

ANNEX D
SAP FOR THE LA PLATA BASIN
PUBLIC PARTICIPATION PLAN (PPP)

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1. Background and Objectives of the PPP

The Public Participation Plan (PPP) for the la Plata Basin Project has been prepared in a manner consistent with the public participation policies and laws of each CIC member country, insofar as they relate to development and environmental management issues, and on the public participation experiences of the GEF-IW funded projects executed in the Basin—particularly during the Bermejo, FREPLATA, Alto Paraguay-Pantanal and the Guarani Aquifer projects—and on the inputs provided by different institutional and social stakeholders during the preparation of the PDF-B. These latter inputs were solicited through a series of consultation meetings, working groups meetings, and national and regional seminars conducted for the definition of the Vision for the Sustainable Development of the la Plata Basin and the Macro Transboundary Diagnostic Analysis (MTDA).

The goal of PPP is to strengthen active, organized and responsible civil society participation in the integrated management and sustainable development of the la Plata Basin. Given the important geographic, social and economic dimensions of the la Plata Basin, the PPP was developed in parallel with the FSAP strategy and is organized in phases—with short- (5 years), medium- (10 years) and long- (15 years and longer) term objectives. The first phase of the FSAP¹ involves increasing knowledge and interaction among all the organizations that are already working in the Basin, creating the conditions necessary for participation within the framework of the CIC, supporting the involvement of key stakeholders, and making the necessary decisions to foster organized participation in the management of the La Plata Basin. In order to achieve these goals, the following activities are proposed: (i) expanding the database of the Basin's stakeholders, by strengthening the Institutional Mapping activity conducted during the PDF-B Phase, as part of CIC's Digital Map; (ii) specifying new coordination and articulation activities based upon the experiences, practices and achievements of other GEF projects being executed in the la Plata Basin; (iii) establishing inter-institutional agreements to implement the preparatory process in commissions, agencies and organizations working in the la Plata Basin; (iv) including civil society organization in the preparation of the TDA and the SAP; (v) implementing communications and information dissemination actions within the framework of the Basin; (vi) executing educational activities and training in IWRM in the Basin to assist key stakeholders in promoting increased and better participation of civil society; (vii) establishing a Fund for the Promotion of Public Participation to facilitate the active commitment of social organizations in the management of critical issues and concerns; and, finally, (viii) executing four priority projects and two pilot demonstration projects in critical local situations. Some elements of the PPP complement and/or are included within other project Components.²

2. Conceptual and methodological framework

The importance of public participation in issues related to environmental protection and sustainable development has increased globally and is a sensitive issue for the la Plata Basin. This process goes hand-in-hand with strengthening democracy and increasing awareness of the sustainable management of natural resources and the environment as a responsibility of all and not only of State institutions. Water resource management is performed locally; therefore, experiences from the priority and pilot demonstration projects will contribute information and

¹ The Framework SAP (FSAP) was developed during the PDF-A, and remains the overarching strategic document. This project will formulate a SAP based on a Basin-wide TDA also developed under this proposed project.

² For example, a public and stakeholder involvement and participation activity is explicitly included within the pilot demonstration project Sub-component, but cross-referenced herein for completeness.

fundamental experiences to the SAP. Awareness of the need for public participation in development has grown at the local government level—in some cases conditioned by the opening of channels and opportunities for participation in the management processes.

One of the decisions that arose from the Earth Summit in Rio de Janeiro (1992) was the adoption of sustainable development concept as a model. Sustainable development is based upon public participation in the establishment of development strategies, which should have the capacity to integrate environmental policies with economic and social policies. Principle 10 of the Rio Declaration³ states that “the best way to treat environmental issues is with the participation of all the citizens at the corresponding levels: at the national level, every person should have adequate access to the information on the environment from public authorities, including information on dangerous materials and activities for their communities, as well as opportunities to participate in decision-making processes, while the State should facilitate and promote awareness and participation of the population by making the information available.”

These statements were also included in Chapter 40 of *Agenda 21* (Rio de Janeiro, 1992), “Information for the decision-making,” and in the Declaration of Johannesburg (2002), adopted during the World Summit on Sustainable Development. Since Rio de Janeiro Declaration these concepts have been reinforced and expanded through concrete experiences.

Within the framework of the OAS, the “Inter American Strategy for the Promotion of Public Participation in Decision-Making for the Sustainable Development”, commonly known as the ISP, states that “Public Participation refers to every interaction between the public sector and civil society including a process through which the government and civil society initiate a dialogue, establish alliances, share information and interact to design, execute and evaluate policies, projects and development programs. The process requires the participation and commitment of all interested parties, including the poor and traditionally marginalized groups, such as disadvantaged ethnic minorities, among others.” Programs of development and environmental management are particularly directed toward civil society, which, according to the ISP, “is organized in different ways and sectors, and includes individuals, the private sector, the labor sector, the political parties, academia, other stakeholders and non-governmental organizations.”

The ISP defines a cross-cutting method of working and integrating activities that specifically includes activities involving different stakeholders; working with a focus on gender issues; providing incentives for communication, education and financing of actions and proposals; interacting with key stakeholders; operating with transparent procedures; building capacity of the private and public sectors and creating jobs at the basin and local levels; and facilitating, in the work places, the creation of sustainable environments.

In addition, the Global Environmental Facility (GEF) establishes certain principles regarding participation by civil society that have been utilized in the preparation of this PPP, within the context of the SAP. Within the GEF context, stakeholder participation is designed to:

- Contribute to the sustainability of environmental, economic, financial, and social interventions.
- Create and implement a flexible methodology in accordance with the local conditions of the countries benefiting from the project.
- Conduct projects, within a framework of transparency and openness, which allow documentation of their implementation through the participatory process, so as to maintain a documentary base that describes how participatory development is implemented.
- Facilitate the exchange of good practices aimed at public and civil society participation.

³ UN Declaration on Environment and Development, 1992.

- Ensure the availability of financial mechanisms within the Executing Agencies to permit participation by governments and NGOs involved in the process.
- Establish—jointly with the Implementing Agency—operational guidelines that promote the effectiveness of the process and the activities developed for public participation, with corresponding monitoring and annual plan revision provisions.

3. Baseline

Public participation within the framework of the la Plata Basin is based on the participation of civil society organizations in the processes of management and decision-making for sustainable development. The legal frameworks of each country guarantee a process of organization and participation by civil society, assigning to them responsibilities in different areas of development and management of natural resources. The diverse jurisdictional structures of the participating countries allow for more complex means of participation, such as in the case of Argentina and Brazil. This focus and will for political openness remains to be finalized within the context of the la Plata Treaty and in the CIC. Still, links have been established, and will be maintained, with civil organizations in the Basin. With the objective of expanding this process during the PDF-B phase, the countries approved the Digital Map Project within the framework of the CIC. The digital database was structured to locate the institutions and projects according to: (i) basins, (ii) sub-basins, and (iii) coverage within the countries, linked with the local executing organizations. This information and database can be found on the web page of the CIC: www.cicplata.org. The support given to this effort by the General Secretariat of the CIC opened a dialogue for working both inside and outside of the Basin, allowing the approval of nine agreements with the following commissions and agencies:

From outside the Basin:

- *World Meteorological Organisation (WMO)/Organización Meteorológica Mundial (OMM)*, for aid with hydrologic warning and water quality monitoring systems.
- *Amazon Cooperation Treaty Organization (ACTO)/Organización del Tratado de Cooperación Amazónica (OTCA)*, for sharing experiences and information.
- *International Commission for River Basins/Comisión Internacional de Protección del Río (ICPR)*, fostering a brotherhood of basins and basin agreements.

From within the Basin:

- *Uruguay River Commission/Comisión Administradora del Río Uruguay (CARU)*, the Argentine-Uruguayan Commission responsible for the administration of the Uruguay River and for the monitoring and protecting of its waters.
- *ITAIPU Binational/ITAIPÚ Binacional*, the Brasil-Paraguay agency managing the Itaipú dam and reservoir, developing a series of protection projects within micro-basins in Brazil with strong community participation and executed by existing organizations in the basin (*Cultivando Agua Boa Project*); working on fish management and protection, and on water quality monitoring; and, developing programs for women, youth, and indigenous populations in the Paraná III region.
- *Commission for the Administration of the la Plata River and Maritime Front/Comisión Administradora del Río de the la Plata y Comisión Mixta del Frente Marítimo. Proyecto FREPLATA*, the Argentine and Uruguayan Project for the la Plata River and its Maritime Front, financed by the GEF and implemented by UNDP.
- *Pilcomayo Basin Commission/Proyecto de Gestión Integrada y Plan Maestro de la Cuenca del Río Pilcomayo*, the tri-national project of Argentina, Bolivia and Paraguay, co-financed by the European Union and headquartered in Tarija, Bolivia.

During the preparation of the FSAP, a series of working meetings on transboundary waters were conducted among the different GEF projects being executed in the la Plata Basin, including: (i) Bermejo; (ii) Alto Paraguay-Pantanal; (iii) Guarani Aquifer System; and (iv) the Maritime Front of the la Plata River (FREPLATA). Staff from the GEF land-degradation project in the *Gran Chaco Americano* were also invited to participate in thematic sessions. Each of these projects has developed, or is developing, experiences in public participation that constitute lessons learned for the FSAP. These experiences constitute the basis of the working relationships to be established with the main stakeholders involved in the management of the la Plata Basin during the execution of the FSAP.

4. Activities, Goals and Products of the Public Participation Plan

The PPP is aimed at encouraging and promoting public participation during the initial phase of the FSAP (first 5 years) and is defined in the FSAP, as part of each of the various components, guaranteeing the active presence or participation of key organizations during execution of the Program. In this phase, agreements will be established, conditions created, and opportunities provided for the formal inclusion of the participatory process in the framework of the la Plata Basin Treaty.

The goals at the end of the five years are to: strengthen active, organized and responsible civil society participation in the integrated management and the sustainable development of the la Plata Basin, within the framework of the CIC, based on the work done with civil society organizations; develop a proposal to amend the Regulation of the CIC; and propose a mechanism for consultation and ways to guarantee the participation of civil society organizations (academia, companies, basins authorities, etc.) in the CIC in a manner consistent with the commitments entrusted to that body by the countries. To this end, the outputs will be: (i) a proposed text of the amendment to the Regulation agreed by the National Units of the Program (UNP) and validated in a Validation Seminar conducted under the auspices of the SAP, and (ii) a proposed legal document to regulate this participation within the framework of the CIC that facilitates its operation.

The six groups of activities to be executed are described below, with their objectives and expected results:

4.1. Increasing the number of active Stakeholders in the Management of the la Plata Basin – Refinement of the Interactive Digital Map. This will concentrate on the expansion of the Institutional Mapping within the Digital Mapping Project of the CIC, supported by CONICET of Argentina, to analyze and characterize the organizations and projects included therein. This will be utilized in order to identify and fortify links for formal work on themes prioritized by the Framework Program. Starting from the first year, the formalization of work agreements will be facilitated within a limited group of stakeholders to develop equity between the numerous agreements currently in place within the Basin. The objective will be to create a synergy of efforts among the CIC and key stakeholders to conduct actions on themes related to the la Plata Basin. The activity includes: (i) refining the Institutional Mapping within the Digital Mapping Project of the CIC; (ii) coordinating and linking the activities of the SAP with other GEF projects being implemented in the la Plata Basin; and (iii) identifying areas of interest for coordinated work and formalizing agreements with commissions, agencies and organizations of the la Plata Basin, including those selected for financing by the Fund for the Promotion of Public Participation.

Those organizations, commissions and projects that sign an agreement will constitute an Ad-Hoc Council for the project that will be constituted to follow-up the work of the Fund. If necessary, it will recommend adjustments and provide recommendations to the Steering Committee of the Project (CDP). This Ad-Hoc Council will meet after approval of the projects to be supported through the Fund and twice a year thereafter, with an agenda defined by the Director of the Project and the Technical Coordinators, and distributed to participants at least 15 days before the meetings of the CDP. The SAP will finance only one of the annual meetings. Of the total of four meetings to be held during the execution of the SAP, the second and subsequent annual meetings of this Council will be the responsibility of the interested agencies and organizations.

As a result, there will be a series of agreements on important issues signed with the CIC, with the goals of: 15 additional agreements signed outside of the Fund during the first five-year period; the establishment of an Ad-Hoc Council for public participation in IWRM within the la Plata Basin; and the creation of a work process for ensuring responsible (future) participation by stakeholders within the CIC. This process will facilitate coordination with industrial, academic and civil society organizations, as well as with the commissions and projects in the Basin. The costs of these activities have been included in the Digital Mapping Project of the CIC, except for those of the Fund for PPP that has independent financing under Sub-component I.2 (see below).

The Activity will be undertaken by the Director of the Project with the support and participation of the Technical Coordinator of the SAP.

4.2. Incorporating Good Practices and Lessons Learned in the Preparation of the TDA and the SAP. The general objective of this Activity is to create a Transboundary Diagnostic Analysis (TDA) that considers, integrates and defines with a scientific analysis, the main environmental problems acknowledged by society, and to identify and prepare a Strategic Action Program (SAP) based on the proposals for strategic actions with the active participation of civil society.

Specific objectives include:

- Civil society organizations and academic institutions of the Basin participating actively in planning and management.
- Transparent decisions regarding projects taken in consultation with competent public institutions in each country and in dialogue with the participating civil society organizations.
- Women and men participating actively according to their needs, capacities and wills and encouraged by their active involvement in the execution of actions in the management of the Basin.
- Technical personnel of the competent sectoral institutions, members of civil society organizations, and organizations and water users participating in the preparation of the TDA and SAP.
- Ministerial authorities defining and validating proposals in their respective fields of responsibility, acting on participatory proposals.

The activity includes civil society organizations and the experiences of projects financed by the GEF in the elaboration of the TDA; including academic capacities that provide the scientific and technical base of perceived problems and permit prioritization by the public and private organizations essential for the social sustainability of the proposed planning process. Participation will be facilitated by the definition of prospective settings, national workshops and seminars dealing with the issues of the Basin. The TDA process will include interviews with key actors

and meetings of the inter-ministerial working groups (IWGs) of the project in the countries. The work of these IWGs will be supported by the analyses and assessments to be completed as part of the Project.

The participation of organizations, commissions, agencies and other organs of civil society, including municipal, state, and provincial organisms, will be key for the preparation of the TDA and SAP, allowing for institutional coordination and social validation. Virtual fora and videoconferences will be organized, dealing with issues related to the TDA and SAP, particularly among the National Coordinators and Technical Coordinators, facilitated by specialized consultants working on specific themes.

This will result in a process of identification of strategic actions representative of the interests of the stakeholders involved with the preparation of the TDA and SAP. The Technical Coordinator of the Program has the responsibility of finalizing these documents, supported by thematic consultancies. The GEF cost for this activity will be US \$ 300,000 and counterpart contribution will be US \$ 150,000, inclusive of the time of personnel in the participating institutions and organizations, meeting expenses and direct support from countries.

4.3. Communicating and Promoting Public Participation. The objectives of this Sub-component are: to devise and execute a Plan of Communication within the framework of the System for Decision-Making within the CIC, to support the development of knowledge and capacities, and to promote the exchange of information with society. The following media will be used to facilitate access to information on the la Plata Basin, its problems, root causes, and proposals for actions:

- CIC web page, www.cicplata.org;
- Online interactive virtual forum, with organizations and communicators;
- Monthly bulletin;
- Videos and TV spots;
- Publications created with the Fund for the la Plata Basin with support from sponsors and thematic committees;
- Banks of press data and information bulletins;
- Contests and festivals related to themes in the SAP; and
- Establishment of information channels

These activities are planned to be implemented within Component I. Planned actions include:

- Maintaining and updating of the web page of the CIC, inaugurated during the preparation of the SAP.
- Hiring a communications expert to prepare the Plan of Communication of the SAP and to provide information and materials to key communicators and specialists.
- Executing mass dissemination events to present the SAP and its solutions to societies in the affected countries.
- Preparing different types of brochures and technical publications for the communications media.
- Coordinating with other GEF projects.
- Communicating a Basin vision, using information generated and integrated in the Basin.

Expected results include a Plan of Communication prepared and executed, with the goal of providing periodic information to at least all the institutions and organizations working in the la Plata Basin (included by the Institutional Mapping tool in the Digital Map); ongoing access to

social communicators and the press in the five countries. The intention is to establish a Publications Fund in the CIC, with “sponsors” financing the elaboration and publication of brochures, and the publication of at least ten documents for print dissemination, videos and TV spots.

The GEF amount of this activity is US\$ 200,000 with a counterpart of US\$ 162,791 provided by the CIC and the countries through CONICET of Argentina (Digital Map) and the sponsors of the publications.

4.4. Educating for Responsible and Conscious Public Participation. The objective of this Activity is to incorporate into the SAP and CIC greater technical capacity and scientific knowledge available from different academic institutions (and through interactions with them) in the advancement of programs of “education and training for the integrated management of water resources and on the hydrologic cycle.” A particular focus will be on climatic and hydrologic warning, prevention and adaptation to climate change and variability, and managing their effects on the hydrology of the Basin. Strengthening institutional capacities and civil society organizations to deal with the issues related to the priorities of the la Plata Basin is also an important aspect of this Component. The program of activities to be undertaken will take advantage of UNESCO-IHP Program and agreements of the CIC with centers of excellence in the Basin related to priority themes. Contributions also will be sought from other GEF projects in the la Plata Basin, as in the case of the Bermejo Project with its successful agreements with the Ministries of Education in the provinces of Argentina for the publication of manuals and teaching materials. The results will include:

- People with complementary education, measured by the number of participants in courses and seminars promoted by the Program.
- Educational programs specific to the SAP.
- Manuals and educational materials on the priority themes of the SAP.
- At least 20 courses in centers of excellence (or through mobile and/or distance learning courses), implemented within the framework of the Project in the five countries.
- Teaching materials for the courses and education, in part replicated from related GEF projects.

The GEF budget for this Activity is US\$ 250,000 with US\$ 203,489 of counterpart in-kind contribution from the countries and educational centers.

4.5. Creating a Public Participation Fund (PPF) for the Integrated Management of the Basin. The objective of this Fund, to be created under the Project, is to involve private organizations and civil society organizations in specific activities related to research, dissemination and management of critical issues facing the la Plata Basin, and for which these types of organizations have advantages and capacities. The Fund criteria will promote gender equity criteria and the promotion of disadvantaged groups.

The concept of the Fund is based on the successful application of this type of instrument in the GEF Guarani Aquifer System project, particularly with respect to the funds provided to universities and civil society. It will seek to generate a process of creative and responsible participation, and, the same time, support important institutional linkages in the management of the Project, helping to resolve issues raised by stakeholders directly involved in the sustainable management of the la Plata Basin. The operation of the Fund will follow specific guidelines and regulations, to be approved during the first meeting of the Steering Committee for the la Plata

Basin. The Fund will finance strategic actions as defined in the SAP, focusing on research, dissemination and social promotion, and will support strategies for adaptation to climate change and variability, particularly with respect to the management of wetland corridors.

First Call for proposals. This call will encourage participation by civil society and basin organizations, municipalities and private companies in project initiatives, with a focus on the following two critical themes:

- Protection of the large wetland corridors of the Paraguay, Paraná, Uruguay and la Plata Rivers, and the ecosystems of key wetlands for the conservation of the enormous wealth of the ichthyo- and coastal fauna affected by the operation of dams and threatened by the modification of land uses and climate change. The benefits are not only of interest for the conservation of one of the world's largest reserves of coastal and riparian biodiversity, but also in its recovery and maintenance, having an important impact on climate change. The subject of land tenure makes private participation key in resolving issues related to biodiversity protection.
- Adaptation to the effects of climate change and variability and clean development, replicable within the la Plata Basin, with an impact on surface water or groundwater.

Financing is proposed to be US \$ 100,000 from GEF. The purpose is to finance project proposals with a maximum cost to the SAP of US \$ 20,000. The remaining US \$ 5,000 will be used for the preparation and conduct of a Technical Committee meeting for the selection and revision of proposals and subsequent recommendations to the Steering Committee. The Technical Committee will also revise and evaluate results and outcome.

Second call for proposals. This call will seek to support the expansion of the knowledge base, enhance capacities, and improve communication on critical themes. Work will be done in conjunction with universities and research and educational centers, and will focus on the following two aspects:

- Projects for research and education on critical themes, as identified in the SAP, linked to the sustainable utilization of water resources and its relationship to climate change and variability. This activity will improve capacities in the countries by financing post-graduate degree theses or post-graduate research on innovative initiatives.
- Small communication projects from centers of excellence within the la Plata Basin related to the critical themes covered by the SAP.

Financing is proposed to be US \$ 100,000 from GEF. The purpose is to finance proposals of US \$ 15,000 max each. US \$ 5,000 will be used for the creation conduct of a Technical Committee for the selection and revision of proposals and recommendations to the Steering Committee of the Project, as well as subsequent revision and evaluation of the results.

In both cases, the co-financing level, the technical quality of the proposals, and their relevance to the formulation of the SAP will be determining factors for selection. The Fund will be open to donors and calls for proposals could continue to be announced based on the evaluation of the success achieved in the first calls.

The organizations selected for financing will form an Advisory Board for the Project that will monitor the Fund and make recommendations to the SC.

4.6. Enhancing Local participation (Priority Projects and Pilot Demonstration Projects).

The objectives of this work element are linked to the participatory execution of the priority projects and pilot demonstration projects proposed in the SAP, under Component II, which are

expected to generate concrete experiences in local participatory management. The four priority projects were selected based on the critical threats to the la Plata Basin, with the purpose of providing solutions for possible future replication in similar situations that may be identified in other areas of the la Plata Basin. The demonstration projects for the SAYTT (aquifer in semiarid zone), the Missionary Forest (land degradation), and similar larger projects of a unique character within the Basin present an opportunity for the SAP to facilitate the participatory process through local management. These projects were identified and prepared in the local environment, and form a permanent link with the main social and institutional stakeholders involved. During the execution of the SAP each project will constitute local management commissions, with the participation of the stakeholders identified during the preparation process. The cost of this participation has been included in the activities of each priority and pilot demonstration project proposed to be executed. The goal is the establishment of the local management commissions for each activity with the active participation of institutional actors and civil society organizations (including the involved municipalities), and the acknowledgement of their existence and operation by the participating countries in each case.

5. Monitoring and Evaluation of the Plan

The following table shows the indicators selected for the monitoring of the process of public participation proposed in the Plan, by activity.

6. Costs –Budgets

The costs for the different activities that promote public participation and that finance the activities of this Plan are included within the Components of the Project. Nevertheless, the following table shows the expected GEF and co-financing amounts for each of the activities corresponding to Components II and III, which constitute the structure of the process of public participation in the present project.

7. References

- *Guidelines from the “Global Environment Facility's (GEF) Policy on Public Involvement in GEF-Financed Projects” (App. Meeting April 1996)*
- *Second Biennial Global Environmental Facility (GEF) International Waters Conference. October 2002, Dalian, China. (Unido-GEF Test Project. Transferring Environmentally Sound Technologies)*
- *Susana Cabezas M. “Participación Pública en el Programa Marco” Informe Consultoría, January 2005.*
- *Strategy for Public Participation for Decision Making in Sustainable Development in the Americas (ISP) OAS, 1997.*

MONITORING AND EVALUATION OF THE PUBLIC PARTICIPATION PLAN

Table –see next page

PROCESS INDICATOR	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
New signed agreements with CSO	5 signed agreements	5 signed agreements	5 signed agreements	-	-
Ad-hoc Assessment Committee established and functioning	1 meeting	2 meetings (1 financed by SAP)	2 meetings (1 financed by SAP)	2 meetings (1 financed by SAP)	2 meetings (1 financed by SAP)
Number of CSO participating in the TDA and SAP	Number of key informant interviews for TDA	Number of participants in TDA national and regional meetings	Number of key informant interviews for SAP	Number of participants in SAP national and regional meetings	TDA and SAP documents validated by civil society
Prepared Communication Plan	Brochures distributed. 1 SAP publication available. 1 Video and TV spot available. Database and communication links established.	5 articles disseminated to the press. 2 technical publications. 1 completed radio and TV campaign.	5 articles disseminated to the press. 2 technical publications. 1 completed radio and TV campaign.	5 articles disseminated to the press. 2 technical publications. 1 completed campaign.	2 Documents of the Project published in Spanish, Portuguese and English, distributed in 5 countries.
Courses delivered, Programs defined and Educational Materials prepared	Number of courses delivered, number of participants, length of time of delivered courses	Number of courses delivered, number of participants, length of time of delivered courses	Number of courses delivered, number of participants, length of time of delivered courses	Number of courses delivered, number of participants, length of time of delivered courses	Number of courses delivered, number of participants, length of time of delivered courses
Fund for PPP established. Fund Regulation approved	2 calls performed With an estimate of 12 projects selected and agreements signed	Roughly 12 projects in execution	Roughly 12 projects in execution	Results from roughly 12 projects evaluated	Results incorporated into the SAP
6 local management committees established	6 local management committees working	6 local management committees working	6 local management committees working	6 local management committees working	6 local management plans evaluated and conclusions included in the SAP

ACTIVITIES FOR PUBLIC PARTICIPATION PROMOTION OF COMPONENTS I and II	AMOUNT (IN US \$)
Communication and Promotion of Public Participation (COMPONENT I)	200,000
Education for a Responsible and Conscious Public Participation (COMPONENT I)	250,000
Fund for the Promotion of Public Participation (COMPONENT I)	200,000
[Incorporation of Good Practices and Lessons Learned in the Preparation of the TDA and SAP (COMPONENT II)]	300,000
Total US \$	950,000

ANNEX E
MONITORING AND EVALUATION PLAN (M&E PLAN)

CONTENTS

1. Introduction –Context and definitions
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6. Cost

1. Introduction –Context and definitions

The Monitoring and Evaluation Plan (M&E Plan) is an integral part of *Project Management* and seeks to provide the means to monitor and evaluate progress and performance in all components of the Project, and achievement of Project goals. The M&E Plan is comprised of two very distinct elements: (1) Monitoring of progress; and (2) Evaluation of performance and achievement. While both elements may use the same set of performance/achievement indicators, each use a different set of tools and processes. Monitoring is characterized by a more frequent set of activities, providing for timely reviews and quick assessments. Often, decision-making lies with the Coordinating Unit. Evaluation, on the other hand, is performed at a predetermined number of times, and decision-making corresponds to the highest level; e.g., the Steering Committee of the Project. Responsibilities for Monitoring and Evaluation are assigned to the various participating institutions—the Local Executing Agency, the Intergovernmental Coordinating Committee (CIC) and national institutions; the GEF Implementing Agency, UNEP; and the International Executing Agency, GS/OAS; and different Project officers, according to their management functions and responsibilities.

This Plan is guided by the principles of accountability and transparency. These principles apply to both, institutions and individuals. The Plan fulfills the standard UNEP procedures for Project Monitoring and Evaluation (administrative, technical and financial,) which include quarterly and half-yearly progress reports; quarterly and annual statements of expenditures, including co-financing and counter-part contributions; a mid-term review (MTR); and a final evaluation. The MTR will be performed within the next quarter after project execution had reached the mid-term; that is, within the 30th and the 33rd months of project execution, regardless the level of execution and disbursement. The final evaluation will take place once all funds had been disbursed and all activities completed.

In addition to Project Monitoring and Evaluation activities, the M&E Plan includes activities aimed at assessing the effectiveness of the Framework Strategic Action Program (FSAP) in achieving its goal. The purpose of this assessment is to identify corrective measures and/or changes in the FSAP in order to more effectively and timely achieve the Development Objective set forth by the participating countries, as agreed in the la Plata Basin Vision for addressing the main transboundary issues identified in the Macro-TDA. In addition, global benefits will be reviewed and assessed.

2. Tools and Timeline

Monitoring and evaluating project execution requires a systematic collection and analysis of data, comparison with baseline data, and consideration of needed changes in the plan of operations, resources assignments, and the timetable. Table 1 represents an outline of the major activities, tools and means to undertake the monitoring and evaluation of the Project.

3. Indicators and Means of Verification

3.1 Project M&E: Performance and Achievement Indicators, baseline values and means of verification

Performance and Achievement Indicators measure progress in the execution of Project activities, and include procurement and production of goods and services, works and infrastructure, and use of resources –human and monetary resources. They also include specific measurable milestones and goals.

Table 1. Major activities, tools and means of monitoring the project and evaluating progress

M&E PLAN COMPONENT/ ACTIVITY	FREQUENCY	SUPPORTING TOOLS		REPORTS/ OUTPUTS		
		GS/OAS MIS (Oracle)	CIC Project Management System (PMS)	Quarterly & Half-yearly Operational Report	Quarterly & Final Expenditure Statement	Minutes & Reports (missions, meetings, progress, etc.)
Monitoring						
Preparation of the Project Implementation Plan (PIP), Work-plans and Time-tables, and budgets	PIP: at the beginning of the Project Work-plans & Time-tables: Quarterly	X	X			
Preparation of Progress Reports	Quarterly			X	X	
Preparation of Expenditure Statements (including co-financing)	Quarterly	X	X	X	X	
Preparation of counterpart contribution reports	Quarterly		X			X
On-site supervision of Pilot Projects and FPPP's projects	Monthly	X	X			X
Preparation of Progress Reports of Pilot Projects, and Priority Projects & Studies	Monthly	X	X			X
Preparation of Progress Reports of the FPPP	Monthly	X	X			X
Meetings of the Inter-ministry Committee	TBD					X
Public Participation Workshops	TBD					X
DDS/OAS Supervision Missions	Quarterly	X	X			X
Evaluation						
Meetings of the SC	Twice a year	X	X			X
Mid-Term Review (MTR)	Once (1 st quarter after mid-term)	X	X			X
Final Evaluation (FE)	Once (upon completion)	X	X			X
Project Implementation Review (PIR) to the GEF	Once a year	X	X	X	X	X

These indicators are then used to monitor the progress of Project execution, and assess the achievement of its goals and specific outputs. They are also used to evaluate performance. A list of indicators, along with their baseline values, parameters to be measured and means of verification are found in Table 2, below. It is worth to note that these indicators may be reviewed during the execution of the Project, baseline values may be adjusted, and new indicators and/or

parameters may be added. The monitoring of these indicators is assisted by Project Management software, such as MicroSoft Project Manager®.

Table 2: List of Performance and Achievement Indicators

Indicator/ Description	Parameters measured	Baseline	Means of Verification
Project Purpose: <i>To support the implementation of Phase I of the Framework Program, by formulating the Strategic Action Program (SAP) of the La Plata Basin and its supporting Transboundary Diagnostic Analysis (TDA,) and creating the institutional and legal framework, and technical capacity for the implementation of the long-term Framework Program</i>			
Inter-ministerial planning mechanism	Formalization of Inter-ministerial meetings Number of meetings Staff assigned to (in each participating Ministry) Establishment of an Executive National Body (Secretariat)	None	Decreets and other legal/admin instruments of creating Inter-ministerial entities Minutes of meetings Payroll of participating ministries and agencies Budget of participating ministries
Technical coordination for thematic issues	Thematic groups established Participating staff (from each participating institution, governmental, NGOs, private enterprises, organized groups of the Civil Society) Number of meetings and working sessions	6 (climate change, biodiversity, land degradation, contingency plans, early alert systems, and hydrological balance) Over 500 staff Over 20 sessions	Payroll of participating institutions Minutes of meetings Technical proposals Budgets of participating institutions
Planning and management tools and instruments	TDA SAP	Mega-TDA FSAP	TDA and SAP Letters of endorsement
On-the-ground experience in pilot sites addressing pressing issues, and priority projects	Pilot projects and priority projects Participating institutions Co-financing (includes GEF and other grants)	4 project proposals for pilot sites 7 priority projects, including major groundwater aquifers (SAYTT and Guarani); and major environmental issues, such as sediment, water quality, land degradation, biodiversity (Bermejo, FREPLATA, Pantanal, Pilcomayo, and Gran Chaco) Over 100 institutions About US \$ 90 million	Pilot projects reports Priority Projects reports New Projects (proposed or under execution) Number of participating institutions, and cooperation agreements Budgets of participating institutions and financial reports
Government commitment and ownership/ <i>country-driven process</i>	Counterpart contributions Staff assigned to National Development Plans (NDP)	About US \$ 500,000 About 50 staff FSAP not included	Expenditures reports from the PMS Payroll of participating institutions NDP and National budgets (Financing Ministries)

Indicator/ Description	Parameters measured	Baseline	Means of Verification
Technical capacity	CIC Secretariat Technical Capacity (personnel and equipment –it does not include personnel funded with the GEF) National Institutions Technical Capacity (personnel and equipment) Technical reports and publications	9, including the General Secretary, 2 technical advisors, 3 administrative staff, and 3 CONICET specialists 10 PC Stations –one with GIS capabilities, including ESRI and SPAN software Plotter and printers N/A OAS 1970s la Plata series publication and cartography; GEF-Block B Publication and technical reports; on-line Institutional Database; GIS coverages and tabular data;	CIC Secretariat payroll and equipment inventory National institutions payroll and equipment inventory Reports and publications
Financial commitment and support	Financing Plan Investment secured	US \$ 15.8 million (Italian Cooperation, EU, FONPLATA, CAF, UNESCO, and others)	Letters of commitment National Budgets and NDP
Component I: Strengthening basin-wide cooperation capacity for integrated hydro-climate management			
FSAP Management Structure	CIC Execution Technical Unit staffing and budget National Institutions staffing and budgets	See Technical Capacity See Technical Capacity	Payroll and budget of the CIC Secretariat Payroll and budget of the participating national institutions
Decision-making support system	Decision-making Support System outputs, queries and visits	CIC Secretariat Web site and GIS and Institutional databases	Outputs from the System Hits and visits to the site
Horizontal Cooperation	Experts roster Experts exchange Virtual fora Training courses: programs, participants and presenters Internships: participants and programs	None	Expert roster available at the FSAP Decision-making support system Minutes from technical meetings and missions Reports of virtual fora Reports of internship programs
Overarching conceptual framework and common legal and policy elements	Comparison of national legislation and identification of common grounds	Only on specific issues basis, such as groundwater. No comprehensive and on CC/CV and Adaptation	Comparison report
Public Participation in the formulation of the TDA and SAP	Number of workshops Number of people involved	N/A	Minutes of the workshops Institutional Mapping Database

Indicator/ Description	Parameters measured	Baseline	Means of Verification
Public Involvement in the execution of Demonstration Pilot Project	Number of participating institutions Number of beneficiaries Co-financing and counterpart contribution	N/A	Project documents and cooperation agreements Budgets and financial reports from the participating institutions
Public Involvement in the identification, design and execution of projects for the Fund to Promote Public Participation (FPPP)	Number of proposals Number of institutions involved in the proposals Number of projects awarded and completed Number of participating institutions Number of beneficiaries	N/A	Institutional Mapping Database Project documents and cooperation agreements
Communication and Dissemination	Tools and means People reached Hits and visits to the Program Web site	N/A	Web site records and logs Distribution lists Publication records
Education and capacity development	Number of institutions involved per educational level (primary, secondary, and university levels)	N/A	
Component II: Strategic Action Program formulation			
<i>Integrated Water Resource Management</i> <i>Water Quality and Contamination</i> Water Quality Monitoring Network Assessment of the Monitoring Network Contamination Sources Regulatory Framework	Network installation Chemical determination and Network improvement plan Database on contamination sources Regulatory framework endorsements	To be defined during the 1 st quarter of execution	Database and equipment in place and operating Reports on sample exchanges and protocols and standards Database on contamination sources outputs Endorsement letters to the Regulatory Framework
<i>Integrated Management of Groundwater</i> Guideline book for Integrated Surface-groundwater Management Map of transboundary aquifers SAYTT SAP Guarani Aquifer System (GAS) SAP Proposal on groundwater for the la Plata SAP	Guideline book submitted to the CIC Map of transboundary aquifers SAYTT SAP GAS SAP Groundwater component for the la Plata SAP	In progress Proposal for the formulation of the SAYTT SAP GAS SAP under formulation	Letters of endorsement and ratification of the Guideline book at the CIC Maps and GIS database of aquifers Letters of endorsement to the SAYTT SAP SAP w/ groundwater component and letters of endorsement
<i>Integrated Water Balance</i> Methodology UNESCO-IHP Integrated Water Balance	UNESCO publication on Methodology for Integrated Water Balance Integrated Water Balance for la Plata Basin	None	UNESCO publication Integrated Water Balance published by CIC and adopted by the countries

