and focusing on sustainable use of the resource. This approach is a strategy for the integrated management of soil, water and living resources that promotes the conservation and sustainable use of resources to maintain ecosystem services. The local communities and their livelihoods will be at the centre of management and protection decisions to ensure that benefits are generated in an equitable manner. In this sense, the preservation of ecosystems and the sustainable water and land management, through a water risk management approach including climate variability and change, is essential for an integrated water management in the basin.

The project aims to design and endorse the SAP through a bi-national participatory process. The SAP will be made up of a series of procedures, agreements, and cooperation strategies between the two countries, and will include the multiple sectors that depend on the shared basins (irrigated agriculture, livestock, sanitation, tourism, navigation). The project seeks to strengthen the capacity for integrated management of local and regional river basins, and to institutionalize transboundary coordination through 4 components.

### **Component 1: Transboundary Diagnostic Analysis (TDA) of the Merin Lagoon basin and Yaguaron river**

**Outcome 1.1 - Main transboundary environmental problems identified and agreed upon by both countries in the Merin Lagoon and Yaguaron River, including causes, drivers and impacts:** The Transboundary Diagnostic Analysis (TDA) will be based on open governance mechanisms, taking advantage of the existing institutional framework to promote cooperation between the different areas of interest in the basin and the Yaguaron river. The diagnosis of each country will be examined and integrated in a status of the basin from a comprehensive water resources perspective, including regulatory, management, climate, geomorphology, hydrology, social, economic, ecological, cultural aspects (local production, tourism, anthropology), water uses and impacts on the basin. This is essential for the development of mechanisms to promote social cohesion between the Brazilian and Uruguayan societies of the Merin Lagoon Basin and Yaguaron river region.

Output 1.1.1 Key weaknesses and barriers identified through participation, environmental, social (including gender, ethnicity and youth) and economic assessment, including ecosystem services valuation: Assessments will be conducted in the basin, coastal lagoons, and associated coastal zone, by national governments, in collaboration with regional basin committees and other relevant stakeholders (national agencies, agricultural producers, fishermen, women's associations, private sector, NGOs, etc.), and will focus on:

- The current state (quantity and quality - including sedimentation, physio-chemical and biological indicators) of water resources (surface water and groundwater) including watercourse, lakes, wetlands, coastal lagoons;
- The current state of fishery resources, aquaculture production capacity; and effects of fishery and aquaculture activities;
- Surveys on climate services and creation of a list of climate services tailored to support rice producers and fishermen;
- Risk and impacts from sea level rise, floods, droughts and other adverse climate events and climate variability;
- Sources of pollution and critical points for specific and diffuse pollution, with emphasis on nutrients;
- Poverty, gender, ethnicity and access to resources and rights, and vulnerability;
- Governance, participatory planning and decision-making process between sectors and actors;
- Trends in land use and processes, drivers and severity of natural resource degradation in the basin;
- State of conservation and sustainable use of biodiversity including agricultural, forest, aquatic and livestock biodiversity;
- Water resource use and availability;
- Analysis and assessment of the ecosystem services supply and employment.

Output 1.1.2 Collective and public consultation process carried out through workshops and digital media: The existing participation mechanisms (the Merín Lagoon Basin Commission in Uruguay and the Merín Lagoon Agency in Brazil) will contribute to the collective construction, and consultations will be extended to other local actors involved during the analysis process, enabling the adoption of local relevant actions for sustainable development of the area. The mechanisms established should ensure the participation of both the different organized sectors and the community, ensuring access through adequate channels and spaces for communication and dialogue. Bilateral institutional strengthening should also be promoted within the framework of the Joint Commission for the Development of the Merín Lagoon Basin, with special attention to the operational and support bodies of the Cooperation Treaty for the Natural Resources Management of the Merín Lagoon Basin.

Output 1.1.3 Transboundary Diagnostic Analysis formulated - with emphasis in the Yaguaron river problems - supporting participatory natural resource management. This output will be based on the principles of the water /food/ energy/ land nexus, and Integrated Watershed and Coastal Area Management. The process of identifying and agreeing on the main issues of transboundary concern in the basins, their causes and possible solutions will be based on the scientific findings of the assessments as well as local knowledge and participatory processes, and will consider the previous experience of different programs carried out in the basin. The approach will focus on water, land, fishery resources and biodiversity management for sustainable, productive, equitable or inclusive and resilient use. Regarding the coastal area included in the project, the TDA will incorporate an Integrated Coastal and Watershed Area Management approach, as a coordinated strategy of natural, socio-cultural and institutional resource allocation for the conservation and sustainability of the multiple uses of the coastal zone.

## **Component 2: Design of a Strategic Action Programme (SAP) for the Merin Lagoon Basin and Yaguaron river**

**Outcome 2.1 - The existing cooperation mechanism (Joint Commission for the Development of the Merín Lagoon Basin) and participatory national organs (Laguna Merín Basin Commission in Uruguay and the Laguna Merín Agency in Brazil) are strengthened to enable integrated and effective regional cooperation and management of the Lagoon and Yaguaron river:** Under this outcome, the project will strengthen water security, environmental sustainability and forecasting capacities in the Merín Lagoon basin, Yaguaron river and associated coastal lagoons through frameworks and mechanisms for transboundary cooperation and information exchange.

Output 2.1.1: Analysis for the alignment of legislative instruments (national and sub-national) and institutional frameworks for water and land governance and tenure: A review of national and regional regulations should be performed, identifying gaps in resource management convergence. Based on each country's background, a description will be made of the countries' water policy/ management instruments, state and provincial/ departmental policies, such as plans, information systems, concession system, water quality classification, charges for water use, capacity building, among others. The effectiveness in the use of these instruments, similarities, principles of integration, and the conditions of continuous feedback in each country and binationally. The competencies of the Joint Commission for the Development of the Merín Lagoon Basin will be reviewed, and an action plan will be put forward to align the regulatory frameworks as well as the instruments for responsible governance of land tenure, fisheries, water and forests.

Output 2.1.2: System for data generation and management, information and knowledge between countries for an integrated and participatory water resources management and sustainable production: It will include regular monitoring protocols, necessary improvements, historical and real time data exchange mechanisms. A common regulatory framework will be jointly approved between the ALM, the operational body of the Merín Lagoon Treaty responsible for the environmental monitoring of the Brazilian side, through its Water and Effluent Laboratory, and the National Water Directorate (DINAGUA) and the National Directorate for the Environment (DINAMA), both from Uruguay. This will allow for shared, planned and coordinated actions in water quantity and quality monitoring, especially with regard to sampling points, analysed parameters and the methodologies used in analyses in Merín Lagoon and its basin. The project also will seek to strengthen the exchange of meteorological data between Uruguay and Brazil in order to strengthen Early Warning Systems, early action and emergency response in the project area (with a focus on hazards such as flooding & sea level rise), and to develop an Impact Assessment Toolbox for the monitoring of different trans-boundary hazards currently affecting the lagoons (e.g. flooding and sea level rise).