Indicator/ Description	Parameters measured	Baseline	Means of Verification
<p><i>Biodiversity Management</i> Harmonized Regional Strategy Environmental Management Plan Monitoring System for controlling the introduction of exotic ichthyic species Harmonized regulatory fishery measures</p>	Harmonized Regional Strategy Environmental Management Plan Monitoring System Harmonized regulatory fishery measures	None	Letters of endorsement and CIC resolution on Harmonized Regional Strategy and Regulatory Fishery Environmental Management Plan Agreements signed by riparian countries
<p><i>Control of Land Degradation</i> Soil base maps at Basin-wide scale Project in a critical area of the Paranaense Forest Public awareness and education mechanism</p>	Map library Project document for the Paranaense Forest Public awareness and education mechanism	Erosion vulnerability map under preparation by the Bermejo GEF-IW project	Maps and GIS database Diagnostic on the Paranaense Forest and Pro doc Public awareness and education plan and endorsements
<p><i>Identification of Sustainable Development Opportunities</i> Projects on the use of clean technologies Projects on sustainable tourism</p>	Identification and formulation of projects	None	Project documents and letters of endorsement Letters of commitment for funding Investments
<p>Water Use Conflicts – Cuareim/Quaraí River Basin (Brazil And Uruguay) Formal Coordination mechanisms Binational Irrigation Boards Micro-hydraulic measures</p>	Management and planning instruments Cadastral system for water users registries Demand-supply analysis and conflict identification Basin zoning in relation to water use	N/A	Project progress and final reports Cadastral system and outputs Land-use maps (per water use) and map of conflicts (land-uses overlaps) Zoning map
<p>Control Of Contamination And Erosion In The Pilcomayo River Basin (Argentina, Bolivia And Paraguay) Tasna Buen Retiro Tail Dam Environmental Control and Mitigation Project Application of soil conservation practices Passives contamination Soil erosion and river sedimentation and filtering control practices</p>	Water drainage tunnel Community leaders trained in conservation practices, and erosion and sedimentation control practices Mining cooperative's staff trained in environmental conservation practices	N/A	Project progress and final reports In-situ verification of control-infrastructures completed Training programs and attendance reports

Indicator/ Description	Parameters measured	Baseline	Means of Verification
Biodiversity Conservation In A Dam Area Of The Parana River (Argentina, Brazil And Paraguay) Ichthyofauna biodiversity evaluation Socio-economic study Environmental Management Plan	Habitat maps under different Climate Change Scenarios Recreational and commercial fishing study Environmental Plan completed and letters of endorsement Dam operators participation	N/A	Project progress and final reports Maps Endorsement letters and other formal instruments Coordinated legal and regulatory instruments for transboundary fishery –seasonal fishing bans Technical encounters among dam operators personnel and project personnel Budget and programs of the dam operators for coping with exotic species
Planning and management tools and instruments	TDA SAP	Mega-TDA FSAP	TDA and SAP Letters of endorsement
On-the-ground experience in pilot sites addressing pressing issues	Pilot projects Participating institutions Co-financing	None	Pilot projects reports Number of participating institutions, and cooperation agreements Budgets of participating institutions and financial reports
Government commitment and ownership/ <i>country-driven</i> process	Counterpart contributions Staff assigned to National Development Plans (NDP)	About US \$ 500,000 About 50 FSAP not included	Expenditures reports from the PMS Payroll of participating institutions NDP and National budgets (Financing Ministries)

Indicator/ Description	Parameters measured	Baseline	Means of Verification
Technical capacity	CIC Secretariat Technical Capacity (personnel and equipment –it does not include personnel funded with the GEF) National Institutions Technical Capacity (personnel and equipment) Technical reports and publications	9, including the General Secretary, 2 technical advisors, 3 administrative staff, and 3 CONICET specialists 10 PC Stations –one with GIS capabilities, including ESRI and SPAN software Plotter and printers N/A OAS 1970s la Plata series publication and cartography; GEF-Block B Publication and technical reports; on-line Institutional Database; GIS coverage and tabular data;	CIC Secretariat payroll and equipment inventory National institutions payroll and equipment inventory Reports and publications
Financial commitment and support	Financing Plan Investment secured	FSAP US \$ 15.8 million (Italian Cooperation, EU, FONPLATA, CAF, UNESCO, and others)	Letters of commitment National Budgets and NDP
Component III: Adaptation to climate change			
Observation and forecasting Systems	Hydro-meteorological and atmospheric measures and forecast Equipment installation and operation	Argentina (www.ina.gov.ar) : Hydrological forecast for the Parana River (3 and 8 days) Hydro-climatic scenarios (3 months) Brazil (www.cptec-inpe.gov.br) : Hydro-climatic scenarios (3 months) To be better defined during the 1 st quarter of execution	In-situ verification Spatial coverage. Official maps and databases Climate Change National Communications
Weather Scenarios	Number of countries that formulate scenarios and models Number of students and trained professionals	2: Argentina and Brazil To be defined during the 1 st quarter of execution	Climate Change National Communications Official databases Curricula from universities
Hydrological Models	Hydrodynamic models distribution and sub-basins coverage	To be defined during the 1 st quarter of execution	Climate Change National Communications Official maps and databases

Indicator/ Description	Parameters measured	Baseline	Means of Verification
Transboundary Contingency Plans	Contingency plans adopted Communication plans adopted for various climate change scenarios Number of studies of current adaptation practices	None	Mass communication media. Media reports (written, audio-visual, radio and TV, etc.) Studies reports
Hydroenvironmental Alert System – Floods And Droughts In The Confluence Area Of The Paraguay And Parana Rivers (Argentina , Brazil And Paraguay). Axis Resistencia-Corrientes (Argentina) – Pilar (Paraguay) Binational Hydroenvironmental Alert System Community Contingency and Hydraulic Works Safety Plans Transboundary Water Alert Committee	Design of an Alert System Risk maps Environmental Assessment of extreme hydro-meteorological events Dynamic GIS Contingency plans Experts exchanges and technology transfer	N/A	Project progress and final reports Maps & GIS database Minutes and reports from the Committee's meetings Letters and other formal endorsements to the plans

3.2 Program M&E: Process indicators, baseline values and means of verification

As per the GEF International Waters Secretariat (Alfred Duda et al, 2002), Process Indicators measure progress in the institutional and policy reforms necessary to implement joint actions (as proposed in a Strategic Action Program) for preventing and/or repairing environmental issues of a transboundary nature. While environmental-status⁴ indicators and stress-reduction⁵ indicators can not be measured during the life-time of a project, Process Indicators allow assessment of the likelihood of undertaking the proposed actions and their success in addressing the identified issues.

Process Indicators are then used to assess the effectiveness of the FSAP in achieving the Development Objective and Project Goal as agreed by the five participating countries. Many Process Indicators coincide with those to measure performance and achievement of the Project, as institutional and policy changes are expected to occur during and as an outcome of the FS Project. Thus, Table 2 includes some Process Indicators. Nevertheless, a specific list of Process Indicators is found in Table 3, below, for convenience. As part of the formulation of the Strategic Action Program (SAP,) these indicators will be reviewed and better defined as to ensure the identification of parameters that are realistic in terms of availability in time and form, and are cost-effective.

As previously mentioned, stress-reduction indicators cannot be measured during the life-time of this Project. Nevertheless, their identification and definition will be part of the SAP formulation

⁴ They measure actual performance or success (of actions taken under a Strategic Action Program) in restoring and protecting a water body, hydrographic basin, aquifer, or coastal-zone. They can be defined by environmental parameters—physical, chemical and biological, or by socio-economic ones.

⁵ They measure changes in the sectoral activities that threaten the environmental quality of water bodies, degrade or destroy habitats, or deplete marine resources. They can be defined by environmental parameters—physical, chemical and biological, or by socio-economic ones.

and the construction of the baseline scenario. Consequently and in order to provide some basis for their identification and development, Table 4 lists some basic indicators drawn from the preparation of the Macro-TDA.

Table 3. List of Process Indicators

Indicator/ Description	Parameters measured	Baseline value	Means of Verification
Project Purpose: <i>To support the implementation of Phase I of the Framework Program, by formulating the Strategic Action Program (SAP) of the La Plata Basin and its supporting Transboundary Diagnostic Analysis (TDA,) and creating the institutional and legal framework, and technical capacity for the implementation of the long-term Framework Program</i>			
Establishment of a permanent Inter-ministerial planning mechanism	Formalization of Inter-ministerial meetings Staff assigned to (in each participating Ministry) with budget allocation Establishment of an Executive National Body (Secretariat) with a budget allocation	None	Decreets and other legal/admin instruments of creating Inter-ministerial entities Payroll of participating ministries and agencies Budget of participating ministries
Strengthening of the CIC and its planning and management instruments	Counterpart contributions of National participating institutions Staff assigned –in the competent institutions, to implementation of the SAP (in each participating Ministry) with budget allocation Inclusion of la Plata Framework Program in National Development Plans (NDP)	About US \$ 500,000 About 50 staff FSAP not included	Expenditures reports from the PMS Payroll of participating institutions NDP and National budgets (Financing Ministries)

Indicator/ Description	Parameters measured	Baseline value	Means of Verification
Technical capacity	<p>CIC Secretariat Technical Capacity (personnel and equipment –it does not include personnel funded with the GEF)</p> <p>National Institutions Technical Capacity (personnel and equipment)</p> <p>Technical reports and publications</p>	<p>9, including the General Secretary, 2 technical advisors, 3 administrative staff, and 3 CONICET specialists</p> <p>10 PC Stations –one with GIS capabilities, including ESRI and SPAN software</p> <p>Plotter and printers</p> <p>N/A</p> <p>OAS 1970s la Plata series publication and cartography; GEF-Block B Publication and technical reports; on-line Institutional Database; GIS coverages and tabular data;</p>	<p>CIC Secretariat payroll and equipment inventory</p> <p>National institutions payroll and equipment inventory</p> <p>Reports and publications</p>
Financial commitment and support	Financing Plan Investment secured	FSAP US \$ 15.8 million (Italian Cooperation, EU, FONPLATA, CAF, UNESCO, and others)	Letters of commitment National Budgets and NDP
Decision-making support system	Decision-making Support System outputs, queries and visits	CIC Secretariat Web site and GIS and Institutional databases	Outputs from the System Hits and visits to the site
Horizontal Cooperation	<p>Experts roster</p> <p>Experts exchange</p> <p>Virtual fora</p> <p>Training courses: programs, participants and presenters</p> <p>Internships: participants and programs</p>	None	<p>Expert roster available at the FSAP Decision-making support system</p> <p>Minutes from technical meetings and missions</p> <p>Reports of virtual fora</p> <p>Reports of internship programs</p>
Weather Scenarios	<p>Number of countries that formulate scenarios and models</p> <p>Number of students and trained professionals</p>	<p>2: Argentina and Brazil</p> <p>To be defined during the 1st quarter of execution</p>	<p>Climate Change National Communications Official databases</p> <p>Curricula from universities</p>
Water Quality Monitoring Network Regulatory Framework	Network installation Regulatory framework endorsements	To be defined during the 1 st quarter of execution	<p>Database and equipment in place and operating</p> <p>Reports on sample exchanges and protocols and standards</p> <p>Database on contamination sources outputs</p> <p>Endorsement letters to the Regulatory Framework</p>

Indicator/ Description	Parameters measured	Baseline value	Means of Verification
Proposal on groundwater for the la Plata SAP	Groundwater component for the la Plata SAP	None	Letters of endorsement and ratification of the Guideline book at the CIC SAP w/ groundwater component and letters of endorsement
Harmonized Regional Strategy Environmental Management Plan Harmonized regulatory fishery measures	Harmonized Regional Strategy Environmental Management Plan Harmonized regulatory fishery measures		Letters of endorsement and CIC resolution on Harmonized Regional Strategy and Regulatory Fishery Environmental Management Plan Agreements signed by riparian countries
Project in a critical area of the Paranaense Forest	Project document for the Paranaense Forest	None	Diagnostic on the Paranaense Forest and Pro doc
Projects on the use of clean technologies Projects on sustainable tourism	Identification and formulation of projects	None	Project documents and letters of endorsement Letters of commitment for funding Investments
Adoption of planning and management tools and instruments	TDA SAP	Mega-TDA FSAP	TDA and SAP Letters of endorsement
On-the-ground experience in pilot sites addressing pressing issues	Pilot projects Participating institutions Co-financing	None	Pilot projects reports Number of participating institutions, and cooperation agreements Budgets of participating institutions and financial reports
Government commitment and ownership/ <i>country-driven</i> process	Counterpart contributions Staff assigned to National Development Plans (NDP)	About US \$ 500,000 About 50 staff FSAP not included	Expenditures reports from the PMS Payroll of participating institutions NDP and National budgets (Financing Ministries)
Public Participation in the formulation of the TDA and SAP	Number of workshops Number of people involved	N/A	Minutes of the workshops Institutional Mapping Database
Public Involvement in the execution of Demonstration Pilot Project	Number of participating institutions Number of beneficiaries Co-financing and counterpart contribution	N/A	Project documents and cooperation agreements Budgets and financial reports from the participating institutions

Indicator/ Description	Parameters measured	Baseline value	Means of Verification
Public Involvement in the identification, design and execution of projects for the Fund to Promote Public Participation (FPPP)	Number of proposals Number of institutions involved in the proposals Number of projects awarded and completed Number of participating institutions Number of beneficiaries	N/A	Institutional Mapping Database Project documents and cooperation agreements
Communication and Dissemination	Tools and means People reached Hits and visits to the Program Web site	N/A	Web site records and logs Distribution lists Publication records
Education and capacity development	Number of institutions involved per educational level (primary, secondary, and university levels)	N/A	

Table 4. List of Stress Reduction Indicators

Indicator/ Description	Parameters measured	Baseline value	Means of Verification
Development Objective: <i>The governments of Argentina, Bolivia, Brazil, Paraguay and Uruguay coordinate actions and investment in the La Plata Basin for the sustainable management of its water resources, adapting to the Climate Variability and Climate Change, mitigating their negative impacts, and capitalizing on the opportunities that provide</i>			
Meteorological forecast period and degree of certainty in diagnoses and forecasts	Length of meteorological forecast period Degree of certainty in diagnoses (weather conditions) and forecasts	To be established by the Project	To be identified based on existing monitoring and evaluation instruments/systems available in the la Plata Basin countries
Reservoir management models in Parana and Uruguay subsystems	Use of integrated reservoir management models in the Parana and Uruguay subsystems	To be established by the Project	To be identified based on existing monitoring and evaluation instruments/systems available in the la Plata Basin countries
River navigability	Dredging volumes Tons of goods carried along the water way	To be established by the Project [The Paraguay-Paraná Waterway increased the fluvial transport of goods from 700,000 tons at the beginning of 1990 to 13,000,000 tons in 2004, due to lower costs relative to alternative transport means]	To be identified based on existing monitoring and evaluation instruments/systems available in the la Plata Basin countries

Indicator/ Description	Parameters measured	Baseline value	Means of Verification
Control of incremental erosion	Suspended sediments Change in technology and agriculture practices	To be established by the Project [The la Plata Basin has one of the highest average sediment transport rates—of approximately 100 million tons/year in the Parana River (at Corrientes)—associated with soil loss, navigation problems, water quality deterioration and problems of infrastructure maintenance. Most solids come from the Bermejo River basin, tributary to the Paraguay River, where erosion control measures are being implemented]	To be identified based on existing monitoring and evaluation instruments/systems available in the la Plata Basin countries
Hydropower capacity	Total GW	To be established by the Project [The hydropower potential of the Basin, estimated at 92 GW, has justified the construction of more than 150 dams, 72 of which exceed 10 MV. Three dams are binational: Itaipú (12.6 GW) and Yacyretá (3.1 GW) located on the Paraná River, and Salto Grande (1.89 GW) on the Uruguay River. 60% of the hydrological potential is already used]	To be identified based on existing monitoring and evaluation instruments/systems available in the la Plata Basin countries
Impact of extreme events on economic development, and standard of living	Economic losses (in USD), number of deaths, and type of diseases and hospital records measured after extreme events	To be established by the Project [In the last three ENSO-related events the number of people affected in the Argentine area was about 150,000 in each event, with economic losses that reached US \$ 17.5 million and affected an area of 18.5 million hectares (1997-1998)]	To be identified based on existing monitoring and evaluation instruments/systems available in the la Plata Basin countries

Indicator/ Description	Parameters measured	Baseline value	Means of Verification
Business endeavors as a result of land-coverage change. Investment	Number of new small and medium business, number of people employed, annual profit and investment	To be established by the Project	To be identified based on existing monitoring and evaluation instruments/systems available in the la Plata Basin countries
Agreements and their scope	Number of agreements and thematic and geographic coverage	To be established by the Project	To be identified based on existing monitoring and evaluation instruments/systems available in the la Plata Basin countries

4. Global Benefits

The la Plata River Basin, extending over some 3.1 million km², is one of the largest river basins in the world. It includes almost all of the southern part of Brazil, the southeast part of Bolivia, a large part of Uruguay, the whole of Paraguay, and an extensive portion of the central and northern parts of Argentina. The importance of the Basin and its global priority has been highlighted in global studies such as the GEF/GIWA Project. The Basin's rivers drain approximately one-fifth of the South American continent. Water and nutrients from the central regions of South America discharge through the la Plata River to the Southwest Atlantic Large Marine Ecosystem (LME).

The Basin is comprised of three large river systems; namely, the Paraná River, the Paraguay River, and the Uruguay River. The Paraguay River has an average annual flow of 3,800 m³/s (at Pilcomayo Harbour), the Parana River has an average annual flow of 17,100 m³/s (at Corrientes) and the Uruguay River has an average annual flow of 4,500 m³/s. These last two rivers come together to form the la Plata River, draining to the Atlantic Ocean, with an average output of 25,000 m³/s

A large wetland corridor links the Pantanal (in the headwaters of the Paraguay River) with the Delta del Parana, at its outlet to the la Plata River. This constitutes a river system with great biological diversity and productivity. The la Plata Basin also has important groundwater resources, which coincides with the Guaraní Aquifer System (1,190,000 km² in extent), one of the largest continental groundwater reservoirs in the world. The Yrenda-Toba-Tarijeño (SAYTT) Aquifer System is another potentially important groundwater resource, among others.

A published review of the World Resources Institute defined the la Plata River system as one of the most important river basins in the world, having a great number, variety, and degree of endemism in fish species (in the Paraguay River sub-basin), and the highest numbers of native birds (the Parana River sub-basin).

Mineral resources, forests, and soil fertility make the la Plata Basin an attractive population region and favor economic development, sustaining 70% of the five countries GDP. Present populations exceed 100 million people, with 57 cities having more than 100,000 inhabitants—including the five capital cities: Buenos Aires, Sucre, Brazilia, Asunción, and Montevideo. The Argentine, Brazilian and Uruguayan economies, with a strong agriculture-cattle component, show a significant level of industrial and service production, while Bolivia and Paraguay maintain an agriculturally-based economy.

This economic development demands communication and multimodal transportation systems, of which the hydrological systems are a fundamental element, interconnecting production, supply and consumption centers and harbors, from which products are exported to different countries. The City of San Paulo, one of the biggest cities and industrial concentrations in the world, is located on one of the Basin headwaters, tributary to the Parana River.

The extensive navigation system of the la Plata Basin is favored by regional commercial agreements. The Paraguay-Paraná Waterway increased the fluvial transport of goods from 700 thousands tons at the beginning of 1990 to 13,000,000 tons in 2004, due to lower costs relative to alternative transport means. In the near future, the goal is to reach 50 million tons.

The important hydrological potential of the Basin, estimated at 92 GW, has justified the construction of more than 150 dams, 72 of which exceed 10 MV. Three dams are binational: Itaipú (12.6 GW) and Yacyretá (3.1 GW) located on the Paraná River, and Salto Grande (1.9 GW) on the Uruguay River. 60% of the hydrological potential is already used. The interferences generated by these dams have determined substantial changes for species in the fluvial ecosystems. These interventions also incorporate a human factor: flow regulation coordinated through modeling processes. On the other hand, slight improvements in runoff foreseen in climate forecasts could offer—with a coordinated dam management—significant social, economic and environmental benefits.

The la Plata Basin is in a complex climate region, with important “gaps” in the available data, which generates uncertainties for the modeling of spatial, temporal and global interrelations. The climate is a determining factor for the heterogenic hydrological system. The relatively scarce rainfalls and high evaporation levels define the arid and semiarid zones to the west (*Grand Chaco Americano*), while strong rainfalls and runoff, due in part to deforestation, characterize the northeastern zones. The great Pantanal wetland has a key role in the storage of runoff produced by rainfall in the Alto Paraguay River catchment, which delays for almost six months the maximum flows to the Parana River, avoiding downstream flooding. The economic and social impacts of flooding are very important. Available data for the last 20 years show that the floods on the Parana River are more frequent, intense and long-lasting. The constant advance of urbanization and soil use changes are important reasons for this phenomenon, which also are certainly related to climate factors.

The la Plata Basin has one of the highest average sediment transport rates—of approximately 100 million tons/year in the Parana River (at Corrientes)—associated with soil loss, navigation problems, water quality deterioration and problems of infrastructure maintenance. Most solids come from the Bermejo River basin, tributary to the Paraguay River, where erosion control measures are being implemented. In the Alto Paraguay-Pantanal, there are significant wetland conservation problems related to increases in sedimentation. Another critical zone is the *Gran Chaco*, where soil degradation is the principal issue to be addressed in integrated water resources management.

The importance of the la Plata Basin water resources and the need to utilize and protect them enabled the signature of the Treaty of the la Plata Basin in 1969 by the five countries. This is the key legal instrument to advance sustainable economic development, with the CIC as the technical and institutional organization to manage and coordinate programs. On the other hand, the Treaty enables the countries “... to conclude specific or partial, bilateral or multilateral agreements to reach the Basin development objectives.” On this basis, more than twenty institutions or agencies have been created with direct responsibility to carry out water resources use and management.

During the 1970s and 1980s, the CIC, with OAS support, performed a complete water resources study of the la Plata Basin, particularly focused to the energy and transport areas. Some critical zones were identified, such as the Pilcomayo River and Bermejo River subbasins with their high

sediment transport rates, and the Alto Paraguay-Pantanal subbasin, with its key role in hydrological regulation.

The global importance of the problems impelled different agencies -in particular the GEF- to finance different projects that allowed strengthening policies on integrated water resources management, biodiversity protection or soil degradation mitigation. However, these projects lack the capacity to visualize, identify and implement wider and more comprehensive actions with additional benefits for the countries sharing the la Plata Basin and the global environment.

5. M&E Responsibility Assignments

Table 5 provides a detail of responsibilities assignments for the different M&E tasks that conform to the Plan.

Table 5. M&E Responsibility Assignments

M&E PLAN COMPONENT/ ACTIVITY	RESPONSIBILITY ASSIGNMENT		MEANS OF ASSESSMENT/ MONITORING DATA SOURCE
	INSTITUTION/ AGENCY	PROJECT/ AGENCY OFFICER	
Monitoring Preparation of the Project Implementation Plan (PIP), Work-plans and Time-tables, and budgets	GS/OAS EXECUTION COORDINATING UNIT	GS/OAS TASK MANAGER INTERNATIONAL COORDINATOR	PROJECT DOCUMENT RESOLUTIONS OF THE STEERING COMMITTEE MEETINGS
Preparation of Progress Reports	GS/OAS	GS/OAS TASK MANAGER	Execution Coordinating Unit's reports
Preparation of Expenditure Statements (including co-financing)	GS/OAS	GS/OAS TASK MANAGER	GS/OAS MIS (Oracle) and CIC Project Management System (PMS)
Preparation of counterpart contribution reports	NATIONAL PROGRAM UNITS (UNPs) EXECUTION COORDINATING UNIT	NATIONAL COORDINATORS INTERNATIONAL COORDINATOR	CIC Project Management System (PMS)
On-site supervision of Pilot Projects and FPPP's projects	EXECUTION COORDINATING UNIT	NATIONAL COORDINATORS INTERNATIONAL COORDINATOR	On-site data collection
Preparation of Progress Reports of Pilot Projects, and Priority Projects & Studies	PARTICIPATING INSTITUTIONS	PROJECT MANAGER (of each Demo and FPPP projects)	Projects Management Systems
Preparation of Progress Reports of the FPPP	PARTICIPATING INSTITUTIONS	PROJECT MANAGER (of each Demo and FPPP projects)	Projects Management Systems
Meetings of the Inter-ministry Committee	UNPs (acting as Secretariat of the Inter-ministry Committees)	NATIONAL COORDINATOR	Minutes of the Meetings and documents of the Committees
Public Participation Workshops	UNPs EXECUTION COORDINATING UNIT	NATIONAL COORDINATORS INTERNATIONAL COORDINATOR	Minutes of the Meetings
DDS/OAS Supervision Missions	GS/OAS	GS/OAS TASK MANAGER	On-site data collection
Evaluation Meetings of the SC	EXECUTION COORDINATING UNIT (acting as Secretariat of the Committee)	PROGRAM DIRECTOR INTERNATIONAL COORDINATOR	Meetings of the SC

M&E PLAN COMPONENT/ ACTIVITY	RESPONSIBILITY ASSIGNMENT		MEANS OF ASSESSMENT/ MONITORING DATA SOURCE
	INSTITUTION/ AGENCY	PROJECT/ AGENCY OFFICER	
Mid-Term Review (MTR)	UNEP in consultation with GS/OAS, CIC Secretariat, UNPs, the Execution Coordinating Unit, and participating institutions and stakeholders	Independent consultant from the STAP roster	On-site data collection
Final Evaluation (FE)	UNEP in consultation with GS/OAS, CIC Secretariat, UNPs, the Execution Coordinating Unit, and participating institutions and stakeholders	Independent consultant from the STAP roster	On-site data collection
Project Implementation Review (PIR) to the GEF	UNEP with the assistance of GS/OAS	UNEP TASK MANAGER	On-site data collection

6. Costs

The total cost is US \$ 1,012,500, where US \$ 714,500 is the GEF cost and US \$ 298,000 counterpart from the governments of the five participating countries, according to the breakdown below. Out of the US \$ 714,500 GEF contribution to the M&E Plan, US \$ 370,000 is allocated under Component I, within the Technical Coordination and Administration of the Project—activities in *Italic*. Additional US \$ 244,500 is allocated under the specific M&E Plans of the Pilot Projects, and Priority Projects and Studies. The remaining US \$ 100,000 corresponds to the MTR and FE, and the meetings of the Inter-ministry Committee.

M&E PLAN COMPONENT/ ACTIVITY	COST (US \$)	
	GEF	Counter-part
Monitoring	300,000	222,000
<i>Preparation of the Project Implementation Plan (PIP), Work-plans and Time-tables, and budgets</i>	20,000	20,000
<i>Preparation of Progress Reports (quarterly)</i>	20,000	0
<i>Preparation of Expenditure Statements (including co-financing)</i>	20,000	0
<i>Preparation of counterpart contribution reports (quarterly)</i>	0	20,000
<i>On-site supervision of Pilot Projects and FPPP's projects (5 tries x 60 months @ US\$200.00/m)</i>	60,000	40,000
<i>Preparation of Progress Reports of the Pilot Projects, and Priority Projects & Studies (4 pilots + 2 P Projects + 2 P Studies) x 60 months @ US\$100.00/each</i>	48,000	32,000
<i>Preparation of Progress Reports of the FPPP</i>	12,000	0
Meetings of the Inter-ministry Committee	30,000	80,000
<i>Public Participation Workshops</i>	50,000	10,000
<i>DDS/OAS Supervision Missions</i>	40,000	20,000
Evaluation	170,000	50,000
<i>Meetings of the SC (twice a year for a total of 10 meetings)</i>	100,000	20,000
Mid-Term Review (MTR)	35,000	15,000
Final Evaluation (FE)	35,000	15,000
Project Implementation Review (PIR) to the GEF	0	0
M&E Plans for Pilot Projects⁶ and Priority Projects and Studies	244,500	26,000

⁶ Given the nature of pilot projects, monitoring and evaluation of the on-the-ground activities, their impact, feasibility, real costs, and performance and achievements will be performed in real-time. Periodic evaluations will be performed, also, as part of the projects' activities. M&E costs include: on-site supervision and monitoring, data collection, and assessments; baseline comparison; trends' analysis; and stakeholder surveys. Total M&E cost for each project is estimated in 20% of the project cost to the GEF. In

M&E PLAN COMPONENT/ ACTIVITY	COST (US \$)	
	GEF	Counter-part
Priority project Cultivando Agua Boa Revolving Fund - ITAIPU Binational, Brazil and Paraguay ⁷	20,000	0
Priority project Integrated Management of the Yerendá-Toba-Tarijeño Aquifer System (SAYTT), Argentina, Bolivia and Paraguay ⁸	20,000	26,000
Study for a Priority Project Selva Misionera Paranaense Protection, Argentina, Brazil and Paraguay ⁹	0	0
Study for a Priority Project Nautical Tourism in the Lower Uruguay River and Paraná Delta, Argentina and Uruguay	4,500	0
Pilot project to Control Contamination and Erosion in the Cotaigaita Microbasin at the Pilcomayo River, Argentina, Bolivia and Paraguay	50,000	0
Pilot project for a Hydrological Alert System at the Confluence of the Paraguay and Parana Rivers, Argentina, Brazil and Paraguay	50,000	0
Pilot project Resolving Water Use Conflicts in the Rio Cuareim/Quarai Basin, Brazil and Uruguay	50,000	0
Pilot project for the Biodiversity Conservation in the Regulated Parana River, Argentina, Brazil and Paraguay	50,000	0
TOTAL	714,500	298,000

7. References

- Alfred Duda *et al.* *Monitoring and Evaluation Working Paper 10 “Monitoring and Evaluation Indicators for GEF International Waters Projects.”* November 2002
- GEF July 2006 IW PIR Results Template and Guidance paper.

the case of pilot projects, stress-reduction indicators will be used, in addition to process, and performance and achievement indicators. In addition to these GEF costs, substantial funding is being allocated to these M&E Plans from the US\$2,450,000 FONPLATA/CAF contribution.

⁷ M&E will be carried out mainly by Itaipu Binational at an additional US \$150,000, bringing the total cost of this priority project M&E Plan to US \$170,000.

⁸ In addition, the Ministry of Environment of Italy contributes with US \$18,000 of co-financing for the SAYTT M&E Plan, bringing the total cost for monitoring and evaluation to US \$ 64,000.

⁹ This study does not include monitoring and evaluation, as the entire budget of US \$ 40,000 is allocated to compilation of existing data and experts meetings for drafting a project proposal.

Annex F: Endorsement and co-financing letters

Argentina

TO :
FROM :

PHONE NO. : #1892040012024583560

MAR. 22. 2005 5:09PM P. 1
PHONE NO. : 311 9960



Ministerio de Relaciones Exteriores,
Comercio Internacional y Culto

"2006 - Año de homenaje al Dr. Ramón CARRILLO"

LETRA: DGCIN

Nº: 10329/06

Buenos Aires, 22 de marzo de 2005.

El Ministerio de Relaciones Exteriores, Comercio Internacional y Culto - Dirección de Cooperación Multilateral- presenta sus atentos saludos al Programa de Naciones Unidas para el Medio Ambiente -PNUMA-, en el marco del Fondo para el Medio Ambiente Mundial -FMAM / GEF- y tiene el agrado de remitir el siguiente proyecto.

Al respecto, se trata del Full Sized Regional "Programa Marco para la Gestión Sostenible de los Recursos Hídricos de la Cuenca del Plata, Relación con la Variabilidad y el Cambio Climático (Programa Marco para la Cuenca del Plata)", cuyo monto solicitado al GEF es US\$ 16.000.000, el que será ejecutado en el caso de ser aprobado, por la Subsecretaría de Recursos Hídricos de la Nación y que fuera presentado ante la Secretaría del Fondo para el Medio Ambiente Mundial en el día de la fecha.

El Ministerio de Relaciones Exteriores, Comercio Internacional y Culto - Dirección de Cooperación Multilateral- encuentra propicia la ocasión para reiterar al Programa de las Naciones Unidas para el Medio Ambiente -PNUMA-, las seguridades de su más distinguida consideración.

Agregados: lo mencionado

Al Programa de Naciones
Unidas para el Medio Ambiente -PNUMA-
Buenos Aires.



TO :
FROM :

PHONE NO. : 42347448252557828938

RECIBIDO
000376 10 ABR 2006
R.S.S. 6 L.R. 4
P.Z.P./G.E.F.
2006 - Año de homenaje al Dr. Ramón CARRILLO



Ministerio de Relaciones Exteriores,
Comercio Internacional y Culto

Gabriel

LETRA: DGCIN

Nº: 10440/06

Buenos Aires, 10 de abril de 2006.

El Ministerio de Relaciones Exteriores, Comercio Internacional y Culto - Dirección de Cooperación Multilateral- presenta sus atentas saludos al Programa de Naciones Unidas para el Medio Ambiente -PNUMA-, en el marco del Fondo para el Medio Ambiente Mundial -FMAM / GEF- y tiene el agrado de remitir el siguiente proyecto.

Al respecto, se trata del Full Sized Regional "Programa Marco para la Gestión Sostenible de los Recursos Hídricos de la Cuenca del Plata, Relación con la Variabilidad y el Cambio Climático (Programa Marco para la Cuenca del Plata)", cuyo monto solicitado al GEF es US\$ 36.000.000, el que será ejecutado en el caso de ser aprobado, por la Subsecretaría de Recursos Hídricos de la Nación y que fuera endosado por el Punto Focal Operacional ante la Secretaría del Fondo para el Medio Ambiente Mundial, el día 22 de marzo p.p.d.

El Ministerio de Relaciones Exteriores, Comercio Internacional y Culto - Dirección de Cooperación Multilateral- encuentra propicia la ocasión para reiterar al Programa de las Naciones Unidas para el Medio Ambiente -PNUMA-, las seguridades de su más distinguida consideración.

Agregados: lo mencionado



Al Programa de Naciones
Unidas para el Medio Ambiente -PNUMA-
Buenos Aires.



Republica de Bolivia

Ministerio de Desarrollo Sostenible

Viceministerio de Recursos Naturales y Medio Ambiente

La Paz, 10 de noviembre de 2005
MDS/VRNMA N° 3006 / 05

Señor:
Klaus Toepfer
Director Ejecutivo
Programa de las Naciones Unidas para el Medio Ambiente (PNUMA)
Presente.-

Estimado Señor K. Toepfer:

Se adjunta a la presente el documento del Proyecto del "Programa Marco para la Gestión Sostenible de los Recursos Hídricos de la Cuenca del río de Plata, en relación con los efectos de la variabilidad y el cambio climático". Los cinco países ribereños del río La Plata, con sus respectivos puntos focales GEF, solicitan por este medio la concesión de financiamiento GEF por la suma de USD 16 millones. El proyecto sería implementado a través del PNUMA. La Secretaría General de la OEA sería la Agencia Ejecutora conjuntamente el Comité Intergubernamental Coordinador de los países de la Cuenca del Plata (CIC) en cooperación de las Instituciones nacionales de los países ribereños.

Como punto focal del GEF para Bolivia, me complace informarle que Bolivia transfiere el Proyecto mencionado al Programa Operativo GEF OP9 y el Programa de Adaptación de Cambios Climáticos. Este proyecto ya ha sido técnicamente despejado por el Viceministerio de Recursos Naturales y Medio Ambiente a través de la Dirección General de Cuencas y Recursos Hídricos.