Output 2.1.3: Inventory and development of common criteria for the design, operation and regulation of water infrastructure, and promotion of nature-based solutions (NBS) for conservation, sustainable use, restoration of natural resources and ecosystem services, and mitigation of undesired impacts: The National Waterworks Inventories, including regulation and defence works in each country will be strengthened. Current criteria will be reviewed and improvements or new criteria will be established for the design, maintenance and safety of reservoirs and other water infrastructure works. On the other hand, measures for conservation, impact mitigation, and sustainable production will be promoted, such as water body buffer zones, good agricultural practices, and waterworks operation, considering the current environmental criteria or necessary improvements, including maintenance, safety, and others. In particular, it will be necessary to analyse the possible effects on the water regime and ecosystems of the defence and regulation works. Joint standards will be established for the design, maintenance and safety of reservoirs and other waterworks infrastructure.

Output 2.1.4: Common criteria developed for the design and implementation of the Ecosystem Approach to Fisheries (EAF) applied to artisanal fisheries: Development of criteria and common regulations for artisanal fishing that considers the complex social-ecological system, avoiding the degradation of the aquatic ecosystem, and allowing the sustainability of the activity over time, through the adequate governance of resources, generation capacity and food security.

Output 2.1.5: Capacity strengthening programmes for relevant stakeholders in national and regional governments and other relevant actors to plan and develop prioritized actions (supported by IW LEARN): The capacity building component of the project is targeted to state and regional stakeholders (including resource management agencies, NGOs, academia, etc.) with expertise in the basin's resources, in particular, technical and postgraduate training on transboundary waters. This output will carefully consider the results from the Gender Mainstreaming Strategy to include a gender approach in the capacity programmes, which will include training in:

- Data collection, analysis and management using information technology including gender disaggregated data on socioeconomic aspects
- Water balance and development of future water scenarios due to climate variability and climate change, which will make it possible to assess water stress and environmental and socio-economic impacts;
- Integrated Water Resources and watershed Management and Integrated Coastal Lagoons Management;
- Natural and fishery resources management with a focus on gender issues;



- Groundwater and shared aquifers management.

Output 2.1.6: Regional offices are strengthened for the binational management of Merín Lagoon Basin and Yaguaron river: The regional offices (the Merín Lagoon Basin Commission in Uruguay and the Merín Lagoon Agency in Brazil) established as permanent instruments for orientation, support, dialogue and promotion of transboundary management in the Merín Lagoon Basin municipalities, will be strengthened in areas such as: federal cooperation and institutional agreements, support in the elaboration of projects and programmes focused on regional development; innovation in processes to improve water management, production of information for management (geoprocessing).

**Outcome 2.2 - Implementation of mechanisms for joint decisions under an integrated water resource management (IWRM) framework:** Under this outcome, decision-making mechanisms will be established to increase capacity and information resources relevant to bi-national basin management objective and programs.

Output 2.2.1: Decision-making system based on participation, integration and dissemination of data and information, their analysis and planning: A decision-making system or procedure based on information and monitoring that considers aspects such as resource allocation, water quantity and quality, ecosystem preservation, and emergency situations management (floods, droughts, wildfires). This system will consider stakeholder responsibilities and competencies and will be administered by the Joint Commission for the Development of the Merín Lagoon Basin.

Output 2.2.2: Data exchange mechanism established and functioning: The Joint Commission for the Development of the Merín Lagoon Basin will have the mandate to oversee the joint management of shared water resources and activities, in coordination with the relevant national ministries; this commission also will ensure compliance with the SAP. A data exchange agreement and platform will be established and administered by the commission, which will include data and information on water quality and quantity, climate scenarios, and hydrographic models.

**Outcome 2.3 - SAP signed and endorsed at ministerial level:** On the basis of the TDA and broad public participation, the States will reach a comprehensive agreement through a Strategic Action Plan for the basin management.

Output 2.3.1: SAP of the Merin Lagoon and Yaguaron River designed and agreed through a multi-sectoral process, socialized with stakeholders and agreed with national governments. The SAP will include specific strategies for developing and implementing an integrated watershed management approach with transboundary elements for the Yaguaron River watershed, based on the fact that it is the most important river feeding into the Merín Lagoon and is the only transboundary watershed in the project. The SAP will include structural and non-structural measures, policy recommendations, communications, and a sound financing strategy, reviewed through a multi-sectoral process, socialized with stakeholders and agreed with national governments.\_ Project planning should include strategies for the joint work and coordination in the development and discussion of the SAP, including structural and non-structural measures, policy recommendations, a communications strategy and a sound financing strategy. This output will consider the results from the Gender Mainstreaming Strategy to include a gender approach in the activities of the SAP.

### **Component 3: Strategic Action Plan (SAP) Implementation**

**Outcome 3.1 - Benefits of integrated basin management demonstrated as the first stage of SAP through the implementation of pilot projects:** The countries resolve to undertake joint actions supported by field testing - sustainable approaches, policies, practices, technologies and innovations, and impacts monitoring (environmental, social and economic), sharing results and experiences, and recommending solutions. The pilots will ensure greater sustainability of water management, from the capture and retention of rainwater in the soil to an efficient and healthy water use, treatment and reuse, as well as capacity building and the resolution of bi-national issues. The work will be carried out by joint teams, as far as possible. The pilots will consider the results from the Gender Mainstreaming Strategy to promote when possible gender equality measures in the implementation of the pilots.

Output 3.1.1: Water efficient and sustainable and climate smart agricultural practices adopted: The project will support the efficient use of water in agricultural production, with emphasis on recognizing and promoting sustainable rice production in wetlands. The project also will support climate smart agricultural practices for rice plantations in order to better use water resources, reduce GHG emissions and improve nutrient use efficiency; and other sustainable agricultural practices to reduce the impacts of livestock and rice plantations on water quality and flows (e.g. from agrochemicals; nutrient loading; erosion), with a focus on activities in the Yaguaron River watershed.

Output 3.1.2: Reduced contamination of the basin's water resources from municipalities located in the Yaguaron River watershed

Output 3.1.3: Tourism and fishery development programme in place for the Merín Lagoon, its tributaries (Yaguaron river mainly) and coastal lagoons.

Output 3.1.4: Common regulatory framework established to coordinate: i) water demand and supply mechanisms; ii) community integration; iii) tourism and food routes based on sustainable fishery and quality water.

Output 3.1.5: Monitoring programme established for water quantity and quality in the Merín Lagoon basin and coastal lagoons, updated with harmonized bi-national criteria and including an analysis of existing management of pesticides, fertilizers and insecticides in the project area.