En vista de la importancia de tal proyecto para nuestra nación, es que Bolivia se compromete por este medio a financiar en forma de contraparte de especies la suma de USD 4,095,542.

Dependiendo de la sumisión y la aprobación por parte del GEF de la Intercesión del Programa de Trabajo en enero del 2006, miramos con optimismo el trabajar con el PNUMA y la Secretaría General de la OEA en este ambicioso proyecto.

Sin otro particular, me despido con las consideraciones más distinguidas.

[Handwritten Signature]
VICEMINISTRO DE RECURSOS
NATURALES Y MEDIO AMBIENTE
Ministerio de Desarrollo Sostenible

Adj. Lo Indicado
Cc. Arch.
MHCEDF.

**CIC**

PROGRAMA MARCO PARA LA GESTIÓN
SOSTENIBLE DE LOS RECURSOS
HÍDRICOS DE LA CUENCA DEL PLATA,
EN RELACIÓN CON LOS EFECTOS
HIDROLÓGICOS DE LA VARIABILIDAD Y EL
CAMBIO CLIMÁTICO

PROGRAMA MARCO PARA A GESTÃO
SUSTENTAVEL DOS RECURSOS HÍDRICOS
DA BACIA DO PRATA, CONSIDERANDO OS
EFEITOS HIDROLÓGICOS DECORRENTES
DA VARIABILIDADE E
MUDANÇAS CLIMÁTICAS

SNMH/CIC/PFPM/680/05.-
La Paz, Noviembre 17 del 2005

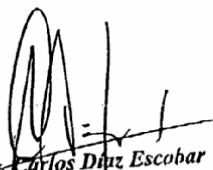
Señor
Klaus Toepfer
DIRECTOR EJECUTIVO
PROGRAMA DE LAS NACIONES UNIDAS PARA
EL MEDIO AMBIENTE (PNUMA)
Nairobi - Kenya

De mi consideración:

Tengo el agrado de remitirle adjunto al presente la Carta de Endoso firmado por la Abog. MSc. Cristlina Marianela Hidalgo Claros, Viceministro de Recursos Naturales y Medio Ambiente de Bolivia y Punto Focal del GEF, para el Proyecto "PROGRAMA MARCO PARA LA GESTIÓN SOSTENIBLE DE LOS RECURSOS HÍDRICOS DE LA CUENCA DEL RIO DEL PLATA, EN RELACIÓN CON LOS EFECTOS DE LA VARIABILIDAD Y EL CAMBIO CLIMÁTICO".

Con este especial motivo, saludo a usted con mis consideraciones más distinguidas.

Atentamente,


Ing. Carlos Díaz Escobar
COORDINADOR NACIONAL ANTE
EL PROGRAMA MARCO CIC

Incl.: Lo cedido
c.c.: Archivo
CDE/czs

COORDINACION PROGRAMA MARCO: La Paz - Bolivia Calle Reyes Ortíz N° 41 Piso 3
Telf.: 2355824 - 2129583
FAX.: (591-2) 2392413
E-MAIL.: dirmethi@sennmhl.gov.bo

Sede CIC Cuenca del Plata - Paraguay 755 - 2do piso - (1057) Buenos Aires - Argentina
Tel/Fax: 54 11 - 43122506/2272 - Página Web: www.cicplata.org

Brazil



MINISTÉRIO DO PLANEJAMENTO, ORÇAMENTO E GESTÃO
Secretaria de Assuntos Internacionais
Esplanada dos Ministérios, Bloco K, 5º andar
Brasília – DF – CEP: 70040-906
Telefone: 3429-4463 - seain@planejamento.gov.br

Ofício nº 303 /2005-MP

Brasília, 21 de dezembro de 2005.

Ao Senhor
AHMED DJOGHLAF
Coordenador Executivo
Escritório de Coordenação do GEF
Programa das Nações Unidas para o Meio Ambiente - PNUMA
P.O Box 30552
Nairobi, Kenya

Assunto: Projeto GEF – “Programa Marco para a Gestão Sustentável dos Recursos Hídricos da Bacia do Prata com relação à Variabilidade e Mudanças Climáticas” – Full Size.

Senhor Coordenador,

Comunico a Vossa Senhoria que esta Secretaria, na qualidade de Ponto Focal Operacional do GEF no Brasil, considerando manifestação favorável à aprovação do projeto pelo GTAP – Grupo de Trabalho para Análise de Projetos de Meio Ambiente, em sua 10ª Reunião Ordinária realizada em 25/10/05, endossa o Projeto Regional “Programa Marco para a Gestão Sustentável dos Recursos Hídricos da Bacia do Prata com relação à Variabilidade e Mudanças Climáticas”, apresentado pelo Ministério do Meio Ambiente, que pleiteia receber recursos de doação do “Global Environment Facility – GEF”.

2. O pleito apresenta um custo total de US\$ 62,483,000.00, assim distribuídos: US\$ 16,000,000.00 de recursos de doação do GEF e US\$ 46,483,000.00 de co-financiamento dos diversos parceiros envolvidos, sendo que o Brasil estará participando do projeto com recursos não financeiros no valor de US\$ 6,511,202.00.

Atenciosamente,


CARLOS EDUARDO LAMPERT COSTA
Ponto Focal Operacional do GEF no Brasil

ISLR

Ronald Ferreira de Melo
Coordenador Geral de Projetos
em Nome Público, Substituto
CGPPU/SEAIN/MP

UNEP Brazil
Incoming Correspondence
Number: C/0006/06
Date: 03/01/2006
Action By: AL/CJB/CME
File: P2-1
Remarks: Klain/capin please forward endorsement to DGEF. Brito/cr 09/10/05

Paraguay

PROPOSAL

Asunción, September 26, 2005.

Mr. Klaus Toepfer
Executive Director
United Nations Environment Program (UNEP)

Dear Mr K. Toepfer,


Attached herewith is the Project Document of the "Framework Program for the Sustainable Management of the Water Resources of the la Plata River Basin with respect to the Effects of Climate Variability and Change". The five La Plata riparian countries, through their respective GEF focal points are hereby requesting GEF grant funding in the amount of USD16 million. The project would be implemented by UNEP. GS/OAS would be the Executing Agency together with the Intergovernmental Coordinating Committee (CIC) for the La Plata Basin in cooperation with National Institutions of the riparian countries.

As the GEF focal point for Paraguay, I am pleased to inform you that Paraguay endorses the above mentioned project in line with OP9 and the Climate Change Adaptation Programme. This project has already been technically cleared by Secretaria del Ambiente.

In view of the importance of such project to our Nation, please note that *Paraguay* is also hereby committing counterpart funding in the amount of US\$ 4,729,493

Pending submission and approval by the GEF January 2006 Intersession Workprogram, we look forward to working with UNEP and GS/OAS in the ambitious project.

With Best regards


Ing. Agr. Albedo Silvio Molinas M.
Signed by Operations GEF Focal Point
Paraguay

cc: I Vanderbeck – UNEP Task Manager
J. Rucks, Chief Geographical Unit I and II, OSDE, GS/OAS

**DINAMA**Dirección Nacional
de Medio Ambiente

Para: Ing. Alicia Torres
Directora Nacional de Medio Ambiente

De: Ing. Luis Santos
Oficina del Punto Focal Operacional del FMAM

Motivo : Endoso a propuesta del Programa
Marco para la Gestión Sostenible de los Recursos
Hídricos de la Cuenca del Plata en relación con
los efectos de la variabilidad y el cambio climático

Fecha: 7 de Octubre de 2005

Se hace referencia al Programa Marco para la Gestión Sostenible de los Recursos Hídricos de la Cuenca del Plata en relación con los efectos de la variabilidad y el cambio climático, a ser implementado por el Programa de las Naciones Unidas para el Medio Ambiente (PNUMA) y ejecutado conjuntamente por la Secretaría General de la Organización de Estados Americanos (OEA) y el Comité Intergubernamental Coordinador de los países de la Cuenca del Plata (CIC).

La ejecución del mencionado programa regional permitirá reunir diversos esfuerzos para asistir a los países que integran la mencionada cuenca, en el diseño y establecimiento de políticas, medidas y acciones colectivas y coordinadas, a favor de un desarrollo económico y social ambientalmente sostenible, basadas en la protección y gestión integrada de los recursos hídricos y en la adaptación a la variabilidad y al cambio climático.

Por lo expuesto, y teniendo en cuenta el valioso aporte de la mencionada iniciativa a la gestión ambiental a nivel nacional y regional, se propone el endoso de la misma para la solicitud del financiamiento al Fondo para el Medio Ambiente Mundial.



DINAMA

Dirección Nacional
de Medio Ambiente

Montevideo, 11 de octubre de 2005

Sr. Klaus Toepfer
Director Ejecutivo del PNUMA

De mi consideración:

Tengo el agrado de dirigirme a Ud. con relación a la solicitud de endoso del Programa Marco para la Gestión Sostenible de los Recursos Hídricos de la Cuenca del Plata en relación con los efectos de la variabilidad y el cambio climático, a ser presentado para su financiamiento ante el Fondo para el Medio Ambiente Mundial a través del Programa de las Naciones Unidas para el Medio Ambiente, y a ejecutarse a través de la Secretaría General de la Organización de Estados Americanos y el Comité Intergubernamental Coordinador de los países de la Cuenca del Plata.

Al respecto, y de acuerdo al informe que se adjunta de la Oficina del Punto Focal Operacional del FMAM de Uruguay perteneciente a esta Dirección Nacional, confirmamos el endoso de la mencionada propuesta en el entendido que a través de la ejecución de dicha iniciativa se obtendrían importantes beneficios económicos, sociales y ambientales, tanto para nuestro país como para los restantes que integran la mencionada Cuenca del Plata.

Sin otro particular, agradeciendo la consideración de este asunto, le saluda muy atentamente,

Ing. Agr. Alicia Torres
Dirección Nacional de Medio Ambiente
M.V.O.T.M.A.



Montevideo, 16 de noviembre de 2005.-

Señor
Director Ejecutivo del PNUMA
Klaus Toepfer
Presente

De mi mayor consideración:

Por intermedio de la presente tengo el agrado de dirigirme a usted, a efectos de adjuntarle la nota de confirmación de endoso de la Oficina del Punto Focal Operacional del FMAM de Uruguay, en el marco del Programa Marco de la Gestión Sostenible de los Recursos Hídricos de la Cuenca del Plata en relación con los efectos de la variabilidad y el cambio climático.

Sin otro particular, le saluda atentamente.-

EJ/mv

A handwritten signature in black ink, appearing to read 'Edi Juri', written over a horizontal line.

Ing. Edi Juri
Director Nacional de Hidrografía (MTOP-Uruguay)
Representante Técnico de Uruguay en el CIC-Cuenca del Plata

C/C: ~~Helio de Macedo Soares~~ (CIC)
Jorge Rucks
Isabel Vanderbat
Mario Liori/Teresa Ayala

Annex G: Associated- and co-financing, and letters of support

CLARIS



A Europe-South America Network for Climate Change Assessment
and Impact Studies
European Project of the 6th Framework programme
<http://www.claris-eu.org>



Buenos Aires, 31st of January 2006.

Mr. Helio Macedo-Soares
Secretario General del CIC y
Director del Programa Marco
Paraguay 755-2^o Piso
C1057AAI-Buenos Aires-Argentina

Dear Sir,

I am writing in my capacity as Coordinator of the project CLARIS (<http://www.claris-eu.org>). A Europe-South America Network for Climate Change Assessment and Impact Studies, funded by the European Commission under the 6th Framework Programme (budget of 499.998 euros). The CLARIS project is a 3-year project gathering 14 European and South American institutes from 9 countries (Argentina, Brazil, Chile, France, Germany, Italy, Netherlands, Spain and Uruguay).

The CLARIS project aims at understanding and studying climate variability, mainly in the La Plata basin, to project its potential future evolution due to anthropogenic activities, to downscale the future climate, to constitute a reference database of high-quality daily data (temperature and precipitation) in order to study trends and changes in extreme events, and to evaluate potential impacts on agriculture and health. The CLARIS project is supported by the CLIVAR (Climate Variability component of the World Climate Research Programme, WCRP) VAMOS (Variability of American Monsoon Systems) Panel and the IAI (Inter American Institute for Global Change).

The CLARIS mission is to develop and strengthen collaborations between European and South American Institutes in order to create sustainable networks under the theme of climate change assessment and impact studies.

After reading in details the Component II.1 of the La Plata Basin Framework Programme related to Hydroclimate Prediction, it appears clearly that this Programme is a great opportunity to support a greater collaboration and integration between the institutions of the region, and to contribute to improvements in climate and hydrology observing systems, modeling and forecasting. The Programme objectives are complementary to many of the CLARIS objectives. I also believe that the Programme can gain from certain developments already made under the CLARIS project and that the European CLARIS partners will be interested in supporting and collaborating with the South-American scientists involved in the La Plata Basin Framework Programme.

Sincerely,

Jean-Philippe Boulanger
Coordinator of the European CLARIS Project



MINISTÉRIO DA CIÊNCIA E TECNOLOGIA
INSTITUTO NACIONAL DE PESQUISAS ESPACIAIS



Ofício nº 1061/2005-DIR

São José dos Campos, 21 de Dezembro de 2005.

Ref.: Nota Nº. 637/05

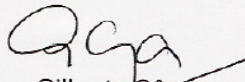
Prezado Senhor,

Com relação à participação do Centro de Previsão do Tempo e Estudos Climáticos, CPTEC, deste Instituto Nacional de Pesquisas Espaciais-INPE, na componente de Predição Hidroclimática da Etapa I do Programa Marco a ser financiado pelo Global Environmental Facility, GEF, temos a informar:

- o governo federal está financiando o projeto "Desenvolvimento da Meteorologia Nacional através da Tecnologia da Informação-PROTIM" com recursos da ordem de R\$ 15.000.000,00 (quinze milhões de reais ou aproximadamente US\$ 6.400.000) num período de 3 anos. Esses recursos, disponíveis no INPE através da Ação nº 3E62, representam um aporte coerente com os objetivos previstos pelo Programa Marco a ser financiado pelo GEF.

Sendo o que havia a informar, reitero protestos de estima e consideração.

Atenciosamente,


Gilberto Câmara
Diretor

Secretaria	<i>prof</i>	del C.I.C.
Recebido em:	<i>03/01/06</i>	
Nº de Entrada:	<i>001/06</i>	
Carpeta:	<i>Comp.</i>	

Ao Ilustríssimo Senhor,
Dr. Helio de Macedo Soares
Secretário Geral do Comitê Intergovernamental Coordenador dos
Países da Bacia do Prata - CIC
Diretor do Programa Marco
Paraguay 755 – 2º Piso
C1057AAI – Buenos Aires
ARGENTINA

/mkuf



Av. Tenoré de Neves, 8731
85.888-900 - Foz do Iguaçu, PR
Tel. (45) 3520-5724
Fax (45) 3520-8888
www.itaipu.gov.br

E/CD/0773/05
Foz do Iguaçu, 09 dezembro de 2005.

Ilmo.
SR. HÉLIO DE MACEDO SOARES
Secretário Geral do CIC - Comitê Intergovernamental
Diretor do Programa Marco
secretaria@cicciata.org
C1057AAI - Buenos Aires / Argentina

Secretaría *Int* del C.I.C.
Recibido el: *12/12/05*
Nº de Entrada: *596/05*
Carpeta: *comp.*

Senhor Secretário Geral,

Acusamos o recebimento de sua correspondência (Nota 630/05) pela qual V.Sa. nos solicita a confirmação de valores apresentados preliminarmente como projetos correlatos da Itaipu Binacional na Etapa I, do Programa Marco, a ser iniciado em 2006 sob coordenação do CIC.

Informamos que após os ajustes necessários o valor orçado para 2006 nos projetos associados é o que segue:

Projeto Biodiversidade Terrestre - Componentes II.5 e III.....	USD 600,000.00 *
Projeto Monitoramento da Qualidade da Água.....	USD 200,000.00 -
Projeto Fortalecimento do CIC - Desenvolvimento de Software..	USD 90,000.00 ✓
Projeto Piloto Demonstrativo - Biodiversidade Aquática	USD 350,000.00 ✓

Conforme a própria Nota esclarece, os montantes não representam participação em aporte financeiro e sim como aval a ser apresentado ante o agente financiador, relativamente aos projetos desenvolvidos no âmbito da Itaipu, inseridos portanto Bacia do Prata.

Certos do êxito dos projetos coordenados pelo Comitê Intergovernamental Coordenador dos Países da Bacia do Prata - CIC, colocamo-nos à sua disposição para colaborar dentro de nossas possibilidades.

Atenciosamente


NELTON MIGUEL FRIEDRICH
Diretor de Coordenação

Cultivando
ÁGUA BOA



**Proyecto de Gestión Integrada y Plan
Maestro de la Cuenca del Río Pilcomayo**

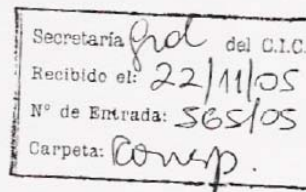
Convenio UE N°. ASR/B7-3100/99/136

Tarija, noviembre 22, del 2005
CITE/PP/Dir./481/05

Señor

Helio de Macedo Soares
Secretario General del CIC
Director del Programa Marco

Buenos Aires – Argentina



De mi mayor consideración:


Mediante la presente deseo ratificarle el apoyo del **Proyecto de Gestión Integrada y Plan Maestro de la Cuenca del Río Pilcomayo**, durante el desarrollo de la Etapa I del Programa Marco del CIC.

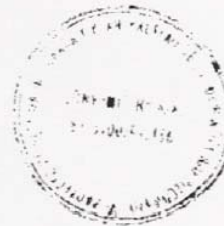
El Proyecto tiene previsto ejecutar acciones vinculadas al Componente II.2 de nuestro Programa Marco según el siguiente detalle:

- Monitoreo de la calidad de aguas superficiales y subterráneas en la cuenca, por un monto no menor a Euro Ciento Cincuenta Mil (€ 150.000.-) hasta diciembre de 2007.
- Evaluación completa de la situación socio ambiental de base de la cuenca, a través de la ejecución del estudio "línea Base Ambiental y Socioeconómica de la cuenca", por un monto de Euros Cuatrocientos Diecisiete Mil Ochocientos Veintitrés con 31/100 (€ 417.823,31)

Aprovecho la oportunidad, para asegurarle mi mayor estima.

Atentamente,


Fernando José Zárate
Director



cc.: Adm.
FZ/cz



**Comisión Nacional de los Ríos
Pilcomayo y Bermejo**

Tarija, 02 de septiembre de 2005
CNRPB-OTN N° 229/05

Secretaría *del* del C.I.C.
Recibido el: *02/9/05*
N° de Entrada: *421/05*
Carpeta: *Comp.*

Señor
Helio de Macedo-Soares
**SECRETARIO GENERAL DEL COMITÉ INTERGUBERNAMENTAL
COORDINADOR DE LOS PAÍSES DE LA CUENCA DEL PLATA**
Buenos Aires, Argentina

De nuestra mayor consideración:

Complementando nuestra nota CNRPB-OTN N° 188/05 de fecha 08 de agosto/2005, relacionada con nuestra solicitud para que el proyecto "Estudio Integral Acuífero Transfronterizo Yrendá-Toba-Tarijeño" (SAYTT) funcione en nuestras oficinas de la ciudad de Tarija, tengo a bien informarle que el financiamiento ofertado es de \$US 400.000, de los cuales \$US 300.000 serán en efectivo proporcionados por las siguientes fuentes:

- Prefectura de Tarija: \$US 100.000
- Proyecto Pilcomayo: \$US 100.000
- ~~PEA Bermejo: \$US 100.000~~

Los restante \$US 100.000 son en especie (oficinas, apoyo administrativo y logístico).

Estos fondos tienen calidad de aportes de la OTNRPB a este proyecto del CIC y serán proporcionados durante la duración del proyecto. Asimismo, es conveniente dejar establecido que los aportes ofrecidos están condicionados a que el proyecto SAYTT tenga como sede la ciudad de Tarija.

Sin otro particular, reiteramos a usted nuestras consideraciones más distinguidas.

Atentamente,

Ing. Jorge O'Connor d'Arlach M.
**DIRECTOR EJECUTIVO
OFICINA TÉCNICA NACIONAL DE
LOS RÍOS PILCOMAYO Y BERMEJO**

c/c Arch.

12-15-65 10:04 UNESCO MONTEVIDEO

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P. 01



United Nations Educational, Scientific and Cultural Organization
 Organisation des Nations Unies pour l'Éducation, la Science et la Culture
 Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura

Oficina Regional de Ciencia para América Latina y el Caribe
 Representación de la UNESCO ante el MERCOSUR
 Representación de la UNESCO en Argentina, Paraguay y Uruguay

PHI- 500/05

16 de diciembre de 2005

Estimado Dr. Macedo Soares:

Nos complace dirigimos a Usted con el propósito de reiterarle el aporte previsto por UNESCO, a través del Programa Hidrológico Internacional para América Latina y el Caribe (PHI-LAC) en concepto "in-kind" (aportes no financieros) al desarrollo de la Primera Etapa del "Programa Marco para la Gestión Sostenible de los Recursos Hídricos de la Cuenca del Plata" que se llevará a cabo a partir del año 2006. La participación del PHI se encuentra asociada al Componente II.4, de Balance Hídrico del Programa Marco, y al II.3 de Gestión Integrada de Aguas Subterráneas del Programa Marco.

En relación al Componente II.4, de Balance Hídrico del Programa Marco, la contribución "in-kind" del PHI-LAC, se estima para el bienio 2006-2007 en un total de US\$ 112.000, con una proyección estimada para el período 2008-2010 (por confirmar tras aprobación de presupuestos por las Asambleas Generales de la UNESCO correspondientes) de US\$ 138.000. En consecuencia, el monto total estimado de aporte "in kind" del PHI-LAC para este componente es de US\$ 250.000 (doscientos cincuenta mil dólares americanos).

A su vez, la contribución "in kind" para la Componente II.3, de Gestión Integrada de Aguas Subterráneas del Programa Marco, se llevará a cabo a través del Programa ISARM Americas, por un monto total "in kind" estimado de US\$ 28.000 (veintiocho mil dólares americanos) para el período 2006-2010

Con este grato motivo, quedo de Usted presentándole nuestra mayor consideración y estima.

Atentamente,

María Concepción Donoso
 Hidróloga Regional para
 América Latina y el Caribe

Secretaria	Juel del C.I.C.
Recibido el:	16/12/05
Nº de Entrada:	602/05
Carpeta:	comer

Sr. Hello de Macedo Soares
 Secretario General del CIC
 Director del Programa Marco

Cc: Sr. Andras Szölösi-Nagy
 ADG/SC
 UNESCO

Sra. Alice Aurell
 SC/HYD/HPC
 UNESCO

ITAIPU

ITAIPU – Co-financing for the *Cultivando Agua Boa* – US \$ 7,500,000 – see Annex 8 bis.

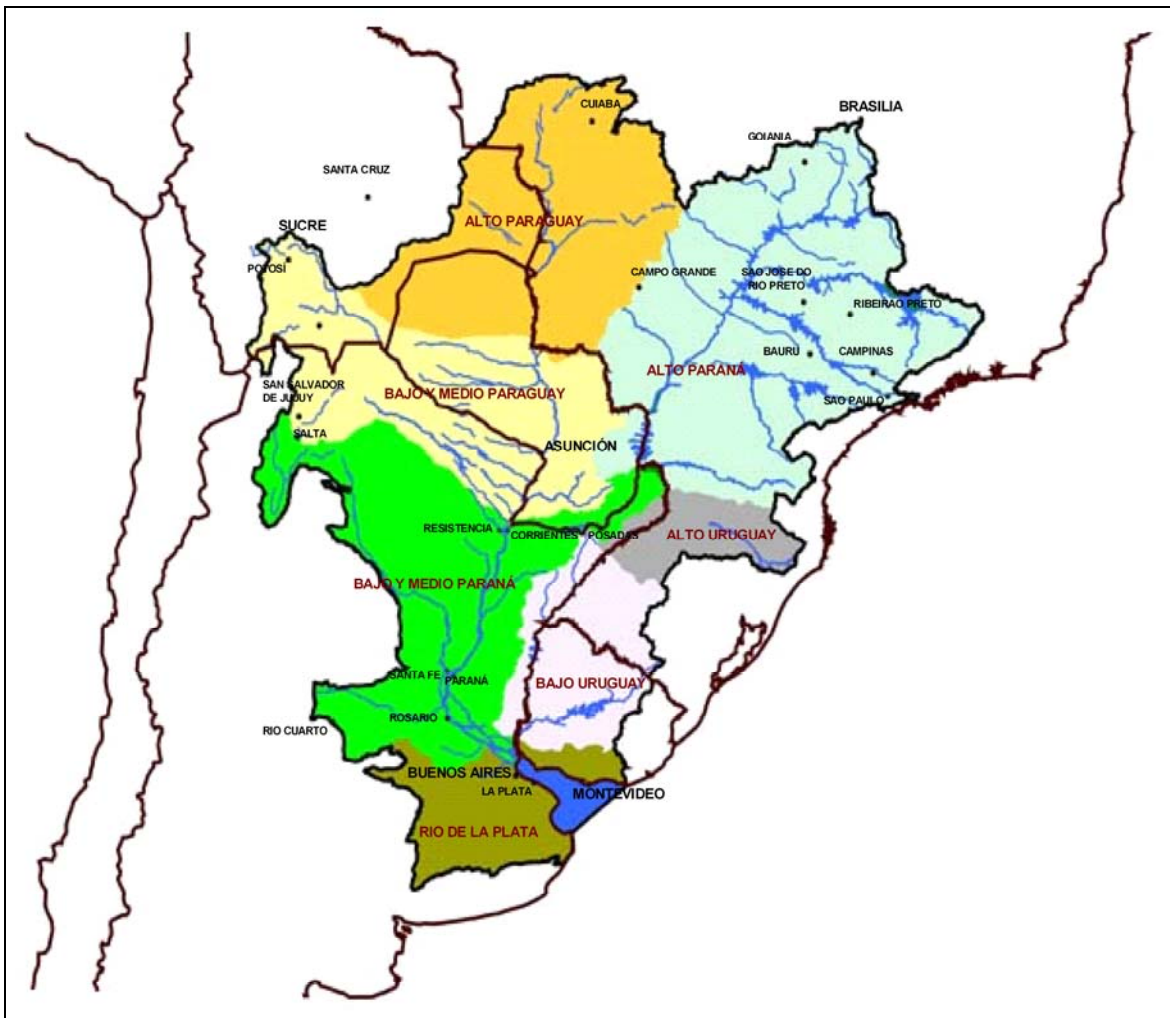
ANNEXES to the PROJECT DOCUMENT (See separate Word file as graphs could not be compressed in Adobe)

- Annex 1: Framework Programme – to be downloaded from the Web
- Annex 2: Map of the la Plata River Basin
- Annex 3: Transboundary Diagnostic Macro Analysis: Transboundary critical issues, causal chain, actions and lack of information
- Annex 4: Development Program Structure Scheme
- Annex 5: Critical transboundary issues and Phase 1 Components Relation Scheme Program
- Annex 6: FONPLATA financing projects List (associated to the Frame Program)
- Annex 7: Financing for associated activities
- Annex 8: Priority and pilot demonstration projects - in a separate file
- Annex 8bis: Pilot Demo project *Cultivando Agua Boa* with ITAIPU - in a separate file
- Annex 9: Preliminary Budget in UNEP Format

Annex 1. Framework Program

www.cicplata.org -> Programas y Proyectos -> Programa Marco -> PDF-B

Annex 2: Map of the la Plata River Basin



Annex 3: Transboundary Diagnostic Macro Analysis: Transboundary critical issues, causal chains, actions and lack of information

According to the base results of the Basin Vision, the Transboundary Diagnostic Macro Analysis had been performed, developing national workshops for the identification of critical subjects, causal chains and information gaps. The results have been consolidated in an International Seminar.

The critical identified issues, its location, causal chains, and strategic actions proposal are presented in figures one to eleven for each one of the following subjects:

- Extreme hydrological events (Floods and Droughts)
- Water Quality
- Erosion, transport and sedimentation
- Navigability restrictions
- Biodiversity alteration
- Non sustainable use of the fisheries resources
- Sustainable Management of transboundary aquifers
- Water use (quantitative) conflicts
- Environmental impacts of irrigated crops
- Dams: security
- Emergency plans
- Water and Health

The causal chains consolidation included the prioritization according to the considered significance given by the countries, which had been highlighted in different colors at the presentation.

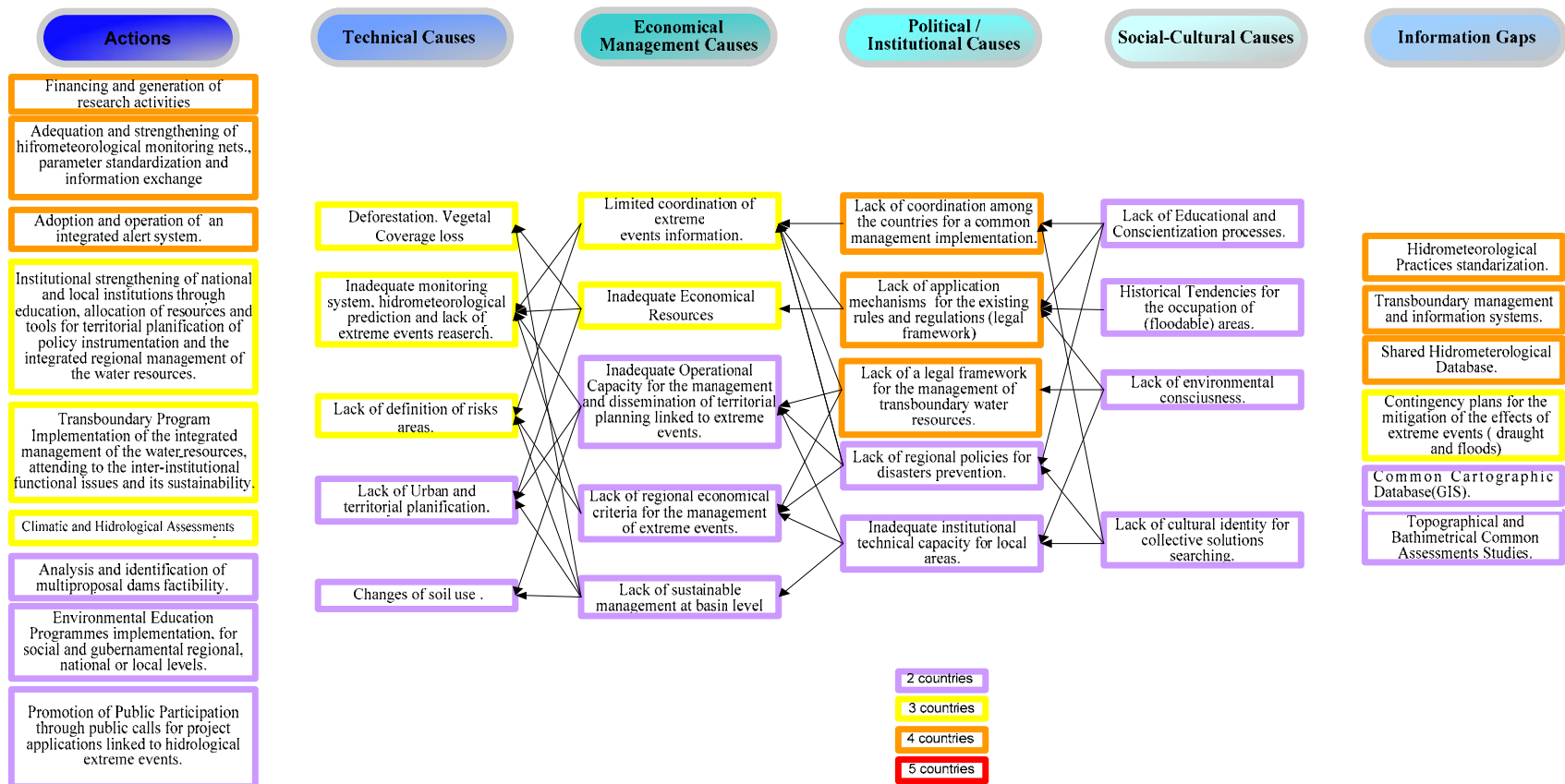


Figure 1: Hidrological extremes, draughts and floods, escess and hidrical deficits. Flood Locations: Apa, Iguazu, Paraguay, Pilcomayo, Bermejo, Parana, y Uruguay (Cuareim) Draughts: All the basin.