Output 3.1.6: Hydrodynamic model created for the Merín Lagoon and tributaries (Yaguaron river mainly) including: i) a preliminary flood risk assessment of the project area, flood hazard maps and flood risk maps; ii) the preparation and implementation of flood risk management plans for achieving certain levels of protection; iii) early warning systems for floods and droughts; iv) analysis of minimum flows to ensure the functioning of the ecosystem; and v) social, economic and environmental development diagnosis.

Output 3.1.7: Identification of degraded lands and proposal for recovery.

Output 3.1.8: Wetland monitoring system established, including for the Bañados del Este and Laguna de Rocha Ramsar site in Uruguay, which includes remote sensing, rapid ecological assessment, identification of critical sites, digital sensors, etc.

Output 3.1.9: Monitoring and co-management system in place for the fishery resources of the Merín Lagoon Basin and Yaguaron river within an integrated watershed and coastal area management framework that highlights the role of user participation as a mode of governance.

#### **Component 4: Project monitoring, communication and evaluation**

**Outcome 4.1 - Relevant project stakeholders learned about the benefits of pilot activities and integrated basin management:** Under this outcome, global and local benefits will be generated through the exchange and dissemination of project experiences and lessons learned.

Output 4.1.1: Communication, education and awareness plan on the outcomes supporting the activities of the project developed: The dissemination of findings and results will be carried out through workshops, conferences, webinars and other online tools, and the publication of documents, involving different water users. In addition, cooperation mechanisms will be established between the Universidad Federal de Pelotas (UFPEL) and the Universidad de la República (UDELAR) to provide access to undergraduate courses, as well as mobility of professors and researchers, on issues related to bilateral relations and the scope of the Merín Lagoon Treaty, which brings countries together in promoting regional development and transboundary integration. A cooperation agreement will be signed to promote Portuguese and Spanish as foreign languages for higher education students and teachers living in the border areas to facilitate interaction in the long term.

**Outcome 4.2 - M&E programme is developed and implemented:** A programme will be implemented to continuously monitor and evaluate the progress made by national governments and other stakeholders, through specific indicators that measure the fulfilment of objectives and budgetary follow-up. This will include gender-disaggregated data as appropriate.

Output 4.2.1: Continuous monitoring of project activities, knowledge and outcomes: Project management, through progress monitoring and activities follow-up including impacts on women, youth, indigenous groups and other marginalised groups. Publication of reports and participation in GEF IW conferences and other IW LEARN activities.

Output 4.2.2: Mid-term review and final project evaluation: A mid-term and a final project report, including conformity/compliance with stakeholders needs, and the fulfilment of the objectives established during the project formulation with emphasis on the fulfilment of the monitoring indicators.

**Outcome 4.3 - Knowledge shared between Brazil, Uruguay, other countries and GEF IW projects in partnership with IW LEARN:** Under this outcome the project will establish a project website following the IW LEARN standards. In addition, the information generated will be integrated into the respective portals used by national and regional governments for the dissemination of environmental information. National governments and the agencies involved will disseminate the project's achievements in meetings and technical publications.

Output 4.3.1: Website in line with IW LEARN guidance active, with integrated environmental and socio-economic information.

Output 4.3.2: Officials from both governments participate in IW LEARN training/ twinning events.

Output 4.3.3: Production of at least one experience note and one results note in IW-Learn and shared widely.

#### **4) Alignment with GEF focal area strategies**

The project is aligned with Objective 3 of the International Waters focal area, GEF-7: *Enhance water security in freshwater ecosystems*. The GEF-7 IW Strategy states that ‘... IW support in freshwater basins will focus on three areas of strategic action: 1) advanced information exchange and early warning; 2) enhance regional and national cooperation on shared freshwater surface and groundwater basins; and, 3) invest in water, food, energy and environmental security’. All three areas are covered in the proposed project.

With regard to the first area, support will be used to:

- The management of risks through the implementation of early warning systems for floods, droughts and water quality degradation.
- Availability of sound data and information for evidence-based decision and policies.

In order to support further regional and national cooperation in the shared water basin, and as set out in the strategy, funding will focus on the following priorities:

- Participation in addressing common problems and agreeing on opportunities for cooperation through a shared vision;
- Capacity building for convergence in integrated water management tools between countries;
- Processes for formulating and formalizing cooperative legal and institutional frameworks;
- Identify and approve resources and investments addressing prioritized activities to provide SAP enabling tools;
- National policy, strategy and regulatory reform in line with regional agreements;
- Improve national and regional policies formulation processes and joint surface water management;
- Stakeholder's commitment to increase collaboration and communication through IW-LEARN.

Finally, investments in water, food, energy and environmental security will:

- Increase water efficiency, and reduce specific and diffuse pollution sources;

- Apply nature-based approaches to improve infiltration, prevent sedimentation and erosion through integrated basin management and sustainable land management;
- Protect and rehabilitate aquatic ecosystems, especially wetland areas; with multiple ecosystem services; support freshwater fishery and aquaculture through improved management strategies and policy formulation processes.

The project's **Theory of Change** is detailed in Graph 1 below:

**Theory of Change: Uruguay and Brazil transboundary Merín Lagoon Strategic Action Programme**

Barriers	Problem	Components	Objective	Global Impacts
<p>1: There is no Transboundary Diagnostic Analysis.</p> <p>2: Absence of specific regulations for defence &amp; regulation works to protect the ecosystem and its services (supporting, productive, regulating and socio-cultural)</p> <p>3: Lack of tools for joint and decentralised governance and integrated management</p> <p>4: Transboundary governance schemes are weak and unable to adapt to population pressures and climate change</p>	Human activities and productive practices causing degradation of ecosystems, without adequate monitoring of the same	<p>1. Transboundary Diagnostic Analysis (TDA) of the Merin Lagoon basin and Yaguaron river</p> <p>2. Design of a Strategic Action Programme (SAP) for the Merin Lagoon basin and Yaguaron river</p> <p>3. SAP implementation</p> <p>4. Project Monitoring, Communication and Evaluation</p>	To strengthen public and private sector capacities in Brazil and Uruguay for joint and integrated water resource management (IWRM) in the Merin Lagoon Basin, Yaguaron River and Coastal Lagoons, with emphasis on the sustainable and efficient use of water, preservation of ecosystems and their services, and adaptation to climate change, through the development of a Transboundary Diagnostic Analysis and Strategic Action Programme.	<ul style="list-style-type: none"> <li>Transboundary Diagnostic Analysis conducted and Strategic Action Programme (TDA/SAP) formulated and being implemented</li> <li>Stakeholder process and institutions strengthened to support Strategic Action Programme implementation</li> <li>National and local legislation and instruments aligned for effective water and land governance and active participation of Inter-ministerial Committees</li> <li>Integrated Water Resource Management (IWRM) approach validated through pilots.</li> <li>Co-benefits: Sustainable landscape management and livelihoods</li> </ul>

##### 5) Incremental/additional cost rationale and expected baseline contributions

An incremental investment by the GEF is essential to find solutions to the environmental problems and barriers identified in the basin within the framework of integrated water resources management coordinated by both countries. It is indeed very timely, considering previous experience in the region, where the project executed by FAO in the 1960s and 1970s resulted in relevant changes allowing access to quality water for various agricultural activities and human consumption, with a very positive view of local populations and actors about the work done. This process also served as the basis for a bi-national treaty and the establishment of a Joint Commission to manage the same, which is a very good starting point for dialogue between both countries and the achievement of project outcomes.