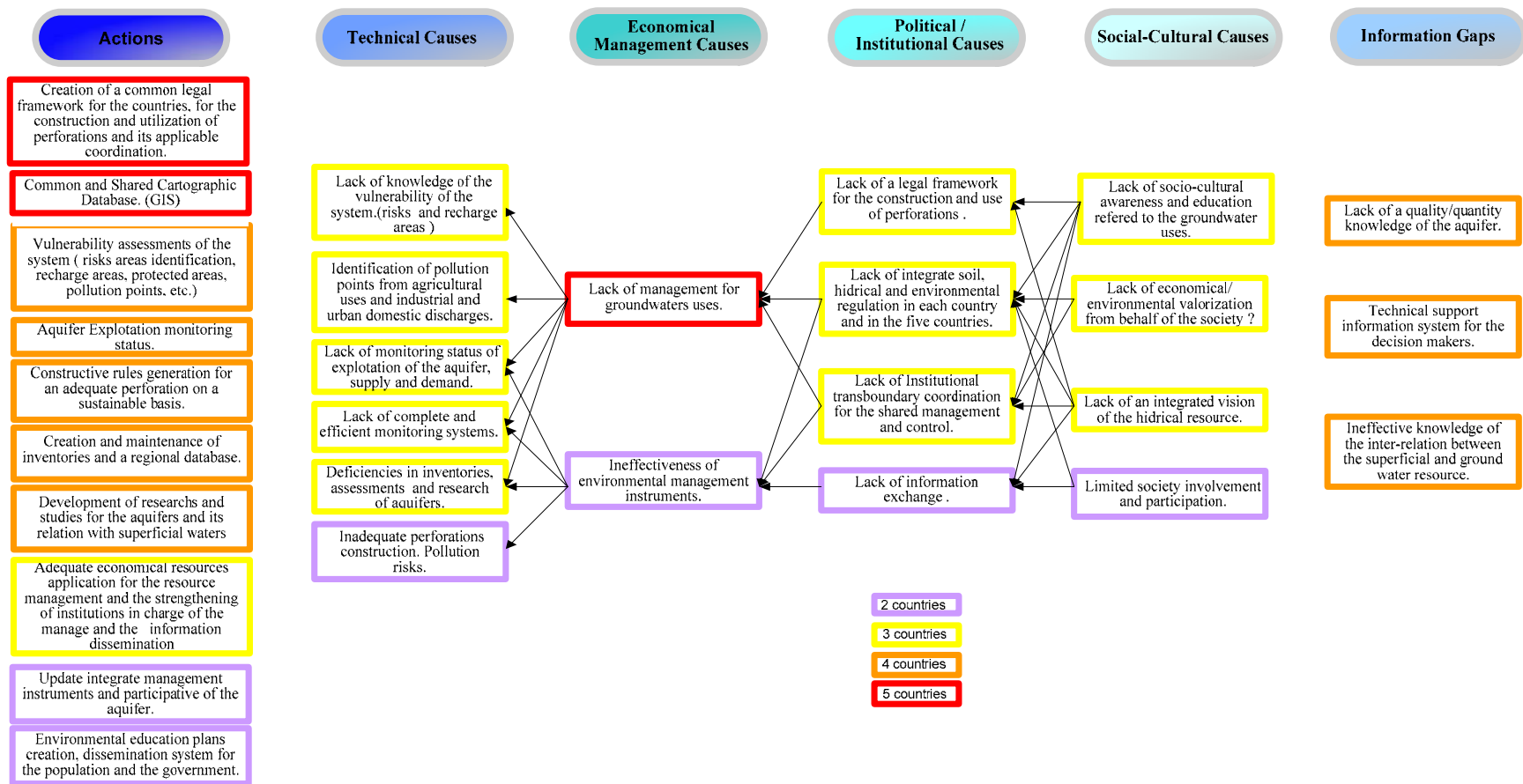


Figure N°2: Sustainable management of transboundary aquifers. Location: Guarany; Areniscas cretasicas superior, Low Uruguay River; Yrenda, (Py); Toba (Ar), Tarijeño (Bo), Aquifer Apa River (Br- Py) and Pantanal, Furnas, Caiuá, Parecis y Serra Geral (Br)

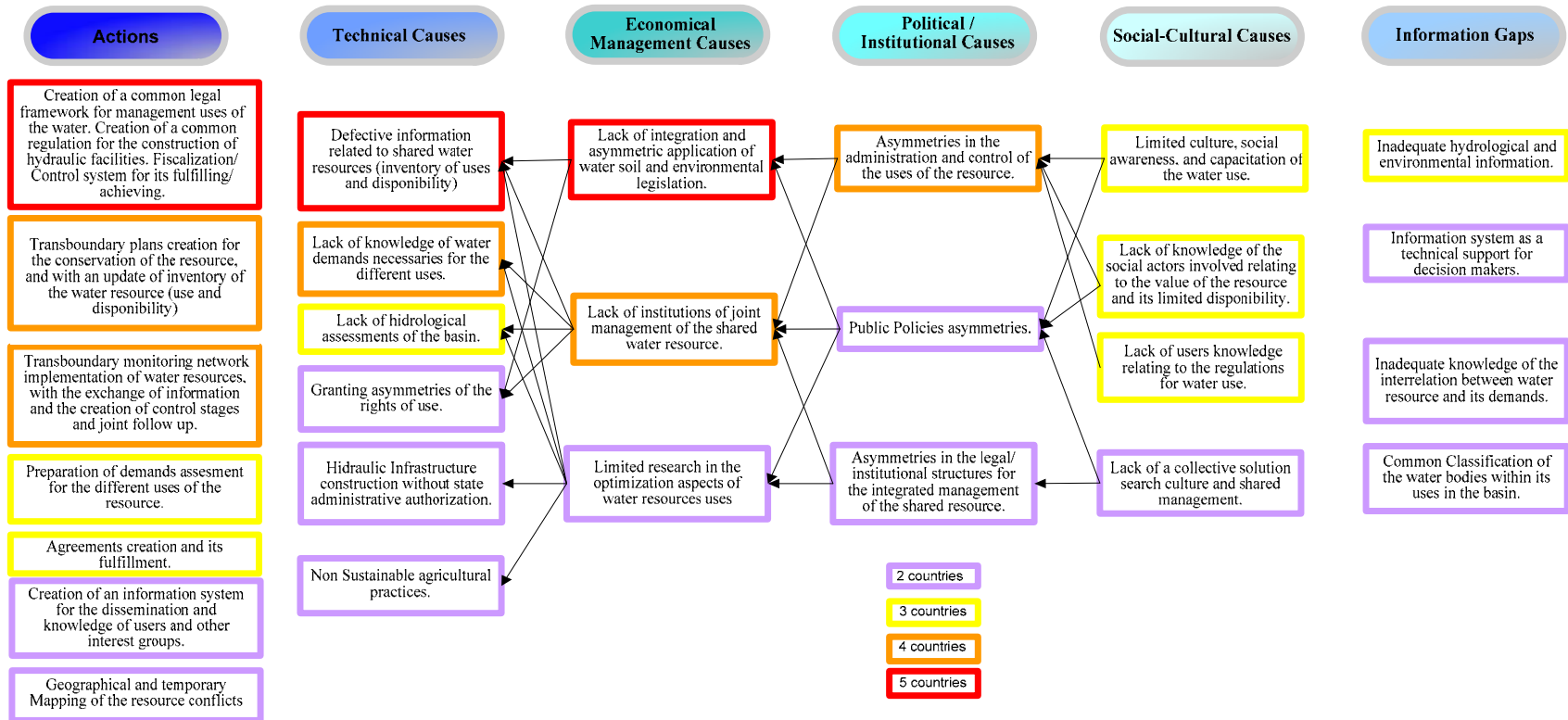


Figure N°3: Conflicts in the use of the water resource. Quantitive aspects. Locations: All the basin, specifically: Cuareim, Pilcomayo, Tiete and Parana River.

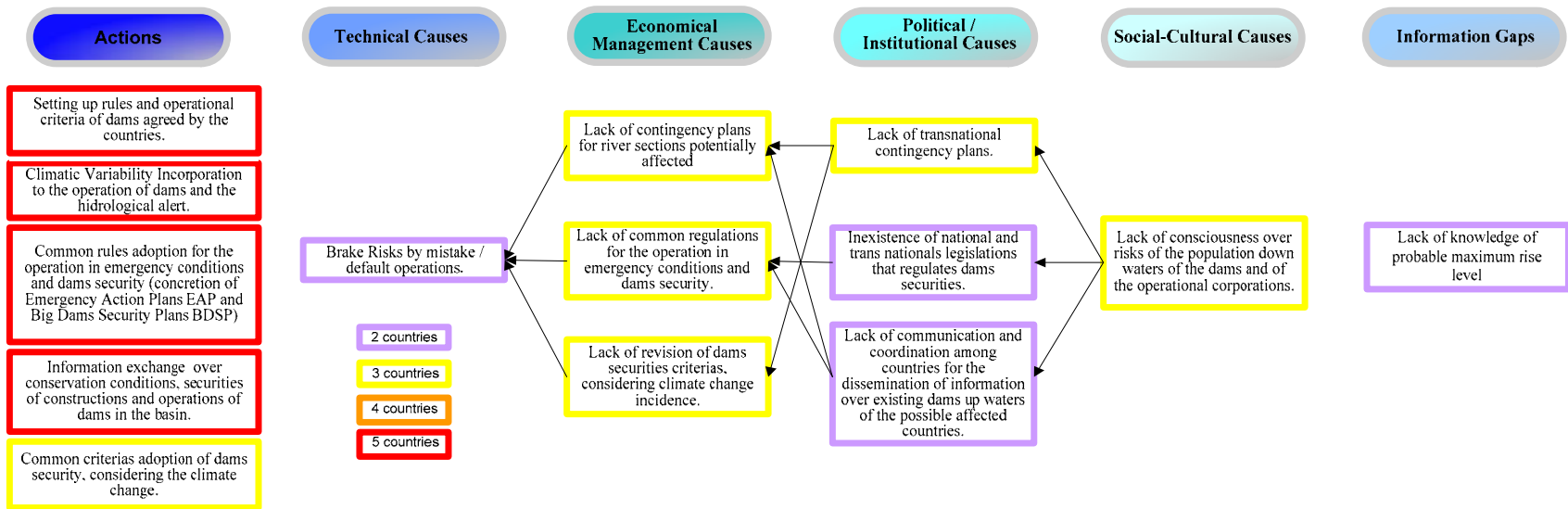


Figure N° 4 Dams: Security and emergency plans. Location: Parana, Uruguay, Iguazu and Negro Rivers.

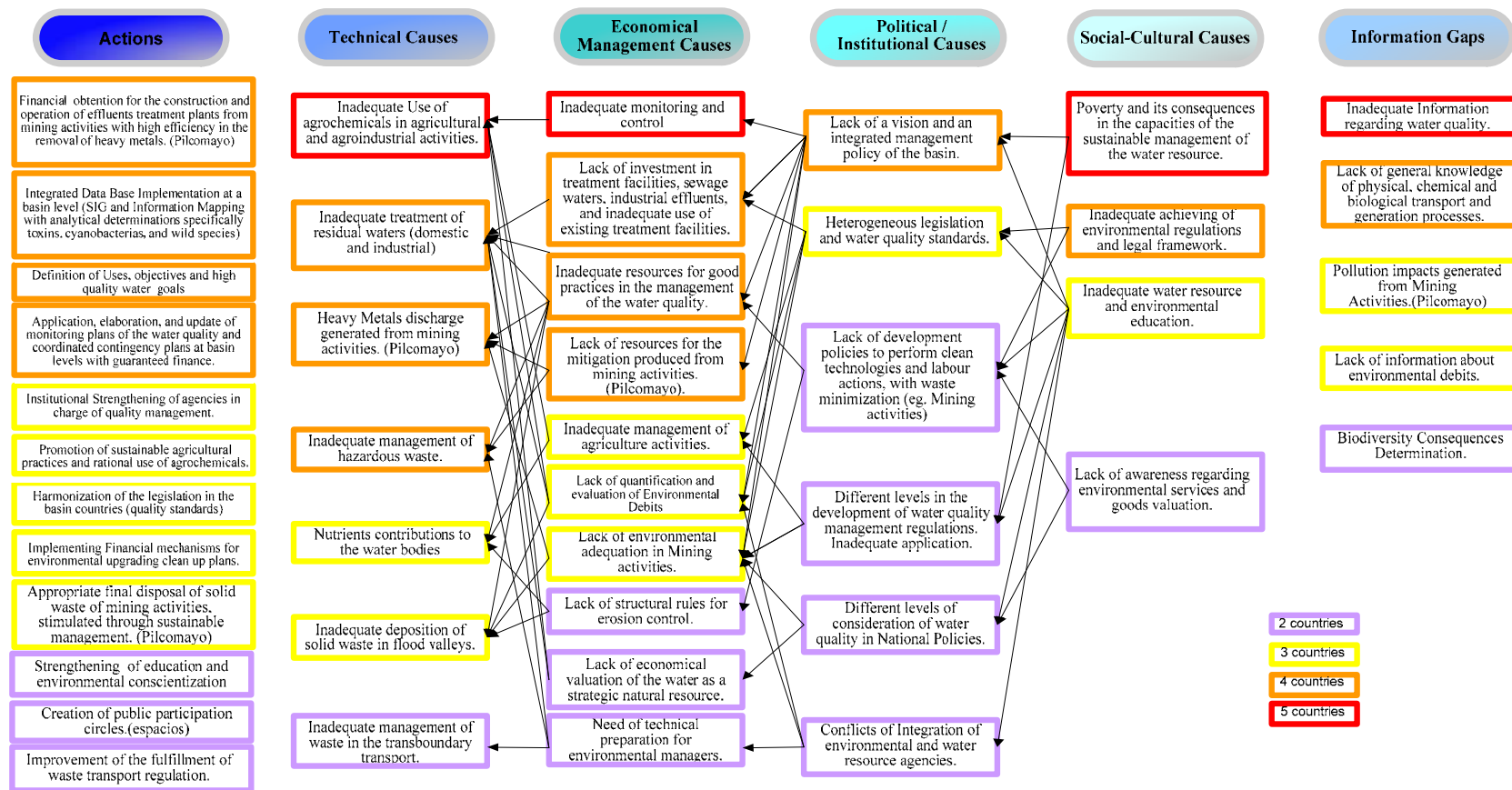


Figure N° 5 Water Quality. Location: All the Basin.

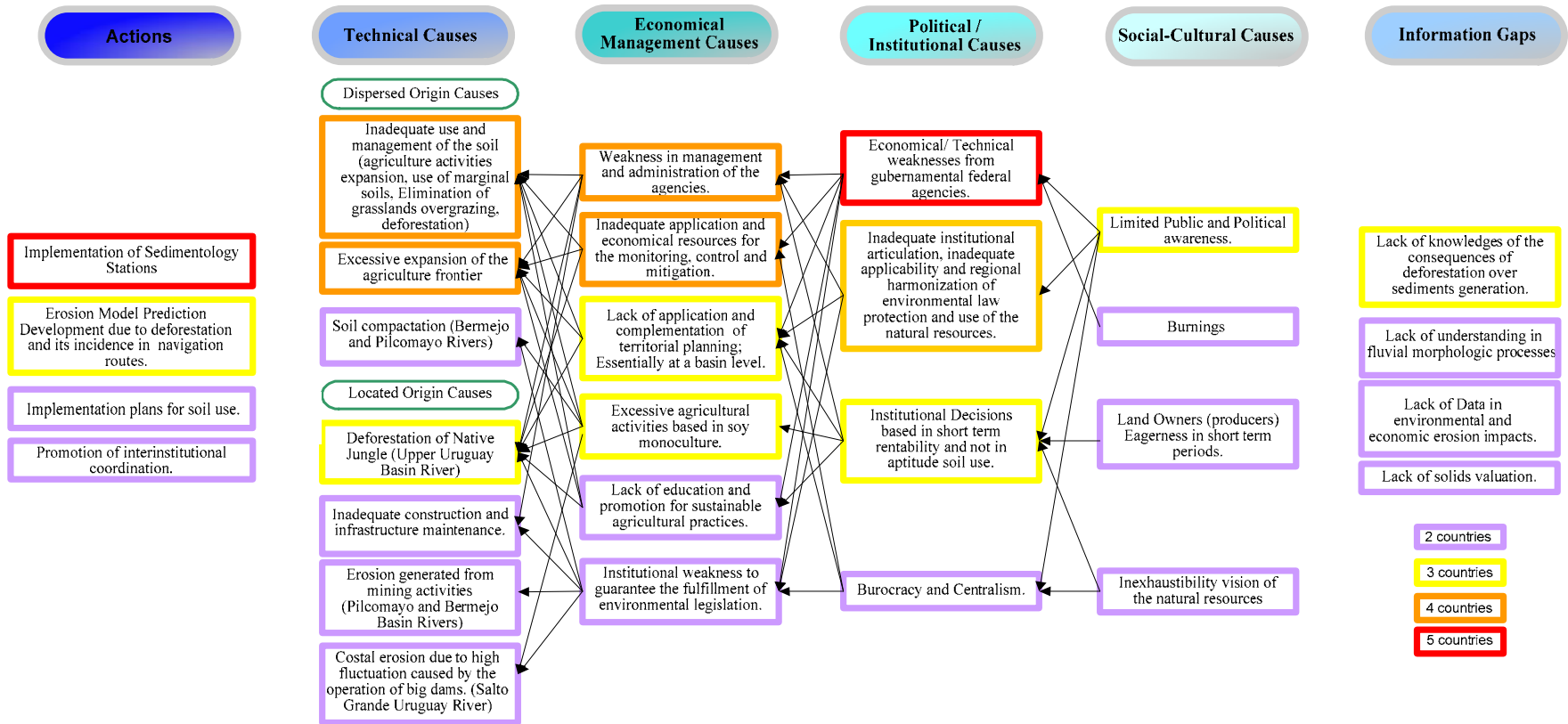


Figure N° 6: Erosion, Transport and sedimentation of water bodies. Location: All the basin.

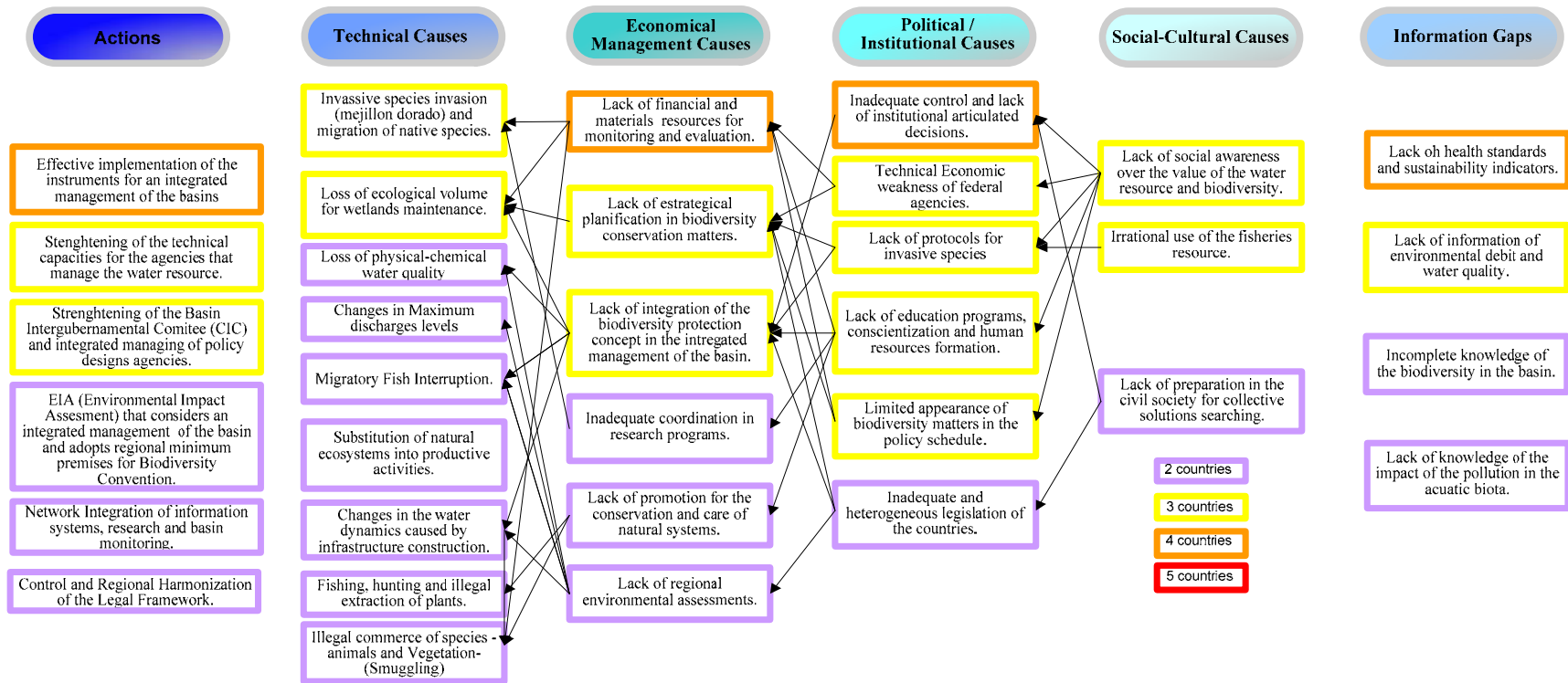


Figure N° 7: Biodiversity Alteration Changes. Location : All the Basin.

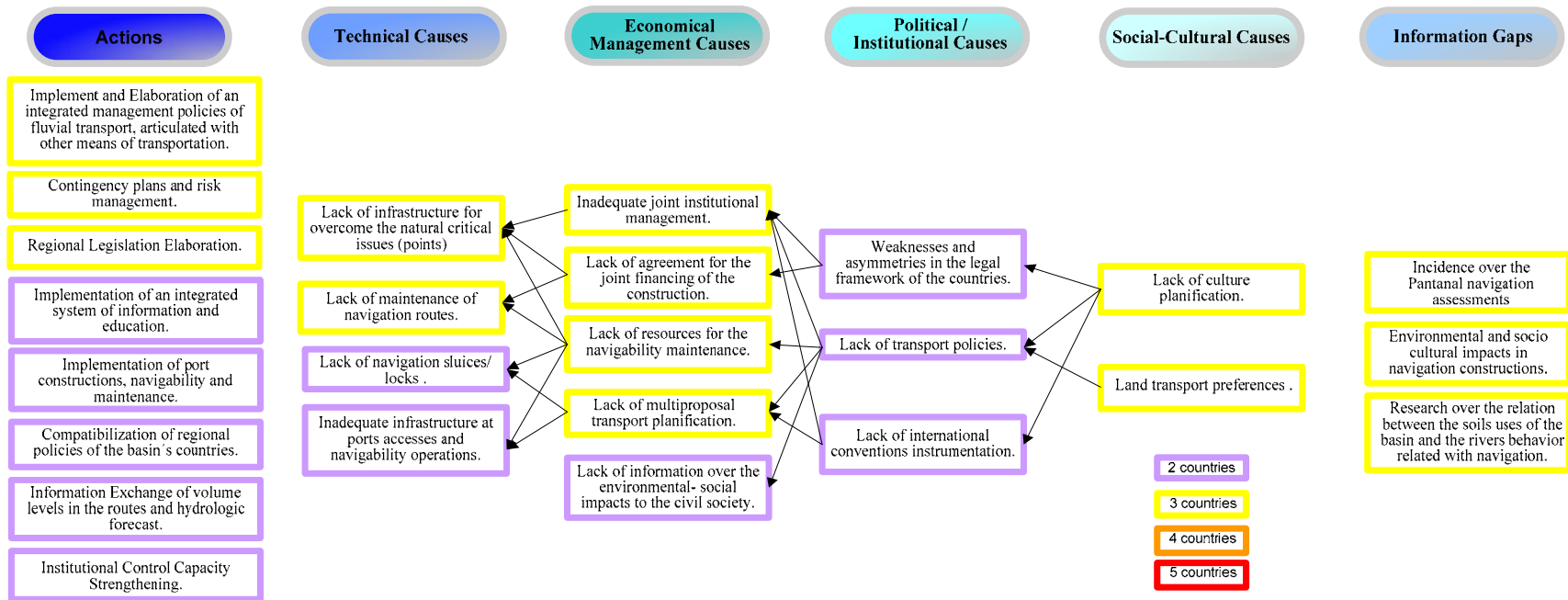


Figure N° 8: Navegability Restrictions. Location: Parana Paraguay Hidrovia. (Argentina, Bolivia, Brasil, Paraguay) Middle and Low Uruguay River (Argentina, Uruguay, Brasil) y Parana Tiete (Brasil, Paraguay)

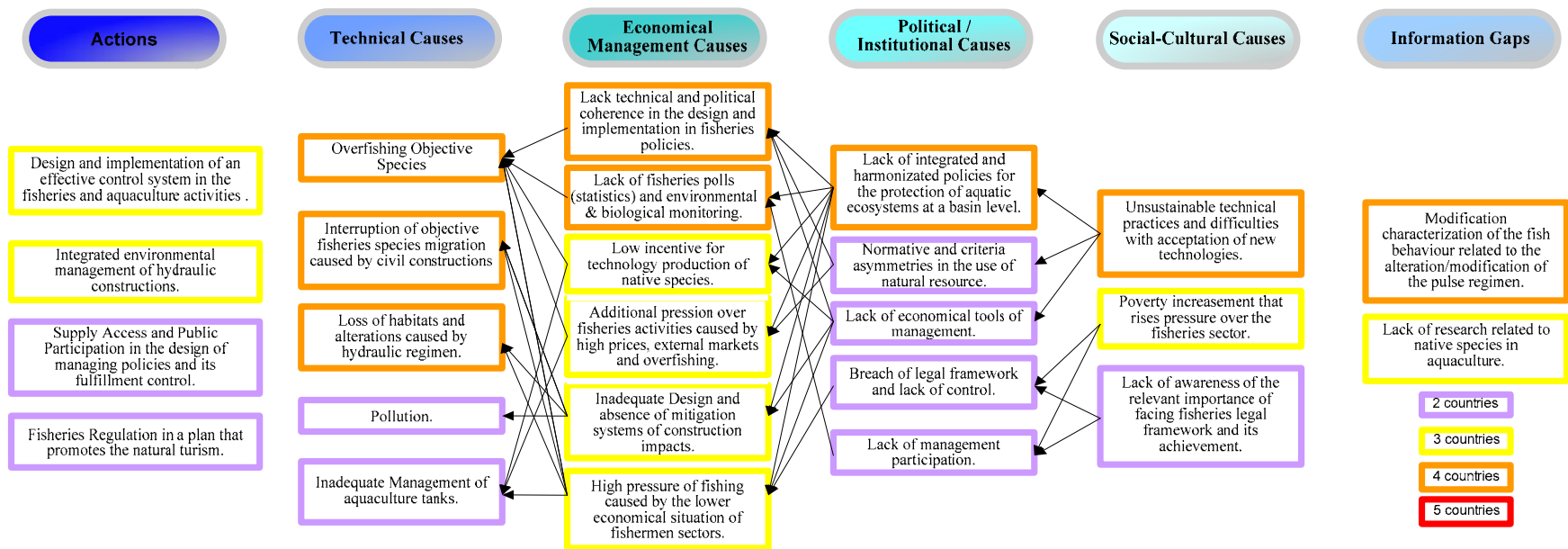


Figure N° 9: Non Sustainable Use of Fisheries Resource. Location: All the basin.

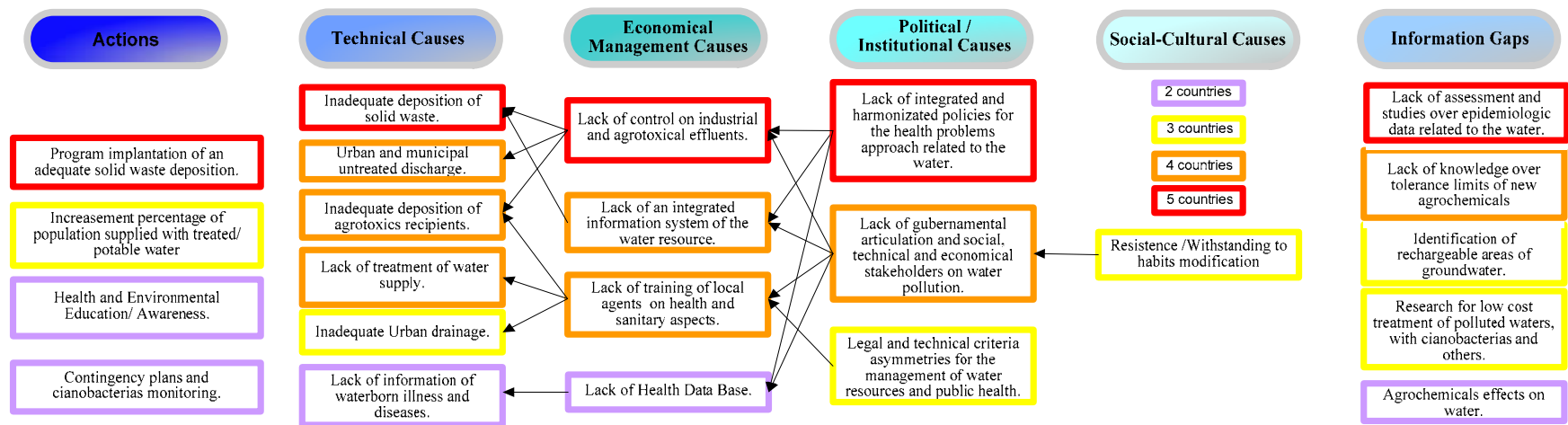


Figure N° 10 Health aspects related to the water. Location All the Basin.

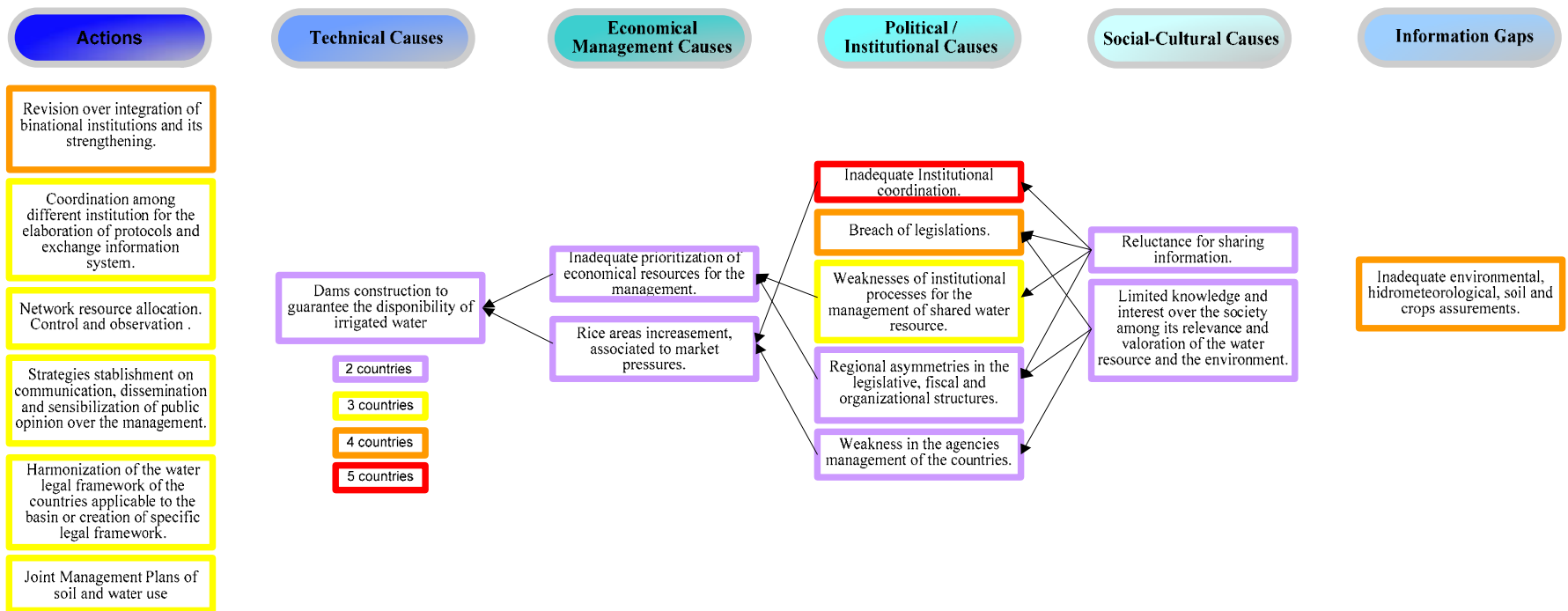
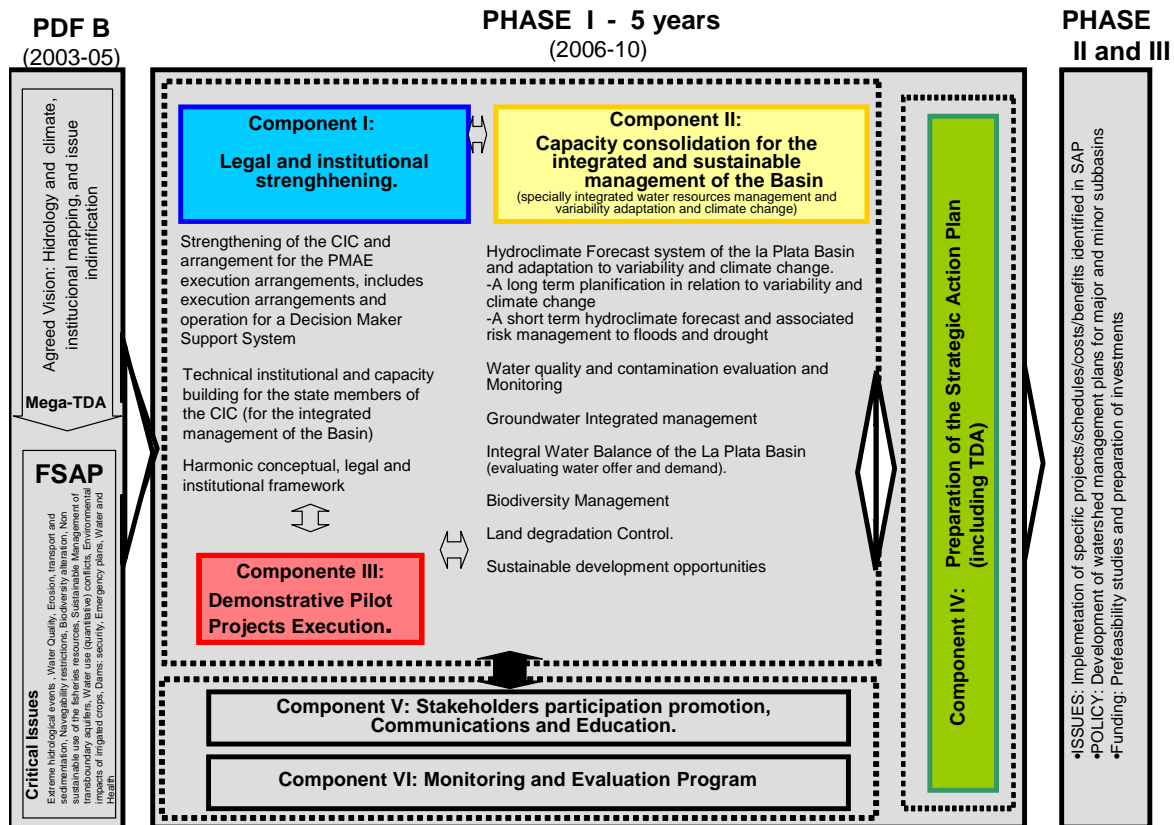


Figure N° 11. Environmental Impacts of irrigated crops. Location: Specifically rice basins: all the Basin of Uruguay River and Lower Parana Paraguay Basin.