The project is also based on the National Water Plans, where both countries will incorporate the vision towards integrated basin management as a basic management unit, with the subsequent challenges stemming from shared basins. The TDA-SAP will build on the work carried out by each country through specific organizations (Basin Commissions, Agencies, Councils), while establishing a common view on the main problems and opportunities, strengthening existing capacities and mechanisms, and agreeing on a Strategic Action Programme. To validate the SAP content, a series of pilot activities will be carried out which will enable to generate additional resources and join efforts in lines of work common to both countries, such as efficient water use in agricultural production, monitoring water quality and quantity, development of tourism and fishery activities, sanitation, and the development of hydrodynamic models to establish early warning systems. All the above considering the preservation of ecosystems, and the effects of climate change and climate variability. GEF funding will also facilitate the elaboration of a common database on monitoring activities that both countries are carrying out in the basin, and to establish protocols for the future on how data is produced, shared and used. In other words, it is based on what the governments have been doing, and the project will establish best practices and mechanisms for coordinated action by countries.

The Project co-financing has been calculated at USD 77,113,000 through contributions made by the National Governments, mainly in plans under implementation or to be implemented in the region, as well as in current expenditure by the institutions involved during the project's execution. It is expected that during the project preparation new possibilities of co-financing may arise through other international agencies and organizations, as well as through the direct participation of the private sector.

Without GEF funding, significant efforts would continue to be made by both governments for the sustainable management of the basin and the socio-economic development of the territory, but without a joint vision of the basin what may lead to a deterioration of the ecosystems, and conflicts between populations regarding water use. Moreover, valuable opportunities would be lost such as the development of a tourist and fishery route, the implementation of sanitation solutions in bordering cities, the exchange of capacities for models development, early communication in case of emergencies, and maritime trade through a new waterway.

The key for the project success will be the acceptance and full adoption of joint and integrated planning of the basin water resources. Technical ministries will provide fresh expertise, share data and other resources, and facilitate the exchange of information and knowledge with decision makers to ensure the success of the project. The individual support from each government will be detailed throughout the entire project and will represent the basis upon which the project will grow.

## **6) Global environmental benefits**

The proposed project will generate global environmental benefits that will be measured through GEF **Core Indicator 7** for the international waters and biodiversity focal area: *Number of shared water ecosystems (fresh or marine) under new or improved cooperative management*: 1. The project will also generate co-benefits under **Core Indicator 11**: *Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment*, as follows:

- 4,000 direct beneficiaries (2,000 men and 2,000 women)
- 928,744 indirect beneficiaries (464,372 men and 464,372 women)

Indirect Beneficiaries: 928,744 indirect beneficiaries (464,372 men and 464,372 women). The estimate of the total indirect beneficiaries is based on the total population of the Laguna Merin basin<sup>[2]</sup>, who will benefit from improved information generated through the Transboundary Diagnostic Analysis (TDA); more informed decision-making through the Strategic Action Programme (SAP); and better understanding and awareness among local inhabitants, scientists, and decision-makers of sustainable management priorities for the basin, under Components 1, 2 and 4 of the project.

The target values for this indicator will be calculated more accurately during the full project development phase.

The project adds the multi-country and multi-level decision-making dimension needed to reform and harmonise existing national policies and plans, addressing the transboundary implications of the shared nature of the resource. This regional dimension will require shared recognition of the system boundaries (in line with the ecosystem approach), the establishment of multi-country mechanisms for information exchange and cooperation on common issues such as climate risk mitigation, improve regional awareness and stakeholder participation, all of which is incremental to the ‘baseline’ represented by the emphasis each country has currently adopted.

The project contributes to strengthening coordination efforts for integrated basin water management, promoting transboundary cooperation for sustainable development and addressing the challenges of shared basin management and the achievement of the SDGs, in particular SDG 6 and its interface with climate change (SDG 13), terrestrial ecosystems management (SDG 15), food security (SDG 2) and effective governance (SDG 17). The project facilitates the inclusion of advances in scientific understanding and knowledge of local populations, and the complexity of the interconnected and shared nature of the transboundary basin, thus minimizing conflicts among users, and promoting water security and ecosystem integrity. Therefore, the cumulative regional benefits of the project will be derived from the improved protection and sustainability of the basin, ecosystems and transboundary water resources, which will improve the overall stability, water security in the region, and the preservation of ecosystems and their ecosystem services.

## **7) Innovation, sustainability and potential to scale-up**



Sustainability: The project will contribute to sustainable watershed and coastal area management through a participatory multi-sectoral and multi-actor approach and the development of decision-making and technical capacities at different intervention levels (local to basin wide). The aim is to lay the foundations and establish the enabling environment for cooperation, joint action and informed decision-making between the countries that share this transboundary water body and its associated ecosystems, so as to restore and sustain the ecosystem services on which a large share of the basin population depend for their livelihoods (fisheries, water supply, agriculture, tourism, etc.). This will be achieved through:

- A Transboundary Diagnostic Analysis (TDA) that will adopt an integrated approach, analyse freshwater resources, including surface and groundwater, evaluate their uses and interactions, and elaborate different future climate scenarios as a basis for better informed and joint planning and action.
- Generation of a joint platform for enhancing data and information on water quality and quantity, which in conjunction with climate scenarios, and the development of hydrographic models, will inform sustainable and harmonised development interventions across the various sectors and allow progress towards an integrated decision-making system based on scientific and local knowledge systems with the participation of the various actors and water users.
- Developed programmes, related to the agricultural, fishing and aquaculture, and tourism sectors, with the objective of improved water and land management and productivity with direct socio-economic benefits for those dependent on the basin's resources and wider environmental benefits and poverty alleviation for the population of the Merín Lagoon basin and Yaguaron river watershed. The experiences and tools can be shared and used as a model for other transboundary basins in Latin America and other regions of the world.

Scaling up: The selection of pilot projects under Component 3 will be carried out with emphasis on the problems common to both countries, which will enable the lessons learned and experiences to be evaluated, adapted and replicated to benefit other critical sites within the Merín Lagoon basin, Yaguaron river watershed, and in the wider Latin American region. The pilot projects on watershed, water resources and wetland management, including water monitoring of water quantity and quality, as well as validation of practices and technologies for efficient and sustainable water use in the agricultural sector (including livestock management), sustainable fisheries and aquaculture, and ecotourism will provide tools and lessons learned. Efforts will be made to share lessons learned on transboundary cooperation, participatory territorial planning, and integrated ecosystem management, and to ensure their scaling out and up for wider adoption across the basin as well as their integration into policies, regulations, and institutional programs at the national level in both Uruguay and Brazil.

Innovation: The project will aim to foster innovation in the use of new technology as well as approaches to expand use of the technologies and adoption of best practices. Technologies could include, *inter alia*, accessible spatial data information systems, digital tools and advances in environmental monitoring and early warning, use of software, smartphones or tablets for data collection and information sharing, and climate smart solutions such as renewable energy (e.g. solar driven pumps and monitoring devices). Based on adequate connectivity and access to technologies, the project will be able to incorporate innovative tools such as remote sensing applied to agricultural activity and monitoring the quality of water bodies, the use of drones for monitoring (agriculture, fisheries, water), application of new technologies and improvements in water use (precision irrigation, sanitation, livestock watering), and the application of innovative technological packages to substitute the use of pesticides with biological alternatives and digital control, among others. Technologies in this arena are developing rapidly, and the project will investigate opportunities through relevant publications, conferences and other fora for exchange, as well as through private public sector partnerships in the basin.

In addition to innovative technologies, the project also proposes to adopt innovative approaches such as collaboration across sectors through virtual platforms for more effective sharing and partnership development, using an open source philosophy to improve access and transparency, testing appropriate and dynamic business models between public and private sectors, and building on local knowledge systems and adaptive management for scaling up of best practices. These approaches should contribute to improved environmental monitoring and use of natural resources, more effective programs and plans, and more efficient use of human resources.

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<sup>[1]</sup> International Hydrological Programme for Latin America and the Caribbean - UNESCO (IHP - LAC), cited by Serrentino (2013)

<sup>[2]</sup> The population estimate is based on the following: the population in the Uruguayan area of the Laguna Merín basin is 154,699 (8% rural) as reported in the Uruguay National Water Plan 2018, MVOTMA; the population of the Brazilian area of the Laguna Merín basin is 774,045 (14.5% rural), according to the Brasil Plano da Bacia Hidrográfica da Lagoa Mirim- Preliminary Diagnosis 2018, Governo Do Estado Rio Grande Do Sul, Ministry of Environment.

#### **1b. Project Map and Coordinates**

**Please provide geo-referenced information and map where the project interventions will take place.**



#### **2. Stakeholders**

**Select the stakeholders that have participated in consultations during the project identification phase:**

**Indigenous Peoples and Local Communities** Yes

**Civil Society Organizations** Yes

**Private Sector Entities** Yes

**If none of the above, please explain why:**

**In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement.**

The project was requested by central and regional government agencies in response to the opportunities and management problems identified in the basin, providing advice for water management participation in each country (Regional Council and *Comité de Bacia*), involving the local communities. Likewise, it also takes advantage of the previous

experience of the Joint Commission for the Development of the Merín Lagoon Basin, a body that, through capacity building, will promote joint and coordinated action of the countries for the development of the basin.

The Government of Uruguay, in collaboration with FAO, presented the project to Merín Lagoon Basin Commission (CLM) (Uruguay) and the Coastal Lagoons Basin Commission on 20 February 2020. In this context, the objectives, scope and main problems to be addressed by the project were discussed and important contributions were received to draw-up this document. Different actors of the civil society (academia, non-governmental organizations, government agencies, water users, the water utility, irrigation communities, rural federations, etc.) participated in this process.

In Brazil, the consultation with stakeholders was carried out through the Merín Lagoon Agency (ALM), which participated during the formulation of the project through a designated team including the perspective of the different water users and other local stakeholders, as well as academia.

The governance structure of CLM and ALM includes representation from most parties interested in the management of the Lagoon Merin basin resources: government agencies, resource users, academia, and civil society:

- 1) CLM Uruguay is composed of groups of resource users and rural inhabitants such as: the Rural Association of Uruguay, the Forest Producers Society, the National Association of Milk Producers, and the Rice Growers Association.
- 2) ALM Brazil includes various groups of resource users and rural workers, such as the Federation of Agriculture of Rio Grande do Sul and the Federation of Workers, among others.

During PPG, local validation workshops will be organized at grassroot level to include those communities who may not have representation in the above-mentioned basin offices. This will be particularly relevant to validate target field activities designed under Component 3.

Regarding indigenous people, two ethnic groups can be found in the proximity of the project area in Brazil: the *Mbyá-Guaraní* people, one of the more representative indigenous people from the Americas, with over 900 years of presence in the area; and some families of the Kaingang people, who have arrived at the area in the last decade. There are no indigenous people in the project area on Uruguay. The project will involve local communities, indigenous people and civil society organizations during its preparation and implementation phase as well as in the process of transboundary diagnostic analysis. Prior informed consent procedures will be adhered to. In addition, the project will carry out extensive fieldwork to understand livelihoods and the gender dimension. The proposed implementation process will also involve NGOs located in the basin territory.

### **3. Gender Equality and Women's Empowerment**

**Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).**

Gender aspects will be considered in a systemic and integrated manner throughout the project, and gender considerations will be integrated into the design of the project activities. During the development of the TDA (Component 1 of the project), an analysis of the existing situation will be carried out, where differences in conditions, opportunities, barriers, etc. for women and men will be identified in terms of food security, poverty, rural productivity, access to technologies, access to markets, education, differences in employment patterns, etc. This analysis will also include (*inter alia*):

- Identification of gaps in gender equality and development of strategies and policies to close those gaps;
- Incorporation of gender issues as they relate to the use of water resources;
- Collection of water data disaggregated by sex, following the methodology promoted by IW LEARN.
- Promotion of women's participation in public consultation activities;
- Promotion of the participation of agencies and organizations involved in gender issues, noting that although the responsibility for implementing a gender approach does not rest solely with women's organizations, they are natural vehicles for promoting gender equality both locally and nationally;

In the later stages of the project, the following will be considered:

- The development and harmonization of regulatory frameworks and institutional capacity building aimed at ensuring that gender perspectives are successfully incorporated into the governance of natural resources;
- Gender considerations incorporated into the design of policies and plans in order to avoid perpetuating gender gaps;
- Recognition of the knowledge and practices of women and their sustainable use of resources, and how to ensure that women are full participants in the plans and value chains that the project will promote;
- Ensuring the participation of women in all training programs for sustainable management of natural resources, in order to promote the sustainability of the gender actions proposed by the project;
- Ensuring that specialists hired by the project have knowledge, skills, responsibilities and experience that will contribute to adequate gender mainstreaming;
- Incorporating gender analyses and gender specific information and data into lessons learned generated by the project;
- Promoting gender-balanced participation in the work of the Joint Commission and any *ad hoc*/subsidiary mechanisms established during the Project, and in project implementation activities such as decision making mechanisms, working groups, the project management unit, and monitoring activities, in order to promote women's involvement and to identify and mitigate any potential negative impacts on women from project activities.