Annex 4: Development Program Structure Scheme



Annex 5: Critical transboundary issues and Phase 1 Components Relation Scheme Program

**PHASE I of the LA PLATA RIVER BASIN FRAME STRATEGY ACTION PROGRAM
(2006-2010)**

Critical Issues of the la Plata River Basin Identified during the Mega Transboundary Diagnostic análisis (Mega - TDA)	Component I Legal and institutional strengthening	Component II Capacity consolidation for the integrated and sustainable management of the Basin (specially integrated water resources management and variability adaptation and climate change);							Component III Demonstrative Pilot Projects Execution.			
	Strengthening of the CIC and arrangement for the PMAE execution arrangements	Hydroclimate Forecast system of the la Plata River Basin and adaptation to variability and climate change.	Water quality and contamination evaluation and Monitoring.	Groundwater Integrated management.	Integral Water Balance	Biodiversity Management	Land degradation Control.	Sustainable development opportunities	Contamination and Erosion (Pilcomayo)	Hydrological Alert System (Paraná-Paraguay)	water use conflicts (Uruguay)	Biodiversity (Paraná)
	Componente V: Stakeholders participation promotion, Communications and Education.											
Extreme hidrological events (Floods and Droughts)												
Water Quality												
Erosion, transport and sedimentation												
Navegability restrictions												
Biodiversity alteration												
Non sustainable use of the fisheries resources												
Sustainable Management of transboundary aquifers												
Water use (quantitative) conflicts												
Environmental impacts of irrigated crops												
Dams: security Emergency plans												
Water and Health												
<p align="center">Componente IV:</p> <p align="center">IV.1 Preparation of the Strategic Action Plan (including TDA)</p> <p align="center">IV.2 Specific studies: -navigation and sustainable development limitations in the Basin ; -potential hydroelectric development and possible use of alternative sources of clean energies; - study issued vinculated to sewage, the incidence on human health and transboundary effects; - dams security.</p>												

Annex 6: FONPLATA financing projects List (associated to the Frame Program)

Will be translated

Objetivos	Monto de Financiamiento (en millones de dólares)	Ubicación
Construcción del Puerto y defensa de costas en la ciudad de Formosa	7,10	Ciudad de Formosa
Desarrollo integral de la Región sudeste de la ciudad de Formosa	9,20	Ciudad de Formosa
Realización de estudios y proyectos para el saneamiento Arroyos de la ciudad de Posada	2,24	Ciudad de Posadas
Programa de financiamiento de contrapartida local para el proyecto BID 1118/OC-AR-Programa de emergencia para la recuperación de las zonas afectadas por las inundaciones, con especial énfasis en la Provincia de Santa Fe	51,00	Provincia de Santa Fe, zonas afectadas por las inundaciones
Financiamiento destinado a la ejecución del Programa de mejoramiento y optimización de la gestión de residuos sólidos urbanos del Área Metropolitana de Buenos Aires. CEAMSE	27,65	Ciudad de Buenos Aires
Financiamiento del programa de recuperación de las áreas degradadas y de preservación del Arroyo SOTER-PROGRAMA SOTER	6,15	Municipio de Campo Grande, región urbana
Ejecución de Obras para Abastecimiento de agua Potable en Departamentos de Fronteras	3,80	Departamentos: Concepción, Itapuá, Amambay, Pte. Hayes, Canindeyú, Alto Paraguay
Realización de estudios de preinversión y ejecución de obras para la construcción de la terminal portuaria multipropósito de la ciudad de Pilar, en el departamento de Ñeembuco - ETAPA DE INVERSIÓN	0,50	Departamentos: Alto Paraguay, Boquerón, Pte. Hayes
Ejecución de Estudios de Zonificación de Áreas Inundables del Río Paraguay	0,25	Proyecto Nacional
Ejecución de Estudios de Diseño Final del Plan de Saneamiento para el Interior del País	0,95	Departamentos: Colonia, Durazno, Lavalleja, Paysandú, Salto, San José, Soriano, Trienta y Tres
Realización de los Planes Maestros para los Puertos de Nueva Palmira y Fray Bentos.	0,52	Puerto Nueva Palmira y Fray Bentos.
Cooperación técnica no reembolsable de la Hidrovía Paraguay-Paraná (puerto Cáceres - puerto Nueva Palmira)	0,15	Proyecto Regional (Puertos: Cáceres - Nueva Palmira)
Cooperación técnica no reembolsable al Comité Intergubernamental de la Hidrovía Paraguay-Paraná, destinado a Realizar Estudios sobre el desarrollo de un Sistema de Información del Programa Hidrovía Paraguay-Paraná.	0,05	Proyecto Hidrovía - CIH
TOTAL	109,56	

Annex 7: Financing for associated activities

FONPLATA - Programs: ARG-02/83, ARG-03/83, ARG-05/94, ARG-13/03, ARG-15/04, BR-06/02, PAR-11/93, PAR-16/01, OCTRC-PAR-04/96, UR-07/93, UR-11/94, OCTRC-CIH-01/91, OCTRC-CIH-03 (ver detalle Anexo 8)	US \$ 109,560,000
PILCOMAYO Project	€ 16,500,000 (Total financing by UE: €12,600,000)
WWAP World Water Assessment Programme	To be defined
TOTAL	US \$ 126,060,000

ANNEX 8 A

PRIORITY¹ AND PILOT DEMONSTRATION PROJECTS² alias “feasibility studies”

1. INTRODUCTION

1.1. Selection Methodology and Procedure. The preparation of the la Plata Framework Program provided the participating countries with the opportunity to visualize their common objectives and present them in a Comprehensive Vision. The role of water resources in the development of the Basin countries, their current uses and constraints, as well as the effects of climate behavior at the short, medium, and long term were identified as per the first time. The agreed Vision focuses on the main issue of the la Plata Basin, the analysis of the hydrological cycle and its interactions with human activities. The Vision was expressed, through a participatory process, in a Macro Transboundary Diagnostic Analysis (MTDA,) prepared based on Basin-wide scientific knowledge. The MTDA identifies the critical issues, which affect the quality and availability of water resources, its main causes, and how they hamper the development of the Basin countries. The MTDA allowed for the structuring of threats and barriers that the Basin countries face and should sort in a coordinated way. The construction of the Vision and the preparation of the MTDA were supported, initially, by national workshops, with a broad participation of all sectors and stakeholders involved in each country. The results and findings of these workshops were later-on integrated and validated at the Basin level. The workshops were supported and moderated by specialists, and counted with the active participation of the five Project National Units, established for the preparation of the Program at each national institution appointed by their respective governments.

The identification of the main issues and threats, the more frequent floods and droughts, resulted in vulnerability assessments of the Basin to these two extreme hydrological events. Vulnerabilities are mainly related to lack of knowledge about local factors that determine the climate. Examples are the drastic changes observed in land use and forest fires. These issues are aggravated by causes that were identified as: i) lack of hydro-climatic information, particularly in critical areas, and the resulting inability to model and prepare for the climate and hydrological changes; ii) institutional weakness, iii) lack of sound planning and management instruments, and iv) lack of capacity –of local communities, for adaptation to climate change, when this phenomena reaches catastrophic dimensions and becomes recurrent. Having recognized the main threats and barriers, they were located and linked to critical scenarios of the subbasins, where they were observed with greater intensity. A map of issues by subbasin was then prepared based upon this information (see Map 1 attached.)

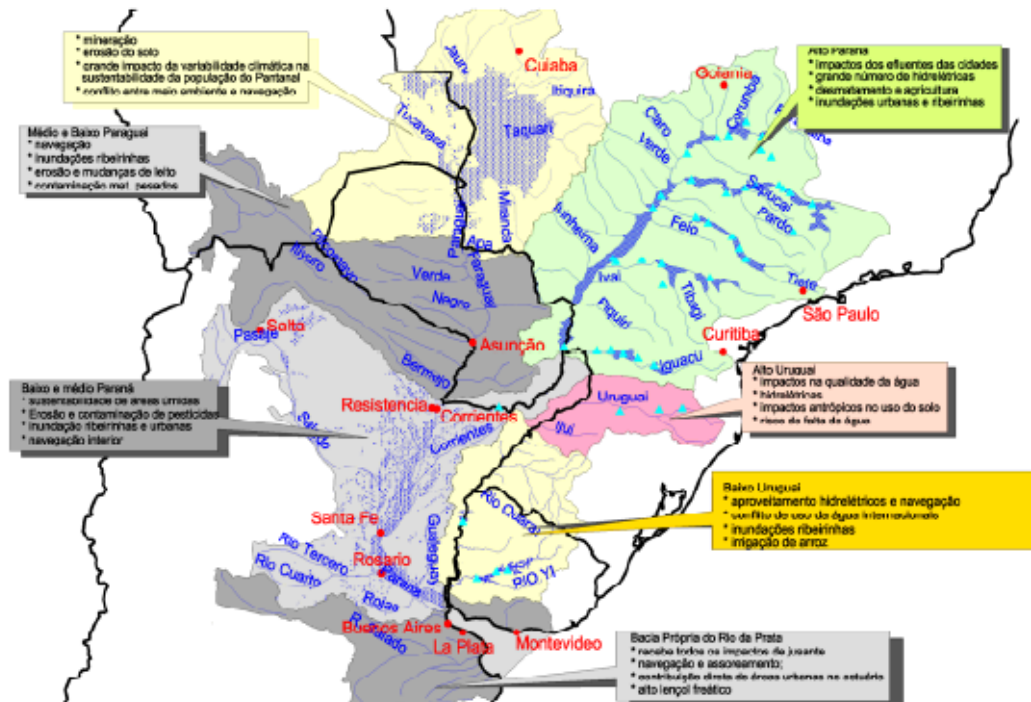
It was also established that some specific critical issues were addressed by treaties, agreements, and projects undertaken by two or more countries. In addition, attention was given to the interest of the countries, within the framework of the CIC, as well as the GEF system (see Map 2, GEF-IW Projects coverage in the la Plata Basin.), as to maximize the on-going efforts, seeking

¹ Priority projects included in this Annex 8 are an integral part of Component II, Sub-Component II.2, Integrated Water Resources Management, Activities: “Integrated Management of Groundwater,” “Biodiversity Management,” and “Control of Land Degradation.”

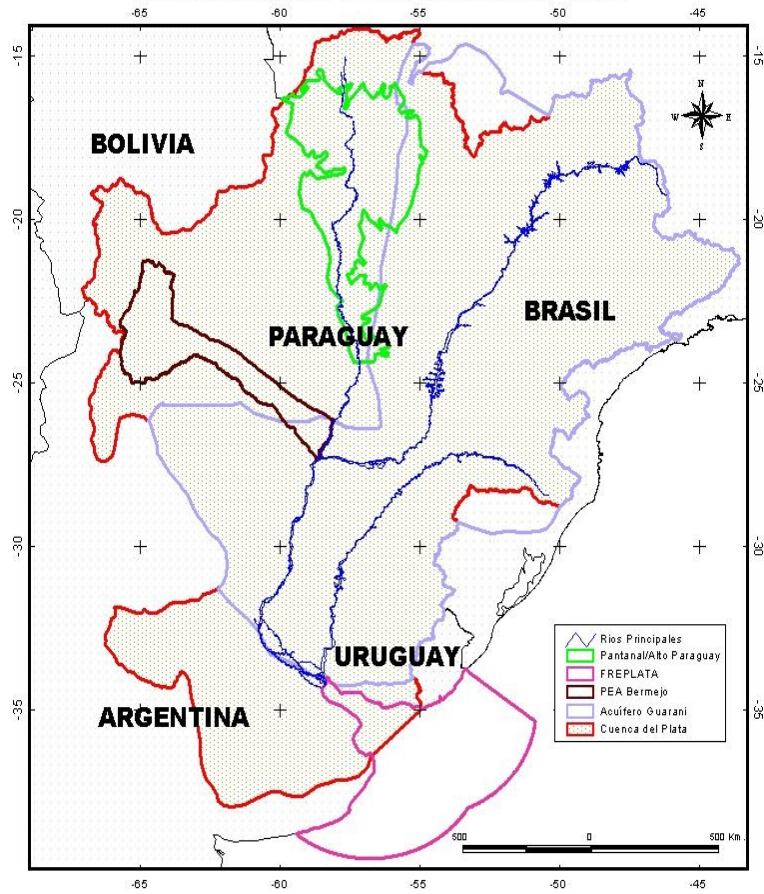
² Demonstration projects included in this Annex 8 correspond to the totality of activities in Component IV, “Pilot Demonstration Projects.”

and forging synergies among projects, and building upon lessons learned and best practices for their replication at the Basin level. All on-going and under preparation GEF projects were analyzed and considered during the various Project meetings: i) GEF Bermejo (addressing the issue of erosion and sedimentation transport and disposal;) ii) GEF Upper Paraguay (addressing the issue of protection of the Pantanal wetland and hydrological regulation of the Basin;) iii) GEF FREPLATA (addressing the management of biodiversity and protection of the la Plata River and its Maritime Front ecosystem;) iv) GEF Guarani Aquifer System (addressing the protection of one of the larger confined aquifers in the World;) v) GEF Gran Chaco Americano (addressing the restoration of degraded lands, reverting the desertification process;) and vi) EU Pilcomayo Basin Project (addressing the issue of contamination, erosion and river regulation.)

MAP 1. CRITICAL ISSUES BY SUB-BASIN



MAP 2 . GEF-IW PROJECTS IN THE LA PLATA BASIN



Selection of Pilot Demonstration Projects³. The set of actions, hereabove described, allowed for the preparation of a matrix linking the critical issues and their causes (threats) and the areas where they are observed under extreme conditions. The matrix became an input for a study carried out by a specialist recruited to identify the location of the pilot demonstration projects, meeting the following criteria: i) addressing one or more of the identified transboundary issues; ii) developing information and experience for the preparation of the final TDA and SAP, during the next phase; iii) providing conditions for replication in other areas of the Basin; iv) linking actions in more than one of the Basin countries; v) supporting the development of local management experiences; and vi) catalyzing on-going initiatives in the region. These projects are demonstrative in nature and seek to develop local management experiences to be assessed for further dissemination and use (upscaling process). Eleven (11) projects were identified for a final selection by the responsible national institutions in the five countries. The demo project hereby presented are the result of this final selection. Matrix 1 shows how these pilot demonstration projects were selected in response to the main transboundary threats, as the priorities set forth in the MTDA –main threat is shown in black. Each project seeks also to address other secondary threats, even though not observed in their maximum intensity at the project location. These relationships are shown in a scale of grays, where the lighter ones correspond to the least intensities at the pilot demonstration project location. In this way, all pilot demonstration projects preserve an integrated approach within their geographic scope, regardless that it is in a micro-basin or a water body.

MATRIX 1. THREATS AND BARRIERS – PRIORITY AND PILOT DEMONSTRATION PROJECTS

PRIORITY & PILOT DEMO PROJECTS	THREATS & BARRIERS (of the La Plata Basin) Identified during the mega TDA							
	SAYTT Priority Project	Cultivando agua buena (Revolving Found)	Prep. Proj. Manejo Sost. de la Selva Misionera Paraná ense	Prep Proj. Ecoturism Navigation Developmet in the Lower Uruguay	Contol Contamination and Erosion (Cotagaita-Pilcomayo)	Hydrological Alert System at the Confluence of the Paraná-Paraguay	Resolution of water use conflicts in the Cuareim River Basin	.Biodiversity Conservation in the regulated Paraná river
1. Extreme hidrologic events linked to climate variability and change (Floods and Droughts)	Dark Gray	White	Dark Gray	Light Gray	White	Black	Dark Gray	White
2. Water quality degradation	Dark Gray	Black	Dark Gray	Light Gray	Black	Dark Gray	Dark Gray	Dark Gray
3. Soil erosion/sedimentation. (effects in navigation, dams reservoirs and biodiversity)	White	Light Gray	Black	White	Dark Gray	White	White	Light Gray

³ Pilot Demonstration Projects are included in Component IV and are described in this Annex 8.

THREATS & BARRIERS (of the La Plata Basin) Identified during the mega TDA	PRIORITY & PILOT DEMO PROJECTS							
	SAYTT Priority Project	Cultivando agua buena (Revolving Fund)	Prep. Proy. Manejo Sost. de la Selva Misionera Paraná ense	Prep Proj. Ecotourism Navigation Development in the Lower Uruguay	Control Contamination and Erosion (Cotagaita-Pilcomayo)	Hydrological Alert System at the Confluence of the Paraná-Paraguay	Resolution of water use conflicts in the Cuareim River Basin	Biodiversity Conservation in the regulated Paraná river
4. Biodiversity alteration								
5. Unsustainable management of fisheries resources								
6. Unsustainable management of aquifers								
7. Water use conflicts related to irrigated crops w/environmental impact.								
8. Lack of contingency plans to face disasters								
9. Unsafe water and environmental sanitation conditions								

The selected Pilot Demonstration Projects are:

- Contamination and Erosion Control in the Pilcomayo River** (Countries involved: Bolivia, Argentina, and Paraguay.) The main threat addressed by the project is the disposal of environmental “passives” –mining origin waste, in a very vulnerable (to the erosion of the Pilcomayo River) micro-basin. The project will contribute with improved knowledge of critical transboundary issues related to water quality and soil erosion, and transport of contaminants and sediments, taking into account the transboundary effects in Argentina and Paraguay, both located downstream. This project contributes to the development of Component II. Integrated Water Resources Management; and particularly to Water Quality and Contamination Evaluation and Monitoring, as well as to Control of Land Degradation.
- Hydrological Alert System at the Confluence of the Paraguay and Paraná Rivers** (Countries involved: Argentina, Paraguay and Brazil.) The main threat addressed by the Project refers to the catastrophic effects of floods caused by climate variability at the confluence of the two main rivers of the la Plata basin, Paraguay and Paraná. The project will contribute with improved knowledge of transboundary critical issues related to hydrological extreme events, contingency planning and water quality.

- **Water Use Conflict Management in the Cuareim/Quarai River Basin** (Countries involved: Brazil and Uruguay.) The main threat addressed by the Project is the conflicts over the use of water resulted from high demands and derived issues, in the irrigation of rice fields. The project informs critical transboundary issues by developing knowledge on water use conflicts and the impacts of irrigated land. This project contributes to the development of Component III Managing the Effects of Climate Change and Variability on Sustainable Development. It also contributes to Component II Integrated Water Resources Management; and particularly to Integrated Water Balance for the la Plata Basin, and Control of Land Degradation.
- **Biodiversity Conservation in the Regulated Paraná River** (Countries involved: Argentina, Brazil and Paraguay.) The main threat addressed by the Project is the loss of fishing capacity and control of exotic species in the river ecosystem regulated by two large dams: Itaipú and Yacyretá. The project will contribute to better understand the transboundary issues related to biodiversity loss and habitats alteration, and sustainable use of fisheries resources. This project contributes to the development of Component III Managing the Effects of Climate Change and Variability on Sustainable Development. It also contributes to Component Integrated Water Resources Management; particularly to Biodiversity Management.

The selected pilot demonstration projects were developed at the local level, with participation of stakeholders and water users of the participating communities, using a document format adopted by FONPLATA, as they are expected to receive most of their financial support from this regional bank, established to support CIC and the la Plata Basin Treaty. Financial support is also being sought from the regional bank of the Andean Community, CAF. Finally, the selected projects were agreed by the participating countries.

The projects will illustrate methodologies and technologies, as well as institutional arrangements and participatory approaches, providing an assessment of cost and feasibility for their replication in the region. Local committees with the participation of key governmental and non-governmental organizations will carry out the projects.

Priority Projects. As opposed to Pilot Demonstration Projects, whose selection was the result of a process seeking representation to address typical critical issues identified in the Basin, the Priority Projects are the result of the progress made in the analysis of each of the identified threats and barriers. They are major projects seeking to advance, in the short-term, in the resolution of pressing issues that require immediate attention (See Matrix 1.) At the same time, the geographic coverage is larger than that of the Pilot Demonstration Projects, and their objective is to address a major transboundary threat. These Priority Projects complement existing projects funded by the GEF, although in some cases their dimension may be greater. These projects are three (3,) two of which are related to transboundary waters and they are already prepared and ready for implementation. The other one has been identified due to its strong linkage to the GEF Land Degradation Operational Program #15, Sustainable Land Management, and the GEF Multifocal Operational Program #12, Integrated Ecosystem Management, respectively, as the main threat is the accelerating land degradation process and its consequent potential loss of an ecosystem, if no measures are taken immediately.

The Priority Projects already prepared, specific to transboundary waters, are the following:

- **Management of the Yrendá-Toba-Tarijeño Aquifer System (SAYTT) within the semi-arid Chaco** (Argentina, Bolivia and Paraguay.) This project fits within the GEF International Waters Operational Program #8, Waterbody-based Operational Program, and seeks to achieve the integrated management of the waters of a shallow aquifer system in the semi-arid area of the

Gran Chaco Americano, threatened by desertification due to the effects of climate change foreseeable in the region. The aquifer is highly vulnerable to becoming salty and is under a strong pressure of unsustainable use.

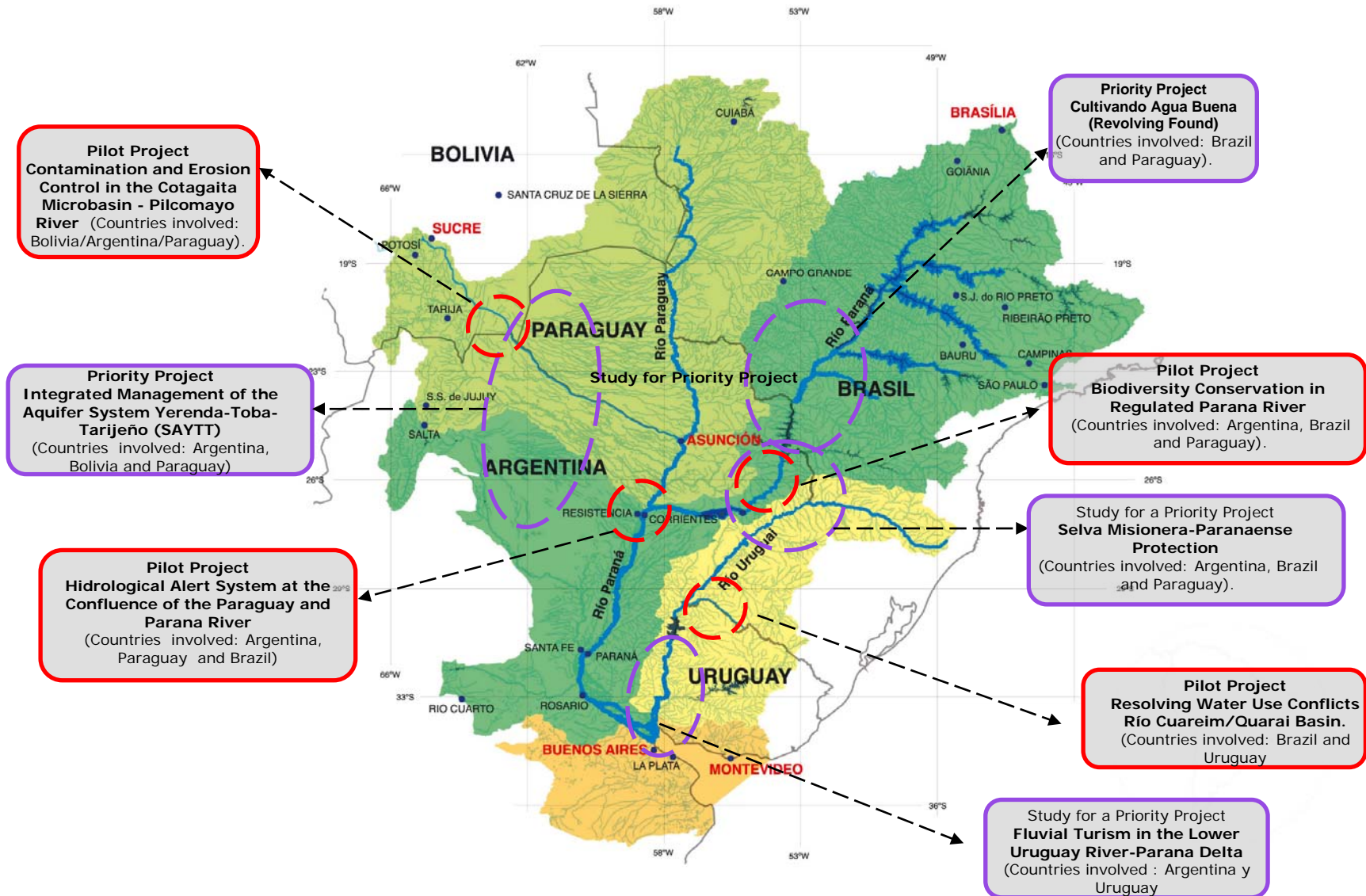
- **Cultivando Agua Boa (Harvesting Good Water) – Revolving Fund** (Governments of Brazil and Paraguay in partnership with Itaipú Binational.) This project will address the management of micro-basins in the Upper Paraná Basin (Paraná III, upstream to Itaipú dam,) for the protection of water quality. The purpose is to establish a revolving fund to revert the historical damaging environmental conditions responsible to a large extent for the eutrophication of impoundments, looking at the management of point and non point contaminant sources from small farm operations. This activity will take place within the context of a broader program of Integrated Management of Micro-basins known as Cultivando Agua Boa, Harvesting Good Water in its English translation. This latter program is being successfully implemented by Itaipú Binational with a budget of about three US million dollars per year. It fits within the GEF International Waters Operational Program #9, Integrated Land and Water Multiple Focal Area Operational Program, under a *public-private partnership* initiative led by Itaipú Binational, to be adopted and disseminated in the Basin.

The other identified Priority Project that requires urgent attention due to the degree of the threat and current pressures, and essentially transboundary, but that needs further preparation⁴ is the following:

- **Management of the Critical Ecosystem of the la Selva Misionera Paranaense** (Argentina, Brazil and Paraguay.) The threats to water resources identified in this area are several and all related to the increment of sediment and contaminant (agro-chemicals and organics) contribution to the rivers and dams of the region. The issue derives from the loss of the ecosystem of the la Selva Misionera Paranaense served by the Paraná and Uruguay rivers and their affluents, under strong pressure due to the expansion of the agricultural frontier. This expansion is a fact in most of the Brazilian and Paraguayan sector of the region that once was covered by the ecosystem. The major preserved part of the ecosystem remains in Argentina, in the province of Misiones, but without effective protection. The deforestation has resulted in an intense erosion of the soils, which on top of the crops and their natural high suitability to erosion, has subsequently resulted in the degradation of the lands. The drainage speed has increased and consequently has the transportation of sediments. This ecosystem is located in the area with the highest rain-fall rates of the la Plata Basin, which deliver high energy when impacting the soils. The Framework Program has identified this critical issue and has defined the scope and terms for the preparation of this priority project, which due to its nature fits within GEF Land Degradation Operational Program #15, Sustainable Land Management, and the GEF Multifocal Operational Program #12, Integrated Ecosystem Management, respectively.

⁴ This Project requires immediate preparation for which funds have been allocated within the Program. Given its urgent nature, its management and future implementation, once approved, may be independent of the Framework Program, if necessary.

Priority And Pilot Projects Location



2. PRIORITY AND PILOT DEMONSTRATION PROJECT DESCRIPTION

Although detailed information in Spanish is available on the project website at www.cicplata.org, each of the below mentioned priority and pilot demonstration projects will be further defined during the appraisal phase.

II.2. Priority project on Integrated Management of Groundwater (Countries involved: Argentina, Bolivia, Brazil, Paraguay and Uruguay)

The Yrenda-Toba-Tarijeño Aquifer System Strategic Project (SAYTT) forms part of Activity II.2, “Integrated Groundwater Management”, in the Framework Program for the Sustainable Management of Water Resources of the la Plata Basin, with respect to the Effects of Climate Variability and Change (Framework Program).

Statement of the Problem – Main Transboundary Issues

The Yrenda-Toba-Tarijeño Aquifer System had been previously selected by UNESCO ISARM Americas as a priority case study for the implementation of future projects. This priority was ratified by the three countries concerned (Argentina, Bolivia and Paraguay).

The objectives and the work plan of the SAYTT Project were defined in three meetings (Tarija-Bolivia, August 2004; Asuncion-Paraguay, November-December 2004; and Buenos Aires-Argentina, May 2005), carried out during the Framework Program (PDF Block B) preparation phase, when specialists discussed and assessed the relevant aspects of the proposed project in order to prepare the Strategic Project.

Location

The limits of the Yrenda-Toba- Tarijeño Aquifer System were established at the Asuncion Workshop, held between November 30th and December 3rd, 2004, as follows:

- **Northern Boundary:** An imaginary line at approximately 20° South latitude, south of the Parapeti River.
- **Southern Boundary:** At the northeastern springs in the Pampeanas Mountain Range (in the Sumampa and Ambargasta Mountains), coincident with the inflow from the Dulce River.
- **Western Boundary** (recharge zone): On the divide which is coincident with the last eastern springs in the Sub-Andean Aguarague Mountain Range, with interruptions which are the large watercourses that cleave through the range, such as the Pilcomayo River, Bermejo River, Juramento River, and Dulce River, coincident with the border of the (surface) hydrogeological basin.
- **Eastern Boundary** (discharge zone): At the confluence of the mainstems of the Paraguay-Parana Rivers, which form the System’s free aquifer (at approximately 59° 30’ 00” East longitude).

This aquifer covers a surface area of 352,000 sq. km. shared out between the three countries.

Ultimate Goal

The long-term objective is to contribute to the sustainable management of the SAYTT water resources, assuring the continuity of recharge and the maintenance of water quality, involving the

users as well as the beneficiaries, in order to achieve a better hazard management response in relation to climate change.

Purpose

The short-term objective of the SAYTT Project is to assist the three countries in the design and establishment of the technical, institutional and legal basis to guarantee the sustainable management of the Yrendá-Toba-Tarijeño (SAYTT) transboundary Aquifer as part of the integrated management of the water resources of la Plata Basin.

Components and Outputs

The SAYTT Project has seven components: 1. Establishment of a management unit; 2. Formulation of the Transboundary Diagnostic Analysis (geologic investigation); 3. Analysis of the institutional and legal framework; 4. Transboundary Diagnostic Analysis synthesis; 5. Pilot projects; 6. Strategic Action Plan focused on the SAYTT; and 7. Replication of the results.

Local Benefits and their relation with Global Benefits of the La Plata Framework Program

The general objective of the Integrated Groundwater Management activity is to define the guidelines for integrated management of groundwater and superficial water resources of the la Plata Basin, based on the SAYTT Project and on the outcomes of other initiatives addressing transboundary aquifer management carried out in the region as a result of the UNESCO ISARM Americas program. This project will complement and augment the activities currently being carried out by the World Bank under the auspices of the GEF-IW project on the Guarani Aquifer. This project will result in the development and application of a proven methodology for the integrated management of surface and ground waters and a Strategic Action Plan for the SAYTT, including its continued recharge and maintenance of its water quality. Consumers and beneficiaries of aquifer water will be included as part of the process of integrated water resources management.

Executing Institutions

National program executing agencies and/or National Program Units, INASLA and CRAS-INA from Argentina, national executing institutions of the Program; Servicio Geológico Técnico de Minas (SERGEOTECMIN) and the Departamento de Hidrogeología del SENAMHI in Bolivia; Secretaría de Recursos Hídricos/Ministerio do Meio Ambiente, Agencia Nacional de Águas, IBAMA, Ministério das Cidades, and the Serviço Geológico Brasileiro (CPRM) in Brazil; Secretaría del Ambiente (SEAM), Dirección General de Protección y Conservación de los Recursos Hídricos, and the Boqueron Government in Paraguay; the Dirección de Recursos Hídricos del Chaco in Paraguay; and Dirección Nacional de Medio Ambiente y Dirección Nacional de Hidrografía in Uruguay.

II.2. Priority project on Biodiversity Protection: *Cultivando Agua Boa* (Countries involved: Brazil and Paraguay) –see also Annex 8bis.

The project *Cultivando Agua Boa* forms part of Activity II.2, “Biodiversity Management”, in the Framework Program for the Sustainable Management of Water Resources of the la Plata Basin, with respect to the Effects of Climate Variability and Change (Framework Program).⁵

Statement of the Problem – Main Transboundary Issues

ITAIPU Binational has undertaken to support interventions within its tributary drainage area as a priority case study for the implementation during the la Plata Basin project. This priority was ratified by the two countries concerned (Brazil and Paraguay).

The objectives and the work plan were by the Directors General of ITAIPU Binational as a means of addressing critical environmental impacts of human development and activities within their drainage basin. Created in 2003, the program *Cultivando Agua Boa* seeks to integrate the multifold aspects of human life and economic activity with the philosophies of sustainable living within the portions of the drainage area tributary to Itaipu dam. These activities have direct and complementary impact on the GEF project and contribute to the development of transferable practices and measures that will benefit the la Plata Basin as a whole.

Location

The projects supported by *Cultivando Agua Boa* are located in the portions of the drainage area directly tributary to Itaipu dam in both Brazil and Paraguay.

Ultimate Goal

The long-term objective is to contribute to the sustainable management of the land and water resources of the drainage area directly tributary to the Dam, involving the users as well as the beneficiaries, in order to implement the principles of social responsibility as set forth in *Agenda 21* and confirmed in the Millennium Goals of the United Nations.

Purpose

The short-term objective of *Cultivando Agua Boa* is to address the needs of local communities, including women and previously disadvantaged groups residing within the watershed of the Itaipu Dam. Consequently, the *Cultivando Agua Boa* program addresses a wide range of socio-economic concerns within their transboundary tributary basin as part of the process of integrated management of the water resources of la Plata Basin.

Components and Outputs

The *Cultivando Agua Boa* Project has eleven components: 1. solid waste management and recycling programs; 2. youth gardening; 3. enhancing opportunities for appropriate and culturally acceptable socio-economic development within indigenous communities; 4. promoting the cultivation of medicinal plants and their use in public health applications; 5. enhancing organic agriculture; 6. promoting agricultural production that is consistent with the region, its cultures, and capabilities; 7. managing the fisheries; 8. protecting biodiversity; increasing public and environmental health in the region; 9. conducting appropriate monitoring, focusing on water quality and control of invasive species; 10. supporting environmental education, both formal and informal; and 11. disseminating and replicating the results. A revolving loan fund will be created to support the community-based actions associated with these components.

⁵ See Itaipu Binacional, *Cultivando Agua Boa/Cultivando Agua Pora*. www.itaipu.gov.br/www.itaipu.gov.py.

Local Benefits and their relation with Global Benefits of the la Plata Framework Program

The general objective of the Biodiversity Management activity is to protect and preserve the natural resource base of the Parana River. By empowering local communities, with a focus on disadvantaged peoples, women and youth, this project will develop experience and expertise that is transferable to other communities throughout the la Plata Basin. These experiences will be documented and made available to the worldwide community through, *inter alia*, the ITAIPU Binational website, the IWRN and IW-LEARN. Local dissemination, through a variety of media, and through the community-based educational and informational programs, will generate additional products that can be replicated elsewhere in support of integrated approaches to land and water resource management as a basis for protecting and preserving native species, regional biodiversity, and economic opportunities.

Executing Institutions

The Itaipu Binational Commission will execute this project. National Project Units, the Itaipu, Yacireta and Salto Grande binational organisations, National Environmental Secretariats, National Fishery Institutions, and civil society organizations involved through the Public Participation Fund (see Component V) will benefit from the project activities and will participate in the dissemination and replication of the project outcomes.

II.2. Priority project on Control of Land Degradation: *Selva Misionera Paranaense* (Countries involved: Argentina, Brazil, and Paraguay)

The project *Selva Misionera Paranaense* forms part of Activity II.2, “Control of Land Degradation”, in the Framework Program for the Sustainable Management of Water Resources of the la Plata Basin, with respect to the Effects of Climate Variability and Change (Framework Program).⁶

Statement of the Problem – Main Transboundary Issues

Significant hydrological erosion is known to occur in the drainage area of the Parana River as a result of current agricultural and other economic development practices that have caused a loss of ecosystem integrity and ecosystem services in this area. This soil loss is manifested as a result of the loss of riverine forests, and changing agricultural practices that favor the use of heavy machinery and agrochemicals for the production of tobacco and sugar cane in the project area. These concerns were identified through a series of public seminars conducted during 2004.

Location

The projects supported by the project *Selva Misionera Paranaense* are located in portions of the Parana River drainage area adjacent to the Selva Tucumano-Boliviana, Parque Chaqueño, and Selva Paranaense in Argentina, Brazil and Paraguay. The project area incorporates areas that are within the GEF-IW project areas of the Bermejo River Binational Basin and the Upper Paraguay River Basin and the Pantanal and GEF-LD project area of the *Gran Chaco*, and, as such, complements the activities of those projects.

Ultimate Goal

The long-term objective is to contribute to the sustainable management of the land and water resources of the region.

Purpose

The short-term objective of *Selva Misionera Paranaense* is to address the threats to the aquatic ecosystem of the Parana River basin created by increasing human encroachment and unsustainable economic development practices of transboundary concern in the la Plata Basin through the development and implementation of appropriate best management practices.

Components and Outputs

The *Selva Misionera Paranaense* Project has five components: 1. establishment of mechanisms for horizontal cooperation for sustainable land management within the project area; 2. evaluation of methods and best management practices for the mitigation of greenhouse gas emissions within the project area; 3. promotion of mechanisms for public awareness with respect to land management; 4. capacity building within civil society with respect to land management practices; and 5. conduct of extension services.

Local Benefits and their relation with Global Benefits of the la Plata Framework Program

The general objective of the Control of Land Degradation activity is to protect and preserve the natural resource base of the Parana River. By empowering local communities and stakeholders, this project will develop experience and expertise that is transferable to other communities throughout the la Plata Basin. These experiences will be documented and made available to the worldwide

⁶ See Pastor, Carlos 2005. “Control de la Degradación de la Tierra y Desertificación: Informe Final.” *Programa Marco para a Gestión Sostenible de los Recursos Hídricos de la Cuenca del Plata, en Relación con los Efectos Hidrológicos de la Variabilidad y el Cambio Climático, Acción II.2*. CIC, Buenos Aires.

community through, *inter alia*, the IWRN and IW-LEARN. Local dissemination, through a variety of media, and through the community-based educational and informational programs, will generate additional products that can be replicated elsewhere in support of integrated approaches to land and water resource management as a basis for protecting and preserving native species, regional biodiversity, and economic opportunities.

Executing Institutions

Riparian national institutions dealing with land management issues; National Project Units, INTA and INA, and Provincial institutions in Argentina; MDS in Bolivia; EMBRAPA in Brazil; MAG-SEAM in Paraguay; and RENARE-MGAP, INIA and UDELAR in Uruguay.

III.1. Pilot project to Control Contamination and Erosion in the Pilcomayo River (Countries involved: Bolivia/Argentina/Paraguay).