During the monitoring and evaluation of the project (4.2.1 and 4.2.2) the results will be analysed from a gender perspective, as well as the lessons learned in the area of gender, which will be systematized and published in reports. The means of communication used in the dissemination of project activities and results will be such that full access to

**Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment?** Yes

**closing gender gaps in access to and control over natural resources;** No

**improving women's participation and decision-making; and/or** Yes

**generating socio-economic benefits or services for women.** Yes

**Will the project's results framework or logical framework include gender-sensitive indicators?**

Yes

#### **4. Private sector engagement**

**Will there be private sector engagement in the project?**

Yes

**Please briefly explain the rationale behind your answer.**

Through the elaboration of the Strategic Action Plan, the project will promote a framework with clear rules for the participation of the private sector in the socioeconomic development of the basin, through the joint view of the national governments. This will create a better connection between private sector investments and formal basin planning processes. This will provide the planning process with up-to-date information on investment strategies, more detailed data than those currently available, and opportunities for dialogue between private basin actors.

Actions will be taken to improve agricultural practices, through a more efficient use of the resources what will encourage greater competitiveness in the sector, while implementing more sustainable environmental practices. In this regard, the development of infrastructure to mitigate the effect of droughts and floods will leverage private sector investment in the region.

A programme for the development of tourism, fishery and aquaculture will encourage new investments and the development of small and medium size undertakings, creating jobs and allowing the settlement of populations that would otherwise move to urban centres.

The development of maritime transport through the implementation of port development and adequate infrastructure, in harmony with the preservation of ecosystems, will attract not only direct investment, but will also boost the regional trade, and the possibility to become a route to connect important urban centres in both countries.

Private sector actors will be further convened during the PPG phase.

## 5. Risks

**Indicate risks, including climate change, potential social and environmental risks that might prevent the Project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the Project design (table format acceptable)**

The following is a preliminary identification of the main risks faced by the project that may prevent its success:

Risks	Risk classification	Mitigation Measures
Lack of permanent political support to establish transboundary cooperation frameworks.	Low	The project will take a step-by-step approach to building mutual trust based on joint fact-finding and consultation processes. It will build on the previous experience of the Joint Commission for the Development of the Merín Lagoon Basin, and on compliance with treaties already in place.
Limited interest or involvement of target stakeholders, local communities and inhabitants of the two basins.	Medium	Over the project implementation, risks will be addressed throughout systematic communication with local communities, and other stakeholders, and through participation in Annual Review Meetings.

Climate change increases hydrological risks, such as floods and droughts.	Medium	<p>A Climate Risk Screening has been undertaken at PIF stage. According to the Köppen scale, the climate in the Coastal Lagoons is characterized for having hot and humid summers, and cold to mild winters. The precipitation throughout the year is homogenous with approximately 60-100 mm/month (Köttek, 2006). The natural hazard most affecting the Coastal Lagoons is flooding and resulted in the displacement of more than 86,000 people from 2015-2019 (SINAE, 2020). Other hazards such as coastal floods and wildfires have been observed in the project's location (GFDRR, 2020). Precipitation patterns show an increase of more than 300 mm in the last 50 years, with an increasing number of days with rainfall above 10 mm (Rusticucci et al., 2009; Fanning 2014). The El Niño Southern Oscillation (ENSO) phenomenon further increases the inter-annual rainfall variability, with higher precipitation during ENSO years and severe droughts during La Niña years (UNDP, 2017).</p> <p>Furthermore, data from 20 GCM's for two climate scenarios (RCP 2.6 and RCP 8.5) suggest in both cases an increase in river discharges in the Merin and Pato's lagoon for the periods 2006-2035 and 2051-2080 (Schuster, 2020). Overall, precipitation is expected to increase by 10-20% on average with an increase in inter-annual rainfall variability (UNDP, 2017).</p> <p>While the hazard risk in the project area is high, the exposure of agricultural systems is moderate and the vulnerability is low. These risks are attenuated by the high adaptive capacity of the people and agricultural systems living in the project area. For these reasons, there is not an urgent need to carry out an in-depth climate analysis at the PPG phase.</p> <p>The project design includes activities recommended in the climate risk screening to improve the planning for climate change impacts, increase resilience to climate change, and reduce GHG emissions (these will be confirmed during the PPG phase). These activities include: Under Components 1 (TDA) and 2 (SAP), the project will strengthen the exchange of meteorological data between Uruguay and Brazil in order to strengthen Early Warning Systems, early action and emergency response in the project's location, with a focus on hazards such as flooding &amp; sea level rise; the project also will develop an Impact Assessment Toolbox for the monitoring of different trans-boundary hazards currently affecting the lagoons (e.g. flooding and sea level rise). Under Component 3 (SAP implementation), the project will promote climate smart agricultural practices for rice plantations and will develop a hydrodynamic model of the Lagoon and tributaries, including: i) a preliminary flood risk assessment of the project area, flood hazard maps and flood risk maps; ii) the preparation and implementation of flood risk management plans for achieving certain levels of protection; iii) early warning systems for floods and droughts; iv) analysis of minimum flows to ensure the functioning of the ecosystem; and v) social, economic and environmental development diagnosis.</p>
Some project activities will be implemented in the vicinity of two Ramsar wetlands, Bañados del Este and Laguna de Rocha	Medium	During the PPG, an environmental analysis will be carried out to ensure that the project will not negatively impact the wetlands.
Limited participation from indigenous people	Medium	During the PPG, FAO guidelines for a free, prior and informed consent (FPIC) will be followed to design participation mechanisms in the project formulation, including instances of involvement during the project implementation.

Environmental and Social Safeguards – Risk screening at PIF stage:

In line with the FAO Environmental and Social Management Guidelines (ESMG), the implementing agency has conducted an Environmental and Social Safeguards (ESS) screening at PIF stage. A full environmental, social and climate risk analysis will be conducted during PPG.

As per the ESS checklist screening, the project has been classified as *Moderate risk*. The table below summarizes the Environmental and Social risks identified in relation to the proposed project:

Safeguard Triggered	Risk Identified	Answer	Risk Classification	Potential (negative) impacts	Mitigation measures (preliminary)
2	2.1 - Would this project be implemented within a legally designated protected area or its buffer zone?	Yes	Moderate	<p>The project area includes two RAMSAR sites: Bañados del Este and Laguna de Rocha</p> <p>The project is reclassified from high to moderate risk, as its activities will meanly contribute to the integrated management of a transboundary basin through sustainable use of terrestrial freshwater ecosystems and associated services. The potential negative environmental and social impacts are site-specific, are not irreversible, and can easily be corrected by appropriate mitigation measures and will not gear to cause adverse impacts to legally protected areas.</p>	An Environmental and Social Analysis (ESA) for Moderate Risk Projects is required and will be generated during full project preparation.



9	9.2 - Are there indigenous peoples living in the project area where activities will take place?	Yes	Moderate	On Brazil side, there are indigenous groups (Guarani and Kaingang) who live in towns near the urban centres or rural areas.	<p>A Free Prior and Informed Consent process is required.</p> <p><b>If the project is for indigenous peoples</b>, an Indigenous Peoples Plan is required in addition to the Free Prior and Informed Consent process.</p> <p>In cases where <b>the project is for both, indigenous and non-indigenous peoples</b>, an Indigenous Peoples Plan will be required only if a substantial number of beneficiaries are Indigenous Peoples. Project activities will outline actions to address and mitigate any potential impact, during PPG.</p>
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#### Additional Information

	Answer	Remarks
Is the proposed project considered potentially controversial?	No	<p>The project will make an environmental assessment during the PPG phase to ensure that activities do not impact negatively on the Ramsar wetland. Actually, the objectives of the project aim to improve the management and quality of the water resource, so the effect will be positive.</p> <p>Regarding indigenous communities, during the PPG phase adequate measures will be taken to contact representatives and invite them to participate in workshops where the project document will be designed, following FAO guidelines for a free, prior and informed consent.</p>

#### 6. Coordination

Outline the institutional structure of the project including monitoring and evaluation coordination at the project level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.

## Institutional Arrangements

In Brazil, the Ministry of Regional Development (MDR) will be responsible for the overall supervision of the project), to provide, over time, full alignment of the project with national programmes and priorities in both countries, as appropriate, and to facilitate synergies with other federal and national programmes, institutions and initiatives. In Uruguay, this responsibility will be assumed by Ministry of Housing, Territorial Management and the Environment (MVOTMA).

The Ministries of Foreign Affairs will be responsible for the diplomatic liaison within the Bilateral Steering Committee.

The binational project will be implemented by FAO. In Brazil, the Merín Lagoon Development Agency (ALM), as implementing partner, will be responsible for ensuring the technical and financial execution of the Annual Work Plan approved by the Bilateral Steering Committee, and will provide coordination of the field project components to be developed on the Brazilian side, as well as coordination and collaboration with local project stakeholders on the Brazilian territory of the Lagoon Basin.

In Uruguay, the National Water Directorate (DINAGUA) will be the executing agency of the project, with partners to advance specific components such as: the Ministry of Livestock, Agriculture and Fisheries (MGAP) and the National Institute of Agricultural Research (INIA) in aspects related to sustainability in agricultural production, State Sewage and Water Works (OSE) for sanitation and drinking water supply, and Regional East University Center (CURE) for capacity building and research.

The main institutions that will participate directly in the project, by country and in alphabetical order are:

### Brazil:

- MDR (Ministério de Desenvolvimento Regional) – Ministry of Regional Development
- ALM (Agência para o Desenvolvimento da Lagoa Mirim) – Merín Lagoon Development Agency
- MRE (Ministerio de Relações Exteriores) – Ministry of Foreign Affairs
- GRS (Governo do Estado de Rio Grande do Sul) – Government of Rio Grande do Sul

### Uruguay:

- CURE (Centro Universitario Regional Este) – Regional East University Center
- INIA (Instituto Nacional de Investigación Agropecuaria) – National Institute of Agricultural Research
- MGAP (Ministerio de Ganadería Agricultura y Pesca) – Ministry of Livestock, Agriculture and Fisheries
- MRREE (Ministerio de Relaciones Exteriores) – Ministry of Foreign Affairs
- MVOTMA (Ministerio de Vivienda Ordenamiento Territorial y Medio Ambiente) – Ministry of Housing, Territorial Management and the Environment

· OSE (Obras Sanitarias del Estado) – State Sewage and Water Works

The organization on behalf of the countries with the mandate to administer the shared resource will be the *Joint Commission for the Development of the Merín Lagoon Basin*. For this, the existing capacities in this organization will be strengthened according to Component 2 of the project. The mechanism will be strengthened and it will be the mandate of this Commission together with the ministries involved to manage and guarantee access to the shared data collected.

During the project a Bilateral Steering Committee (BSC), which may function within the Joint Commission, for the Development of the Merín Lagoon Basin, will be established to guide the implementation of the project, verify and approve annual operational plans and technical reports, and provide guidance on project execution. There will also be a Project Management Unit (PMU), responsible for the daily management of the project and ensure the coordination and execution of the project through the effective implementation of the annual work plans. The PMU consists of a Project Coordinator, Administrative Assistant, and specialists (to be determined) with expertise in the project's issues, including participation and gender.

FAO, the partner agencies and the other co-financiers mentioned above will work with the implementing agencies of other programmes and projects to identify and facilitate synergies with other relevant GEF-funded projects as well as projects funded by other Donors. Collaboration will take place through communication between GEF agencies and implementing partners of other programmes and projects, as well as the exchange of information and dissemination materials between projects.

#### Coordination with other relevant GEF-financed projects and other initiatives

- The project will coordinate efforts with the following on-going GEF-funded initiatives in each country:

Country	Project Name	Project Objective
Uruguay	Consolidate biodiversity and land conservation policies and actions as pillars of sustainable development.	Strengthen systemic, financial and institutional capacity for biodiversity conservation and sustainable land management, improving the effectiveness and sustainability of protected area management, private land administration and human welfare.
Uruguay	Smart livestock production and land restoration in the Uruguayan grasslands.	Mitigate climate change and restore degraded land by promoting climate-smart practices in the livestock sector, with a focus on family farming.
Brazil	Recovery and protection of climate and biodiversity services in the Paraiba do Sul basin of Brazil Atlantic Forest.	Recovery and preservation of the Paraiba do Sul basin of Brazil Atlantic Forest (AF) to protect carbon sequestration and generate benefits for biodiversity.
Brazil	Marine and coastal protected areas.	Reduce the loss of marine and coastal biodiversity in Brazil through the conservation of globally significant ecosystems and key environmental services relevant to national development and welfare of coastal communities. Protected ecosystems will maintain their capacity to produce food, good water quality and increase resilience, bringing far-reaching social benefits.