The purpose is to generate local management experience in reducing mining contamination and soil erosion, and sedimentation and water course sediment deposition in the Pilcomayo River. It includes a group of actions at the local level (Cuenca de Cotagaita in Bolivia) to preserve the integrity of the water resources system of the Pilcomayo River basin, improving water quality and erosion control, to obtain a replicable experience in control actions and contamination and erosion mitigation. The project contributes to improved knowledge of critical transboundary issues related to water quality and soil erosion, transport and sedimentation, taking into account the transboundary effects on Argentina and Paraguay located downstream.

Statement of the Problem - Main Transboundary Issues

Water contamination, due primarily to past and present mining activities, and soil erosion and sedimentation are evidence of environmental problems in the Pilcomayo River basin.

Among the main impacts of water contamination is the presence of heavy metals in sediments along the Pilcomayo River, causing the contamination of soil on the river banks, reduction of the area for cultivation, and loss of aquatic biodiversity.

Among the main impacts of erosion and sedimentation, at the local and global levels, are flooding during rainy seasons, sedimentation of the river bed, erosion of river banks, and the recession of the river and the formation of critical points with a high probability of deviating the watercourse. All these impacts affect not only the upper basin but also the lower part of the basin. Therefore, these become transboundary problems between Bolivia, Paraguay and Argentina.

Location

Upper basin of the Pilcomayo, Cotagaita Municipality, Nor Chichas Province of the Department of Potosí in the Republic of Bolivia.

Ultimate Goal

To contribute to the socio-economic development and improvement of the quality of life of the inhabitants of the area influenced by the Pilcomayo River through the replication of activities for the mitigation and control of mining contamination as well as soil erosion and degradation of the hydrographical basin.

Purpose

Implementation of experiences in the local management of the Cotagaita basin that contribute to the reduction of the degradation of environmental goods, mining contamination, soil erosion, and the sedimentation of the river bed through a group of actions focused on their causes.

Components and Outputs

1. Control and mitigation of environmental goods from the Mining District of Tasna: building capacity to incorporate environmental adaptation in mining activities: (i) "Control and Environmental Mitigation of Colas Tasna Buen Retiro Dike" Project: improvement of the drainage tunnel, water management and additional works (containing wall; covering of the platform of the dike, cross-cutting dikes for sand capture upstream of the main and secondary tunnels); (ii) Implementation of community environmental management and development of human resources by a union of mining workers with knowledge and ability to institute environmental adaptation in the mining District of Tasna.

2. Control and mitigation of soil erosion and sedimentation of river bed: (i) Communities and their conservation leaders, as well as the municipal authorities and their technical teams, have the technical capacity and proactive attitude to find solutions for the control of soil erosion and promotion of sustainable development alternatives; (ii) Community agriculture workers develop a positive attitude towards sustainable development, consciously applying conservation, reforestation, and biomechanical practices.

3. System for monitoring water quality and sedimentation: (i) System for monitoring, evaluating and disseminating water quality and sediments set up and running.

Local Benefits and their relation with Global Benefits in the la Plata Framework Program

This Pilot Project is important from the stand point of conservation and preservation of the integrity of the water resources of the Pilcomayo basin, because it affects the causes of the problem; reduces the risk of collapse of environmental goods; contributes to environmental adaptation of current mining activities; reduces soil erosion and the sedimentation of the river bed; and provides for monitoring of water quality and sediments that are critical transboundary issues in the la Plata Basin.

In particular:

- Control and mitigation of environmental goods in the Mining District of Tasna Buen Retiro; education and capacity-building for environmental adaptation in mining activities, directly related to the component on integrated water resources management in the sub-component of water quality and to the component on public participation. Results can be replicated in similar areas in Bolivia and Argentina.

- Control and mitigation of erosion and sedimentation through participatory contests that will complement the monitoring of water quality and sediments in local and regional watercourses. Sediment control and water quality are priority themes in the la Plata Basin, related to navigation, biodiversity and infrastructure, among others.

Executing Institutions

The direct coordination and supervision will be carried out by technicians in each country under the supervision of the Project Technical Coordinator. Technical Advisors will be contracted for specific support, technical report preparation, conduct of meetings, dissemination of press releases, and support of public participation regarding the corresponding government decisions.

National institutions participating in the project are: COMIBOL, Federación Nacional de Cooperativas Mineras (FENCOMIN) and Alcaldía Municipal de Cotagaita. The project is related to and generates synergy with actions being executed by the Pilcomayo Project financed by the European Union. There is strong participation by local stakeholders from the Cotagaita Municipality, among them agriculture workers.

III.2. Pilot project for a Hydrological Alert System at the confluence of the Paraguay and Parana Rivers. (Countries involved: Argentina, Paraguay and Brazil)

A monitoring and alert system for irrigation management (prevention, contingency and rehabilitation) in the metropolitan axis of Resistencia-Corrientes (Argentina) and Pilar (Paraguay) is envisioned. It contemplates adaptations/actions to address the hydrological effects of climate variability and change, to prevent flood and drought-related disasters and implement mitigation actions in partnership with Civil Defense authorities. The alert system contemplates notifications of extreme hydrological events, contaminant spills and preparation of contingency plans. It also contributes to improved knowledge of transboundary critical issues related to hydrological extremes, contingency planning and water quality.

Statement of the Problem – Main Transboundary Issues

The problem is related to the mitigation of the effects of extreme hydrological events (flooding, drought) and episodes of spillage of contaminants in the Project area, which includes the transboundary area of junction of the Paraguay and Paraná rivers.

The flooding of 1982, 1983, 1992, 1995, 1997 and 1998, due to the extraordinarily swollen condition of the Paraná, Paraguay and Uruguay rivers associated with the El Niño phenomenon, have had enormous socio-economic impacts for populations located on the banks of these rivers, including seven provinces in the Littoral regions of Argentina (Buenos Aires, Corrientes, Chaco, Entre Ríos, Formosa, Misiones and Santa Fe) and Paraguay (Bahía Negra, Concepción, Asunción, Alberdi, Pilar, and Encarnación, among others). The city of Resistencia is the first to feel the impacts caused by extreme hydrological events due to its location at the junction of the Paraná and Paraguay rivers. Consequently, there is a need to improve the management of risks (prevention, contingency and remediation) in the face of extreme hydrological events.

On the other hand, the impact contaminants have on water quality in the Project area is an important issue for effective environmental management and the implementation of contingency plans at the transboundary level. Nowadays, there is not any spill alert center to provide information regarding contamination by a particular product or substance and the location of such contamination; likewise, there is not any local technical capacity to model the extent and magnitude of the contamination, and evaluate the need for applying contingency plans.

Location

Junction of the Paraguay and Paraná rivers: Resistencia-Corrientes axis (Argentina) and Pilar (Paraguay). In the Paraguay River, the upstream border is the Asunción axis and in the Paraná River is the Yacretá dam. For the alert system, the upper basins of the Paraguay and Paraná, with particular reference to the Iguazú Basin.

Ultimate Goal

To mitigate the impact on people and the environment caused by extreme hydrological events and episodes of contaminant spillage.

Outcome

A transboundary system for monitoring and hydro-environmental alert for risk management (prevention, contingency and rehabilitation) in the metropolitan axis of the Resistencia-Corrientes (Argentina) and Pilar (Paraguay) is developed and running, taking into consideration adaptation measures for climate change scenarios.

Components and Outputs

1. Operational system for forecasting and hydrologic observations: (i) Transboundary system designed and approved by consensus by the countries involved; (ii) Zoning of water resource risk in the Paraná and Paraguay Rivers; (iii) Environmental Assessment of the effects of flooding/drought and drainage in the wetland area.
2. Operational system for spillage and contamination modeling: (i) System implementing a quality and contamination database; (ii) Map of identified critical areas, with problems and main sources of contamination identified; (iii) Future scenarios of water quality, based on ecological models.
3. Development of the “Binational System of Hydro-environmental Alert” to support decision-making and Contingency Planning: (i) Dynamic GIS system with capacity to be updated with new geo-referenced information hydrology data, topographic maps, etc of the area; (ii) Specific Contingency Plans for the management of transboundary risks and the creation of the Emergency Center; (iii) The establishment of a technical cooperation network.

Local Benefits and their relation to Global Benefits in the la Plata Framework Program

This project is important from the stand point of building synergy between the countries related to the actions against extreme hydrological events. Joint actions between the municipalities of Resistencia-Corrientes and Pilar will be promoted. The actions will have a strong relationship with the Hydro-Climatic Forecast System for the la Plata Basin, creating a pilot experience to verify the implementation of the systems developed for the whole region, in particular the support systems for decision-making. Particularly, adaptation to climate change will be considered, with special consideration of the control of urban development in zones prone to flooding under the future scenarios.

Executing Institutions

The direct coordination and supervision will be carried out by technicians in each country under the supervision of the Project Technical Coordinator. Technical Advisors will be contracted for specific support, technical report preparation, conduct of meetings, dissemination of press releases, and support of public participation regarding the corresponding government decisions. National institutions participating in the project are the provincial and municipal governments connected to the Hydrologic Alert System (COAH) in Buenos Aires and Asunción.

III.3. Pilot project to Resolve Water Use Conflicts in the Cuareim/Quaraí River Basin (Countries involved: Brazil and Uruguay)

The proposal is to generate local experience to improve integrated water resources management capacities in this basin, seeking to harmonize use at the national and transboundary levels. This project will encourage participation by local stakeholders and the existing Binational Commission for the development of the basin in the conservation and/or improvement of environmental quality through the rationale use of water by solving actual conflicts, including water use for irrigated cultivation, particularly of rice. This project informs critical transboundary issues by developing knowledge on water use conflicts and the impacts of irrigated cultivation.

Statement of the Problem – Main Transboundary Issues

The transboundary basin of the Cuareim/Quaraí river is shared by Brazil and Uruguay, and includes a section of the border between these two countries. The main course of the river defines the border between these countries. Runoff is present in all the tributaries after a rain event followed by a quick reduction in flow since the basin does not have a high storage volume. This results in the rapid transition between high and low water levels, and a rapid return in a few days to median flows that are generally low.

The primary water use in the basin is for potable water supply for the population of the cities of Artigas and Quaraí; the amount of water used for this activity is small compared to the total runoff potential of the river. The second most important social use of the water, and the first in economic importance, is irrigation. Since the 1970s, rice started to be cultivated under irrigation; this generated a sustained growth in demand for water resources in both countries. In third place, water resources are used for recreation and maintenance of ecosystems.

Conflicts in the basin arise from the strong competition for the use of the resource, the impact of irrigation, the impact of extreme hydrological situations (drought and flooding), and changes in the quality of the resource, but primarily due to the lack of a management system that contributes to the functioning of the existing institutional framework for the management of the basin.

Location

The transboundary basin of the Cuareim/Quaraí river is a tributary of the Uruguay River on its left bank and includes the Santana de Livramento, Quaraí and Uruguayana Municipalities in the Southern part of the State of Río Grande do Sul (Brazil) and the Department of Artigas in the Northeast of Uruguay.

Ultimate Goal

To contribute to the solution and moderation of conflicts regarding water use in the Cuareim/Quaraí basin.

Purpose

Implementation of a system for the integrated management of the basin that promotes conservation and improved environmental quality within the framework of the “Comisión Mixta Uruguayo-Brasileña para el desarrollo de la cuenca del Río Cuareim/Quaraí” (*Joint Uruguayan-Brazilian Commission for the Development of the Cuareim/Quaraí River Basin*) based on a stronger articulation between the institutions of both countries and the strengthening of local participation.

Components and Outputs

1. Integrated management system: 1.1 Management tools: (i) Planning and coordination mechanisms; (ii) Support system for environmental auditing; (iii) Compatibility and elaboration of norms and operational procedures. 1.2 Information system: (i) Base line and environmental information system; (ii) Information system on land use and users shared by both countries. 1.3 Civil society participation: (i) Organized roundtable for agreements and dissemination material. 1.4 Environmental education: (i) Environmental education program for the basin. (ii) Building- water management capacity for teachers (docents).

2. Sustainable use of water resources: 2.1 Environmental monitoring: (i) hydrologic and territorial monitoring of the basin; (ii) Agro-hydrologic information system. 2.2 Extreme situations: (i) Analysis of vulnerability and contingency plans.

3. Preservation of water resources: 3.1 Mitigation of environmental impacts: (i) Implementation of experimental measures for the mitigation of environmental impacts related to irrigation; (ii) Promotion of good practices in rice irrigation manual. 3.2 Biodiversity conservation: (i) Determination of ecologic flows; (ii) Experimental environmental surroundings balance. 3.2 Land planning: (i) Zoning of the basin and development of management proposals.

Local Benefits and their relation with Global Benefits in the la Plata Framework Program

Pilot demonstration projects are to be performed to provide local management experience and to obtain information for the preparation of a definitive TDA and SAP. This project is designed to test the feasibility and determine the actual costs of specific interventions identified through the TDA/SAP process in a basin that already has a transboundary institutional structure. It is focused on the resolution of critical problems, including a strong element of participation by organized civil society. The actions will have a close relationship with the development of the TDA and SAP of la Plata Basin.

Executing Institutions

The direct coordination and supervision will be carried out by technicians in each country under the supervision of the Project Technical Coordinator. Technical Advisors will be contracted for specific support, technical report preparation, conduct of meetings, dissemination of press releases, and support of public participation regarding the corresponding government decisions. There will be an active participation of the Joint Uruguayan-Brazilian Commission for the Development of the Cuareim/Quaraí River Basin.

III.4. Pilot project for the Biodiversity Conservation in the Regulated Parana River (Countries involved: Argentina, Brazil and Paraguay).

The experience to be gained contributes to the development of management capacity for the improvement of the aquatic resources in the Parana River basin, comprising the confluence of the Parana and Paraguay Rivers and Saltos del Guayrá, where two of the most important transboundary dams are located: Itaipu and Yacyretá. A management plan to preserve aquatic resources will be developed. A recommendation to harmonize legislation and local stakeholder capacity is anticipated, and will contribute to a better understanding of transboundary issues related to biodiversity alteration and sustainable use of fisheries resources.

Statement of the Problem – Main Transboundary Issues

The Project includes two critical transboundary issues: biodiversity alteration and exploitation of fishing resources. The selected section includes the Yacyretá and Itaipú dams and the main stem of the Paraná River with varied development of floodplains and tributary basins. The ichthyologic fauna includes at least 220 species, with a wide representation of functional groups, occupation of habitats, and economic importance. These properties allow consideration of actions that will conserve, and guarantee the preservation of, most of the biota.

The project analyzes the main factors that alter the biodiversity and the sustainable exploitation of fishing resources: 1) civil works; 2) fishing intensity; 3) global climate change; 4) exotic species; and 5) water quality. Civil works include dams, but also roads, embankments, bridges, and ports. On the other hand, both commercial and recreational fishing is actively practiced with little official control of the activities and little or non-existent monitoring of unloading activities of fishing boats. There is no doubt that the frequency and intensity of flooding and the consequent modification of habitats, biodiversity and fishing productivity are also conditioned by hydro-climatic changes. Likewise, invasive species must be considered, particularly mollusks that can cause serious alterations in the quality of the water, habitat and trophic webs.

Location

Section of the Paraná river from the junction of the Paraná-Paraguay rivers to the Salto del Guairá-Guaira axis.

Ultimate Goal

To contribute to the conservation of the biodiversity of the ichthyologic resources of the Paraná river.

Purpose

Improvement in the management capacity of ichthyologic resources.

Components and Outputs

1. Ichthyologic fauna and habitat: (i) Evaluation of the ichthyologic biodiversity in the critical habitat; (ii) Study of the relationships between flows, water quality and the aptitude of critical habitat; (iii) Forecasts of the effects of different flow conditions on fish habitat; (iv) synthesis of migration patterns; compilation of the effects of the golden mussel (mejillón dorado) on the ichthyologic fauna; (v) Compiled data on fishing biology of the main species of economic and ecologic importance.

2. Socio-economic and legal framework: (i) Socio-economic assessment of recreational and commercial fishing in the area. (ii) Recommendations for the possible retraining of fishermen from the area; (iii) Involvement of stakeholders from different sectors, such as academia, management

and qualified resource users; (iv) Preparation of proposals for legal harmonization; (v) Dissemination of materials and capacity-building.

3. Management plan: (i) Preparation of a management plan with the participation and the consensus of different stakeholders from civil society.

Local Benefits and their relation with Global Benefits in the la Plata Framework Program

This project is important from the standpoint of building the synergy between the countries related to action for the preparation of a plan for the management of ichthyologic resources, with a consensus at the transboundary level. The actions will have a strong relationship with the component related to the conservation of fishing resources and biodiversity, generating a pilot experience to verify the implementation of the systems developed for the whole region. Particularly, climate change adaptation will be considered, taking into account the areas prone to flooding, where the ichthyologic fauna has its habitat, as a result of future scenarios.

Executing Institutions

The direct coordination and supervision will be carried out by technicians in each country under the supervision of the Project Technical Coordinator. Technical Advisors will be contracted for specific support, technical report preparation, conduct of meetings, dissemination of press releases, and support of public participation regarding the corresponding government decisions.

The national institutions that participate in the project are the provincial and municipal governments, as well as local fishermen. The two binational entities for the Itaipu and Yacyretá dams are also participating.

Annex 8 B: ITAIPU – CULTIVANDO AGUA BOA INITIATIVE
Official document as presented by Itaipu



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EC-CD157/06

Foz do Iguaçu, 21 de Março de 2006.

Sr. Hélio de Macedo Soares
MD. Secretário Geral do CIC

Prezado senhor,

Tendo tido a oportunidade durante a estada no 4º Forum Mundial da Água na Cidade do México de negociar previamente com o GEF – Global Environment Facility, através do seu Assessor principal em Águas Internacionais, Alfred Duda, do Gerente Oficial de Projetos em Águas Internacionais, Takehiro Nakamura e do chefe da Divisão 2 da DDS/OEA Jorge Rucks, a inclusão de um projeto piloto para para implantação de um Fundo Rotativo para financiar a adequação ambiental de microbacias, no âmbito do Programa CULTIVANDO AGUA BUENA no Programa Macro para a Gestão Sustentável da Bacia do Prata, vimos a vossa presença encaminhar nosso pleito.

Outrossim, encaminhamos anexo um breve resumo do projeto piloto que nos referimos, assumindo desde já a responsabilidade de detalhá-lo assim que tivermos sua decisão.

O Sr Jorge Rucks, entregará esta proposição em mãos e as mesmas enviaremos por fax para facilitar sua leitura.

Cordiais saudações

Nelton Miguel Friedrich
Diretor de Coordenação
Itaipu Binacional

Cultivando
ÁGUA BOA



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PROJECT IDENTITIES

1. *Project name:* Projeto Piloto para implantação de um Fundo Rotativo para financiar a adequação ambiental de microbacias, no âmbito do Programa CULTIVANDO AGUA BUENA
2. *Implementing agency:* PNUMA
3. *Country(ies) in which the project is being implemented:* BRASIL E PARAGUAI
4. *Country eligibility:*
5. *Focal area(s):* MICROBACIAS HIDROGRÁFICAS COM INFLUÊNCIA DIRETA NA FORMAÇÃO E MANUTENÇÃO DO RESERVATÓRIO DE ITAIPU.
6. *Operational program(s):* AGUAS TRANSFRONTEIRIÇAS

RESUM

O Programa Cultivando Água Porá, oferece apoio para adequação ambiental de suas propriedades e atividades econômicas sobre elas realizadas, aos proprietários rurais instalados na bacia hidrográfica de influência direta sobre o Reservatório da ITAIPU Binacional, no Brasil e Paraguai, aonde mais de 60% são pequenos proprietários com uma média de 20 hectares por propriedade.

O Programa tem como meta a assistência técnica ambiental e financiamento para obras de recuperação de passivos ambientais dos meios de produção potencialmente poluentes, em propriedades rurais, tendo portanto o Projeto uma forte conotação social, ambiental e econômica.

Os recursos solicitados ao GEF - serão aplicados na estruturação de um arranjo institucional e com prioridade, nas intervenções a serem realizadas diretamente nas propriedades rurais, localizadas nas microbacias hidrográficas com influência direta na formação e manutenção do Reservatório de Itaipu, para a correção dos passivos ambientais existentes nas operações agrícolas e nas operações com animais estabulados, sendo estas intervenções válidas para o licenciamento ambiental das propriedades.

A parceria com Itaipu Binacional, cujas características de solidez econômica garantem condições próprias de autofinanciamento, as contrapartidas sob sua responsabilidade, garantem ainda que os recursos do Projeto sejam integralmente aplicados em seus fins.

O objetivo do presente projeto, portanto, é de consolidar e validar metodologias para constituir mecanismo eficiente e eficaz, para financiar a adequação ambiental das propriedades imobiliárias instaladas em microbacias, com replicabilidade.

A. OBJETIVO:

O objetivo do presente projeto é de consolidar e validar metodologias para constituir mecanismo eficiente e eficaz, para financiar a adequação ambiental das propriedades imobiliárias instaladas em microbacias, na área de influência do Reservatório de Itaipu, no Brasil e no Paraguai, com replicabilidade.

Handwritten signature

Cultivando
ÁGUA BOA

B. ATIVIDADES;

O Projeto será composto das seguintes atividades:

1 - Planejamento:

1.1. Do projeto

1.1.1 Fase 1: Estruturação do Arranjo Institucional

Para planejar, executar, monitorar e manter efetivo o mecanismo operacional e financeiro do Projeto

1.1.2 Prazo de execução: 6 meses

1.2 Das operações

1.2.1 Fase 2 Intervenções para recuperação de Passivos ambientais I

1.2.1.1 Aplicação da Metodologia Itaipu

1.2.1.2 Prazo de execução: 12 meses

1.2.2 Avaliação da Fase 2

1.2.2.1 Prazo de execução: 2 meses

1.2.3 Fase 3 Intervenções para recuperação de Passivos ambientais II

1.2.3.1 Prazo de execução: 10 meses

1.2.4. Fase 4: Avaliação final e Divulgação dos resultados na Bacia do Prata.

1.3. Do mecanismo Financeiro

Será constituído um Fundo Rotativo de Financiamento, que visa oferecer os meios necessários de financiamento para efetuar os investimentos em adequação ambiental das propriedades e das microbacias elegíveis, recuperando-os através de cobrança, para garantir a sustentabilidade do projeto.

2 – Execução do Mecanismo Operacional

A execução se dará com dois tipos de atividades. Uma coletiva que não é objeto do presente Projeto, pois será executado por Itaipu e seus parceiros atuais e outra Individual, que será objeto de financiamento GEF.

2.1. Atividades individuais:

Metodologia Itaipu: Escala de detalhe, ou propriedade imobiliária

2.2.1. Objetivos: Correção de passivos ambientais em Operações Agrícolas, e Operações com Animais Estabulados, com validade para licenciamento ambiental

3. Monitoramento

O monitoramento do mecanismo operacional do Projeto será realizado por Itaipu, como parte de sua contrapartida, que o executará levando em conta a seguinte estratégia

3.1 No Reservatório de Itaipu

3.1.1 Sedimentométrico

3.1.2 Índice de eutrofização

3.1.3 Biológico: Populações de algas e macrófitas

3.2 Nos exutórios das microbacias-piloto

3.2.1 Índice de Qualidade da Água (modificado). Carga Orgânica e Nutrientes, com parâmetros de medição ajustados segundo conhecimento acumulado por Itaipu.

3.2.2. Monitoramento biológico. MIB - Macro Invertebrados Bentônicos

3.3. Nas propriedades imobiliárias

3.3.1 Intensidade de adoção de critérios propostos de gestão ambiental no manejo das terras e dos animais estabelecidos

3.3.2 Segurança ambiental das edificações

3.3.3 Implantação de Serviços conservacionistas nas operações agrícolas

3.3.4 Segurança ambiental das operações agrícolas. Agroecologia, redução de agrotóxicos. Qualidade do plantio direto.

3.3.5 Índice de recuperação ambiental de nascentes

3.3.6 Índice de ocupação de áreas de preservação permanente (matas ciliares)

3.3.7 Índice de implantação de reservas legais e outras explorações florestais, ou agriculturá perene.

3.4. No fluxo financeiro do projeto - identificar, capacitar e monitorar uma instituição local para operar o fluxo financeiro e monitoramento da execução do projeto.

C. GOALS

1. Desenvolver e operar um projeto piloto de Mecanismo Financeiro para oferecer financiamento para intervenções a nível de detalhe, de passivos ambientais das propriedades imobiliárias localizadas em territórios de microbacias hidrográficas
2. Construir um Fundo Financeiro Rotativo para sustentar com investimentos, as intervenções que visam a redução dos passivos ambientais das propriedades em microbacias hidrográficas.
3. Garantir o fluxo financeiro de retorno, para a consolidação do Fundo Rotativo de financiamento, que garante a sustentabilidade e replicabilidade do Projeto Piloto.
4. Desenvolver e operar um Mecanismo Operacional para gerenciar o fluxo de metodologias de gestão ambiental e territorial para adequação ambiental das propriedades imobiliárias.
5. Monitorar os mecanismos, operacional e financeiro em todas as suas fases.



D. RESULTADOS

Consolidar e validar a metodologia e mecanismo operacional e financeiro,

- Número de propriedades envolvidas: aproximado de 160 propriedades imobiliárias localizadas nos territórios de bacias hidrográficas com influência direta no Reservatório de Itaipu, no Brasil e Paraguai.
- Recurso destinado às intervenções: US\$ 5.000 em média/propriedade.

ATIVIDADES	INDICADORES DE RESULTADOS POR PROPRIEDADE	MEIOS DE VERIFICAÇÃO
1. Estruturação do Arranjo Institucional	Arranjo estruturado e em operação	Relatórios gerenciais, Balanços Financeiros e atas de reuniões
2. Intervenções a nível de propriedade		
2.1. Adequação de edificações pecuárias	Edificações adequadas	Visita de campo com registro fotográfico georeferenciado
2.3. Gestão ambiental para manejo de animais	Efluentes com destinação adequada	Visita de campo e relatório físico-fotográfico
2.2. Práticas conservacionistas de solos e água em função dos riscos ambientais das propriedades	Hectares conservados	Visita de campo com registro fotográfico georeferenciado
2.4. Recuperação de nascentes	Nascente protegida e recuperada	Visita de campo com registro fotográfico georeferenciado
2.5. Recuperação de áreas de proteção permanentes, ciliares e fundos de vale	Cercas implantadas	Visita de campo com registro fotográfico georeferenciado
2.6. Recuperação de Reservas Legais	Hectares recuperados	Visita de campo e relatório fotográfico
3. Monitoramento		
3.1. Monitoramento ambiental	Índices e indicadores ambientais consolidados	Relatórios de análises físico-químicas e relatórios operacionais
3.2. Monitoramento da qualidade da água	- No Reservatório: Eutrofização - Nos rios, Carga Orgânica e Nutrientes	Análises Físico-química e Bacteriológica da água
3.3. Sedimentos	- No Reservatório - Nos rios	Medição constante com instalação de turbidímetro.
3.4. Monitoramento econômico – financeiro	-Recursos aplicados conforme os projetos de adequação ambiental aprovados. -Retorno fundo dos recursos financeiros aplicados conforme contratualizado entre o fundo e o proprietário	Relatório de acompanhamento da execução físico-financeira, em consonância com o projeto de adequação ambiental aprovado

Mltf.

E. BASE LINE

O Projeto Cultivando Água Buena consiste em solucionar os passivos ambientais das propriedades localizadas nas bacias hidrográficas da área de influência da Itaipu Binacional, no Brasil e Paraguai. A empresa já realiza grande parte do Projeto, tendo sido invertidos nele, parte dos orçamentos das Diretorias de Coordenação Brasileira e Paraguaia, que somam investimentos em metodologias de manejo integrado de microbacias e em intervenções no meio físico destas, em torno de US\$ 10 milhões, desde 2.003.

Em que pese os investimentos realizados em atividades coletivas, com ações em 29 microbacias hidrográficas, já envolvendo cerca de 1.200 proprietários, as intervenções nas suas propriedades ainda não foram executadas, dado à inexistência de linhas de financiamento adequadas para a natureza das operações, recuperação de passivos ambientais. A estratégia utilizada para redução de passivos ambientais das propriedades, prende-se à necessidade de reduzir os impactos ambientais monitorados por Itaipu em seu reservatório. Os dados da rede de monitoramento da água de Itaipu, demonstram que a qualidade da água do Reservatório está ameaçada por sedimentos e por frequentes florações de algas potencialmente tóxicas e a proliferação excessiva de algumas plantas aquáticas nos compartimentos laterais. Estes sintomas, são associados às concentrações de nutrientes e de transporte de sedimentos, limitando o uso múltiplo e prejudicando a saúde pública.

A variação temporal do Índice de Eutrofização (Carlson) na Bacia do Rio São Francisco Verdadeiro (bacia HELP UNESCO) é demonstrada na Figura 1 que em novembro de 2003 apresentou o índice eutrófico 63.

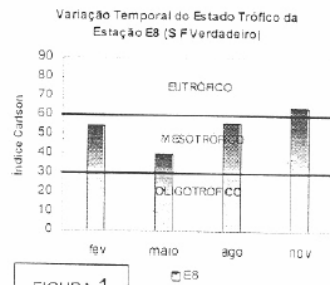


FIGURA 1

A figura 2 apresenta os dados da rede sedimentométrica automática localizada na bacia hidrográfica do rio Carapá, Paraguai.

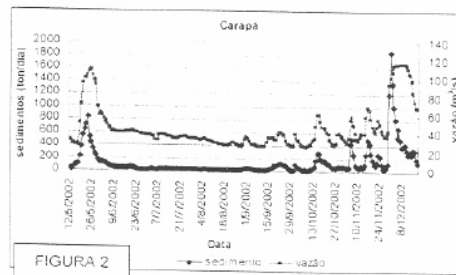


FIGURA 2

Sabe-se que estes impactos são originados das múltiplas atividades antrópicas como: erosão dos solos agrícolas intensamente utilizados para o plantio de soja e milho, pastos e dejetos de animais, principalmente estabulados (confinados).

No Brasil e no Paraguai não há políticas públicas destinadas a regular o saneamento básico rural. Os produtores/proprietários, em grande maioria são pequenos, não possuem recursos para solucionar os passivos ambientais de seus meios de produção

O Projeto pode ser entendido como composto por atividades coletivas e atividades individuais

- Atividades coletivas

São denominadas COLETIVAS as atividades que Itaipu e seus parceiros, como Prefeituras, Associações e proprietários realizam nas bacias hidrográficas eleitas para trabalho, tais como: adequação de estradas, de cercas divisórias, de instalação de abastecedouros comunitários, distribuição de equipamentos agroecológicos e educação ambiental. Estas atividades coletivas são consideradas linhas de base, no presente projeto e não são financiadas pelo presente projeto.

- Atividades individuais

São as atividades de recuperação dos passivos ambientais que ocorrem a nível de propeidade imobiliária e portanto, objeto de financiamento do presente projeto, entre outras:

- a) geradoras de contaminação orgânica: como as edificações inadequadas de suinocultura, bovinocultura de leite, avicultura e piscicultura
- b) geradoras de sedimentos: erosão da agricultura intensiva e estradas inadequadas
- c) comprometedoras da cobertura vegetal: matas ciliares e reservas legais.
- d) comprometedoras da quantidade e qualidade da água: nascentes degradadas, falta de faixas de proteção nos rios.

F. INDICADORES

1. Na água

- Medidos nos exutórios das microbacias elegíveis
- Redução anual de 50% % da Carga Orgânica
 - Redução anual de 30 % dos níveis de Sedimentação

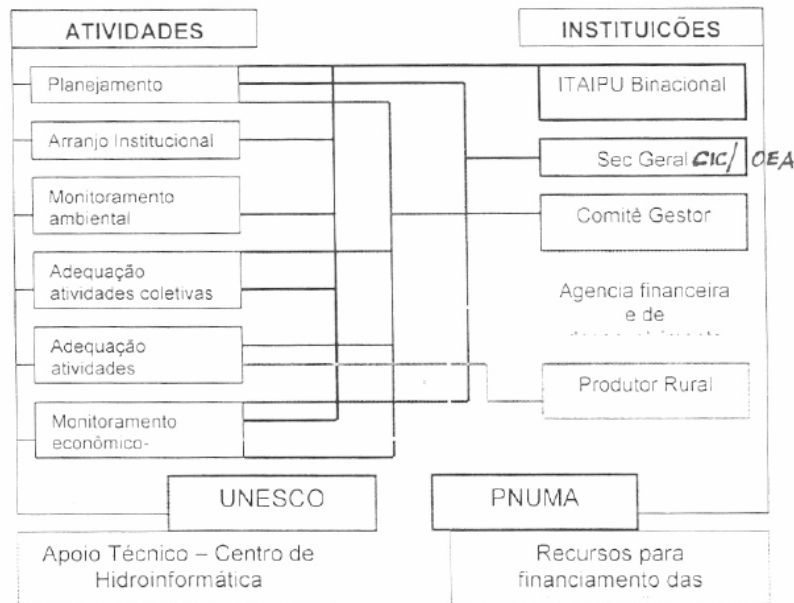
2. Nas propriedades

- recuperação e/ou proteção de 100 % de nascentes
- recuperação e/ou proteção de 100% de matas ciliares
- adequação de 100% de cercas divisórias e estradas internas
- adequação de 100 % de passivos das edificações

mt

G. ARRANJO INSTITUCIONAL

- Para operacionalização das atividades será constituído um arranjo institucional que envolverá:
- Itaipu Binacional (Br e Py): com a responsabilidade de planejar as atividades, constituir o arranjo institucional e realizar o monitoramento ambiental e físico-financeiro.
 - Comitê Gestor das Microbacias (Br e Py): Proprietários, entidades de classe, instituições de ensino superior, ONGs, profissionais de meio ambiente que operam nas áreas e representação do Poder Público Municipal e Estadual, para Planejamento e Monitoramento das atividades.
 - PNUMA: Supervisão Geral do Projeto como Agência de Implementação do GEF. Recursos para financiamento das intervenções
 - Secretaria Geral do CIC/OEA: Gerência Técnica e Financeira, dos recursos originários do GEF/PNUMA. Apoio técnico para Planejamento e Monitoramento
 - UNESCO: Apoio técnico através do Centro de Hidroinformática para América Latina e Caribe (em formação)
 - Agência Local Financeira e de Desenvolvimento (Br e PY): Para gerenciamento do fluxo financeiro e monitoramento econômico financeiro dos proprietários.
 - Proprietários beneficiários: Execução das atividades de adequação ambiental individuais, e execução do retorno dos recursos tomados, segundo regras financeiras do Fundo Financeiro do Projeto.



H. CUSTOS

1. Os recursos oriundos do GEF serão aplicados nas seguintes atividades:
- a) Arranjo institucional e avaliação, monitoramento e difusão: \$ 200.000,00
 - b) Correção de passivos ambientais nas propriedades imobiliárias rurais

– **Fase 1:** \$ 500.000,00 (\$ 5.000,00 por propriedade – 100 propriedades)

- c) Correção de passivos ambientais nas propriedades imobiliárias rurais

– **Fase 2:** \$ 300.000,00 (\$ 5.000,00 por propriedade – 60 propriedades)

2. A Itaipu Binacional executará as atividades coletivas de adequação ambiental, mencionadas no BASE LINE, no montante de \$ 3.000.000,00 / ano, que constituem-se como co-financiamento.



Annex 8C: Priority Projects and Pilot Demonstration Projects – Detailed information compiled as of March 2007

Priority Project

PROJECT TITLE: Sustainable Management of the **Yrenda-Toba-Tarijeño Aquifer System (SAYTT)**

EXECUTING AGENCY(IES): Argentine, Secretariat of Water Resources and Provincials' water authorities ; Ministry of Water and the Technical Office of Pilcomayo and Bermejo Rivers (OTN-Tarija, Bolivia); Secretary of Environment of Paraguay (SEAM)

DURATION: 5 years

BACKGROUND

The area and the aquifer. The Yrenda-Toba-Tarijeño Aquifer System (SAYTT) represents one of the key transboundary aquifer systems in La Plata Basin. It's entirely contained in the semiarid Chaco of Argentina, Bolivia and Paraguay and covers an approximate surface area of 352,000 km² (Figure 1).