## 7. Consistency with National Priorities

### Is the Project consistent with the National Strategies and plans or reports and assessments under relevant conventions

Yes

**If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc**

National Bio Strategy Action Plan (NBSAP)

CBD National Report

UNCCD Reporting

National Adaptation Programme of Action Update

#### Uruguay:

National Bio Strategy Action Plan: According to the National Strategy for the Conservation and Sustainable Use of Biodiversity for the period 2016-2020, the project in question will contribute at least through the following components: (i) Conservation and sustainable use of biodiversity: Conserve and efficiently manage the territories whose components make them particularly strategic to maintain biodiversity (ii) Incorporation of biodiversity considerations into sectors: Promote and ensure the sustainable use of biodiversity. Establish policies for the integration of biodiversity conservation with the development of productive activities.

CBD National Report: The project will contribute at least to the following objectives i) Advance in knowledge generation regarding ecosystems capacity to absorb impacts from production; ii) Adopt measures to move towards sustainable production and consumption models, in line with national regulations and the promotion of biodiversity initiatives; iii) Establish best agricultural practices (institutionally fostered) where guidelines are specifically developed for the articulation between production activities and biodiversity conservation; iv) Develop baselines on pollution levels for the country's main basins; v) Adopt measures to reduce pressures on the ecosystems vulnerable to climate change, particularly the coastal and marine areas, forests and grasslands. The integration of the climate change dimension in planning instruments involving ecosystems and natural resources will be promoted.

UNCCD Reporting: The project will contribute at least to the following strategic objectives: i) To improve the condition of affected ecosystems, fight against desertification or land degradation, promote sustainable land management and contribute to neutrality in land degradation. ii) To improve the living conditions of affected populations through access to adequate drinking water services. iii) To mitigate, adapt to and manage the effects of drought in order to leverage resilience of vulnerable populations and ecosystems.

National Adaptation Programme of Action Update: The Project will contribute to building adaptive capacity and resilience and improving the livelihoods of rural populations through the adoption of sustainable plant and animal production systems, technology development and transfer, information systems, resilient infrastructure, fostering best practices, support networks and farmers' organizations, and strengthening institutional adaptation capacities.

Brazil:

National Bio Strategy Action Plan: According to the National Strategy for the Conservation and Sustainable Use of Biodiversity for the period 2011-2020, the project will contribute at least through the following components: i) Addressing the root causes of biodiversity loss by making biodiversity concerns permeate government and society. ii) Reducing direct pressures on biodiversity and promoting its sustainable use. iii) Enhancing the benefits of biodiversity and ecosystem services for everyone.

CBD National Report: The project will contribute at least to the following objectives: (i) Governments, the private sector and stakeholders at all levels have taken actions or have implemented sustainable production and consumption plans to mitigate or prevent negative impacts of the use of natural resources. (ii) All stocks of any aquatic organism are managed and harvested sustainably, legally and using ecosystem based approaches, so that overexploitation is avoided, recovery plans and measures for depleted species are implemented, fisheries do not have significant adverse impacts on threats to vulnerable species and ecosystems, and the impacts of fishing on stocks, species and ecosystems are within safe ecological boundaries, when scientifically established. (iii) The incorporation of sustainable management practices has been disseminated and promoted in agriculture, livestock production, aquaculture, forestry, extractive activities and forest and wildlife management, ensuring the conservation of biodiversity. (iv) Pollution, including excess nutrients, has been brought to levels that are not detrimental to ecosystems and biodiversity. (v) The National Strategy on Invasive Alien Species is fully implemented, with the participation and commitment of States and the development of a National Policy, ensuring continuous and updated diagnosis of species and effective Action Plans for prevention, containment and control. (vi) Ecosystems that provide essential services, including water-related services that contribute to health, livelihoods and welfare are restored and protected, taking into account the needs of women, traditional peoples and communities, indigenous peoples and local communities, and the poor and vulnerable.

UNCCD Reporting: The project will contribute at least to the following strategic objectives: i) Improve the condition of affected ecosystems, fight against desertification or land degradation, promote sustainable land management and contribute to neutrality in land degradation. ii) Improve the living conditions of affected populations through access to adequate drinking water services. iii) Mitigate, adapt to and manage the effects of drought in order to increase the resilience of vulnerable populations and ecosystems.

National Adaptation Programme of Action Update: The project contributes to the overall objective of the Plan which is to promote climate risk reduction and management in Brazil and to consider the effects of climate change, taking full advantage of emerging opportunities, avoiding losses and damages, and building instruments to enable adaptation of natural, human and productive resources and infrastructure systems. This is done through inter-governmental and intra-governmental coordination, the incorporation of climate change adaptation into government planning, the implementation of adaptation actions with scientific and technical knowledge, and the promotion of regional cooperation.

## 8. Knowledge Management

**Outline the Knowledge management approach for the Project, including, if any, plans for the Project to learn from other relevant Projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.**

The objective of the Knowledge Management strategy that will be fully developed during project preparation is to provide a structured and integrated approach to systematically leverage and share the knowledge assets generated by the Project with the intended beneficiaries and audiences. In doing so, the strategy will aim to maximize the impact of the project by strengthening operational coherence; taking advantage of synergies; **addressing gender dimensions**, and informing policy makers and key stakeholders of the benefits derived from the project interventions.

The objective of the strategy is to maximize the the project impact:

- Systematically leverage and share the knowledge assets generated by the Project with the intended beneficiaries and audiences;
- Strengthen the science-policy interface and influence decision making through data and information sharing, capacity building and involvement of regional stakeholders;
- Generate cooperation agreements between universities of both countries to do research on the lake system;
- Use the tools on the IW Learn portal to draw lessons from other similar experiences;
- Strengthen knowledge sharing in the framework of the existing Joint Commission, through the development of a web platform;
- Hold Annual Review Meetings that will be the main regional events with the aim of establishing synergistic interactions between countries, with other relevant initiatives and stakeholders. The meetings will have a dual purpose: 1) to provide a forum for peer learning among project stakeholders, and 2) to catalyze regional attention on progress towards water and environmental security.

**Part III: Approval/Endorsement By GEF Operational Focal Point(S) And Gef Agency(ies)**

**A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter with this template).**

<b>Name</b>	<b>Position</b>	<b>Ministry</b>	<b>Date</b>
Judith Torres	Environmental Affairs Officer	Ministry of Housing, Territorial Management and the Environment	3/23/2020
Mr. Marcus Cesar Ribeiro Barretto	General Coordinator for External Financing	Ministry of Economy	4/16/2020

#### **ANNEX A: Project Map and Geographic Coordinates**

Please provide geo-referenced information and map where the project intervention takes place