Fig. 1- The Project area

The approximate limits of the SAYTT include:

- A northern boundary defined by imaginary line that is found approximately 20 degrees in the southern latitude, to the south of the Parapeti River;
- A southern boundary situated at the north-eastern springing of the Pampeanas Mountain Range (Sumampa and Ambargasta Mountains) and coincide with filtering from the Dulce River;
- A western boundary (recharge zone) located in the division of the waters which conform the last eastern springing of the Sub Andean Mountain Range with interruptions which generate the big watercourses which cleave through, such as the Pilcomayo River, Bermejo River, Juramento River and the Dulce River. Particularly in the Aguarague Mountain Range, this superficial border also coincides with the border of a hydrogeological basin and
- An eastern boundary (discharge zone) which, although should be contemplated up to the confluence of the big rivers in the main Paraguay-Parana water conduits, the SAYTT has been marked out up to that of the system's free aquifer (approx 59°30'00", east longitude).

In Argentina the Toba Aquifer System includes an area of approximately 200,000 km², and corresponds to approximately 25% of the geological province of the Pampean-Chaco, and approximately 7.7% of the national continental territory. It includes the provinces of Salta, Jujuy, Tucumán, Formosa, Chaco and Santiago del Estero.

In Paraguay the Yrendá Aquifer System includes an area of approximately 120,000 km² and corresponds to approximately 30 % of the national territory. The department of the Boquerón, with an area of 91,669 km², is fully inserted in within the aquifer boundaries. The difference of 28,331 km² is distributed to the departments of Alto Paraguay and Presidente Hayes.

In Bolivia the Tarijeño includes an area of approximately 32,000 km² and includes the departments of Tarija (province of Gran Chaco), Chuquisaca (provinces of Luis Calvo and Hernando Siles), and Santa Cruz de la Sierra (province of Cordillera).

Approximately 80% of the population in the SAYTT area lacks access to drinking water. The average population growth rate in the region is 2.6%, however, the growth rate is larger (3.5% per year) in the indigenous population of the central region of the Paraguay Chaco (which represents approximately half of the total population).

The precipitation gradient in the Chaco varies from 450 mm annually in the southwest to 1,200 mm annually in the East. The precipitation regime is highly seasonal with 80% of the precipitation concentrated in the summer from October to April.

The region has been submitted to an intense desertification process due to uncontrolled overexploitation of its natural resources, agricultural expansion and wrong practices, and lack of water resources management. There is an increasing frequency in the urgent need for water during drought periods, which is managed by installing new wells in an uncontrolled mode, rather than by a rational and sustainable management of the aquifer system. There has been considerable increase in water related contagious diseases.

Globally temperatures are expected to increase by between 2°C and 5°C as a consequence of increasing concentrations of greenhouse gases in the atmosphere. The implications on Chaco should include: (i) increased evaporation and likelihood of droughts and, (ii) increased risks of extreme events including more flashy or erratic rainfall and runoff patterns (increasing erosion problems).

The sustainable management of the SAYTT by the three countries requires better understanding on the aquifer's potential (in terms of quantity and quality) and systems dynamics (recharge areas, fluxes, storage capacity, exploitation potential, critical areas, etc.). Additionally, the establishment of a minimum technical, institutional and legal basis is required to promote information exchange and technical strengthening of the institutions involved in the planning and management of the SAYTT.

The Internationally Shared Aquifer Resources Management Program (ISARM), is a joint action from several agencies to increase scientific, socio-economic, legal, institutional and environmental knowledge related to transboundary aquifers. Inside of it, the **ISARM Americas Program** was launched in 2002, and is a result of a joint strategy between UNESCO-IHP and USDMA/OAS to coordinate the program in the Americas. It incorporates the Hydrological Balance Project of the International Hydrologic Program (HIP-UNESCO). ISARM Americas is documenting important transboundary aquifers at the hemispheric level including La Plata Basin. The OAS, as the leading agency coordinating the ISARM America program, has helped in the execution of some of the projects in several American countries, as the Guaraní Project, financed by the GEF under the World Bank implementation.

On September 2003, a UNESCO/OAS ISARM meeting was held in Montevideo, Uruguay. One of the most important outcomes was identification of nine potential case studies of transboundary aquifers. The selection criteria was based on hydrogeologic characteristics, information availability, and existing agreements between countries. The SAYTT was finally selected as a case study.

Inclusion of the SAYTT as a Priority Project inside the FSAP. At the International Workshop for the Macro Transboundary Diagnostic Analysis (TDA) organized during the PDF Block B in Montevideo, the integrated management of superficial and ground water was considered as a big gap for the sustainable development of the La Plata basin, and the transboundary SAYTT was presented as an aquifer of major interest under the semiarid area of El Gran Chaco Americano. The root causes of its problems were identified, based on previous tri-national workshop and five national workshops done, in which was recompiled the information gathered by the various experts and local and national universities. The Macro TDA identified the technical, managerial, economic, social and political aspects and causes related to management of this transboundary aquifer, and required actions to mitigate problems and to cover information gaps.

Co-financing at the preparation phase. The preparation phase of the groundwater component of the Framework Program for the Integrated Management of the Water Resources of La Plata Basin (Framework Program), based on the SAYTT, was co-funded by the Italian Ministry of Environment, which offered cooperation for the development of the different activities interested to support sustainable management of waters in areas affected by the climate change and in a pilot demonstration experience at the regional level. As a priority project, the SAYTT one will provide information and preliminary guidelines for the integrated management of the surface and ground water resources in La Plata Basin.

Linked GEF's and others IW projects. The GEF has supported the Bi-national Commission for the Development of Upper Bermejo River and Grande de Tarija River Basin (Argentina-Bolivia) in implementing a Strategic Action Plan for the Bermejo River (SAP-Bermejo) to promote sustainable development of this basin and mitigate the increases of the natural erosion by anthropogenic causes. The Gran Chaco Americano is located on the western side of La Plata Basin within an important semiarid region. The GEF has approved a grant to fight land degradation in this region, which overlies the SAYTT. The SAP-Bermejo has identified the need to implement management actions in the SAYTT.

European Union Participation. The interest to develop a scientific research in the groundwater resources of the semiarid Chaco area, was identified by the Italian consultant working to prepare the SAYTT project. An initial project document was prepared under the name of: *Sustainable*

management of groundwater resources of the Great American Chaco and its relation to hydrological effects on climatic change and regional ecosystems(CHAGARES). This project was presented to the Sixth, Integrating and Strengthening the European Research Area, Specific Measures in Support to International Co-operation (INCO), for consideration and is under the approval process. The INCO Program support the Community's international co-operation in research. The EC Policy with Latin America countries is based on the dialogue and is covered by regulation 443/92 and by EC Communications on relations between EU and Latin America. In particular this specific intervention will support the Community's external relations and development aid policies with Argentina, Bolivia and Paraguay in the EU Water Initiative and the commitment towards the Millennium Development Goals (MDG's) and the goals included in the Plan of Implementation of the World Summit on Sustainable Development (WSSD).

SAYTT Priority Project Preparation Process. On August 16-17, 2004, an International Workshop on SAYTT was held in the city of Tarija, Bolivia, through the SAP-Bermejo, with the support from the Binational Commission for the Development of the Upper Bermejo River and Grande de Tarija River Basin, the UNESCO/OAS ISARM Americas, and the ODSMA/OAS. The main objective of the workshop was to define a working plan and TOR for the SAYTT, in accordance to the ISARM methodology which includes: (i) building up comprehensive and in-depth knowledge of the system and; (ii) developing criteria and guidelines for the most appropriate mechanisms for sustainable development of the aquifer.

A comprehensive baseline study, based on bibliographic references, meetings, and interviews with experts, was performed to collect data on to hydrological, hydro geological, geological, topographic, soils, vegetation, infrastructure, environment, and socio economic characteristics of the Bolivian Chaco. The multidisciplinary information was compiled, analyzed and structured on a report on the aquifer shared by Paraguay and Argentina.

A second SAYTT workshop was performed on November 30 and December 1-2, 2004 in the city of Asunción, Paraguay to: (i) present, evaluate, and organize the information gathered on the aquifer for the three countries; (ii) define additional data requirements and; (iii) present a proposal with the activities to be developed by the consultant from the Italian Environmental Ministry – Cooperation.

A third meeting was held in Buenos Aires on May 4-7, 2005 to: (i) present a progress report on the SAYTT and; (ii) present the proposals for the SAP-Bermejo and the Sustainable Land Management in the Transboundary Ecosystem of the Gran Chaco Americano projects.

During the preparation phase of Framework Strategic Action Program (FSAP) was considering the information and the project structure produced by the UNESCO/OAS ISARM American Program and study made this the cooperation of the Italian Environmental Ministry. Finally, the incorporation of the SAYTT Priority Project to the Framework Program was formalized during the validation process of the Marco Program.

The Guarani Aquifer System, which is largely coincident with La Plata Basin, is another key aquifer to be protected by the four countries which share it (Argentina, Brazil, Paraguay and Uruguay). A management plan for the sustainable development of the aquifer is under formulation with resources from GEF and four involved countries. The Guaraní Project will also contribute for the better understanding and management of important aquifer systems in the La Plata basin.

Project rationale

The Project “Framework Program for the Sustainable Management of La Plata Basin’s Water Resources, in Relation with the Effects of Climate Variability and Change” aims to strengthen the efforts of the governments of Argentina, Bolivia, Brazil, Paraguay and Uruguay to implement their shared vision for the sustainable (environmental, social and economic) development and the protection of its water resources.

The protection and management of aquifers in the five countries is especially weak and disconnected from the protections offered to surface water resources. There is great need to: (i) improve the level of knowledge, control, and protection of groundwater resources (including effects of climatic change and needed mitigation measures) and, (ii) implement on key aquifer systems in La Plata Basin a sustainable and integrated water resources management systems approach.

The Yrenda-Toba-Tarijeño Aquifer System (SAYTT), with an extension of approximately 352,000 km² (200,000 km² in Argentina, 32,000 km² in Bolivia, and 120,000 km² in Paraguay), is believed to represent one of the most important transboundary groundwater reservoirs in South America. It's entirely contained in the semiarid Chaco of Argentina, Bolivia, and Paraguay. The potential impacts of climate changes (including increased process of desertification) to this socially vulnerable region (characterized by high poverty index values and the presence of indigenous communities) make the SAYTT a priority project for the application of a sustainable and integrated management approach.

The SAYTT Priority Project, is a pilot project for the UNESCO/OAS ISARM (Internationally Shared Aquifer Resources Management) Americas Program, will work in close coordination with other important projects in the region (such as the Strategic Action Plan of the Binational Bermejo River Basin, the Project for Environmental Protection and Sustainable Development of the Guarani Aquifer System, the Strategic Action Programme for the Management of the Pantanal and the Upper Paraguay River Basin, the Sustainable Land Management in the Transboundary Ecosystem of the Gran Chaco Americano, and the Integrated Management Project and Master Plan of Pilcomayo River Basin) and it will help develop information and preliminary guidelines for the sustainable and integrated surface and groundwater management of key aquifer systems in La Plata Basin.

The SAYTT project concerns the Framework Program for the Sustainable Management of La Plata Basin's Water Resources, in Relation with the Effects Variability and Climate Change and in particular constitutes a priority project under the Groundwater Component, co-financed by the Italian Ministry of Environment.

Project Objectives

The project objectives and work plan for the SAYTT project were defined on the international workshops, part of the Framework Program preparation phase Block B, in Tarija (Bolivia, August, 2004), Asunción (Paraguay, November-December, 2004) and Buenos Aires (Argentina, May, 2005), and in the mentioned international workshops done.

The short-term objective is to assist the countries of Argentina, Bolivia and Paraguay in the design and establishment of technical, institutional and legal basis in order to guarantee a sustainable management of the trans-boundary Superficial Aquifer Yrendá-Toba-Tarijeño (SAYTT) as part of integrated management of water resources of La Plata Basin.

The long-term objective is to promote, through active stakeholder participation, the sustainable management of the SAYTT which includes: (i) maintaining continuous quantity and quality recharge, (ii) preserving the integrity of the aquifer and, (iii) developing risks and hazard management plans to deal with climate changes.

In particular the project will contribute in achieving the following results:

- Identify the existing potential of the SAYTT and sustainable access possibility for the three countries;
- Identify a sustainable and integrated water resources management model at river-basin scale, working in close co-ordination with other projects in the region (Bermejo, Pantanal, Pilcomayo, Guarani and others), ISARM Americas, and various studies and researches at national and bi-national level, etc.;

- Study the effects of climatic change and needed mitigation and
- Provide the tools to the Intergovernmental Coordinating Committee of La Plata Basin Countries (CIC) to draw up a specific Strategic Action Program (SAP) for the SAYTT as an outcome of the Framework Program.

Supporting the SAYTT is the knowledge base available within the sub-region, developed through various national, bilateral and international programs focusing on, amongst others, aspects of integrated water resources management, biodiversity protection and mitigation of soil degradation in critical zones such as the Pilcomayo River, Bermejo River, Upper Paraguay River and Pantanal, and others.

Expected project outcomes

The Project will:

- Generate local experience and improve management capacities in the SAYTT, seeking to harmonize policies and management of its water resources, and to strength the sustainable uses of the superficial and ground water with an integrated approach at the national and transboundary levels. It will encourage participation of local stakeholders in the conservation and/or improvement of environmental quality of the aquifer, as well as in the implementation of rational use of water, and in helping to manage conflicts.
- Develop information and preliminary guidelines for the integrated management of the surface and ground water resources of La Plata Basin, within the semi-arid Chaco, with the support of the ISARM Americas Program, and with the cooperation of the Italian Ministry of Environment, and the European Union.
- Represent a mechanism to coordinate and integrate the ongoing GEF supported efforts in portions of La Plata Basin (Bermejo, Gran Chaco, Pantanal and Guaraní), enhancing replicability and sustainability of single successful outcomes. It expected results will be disseminated through the interested institutions within the basin.
- A working methodology applicable to other transboundary aquifers in La Plata Basin and will be applied to the groundwater component of the FSAP and constitute a practical experience and lesson learned for the ISARM/Americas Program at the Hemispheric level and to all ISARM Program at the global level, in close working relation with UNESCO-HIP.

Activities needed to enable changes

The SAYTT Project has seven components: (1) Establishment of a Management Unity; (2) Formulation of the Transboundary Diagnostic Analyses (geologic investigation); (3) Analysis of the Institutional and Legal framework; (4) Transboundary Diagnostic Analyses synthesis; (5) Pilot Project; (6) Strategic Action Plan addressed to the SAYTT and; (7) Replication of the results.

The description of the activities is presented in Table 1.

Table 1. Description of Components and Activities

1. Project coordination and execution arrangements
<ul style="list-style-type: none"> ▪ Location of the management unit ▪ Definition of the working team ▪ Hiring of team ▪ Internal project coordination ▪ External project coordination (between Framework Program and others projects) ▪ Implementation of a dissemination program for the Project
2. Diagnosis and geo-scientific research

<p>2.1 General geology</p> <ul style="list-style-type: none"> ▪ Coordination and integration of key stakeholders, organization and evaluation of existing information to characterize the aquifer as well as to structure the information into a regional information system. ▪ Integration and update of available information on the hydro geological properties and characteristics of the SAYTT ▪ Development of soil classification as well as degree of deterioration (if applicable) due to natural causes or anthropogenic aspects. ▪ Correlation of geological formation of the area. ▪ Characterization of the geological structure of the region and the geometry of the aquifer's strata. ▪ Reconstruction of the main geological structures at the regional level based on strata analysis and geo-structural information. ▪ Coordination with the CIC on an information system for the cartographic material. ▪ Analysis and evaluation of the available geo-physical information, integrating them into the pilot areas, with other deep exploration geo-electric data. ▪ Development of vertical and horizontal profiling to verify and complement local stratigraphic data. ▪ Definition of borders, through geo-electrical prospecting, electromagnetism, and piezometers, of the areas shared by sweet water, brackish, and salty water, and define the contact depth of the Tertiary-Quaternary.
<p>2.2 Regional Hydrogeology</p> <ul style="list-style-type: none"> ▪ Location and installation of piezometers for water gauging, hydro geochemical characterization, in order to define the hydraulic parameters and monitoring network. ▪ Integration of all the available information on the hydro geological and hydro geochemical characteristics for the aquifers in the study area as well as to south and east of the Toba Aquifer System. ▪ Validation of existing data ▪ Determination of a hydro geological water balance ▪ Determination of water recharges of the SAYTT ▪ Differentiation between renewable reserves and geological reserves ▪ Implementation of a detailed gauging campaign with piezometers one at least during the drought period and one during the maximum recharge period ▪ Performance of well and piezometer sampling for chemical, physical chemical and isotopes (O18 / O16, D, T) for water quality estimation and classification as well as to help identify recharge areas and to develop a hydro geological model. ▪ Definition of morphological characteristics and dynamics of the water table ▪ Mapping and development of a database of exploited wells ▪ Definition, at least on the pilot areas, of the relations between surface and groundwater.
<p>2.3 Hydrometeorology, surface hydrology, and influence of climate change on water resources – to be coordinated with the activity System of Hydroclimate Prediction and Adaptation to the Hydrological Effects of Climate Change and Variability of the Framework Program</p> <ul style="list-style-type: none"> ▪ Determination of a water balance for the SAYTT ▪ Analysis and interpretation of the climatological and hydrological records of the SAYTT region ▪ Analysis and validation of the existing meteorological data ▪ Filling of data gaps by data extrapolation ▪ Analysis of regression curves between key stations ▪ Study of the permanent and temporary hydrographic network of the study area ▪ Determination of infiltration as a function of the hydro meteorological parameters in the SAYTT ▪ Correlation between rainfall, evaporation and infiltration ▪ Estimation of surface water recharges to the aquifer ▪ Estimation of groundwater recharges originated from precipitation and temperature variations during a defined period
<p>2.4 Vulnerability and contamination risk</p>

<ul style="list-style-type: none"> ▪ Definition of optimal multispectral and multitemporal cover ▪ Image processing for thematic mapping (georeferenced, mosaic assemblage) ▪ Mapping of current situation to determine critical areas ▪ Development of integrated vulnerability model by hydro geological units ▪ Development of a risk model for the pilot area ▪ Development of criteria to define protection limits in the exploitation (wells) and recharge areas. ▪ Proposal of actions to reduce non point source pollution in urban and rural areas in collaboration with local institutions to create a legal framework for environmental protection ▪ Definition of a methodology to characterize point and non point sources of pollution and development of vulnerability map of natural and anthropogenic factors. Identification of strategies for remediation current risks as well as prevention of potential future risks.
2.5 Territorial Information System / Regional Data Base
<ul style="list-style-type: none"> ▪ Creation of a Territorial Information System with all information related to existing data on natural resources related to anthropogenic, economical and social aspects of the area. ▪ Integration of the SAYTT Regional Data Base to the CIC Data Base.
2.6 Hydrological and Hydro geological monitoring and control
<ul style="list-style-type: none"> ▪ Data analysis of current network ▪ Determination of water use ▪ Validation of existing data ▪ Analysis of the measuring stations recovering ▪ Identification of critical areas for monitoring and control of the quantity and quality of groundwater resources. ▪ Establishment of agreement between the three countries on control parameters ▪ Definition of an improved systems for data collection and transmission ▪ Design a monitoring network and multi parameter control on key areas based on common criteria between countries
2.7 Formulation of general geodiagnosis.
<ul style="list-style-type: none"> ▪ Formulation by regional experts ▪ Validation through a public participation process ▪ CIC endorsement within the approval process of the Marco Program
3. Analysis of the Legal, Institutional and Socio-Economical situation
<ul style="list-style-type: none"> ▪ Recompilation of existing socio-economic information in the region and updating through interviews ▪ Diagnosis of socio-economic and cultural characteristics of the SAYTT area ▪ Classification of economic activities in the region and evaluation of current and future potential for sustainable development of the aquifer ▪ Estimation of the degree of current and potential future environmental degradation related to current economic activities ▪ Gathering and analysis of the existing antecedents of environmental education and dissemination of environmental programs in the area ▪ Analysis and comparison of existing legal framework and instruments in the three countries, at the SAYTT level ▪ Comparison between the countries institutional frameworks
4 Formulation of Transboundary Diagnostic Analysis (TDA)
<ul style="list-style-type: none"> ▪ Update of preliminary TDA, developed during preparation phase, through a comprehensive public participation process. The outcome will be the final TDA, with consensus between the three countries and the stakeholders, which include: <ul style="list-style-type: none"> – The main factors which influence the SAYTT and its priorities (ex. deforestation, contamination, etc.) – Prioritization of joint mitigation actions by the three countries – Definition of development opportunities from the SAYTT – Identification of national, bi national or tri national actions necessary to prevent degradation and promote the potential development of the SAYTT: legal & institutional reforms and investments
5 Pilot Interventions

<p>The intervention will focus in detail on 3 selected pilot areas where will be implemented various researches and demonstration activities on sustainable use of ground water resources. The reference trans-boundary zones are representing different ecological and groundwater patterns of Argentina, Bolivia and Paraguay. According to the results of previous investigations the three selected areas are the following:</p> <ul style="list-style-type: none"> ▪ First type of intervention: interventions for the optimization and protection of groundwater resources, through controlled and induced recharge, improvement in the intake and storage infrastructure, and proposals for mitigation of contamination risks. Individualized area: Gral. E. A. Garay – La Tricolor (Bolivia – Paraguay) ▪ Second type of intervention: Protection of the recharge of the aquifer system, water quality, and related ecosystems. Identification of mitigation options of the risks related to global climate changes in the intervention area. Individualized area: Palmar Grande – Tartagal (Bolivia-Argentina) ▪ Third type of intervention: survey for confirmation of the deep freshwater aquifers in transboundary areas and construction of groundwater intake and storage works. Individualized area: Tte. M. Cabello – Capitán Pages (Paraguay-Argentina)
<p>6 Preparation of the Specific Strategic Action Program (SSAP)</p>
<ul style="list-style-type: none"> ▪ Selections of the actions, which was identified in the TDA, to implement for achievement the sustainable development of the SAYTT. ▪ Identifications of actions to be developed nationally and binationally o trinationally. ▪ Definitions of action type, chronograms and investments ▪ Formulation and implementation of a Program on Environmental Education
<p>7 Replication within La Plata Basin and the Americas</p>
<ul style="list-style-type: none"> ▪ Dissemination of the partial and final results through workshops: <ul style="list-style-type: none"> - Identification of the participants of the workshops with the supervision of the Framework Program Coordination. - Participation of the Project National Units, ISARM Americas, and representatives from provinces/departments, municipalities, universities, NGOs, etc. ▪ Identification of the replication strategy and transfer of experiences within the Framework Program
<p>8 Monitoring and evaluation</p>
<ul style="list-style-type: none"> ▪ Monitoring of progress ▪ Evaluation of performance and achievement

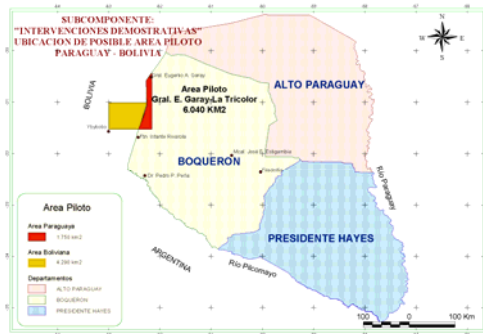
Considering the character of the INCO-EU program the scientific research included in Component 2, will be developed in a 56 % of the Activities by the CHAGRES project, under the agreements developed in Component 1, and this research project will complement activities related with the legal studies, and pilot project selected.

Pilot Demonstration Projects

As first approach, the intervention foresees to identify the main ecosystem dynamics and other factors which have a significant impact on water ground variability in the whole Plata watershed. According to previous results, the intervention will focus in detail on 3 selected pilot areas where will be implemented various researches and demonstration activities on sustainable use of ground water resources. The reference trans-boundary zones are representing different ecological and groundwater patterns of Argentina, Bolivia and Paraguay. According to the results of previous investigations the three selected areas are the following:

- General E. A. Garay – La Tricolor (Paraguay – Bolivia);
- Palmar Grande – Tartagal (Bolivia – Argentina);
- Tenente 1° Cabello – Capitán Pagés (Paraguay – Argentina).

The following 3 maps shows the areas selected for the SAYTT Pilot Demonstration Project



Outputs

The outputs of the SAYTT are presented in Table 2.

Table 2. Outputs of the SAYTT

Component	Outputs
1. Project coordination and execution arrangements	
<ul style="list-style-type: none"> Location of the management unit Definition of the working team Hiring of team Project coordination 	<ul style="list-style-type: none"> Management unit of the SAYTT Priority Project operating in direct coordination with the national executing units and the Framework Program. Project well coordinated and implemented
2. Diagnosis and geo scientific researches	
<ul style="list-style-type: none"> General geology Regional Hydrogeology Hydrometeorology, surface hydrology, and influence of climate change on water resources Vulnerability and contamination risk Territorial Information System / Regional Data Base Hydrological and Hydrogeological monitoring and control Promotion of the public participation, education and communication Formulation of geodiagnosis 	<ul style="list-style-type: none"> Integrated regional block diagrams Hydro geological correlation profiles Thematic maps in regional scale (1:500,000) Regional data base associated with thematic maps and territorial information for planning Conceptual model of the aquifer Rehabilitation of piezometers and wells for hydro geological studies and monitoring Identification of the groundwater / surface water relation Hydro geological maps on proper scale Estimation of groundwater recharge Technical manual for the preservation of the quality of groundwater resources in areas of high risks Defined training program for the technical personnel on vulnerability maps Plan for a monitoring and control hydrogeological network at the SAYTT Diagnosis formulated by regional experts, validated through a public participation process.

3 Analysis of the Legal, Institutional and Socio-Economical situation	
<ul style="list-style-type: none"> • Recompilation of existing socio-economic information in the region and updating through interviews • Diagnosis of socio-economic and cultural characteristics of the SAYTT area • Classification of economic activities in the region and evaluation of current and future potential for sustainable development of the aquifer • Estimation of the degree of current and potential future environmental degradation related to current economic activities • Analysis and comparison of existing legal framework and instruments in the three countries, at the SAYTT level • Comparison between the countries legal frameworks 	<ul style="list-style-type: none"> • Diagnosis of future development scenarios (20 years) in the SAYTT region • Land use map of the SAYTT area • Criteria for creation of a regional legal framework on the use, protection and conservation of the SAYTT
4 Formulation of the Transboundary Diagnostic Analysis (TDA)	
<ul style="list-style-type: none"> • The main factors which influence the SAYTT and its priorities (ex. deforestation, contamination, etc.) • Prioritization of joint mitigation actions by the three countries (transboundary problems) • Definition of development opportunities from the SAYTT • Identification of national, bi national or tri national actions necessary to prevent degradation and promote the potential development of the SAYTT: legal & institutional reforms and investments 	<ul style="list-style-type: none"> • TDA formulated by regional experts, validated through a public participation process, and approved by CIC within the approval process of the Marco Program
5 Pilot Interventions	
<p>Presentation of the three selected pilot areas identified during the preparation phase (representing different ecological and groundwater patterns of Argentina, Bolivia and Paraguay) - and implementation of the selected case</p>	<ul style="list-style-type: none"> • Pilot project consented between the countries and the Management Unit • Demonstration project for the sustainable use of the aquifer, as strategic intervention for adaptation to climate change, implemented
6 Preparation of the Specific Strategic Action Program (SSAP)	
<p>Consensus on the actions identified in the TDA that the countries agree to implement to achieve sustainable development of the SAYTT Program on Environmental Education</p>	<ul style="list-style-type: none"> • Program defined on the bases of actions identified in the TDA to achieve sustainable development with chronogram and costs. • Insertion of the SSAP-SAYTT to the Framework Program • Program on Environmental Education defined and implemented
7 Replication in La Plata Basin and in the Americas	
<p>The partial and final results will be disseminated through workshops with the participation of representatives from provinces, municipalities, NGOs, etc. identified with the supervision of CIC.</p>	<ul style="list-style-type: none"> • Workshops and seminars of the experience and learned lessons in the SAYTT for replication in La Plata Basin, implemented • Workshops and seminars for experience exchange between countries in La Plata basin, including those not directly related to the SAYTT, implemented • Workshops and seminars of the experience and learned lessons in the SAYTT for replication in the Americas, implemented
8 Monitoring and evaluation	
<p>Monitoring of progress Evaluation of performance and achievement</p>	<ul style="list-style-type: none"> ▪ Project well coordinated and adapted to the reality

Base line and beneficiaries

The baseline is given by the institutions and programs which will: (i) provide the project a knowledge base on the environmental, social, legal, economical and political aspects related to the aquifer and; (ii) benefit from the project implementation. The baseline for each country of the SAYTT is presented:

Argentina

- In Argentina the main stakeholders that have been involved in project development are the National State and Universities and the Provincial Water Administrations that share the SAYTT (the Provinces have domain on their water resources). These include the Provincial Water Administration of the Chaco Province; the Water Resources Department of Formosa Province; the Water Resources Department of Jujuy Province; the Water Resources Agency of Salta Province; the Water Resources Department of Santiago del Estero Province; and the Water Resources Department of Tucumán Province. Their main objective is to develop and to implement water resources policies, and to plan and execute the water supply works.
- Provinces with water services concessions have the public regulatory agencies as responsible for controlling the adequate water supply to the population.

Bolivia

- In Bolivia there isn't an agency responsible for the survey, exploration and preservation of groundwater resources. In general water extraction is a responsibility of the municipalities and town hall. However, there isn't a regulatory framework for control and preservation.
- The Hydro geological Department of the Mining Geological Service (SERGEOMIN) published a hydro geological map of Bolivia, and it is the official counterpart for internationally financed groundwater projects. The trained staff, experience and responsibility of SERGEOMIN qualifies it as ideal for research and exploration of groundwater resources.
- The National Hydrographic Basin Plan (PLAMACH-BOL) constitutes a strategic instrument for the sustainable management of water resources. It includes diagnosis on water resources and prioritizes future actions for the basin.

Paraguay

- In Paraguay, based on the law 1561/2000, the General Directorate for Protection and Conservation of Water Resources, associated to the Secretary of Environment, is currently the agency responsible for the formulation, coordination and evaluation of policies for the preservation of water resources (including base flows, recharge capacity, and ecological preservation of aquifers).
- The Directorate of Water Resources of the Chaco has performed several local and regional hydro geological studies in the area and is the only institution in the Chaco qualified to provide services for drilling of deep wells.

Projects and Programs

- Strategic Action Plan for the Bermejo River (SAP-Bermejo). The Binational Commission for the Upper Bermejo and Grande de Tarija River Basin (Argentina-Bolivia) is implementing the Strategic Action Plan to promote sustainable development while mitigating human induced erosion.
- Sustainable Land Management in the Transboundary Ecosystem of the Gran Chaco Americano. This project, initiated in 2004, although still in the PDF-B stage will be developing a Sub-regional Action Program for the sustainable development of the Gran Chaco Americano, within the legal framework of the Convention to Combat Desertification.

This Project is being developed by Argentina, Bolivia and Paraguay and will help enhance the knowledge of this semi-arid region and provide remedial actions as input to the Plata TDA/SAP process.

- The ISARM Americas program is a regional initiative (Argentina, Bolivia, Brazil, Paraguay and Uruguay) managed by UNESCO-IHP and USDMA/OAS with the main objective to increment the scientific, socio-economic, legal, institutional and environmental knowledge on planning and management of transboundary aquifers in the Americas.
- EU funded Integrated Management and Master Plan of Pilcomayo River Basin (Argentina, Bolivia, and Paraguay). The Trinational Commission of Pilcomayo River Basin is developing the integrated management and master planning project for the Pilcomayo River. The purpose is to generate local management experience in reducing mining contamination and soil erosion, and sedimentation and water course sediment deposition in the Pilcomayo River.

SUSTAINABILITY

Institutional

Most probably the Management Unit of the Project will be based in Tarija (Bolivia). The Technical Office of Pilcomayo and Bermejo Rivers in Bolivia has offered its fine installed technical and operational capacity. This could allow a close co-ordination with the Project “Integrated Management and Master Plan of Pilcomayo River Basin”, which has several contiguous activities with the present Project.

The Project can be supported by other units to facilitate the day by day project management and to guarantee institutional sustainability. Such units include: (i) the Technical Office for Bermejo and Pilcomayo (Bolivia) focused on institutional and socioeconomic development; (ii) the University of Salta (Argentina) focused on research and development and; (iii) the Ministry of Environment of Paraguay for planning aspects.

Within the CIC framework a specific organization will be implemented with the representation of three involved countries (Argentina, Bolivia and Paraguay). The structure will be defined during the project execution. It would provide institutional sustainability and be responsible of the policies and implementation plans concerning the groundwater resources and ecosystems of the SAYTT.

The Project will analyze the management practices of indigenous people placed in a historical context in order to plan and implement sustainable management strategies of renewable natural resources. A participative methodology will be implemented including participation of indigenous organizations, regional associations, and the other organizations.

The sustainability of the project would also be provided through the involvement of the Intergovernmental Coordinating Committee of La Plata Countries (CIC), the countries, provinces/departments by its waters resources institutions and the universities.

Environmental

The project will promote research (applied to management) to increase the knowledge and understanding of the dynamics of the SAYTT and impacts (and mitigation measures) of climate changes in the semi-arid Chaco ecosystem.

The project will develop a sustainable and integrated water resource management model at a regional scale (Argentina, Bolivia and Paraguay) addressing aspects related to increasing efficiency of water use including recycling and re-use, multi-purpose use, erosion, pollution and water logging, and minimizing the effects on climate change. This model will be use on the short and long term planning and management of the SAYTT. Consequently, the application of the knowledge to the management will be guarantee.

Financial

The Framework Program is an initiative of Argentina, Bolivia, Brazil, Paraguay and Uruguay for the integrated management of the water resources of La Plata Basin. The Intergovernmental Committee of La Plata Basin Countries (CIC) will be the local executing agency; the Organization of the American States (OAS) will be the executing agency; and the United Nations Environmental Program (UNEP) will be the implementing agency.

The SAYTT Priority Project will be financed by Global Environmental Facility (GEF), co-financed by the Italian Ministry of Environment and the Pilcomayo Project (Integrated Management and Master Plan of Pilcomayo River Basin) will contribute through the National Technical Office of the Pilcomayo and Bermejo Rivers. The involved countries will be the counterparts contributing with human resources, studies and information.

REPLICABILITY

Replicability of the project execution will be assured through its incorporation into the Framework Program of the La Plata Basin. This will allow replication to other shallow aquifers in La Plata Basin with similar conditions. Additionally, as a pilot project of the IASTN Americas the project will be globally replicated.

At the end of the execution of the SAYTT Project it is expected the three countries sharing the SAYTT, will have a workable model to increase scientific, socio-economic, legal, institutional and environmental knowledge and understanding of management scenarios related to the integrated management of transboundary aquifers. The most important results will be action proposals for sustainable management of the aquifer.

The SAYTT Priority Project is also a Pilot Project of the UNESCO-OAS-ISARM America. Consequently the replication at global level is guarantee.

The SAYTT model and lessons learned will be disseminated by the CIC and by UNESCO-OAS-ISARM Americas Project through a Manual of Guidelines for the Integrated Surface and Groundwater Management of Transboundary Aquifers. The objective will be to provide decision support for managing other important aquifers in La Plata Basin.

The SAYTT also represents a mechanism to coordinate and integrate the ongoing GEF supported efforts in portions of the basin (such as Bermejo, Pantanal, Gran Chaco, and Guarani), enhancing replicability and sustainability of single successful outcomes.

STAKEHOLDER INVOLVEMENT

This section describes briefly stakeholders that have been involved in project development.

Argentina

Ministry of Federal Planning, Public Investments and Services; Secretary of Public Works; Under Secretariat of Water Resources; Argentine Water Resources Institute (IARH); National Agency of Sanitation Works (ENOHSA); Regional Groundwater Resources Centre (CRAS); Permanent Committee of the National Water Congresses (CONAGUA); National Water Institute (INA), National University of Salta; National University of Litoral, National University of La Plata, AIDIS Argentina (Argentine Association of Sanitary and Environmental Sciences), Federal Water Resources Council (COHIFE), Regional Committee of the Bermejo River (COREBE).

The provincial agencies include Provincial Water Administration of Chaco; Provincial Water Coordinating Unit of Formosa; Provincial Agency for Environment and Natural Resources of Jujuy; Provincial Directorate of Water Resources of Jujuy; Agency of Water

Resources of Salta; Regional Entity of Public Services of Salta; Provincial Administration of Water Resources of Santiago del Estero; Undersecretary of Water Resources and Sanitation of Santiago del Estero; Directorate of Water Resources of Tucuman; Undersecretariat of Water Resources of Tucumán, Energy, Mining and Environmental Politics of Tucumán; Water of Los Andes SA (water supply company of Jujuy).

Bolivia

Ministry of Water - Viceministry of Biodiversity, Forestry Resources and Environment - General Directorate for Land and Basin Classification; Ministry for Sustainable Development (MDS); Geological Mining Service (SERGEOMIN); Department of Hydrogeology and the National Meteorological and Hydrological Service (SENAMHI); Prefecture of Tarija; Major University of San Andrés; Foundation for the Sustainable Development of Water Resources and Environment (HIDROBOL)

Paraguay

Secretary of Environment (SEAM), General Directorate for Protection and Conservation of Water Resources (DGPCRH); National Service for Environmental Sanitation (SENASA), Company for Sanitation Services of Paraguay (ESSAP-AS); Directorate of Water Resources of the Chaco, National University of Asunción / Technological Innovation Centre; Paraguayan Institute of Water Resources (NGO); Altervida (NGO).

International

Latin American Association of Groundwater Hydrology for Development (ALSHS - NGO); Binacional of the Bermejo River; Binacional and Trinational of the Pilcomayo River, Research Network and Environmental Management of La Plata Basin (RIGA).

MONITORING AND EVALUATION PLAN

The Monitoring and Evaluation Plan (M&E Plan) is an integral part of Project Management and seeks to provide the means to monitor and evaluate progress and performance in all components of the Project, and achievement of its goals. The M&E Plan is comprised by two very distinctive components: (1) Monitoring of progress; and (2) Evaluation of performance and achievement. While both components may use the same set of performance/achievement indicators, each use a different set of tools and processes. The Monitoring is characterized by a more frequent set of activities, providing for timely reviews and quick assessments. Often, decision-making lies on the Execution Coordinating Unit. The Evaluation, on the other hand, is performed at a predetermined number of times, and decision-making corresponds to the highest level, the Steering Committee of the Project.

Responsibilities for monitoring and evaluation will be assigned to the various participating institutions –the Local Executing Agency, the Intergovernmental Coordinating Committee (CIC,) and national institutions; the GEF Implementing Agency, UNEP; and the International Executing Agency, GS/OAS; and different Project officers, according to their management functions and responsibilities. The Plan is guided by the principles of accountability and transparency. These principles apply to both, institutions and individuals.

Indicators and Means of Verification

a. Project M&E: Performance and Achievement Indicators, baseline values and means of verification

Performance and Achievement Indicators measure progress in the execution of Project activities, and include procurement and production of goods and services, works and

infrastructure, and use of resources –human and monetary resources. They also include specific measurable goals.

These indicators are then used to monitor the progress of Project execution, and assess the achievement of its goals and specific outputs. They are also used to evaluate performance. A list of indicators, along with their baseline values, parameters to be measured and means of verification are found in Table 3, below. It is worth to note that these indicators may be reviewed during the execution of the Project, baseline values may be adjusted, and new indicators and/or parameters may be added. The monitoring of these indicators is assisted by a Project Management Software, such as MicroSoft Project Management.

Table 3. List of Performance and Achievement Indicators

<i>Indicator/ Description</i>	<i>Parameters measured</i>	<i>Baseline value</i>	<i>Means of Verification</i>
<i>Integrated Management of Groundwater</i>			
Guideline book for Integrated Surface-groundwater Management	Guideline book submitted to the CIC	0	Letters of endorsement and ratification of the Guideline book at the CIC
Map of transboundary aquifers	Map of transboundary aquifers	In progress	Maps and GIS database of aquifers
SAYTT SSAP	SAYTT SSAP	Proposal for the formulation of the SAYTT SSAP	Letters of endorsement to the SAYTT SSAP
Proposal on groundwater for La Plata SAP	Groundwater component for La Plata SAP	0	SAP groundwater component and letters of endorsement

b. Program M&E: Process Indicators, baseline values and means of verification

Process Indicators measure progress in the institutional and policy reforms necessary to implement joint actions (as proposed in a Strategic Action Program) for preventing and/or remediating environmental issues of transboundary nature. While environmental-status indicators and stress-reduction indicators may not be measured during the life-time of a project, and until after a considerably long time has passed after actions have been taken, Process Indicators allow for assessing the likelihood of undertaking the proposed actions.

Process Indicators are then used to assess the effectiveness of the FSAP in achieving the Development Objective as agreed by the five participating countries. A list of possible indicators is found in Table 4, below.

Table 4. List of Process Indicators

<i>Indicator/ Description</i>	<i>Parameters measured</i>	<i>Baseline value</i>	<i>Means of Verification</i>
Integrated groundwater management planning and models	Use of integrated groundwater management models in the SAYTT	To be established by the Project	To be identified based on existing monitoring and evaluation instruments/systems available in La Plata Basin countries

FINANCING PLAN

The costs GEF, counterpart and co-financing are presented in Table 5. The main sources are: GEF, US\$ 1.100.000; EU-INCO Program US\$ 2.565.108 (under consideration at the EU); UNESCO-ISARM Americas, US\$ 28.000 (confirmed); European Union Pilcomayo basin Project, US\$ 660.000 (confirmed); Technical Office of the Pilcomayo and Bermejo Rivers of Bolivia, US\$ 300.000 (confirmed), for a total amount of US\$ 4.553.108, excluding the

counterpart costs in kind, estimated in US\$ 900,000 under the responsibility of CIC and the three countries involved.

Table 5. Costs, by the origin of the funds

Project & Activities	GEF (US\$)	Counterpart (US\$)	Co-Financing (US\$)	TOTAL (US\$)
SAYTT Priority Project Total	1,100,000	900,000	1,300,000 INCO(2,173,108)	5,373,108
1. Project coordination and execution arrangements	280,000	90,000	104,000 INCO(100,000)	574,000
2. Diagnosis and geo scientific researches	150,000	342,000	923,000 INCO(1,173,108)	2,588,108
3 Analysis of the Legal, Institutional and Socio-Economical situation	30,000	27,000	39,000 INCO(50,000)	146,000
4 Formulation of the Transboundary Diagnostic Analysis (TDA)	27,000	36,000	INCO(300,000)	363,000
5 Pilot Interventions	440,000	279,000	182,000 INCO (350,000)	1,501,000
6 Preparation of the Specific Strategic Action Program (SSAP)	50,000	81,000	INCO(200,000)	331,000
7 Replication within La Plata Basin region and the Americas	103,000	27,000	26,000	156,000
8 Monitoring and evaluation	20,000	18,000	26,000	64,000

Counterpart includes: (a) incremental costs to prepare the current proposal and human resources from the countries participating in the UNESCO-ISARM Americas Program; (b) human resources from the executing agencies as well as logistical support for field survey and; (c) other programs and projects being executed in La Plata Basin.

Co-financing includes: (a) M. Environment of Italy cooperation, (b) EU-INCO Program cooperation; (c) ISARM-Americas cooperation; (d) Pilcomayo River Project-EU cooperation and (e) OTN-Bermejo and Pilcomayo-Bolivia funds.

Associated resources and estimation of counterpart

The specific activities related to counterpart and co-financing for the SAYTT are presented in Table 6.

Table 6. Specific activities related to counterpart and co-financing for the SAYTT

Activity	GEF	Counterpart	Co-Financing
SAYTT Priority Project	<ul style="list-style-type: none"> ▪ Hiring of technical personnel for supervision of daily project activities from the Executing Unit ▪ Maintenance of Executing Unit ▪ Consulting for preparation of the TDA ▪ Consulting for preparation of Program on Environmental Education and Dissemination ▪ Preparation of the 	<ul style="list-style-type: none"> ▪ Human resources from the participating countries in the UNESCO-OAS-ISARM Americas program ▪ Human resources of the participating countries in the SAYTT project ▪ Wells constructed by the countries in the SAYTT area ▪ Hydro geological, hydrological, hydro chemical, socio economic information produced by the countries in the SAYTT area ▪ Studies developed by other programs and projects in the SAYTT area related to 	<ul style="list-style-type: none"> ▪ Consulting for the analysis of field surveys related to geology, hydro geology, hydrology and geophysics ▪ Studies related to geology, hydro geology, hydrology, geophysical and hydro chemical ▪ Study wells for data collection ▪ Socio economic studies ▪ Information system of the SAYTT ▪ Cartography, and

	SAP of the SAYTT <ul style="list-style-type: none"> ▪ M&E plan execution. ▪ International workshops – one per year during 5 years of project execution. 	groundwater management <ul style="list-style-type: none"> ▪ Investments provided by countries and programs in the SAYTT area for maintenance of the Executing Agency 	satelital information <ul style="list-style-type: none"> ▪ Cientific and technical worksohps ▪ Capacity Building activities and Universities involvment
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EXECUTION ARRANGEMENTS FOR IMPLEMENTATION

A Consortium will be formed to implement the Project according to the results of workshops carried out in Tarija (August 2004), Asunción (November – December 2004) and Buenos Aires (May 2005) among the interested organizations and representatives of non state actors which participated in these meetings. The Organizations / Companies participating in the Consortium have a complementary experience, which include all sectors foreseen by Project's activities. The assignments of tasks and responsibilities among participants are summarized in Table 7.

Table 7. Assignments of tasks and responsibilities among participants

Organization / Company	Tasks and Responsibility
Intergovernmental Committee of La Plata Basin Countries (CIC)	Conduct the Program
Global Environmental Facility (GEF)	Financial Institution & financial management
United Nations Environmental Program (UNEP)	Implementing Agency
Organization of the American States (OAS)	Financial Management of funds coming from the GEF (Global Environmental Facilities) and the Italian Ministry of Environment
Italian Ministry of Environment (Italy)	Co-financial Institution
INCO-EU Program/PROATEC, Univ. of Pisa, Italy	Technical cooperation and co-financing
The Technical Office of Pilcomayo and Bermejo Rivers (Tarija, Bolivia)	Local implementing agency
Prefecture of Tarija / Water Resources Unity (Bolivia)	Technical and Scientific Collaborator, co-financial institution
National Technical Office of the Pilcomayo and Bermejo Rivers. (OTN-Bolivia)	Technical and Scientific Collaborator
University of Salta/INASLA (Argentina)	Technical and Scientific Collaborator
National University of Litoral (Argentina)	Technical and Scientific Collaborator
Provincial Water Administration of Chaco; Provincial Water Coordinating Unit of Formosa; Provincial Agency for Environment and Natural Resources of Jujuy; Provincial Provincial Directorate of Water Resources of Jujuy; Agency of Water Resources of Salta; Regional Entity of Public Services of Salta; Provincial Administration of Water Resources of Santiago del Estero (Argentina)	Provincial executing agencies
National University of Asunción / Technological Innovation Centre (Paraguay)	Technical and Scientific Collaborator
Secretary of Environment of Paraguay (SEAM)	Technical and Scientific Collaborator

The Director of the SAYTT project is the Director of the Marco Program (also Secretary of the CIC). There will be 3 national coordinators designated by each country. The technical base will be in Tarija, Bolivia, at the Technical Office of Pilcomayo and Bermejo Rivers. The International Technical Coordinator of the SAYTT project will be elected following the methodology established for the Marco Program, and will coordinate the consultants and the work from the technical office in Tarija. The International Technical Coordinator of the SAYTT is responsible for the execution of the SAYTT, with support from the technical coordinator of the Marco Program. The International Technical Coordinator of the SAYTT will depend technically of the international technical coordination of the Marco Program. Routine and frequent coordination meetings will be held. The INCO-EU Program will have a Technical Manager located in Tarija or in Buenos Aires and will be responsible for the coordination of the INCO Program with the FSAP, related with the activities in the SAYTT will follow the guidelines of the SG of the CIC and will work in close coordination with the International Technical Coordinator of the FSAP

OAS as executing agency will perform the financial administration of the Marco Program. The administrative support will be provided by the Technical Office of Tarija.

WORK-PLAN

Execution chronogram

Table 7. Chronogram of activities / components

Activity	Task	Chronogram of Activities																			
		Year 1				Year 2				Year 3				Year 4				Year 5			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SAYTT Priority Project																					
	1																				
	2																				
	3																				
	4																				
	5																				
	6																				
	7																				
	8																				

The work plan includes:

- Select coordinator, organize the working group and setup the office.
- Hiring consultant to prepare the groundwater database for the La Plata basin. The TOR will be prepared by the International Technical Coordination (ITC). This activity will be developed on the second trimester of the Program.
- Meeting to define the basis for the conceptual methodology of integrated management including participation on the different existing projects in the basin (Guarani Aquifer System, Pantanal, Pilcomayo, Bermejo, Patiño Aquifer, among others). The ITC (with

the help of the consultant for developing the groundwater database) will be responsible for organizing the meeting and presenting the results.

- First meeting of the SAYTT to coordinate the activities and integrate the different sponsors (GEF, Italian Cooperation, European Union and the three countries (including provincial jurisdictions). This activity will be performed on the fourth month of the Program. The specific arrangements for the execution of the SAYTT will be defined in accordance to the countries' vision, the CIC, cooperating agencies and projects being implemented in the region (Pilcomayo, Bermejo and Gran Chaco). The ITC will be responsible for the execution of the meeting and to formalize the institutional arrangements defined during the meeting.

“Pilot project for a Hydrological Alert System at the confluence of the Paraguay and Parana Rivers”

PROJECT SUMMARY

Project Rationale

The problem contemplates the mitigation of the extreme hydrological events (floods and droughts) and contaminant spills in the area of the confluence of the Parana and Paraguay rivers, including the metropolitan region of Resistencia-Corrientes (Argentina) and the city of Pilar (Paraguay).

The floods which occurred in 1982/83, 1992, 1995, 1997 and 1998 on the Parana, Paraguay and Uruguay rivers, associated to the El Niño, generated great socio-economical impacts in the riverine population, including the seven provinces of the Litoral region of Argentina (Buenos Aires, Corrientes, Chaco, Entre Ríos, Formosa, Misiones and Santa Fe), and several cities in Paraguay (Bahía Negra, Concepción, Asunción, Alberdi, Pilar, and Encarnación, among others).

The city of Resistencia is one of the cities most heavily impacted by extreme hydrological events. There is great need to improve risk management (prevention, contingency and rehabilitation), to define flood zoning linked to a real time flood forecasting system, and to work directly with the Civil Defense Authorities.

The impacts of spills and contaminants on the water quality is another key issue for an efficient environmental management of the region, and the application of contingency plans. Until the present moment there isn't an alert center for spills, where it is possible to communicate a spill (contamination) of a certain product and its location, and local technological capacity to model the extension, magnitude, and seriousness of the contamination - to evaluate the necessity of applying contingency plans.

Project Objectives

The goal of the “Pilot Project for a Hydrological Alert System at the confluence of the Paraguay and Parana Rivers” (PP-Hydrologic Alert System) is to mitigate damages and losses caused by extreme hydrological events and/or spills (contamination) on the population and environment.

The objectives of the PP-Hydrologic Alert System are to improve the capacity to forecast, communicate and act upon the occurrence of extreme hydrological events and spills (contamination) in the metropolitan areas of Resistencia, Corrientes and Pilar. The system should promote development of future information exchange agreements between the countries.

To meet the objectives the main tasks include:

- a) To update, strengthen, and integrate the current hydro environmental alert systems and community management systems to predict extreme hydrological events and occurrences of contaminant spills;
- b) To develop community contingency plans including social participation and transboundary integration;
- c) To develop simulation experiments of transfer mechanism for hydrological risks;
- d) To promote institutional strengthening and
- e) To strengthen local capacity.

Area of Influence

The area of influence of the project is defined by: (i) localities along the Paraguay River (up to the city of Asuncion); (ii) localities along the Parana River (up to the Yacireta dam) and; (iii) by the confluence of the Parana and Paraguay rivers to the cities of Corrientes and Resistencia. Also are included the province of Formosa, the Tebicuary river, the Bermejo river (80 km upstream up to Colorado), and strategic points in the Iguacu river, due to the rapid response time of the river (approximately 7 days to Resistencia).

Expected Project Outcomes

The PP-Hydrologic Alert System includes:

- (i) Development of a Bi-national (Argentina and Paraguay) hydro environmental alert system for risk management (prevention, contingency and rehabilitation) using simulation models to predict floods and droughts, as well as contamination impacts caused by spilling;
- (ii) Adaptations/actions to address the hydrological effects of climate variability and change, to prevent flood and drought-related disasters, and implement mitigation actions. Flood maps will be generated for different scenarios of climate change;
- (iii) Providing immediate notification of extreme hydrological events, contaminant spills and preparation of contingency plans, in partnership with Civil Defense authorities;
- (iv) Improve knowledge of transboundary critical issues related to hydrological extreme events, contingency planning, and water quality. It will also take into account safety guidelines in hydro regulation works (dams) and
- (v) Promote creation and implementation of a Transboundary Water Alert Committee.

Components

The pilot project is subdivided into 5 main components. The components and products are presented in Table 1.

Table 1. Components and Products

Components	Products
1. Operational System for Forecasting and Hydrological Observation (predict floodings and droughts)	Transboundary system designed and approved by the participating countries; Flood risks zoning (mapping) in the Parana and Paraguay rivers and Environmental evaluation of the effects of floods & droughts and drainage in wetlands.
2. Operational System for Contaminant Spill Modelling	Database system on water quality and contamination; Map of critical areas, with identification of problems, and main sources of contamination and Future scenarios on water quality, based on ecological modelling.
3. Development of a Decision Support System ("Binational Hydro Environmental Alert System"). This component is to facilitate organization of information and use of the models from the Components 1 (flooding) & 2 (contamination)	Operating Binational Hydro Environmental Alert System for simulation of future management scenarios (floods, drought, and spills) and with resources for continuous data updating
4. Contingency Plans and	Contingency Plans specific for managing

	transboundary risks (floods, drought, and spills and creation of an Emergency Center and Establishment of a technical cooperation network.
5. Support projects and studies.	Specific studies of vulnerable, critical and sensitive areas

Costs and Financing

Table 2. Costs and Financing

Component	Sources of funds		Total Cost (US\$)
	Financing Agency (US\$)	Counterpart (US\$)	
1 Operational System for Forecasting and Hydrological Observation (predict floodings and droughts)	50,000	1.623.000	2.037.000
2 Operational System for Contaminant Spill Modeling	50,000	398.000	534.000
3 Development of a Decision Support System (“Binational Hydro Environmental Alert System”). This component is to facilitate organization of information and use of the models from the Components 1 (flooding) & 2 (contamination)	100,000	193.000	330.000
4 Contingency Plans and	40,000	158.000	263.000
5 Support projects and studies.	10,000	186.000	285.000
TOTAL	250,000	2.558.000	3.449.000

PROJECT DESIGN

Background

The “Pilot Project for a Hydrological Alert System at the confluence of the Paraguay and Parana Rivers” (PP-Hydrologic Alert System) is located in one of the highest flooding risk prone areas in La Plata Basin due to extreme hydrological events. The problem is increasingly worsening with uncontrolled land use expansion.

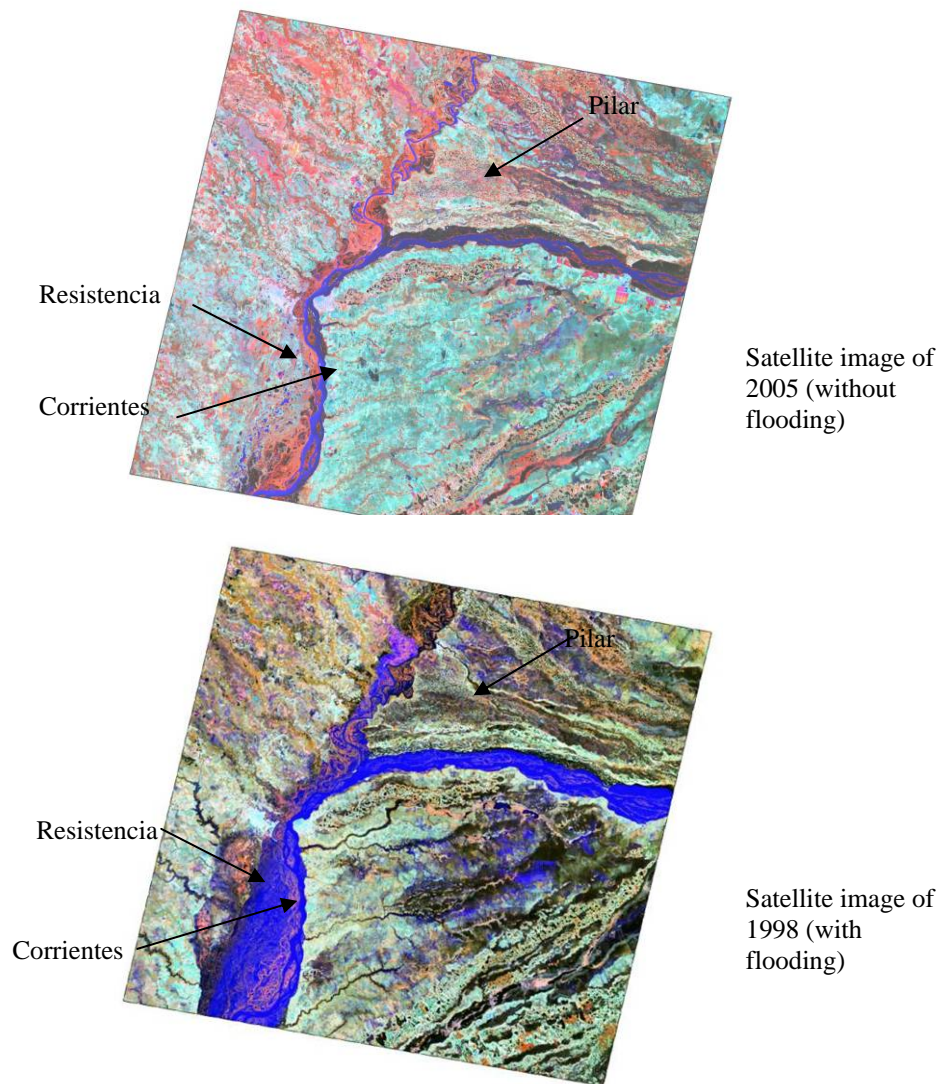


Figure 1. – Satellite images of 2005 (above) and 1998 (below) of the confluence of the Paraguay and Parana rivers (Argentina/Paraguay)

As shown in Figure 2 the city of Resistencia (Chaco) is the first city to receive the impact from extreme hydrological events. The city has historically been very vulnerable to flooding from multiple causes: the rivers Parana, Paraguay, Negro and Neembucu; intense rainfall events; urbanization related to the increasing impermeable areas (the land surface in small urban basins usually consists of roofs, streets and other impervious material). Additional impacts include development of many related and water born diseases due to contamination of septic tanks.

These extreme events tend to increase frequency and magnitude affecting large urban, wetlands, and agricultural areas of great economic and strategic importance. In the area of Gran Resistencia, after the large flooding of 1982/83, which lasted 11 months, defence systems were built to provide protection from the floods. Diversion channels and 29 metropolitan lagoons were also built and maintained in order to help control the water levels and to provide additional defence against flooding for the local residents. Since 1998 land use has been regulated based on risks to extreme rainfall and flooding of the Negro river.

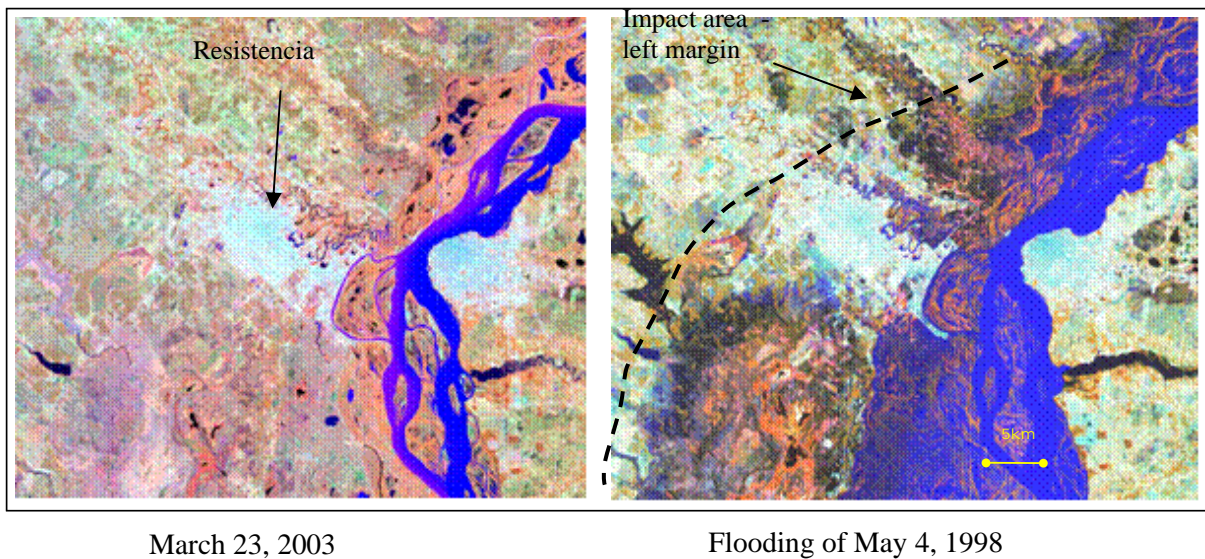


Figure 2. – Comparison of satellite images of 1998 (with flooding) & 2003 (without flooding)

In Paraguay a great portion of the population along the rivers is very vulnerable to extreme hydrological events. This is especially critical in the Paraguay river (and tributaries) flood valley where the cities of Bahia Negra, Concepcion, Asuncion, Alberdi, and Pilar are located, and along the Parana river. These areas include thousands of families that were displaced having to abandon their properties, and are living in poverty on the outskirts of towns and cities in the region, in many cases subject to very unsafe sanitation and health conditions.

The annual flooding and intense rainfall has a dramatic impact on the livelihood of the farming communities and can often lead to devastating crop losses. There is increasing fear that the magnitude of these flood events may increase due to El Nino effects and they may also become more frequent.

The media (TV, radio, newspaper, magazines, etc.) can play a key role, however, currently it is not well exploited.

Hydrological forecasting should be considered by the authorities, planners, and decision makers, as a strategic data to be included on development plans and decision making.

The El Niño in 1997-98 left in Paraguay a great lesson: it's absolutely necessary to pay attention to hydrological and climatological forecasting.

The flooding of 1982/83, 1992, 1995, 1997 and 1998 caused by the extreme increase in the levels of the rivers Parana, Paraguay, and Uruguay, associated to the El Niño, heavily punished

the seven provinces of the Litoral region – Mesopotamia: Buenos Aires, Corrientes, Chaco, Entre Rios, Formosa, Misiones and Santa Fe. Each of the floodings in the Argentina Litoral region originated from different rainfall patterns and were initiated in other countries (with exception of the one occurred in 1997/98, where precipitation occurred entirely on Argentinean territory).

In many cases the flooding is aggravated when there is no urban drainage and when the drainage system exists, but it is filled with garbage and sediments. Lack of appropriate refuse collection and disposal decreases water quality and waste material clogs the urban drainage network.

The region of Resistencia-Corrientes in the confluence of the Parana and Paraguay rivers is the region in the La Plata Basin first impacted by extraordinary increases in river levels, originated mainly from Paraguay and Brazil. Due to lack of forecasting and emergency and contingency plans, the economic losses to some industries, businesses, farmers and homes create a depression and psychological impact on most of the population.

Historical records from the last 200 years indicate huge flows in the Parana river (at Resistencia-Corrientes) like in 1812 (58,000-62,000 m³/s); 1858 (51,000-54,000 m³/s); 1878 (47,000-50,000 m³/s); 1905 (47,000-49,000 m³/s); 1966 (41,000-42,000 m³/s); 1977 (34,000 m³/s); 1982/83 (60,000 m³/s); 1991/92 (54,000 m³/s) and; 1997 (42,000 m³/s). The longest flood duration occurred in 1982/83 (11 months).

Since 1970 the frequency of flooding increased to approximately one every four years. The increase is correlated to the El Niño phenomena, land use changes, and increase exposure of new developments to high risk flood areas. Flood losses can be quite significant like in 1966 (US\$ 750 million); 1982/83 (US\$ 1.8 billion); and 1982/83 (US\$ 1.75 billion).

The wetland areas of Neembuco and the agricultural areas in the Pilar region have gravely been impacted by flooding causing isolation of areas, disruption of production, and displacement of the population. The Japanese International Cooperation Agency (JICA) and the government of Paraguay started in 1997 structural flood control measures to mitigate impacts including physical control of basin drainage, by means of constructions or devices such as dikes, channel, canalization, and planting forests. Some of the works were efficient others, require further studies (including interaction with the aquifer) especially in the sensitive wetland areas.

The World Bank provided financial support to repair the losses caused the floodings of 82/83 and 97/98 in the Litoral and Mesopotamia region. However, it is recognized the lack of protection in other urban and rural areas.

There is great need to define flood zoning linked to a real time flood forecasting system, and working directly with the Civil Defense Authority. Related actions include: (i) definition of an alert system: mathematical model, forecasting range and alert steps; (ii) strengthen the County Civil Defense Authority, so as to be prepared to act, with well pre-established plans, during the floods and ; (iii) preparation of emergency plans for the different parts of the city. The forecasting conditions include watch conditions, alert conditions, and emergency conditions.

Risks of accidents (spills) and water quality contamination

The impacts of an accident (spill) in the water quality (contamination) in the area of influence of the Hydrological Alert System, at the confluence of the Paraguay and Parana Rivers (PP-Hydrologic Alert System), is a critical issue for the effective environmental management and application of contingency plans.

Currently there isn't a Spill Alert Centre where the contamination of a certain product and location can be communicated - and the technological capacity to quickly model (simulate) the extension and magnitude of the contamination plume, to determine the need to apply contingency plans.

Water quality problems originate from several sources including: (i) inadequate use of agrochemicals; (ii) farming activities and agricultural industry; (iii) inadequate treatment of residual waters (domestic and industrial); (iv) heavy metals from mining activities; (v) inadequate management of dangerous substances; (vi) nutrients in water bodies; (vii) inadequate disposition of solid wastes on flood basins and; (viii) inadequate management of wastes during transportation.

Accidents (spills) occurred in the area of influence of the project and it is essential to have capacity to model impacts and the need to apply emergency measures. Additionally, there isn't in the area of influence of the PP-Hydrologic Alert System an agreed common plan for exchange of information on contamination. The countries have been working independently on this theme.

Available information on water quality in the countries includes:

- Argentina has stations operated by provinces, via bi-nationals and tri-nationals (Caru, Pilcomayo, Yacireta, etc.) and the Prefectura Naval. There isn't a coordinated operation at the national level.
- Paraguay has an operational water quality monitoring network, funded by JICA until 2006. It includes 6 stations (32 parameters measured) for the monitoring network of the La Plata Basin.
- Brazil has an operational water quality network, coordinated at the national level with support of state and federal institutions. The monitoring network includes 16 stations (on average 6 parameters measured).
- Bolivia has a network operated by the tri-national of the Pilcomayo. There isn't a coordinated operation at the national level.

In the area of influence of the PP-Hydrologic Alert System chemical, biological, bacteriological, physical-chemical analysis are performed at 6 locations (Bermejo/Paraguay; Paraguay/Parana; Puente interprovincial Resistencia/Corrientes).

The GEF funding will be used to ensure dissemination of the experience throughout the basin and for the formulation of a mechanism to allow up-scaling of the experience generated, throughout the Plata Basin during the SAP implementation phase.

Project Objectives

The goal of the PP-Hydrologic Alert System is to mitigate damages and losses caused by extreme hydrological events and/or spills (contamination) on the population and environment, at the confluence of the Paraguay and Parana Rivers.

The objectives of the PP-Hydrologic Alert System are to improve the capacity to forecast, communicate and act upon the occurrence of extreme hydrological events and spills (contamination) in the metropolitan areas of Resistencia, Corrientes and Pilar. The system should promote development of future information exchange agreements between the countries.

To meet the objectives the main tasks include:

- a) To update, strengthen, and integrate the current hydro environmental alert systems and community management systems to predict extreme hydrological events and occurrences of contaminant spills;
- b) To develop community contingency plans including social participation and transboundary integration;
- c) To develop simulation experiments of transfer mechanism for hydrological risks;
- d) To promote institutional strengthening and

- e) To strengthen local capacity.

The PP-Hydrologic Alert System is demonstrative of the Marco Program and should put into practice the general actions developed in Component II Consolidations of Capacities for the Integrated Management – in particular Action II.1. Hydro Climatic Prediction Systems and Adaptation to Hydrological Effects and Variability of Climate Changes.

Area of Influence of the Project

The area of influence of the project is defined by: (i) localities along the Paraguay River (up to the city of Asuncion); (ii) localities along the Parana River (up to the Yacireta dam) and; (iii) by the confluence of the Parana and Paraguay rivers to the cities of Corrientes and Resistencia. Also are included the province of Formosa, the Tebicuary river, the Bermejo river (80 km upstream up to Colorado), and strategic points in the Iguacu river (due to the rapid response time of the river - approximately 7 days to Resistencia).

Expected Project Outcomes

The PP-Hydrologic Alert System includes:

- a. Development of a Bi-national (Argentina and Paraguay) hydro environmental alert system for risk management (prevention, contingency and rehabilitation) using simulation models to predict floods and droughts as well as contamination impacts caused by spilling;
- b. Adaptations/actions to address the hydrological effects of climate variability and change, to prevent flood and drought-related disasters, and implement mitigation actions. Flood maps will be generated for different scenarios of climate change;
- c. Providing immediate notification of extreme hydrological events, contaminant spills and preparation of contingency plans, in partnership with Civil Defense authorities;
- d. Improve knowledge of transboundary critical issues related to hydrological extreme events, contingency planning and water quality. It will also take into account safety guidelines in hydro regulation works (dams) and
- e. Promote creation and implementation of a Transboundary Water Alert Committee.

Components, Activities and Products

The pilot project is subdivided into 5 main components:

1. Operational System for Forecasting and Hydrological Observation (predict floodings and droughts);
2. Operational System for Contaminant Spill Modelling;
3. Development of a Decision Support System (“Binational Hydro Environmental Alert System”). This component is to facilitate organization of information and use of the models from the Components 1 (flooding) & 2 (contamination);
4. Contingency Plans and
5. Support projects and studies.

Component 1. Operational System for Forecasting and Hydrological Observation (predict floodings and droughts)

This component deals with the main aspects related with hydrological observation and forecasting (anticipate floods and droughts) which includes: (i) identification of locations and

forecasting requirements; (ii) methodology for the elaboration of water risk maps; (iii) improved network operation system; and (iv) social communication and relationship with users.

The development of the project should be and joint effort between Argentina and Paraguay with support from Brazil and Bolivia. The local stakeholders should contribute to the project formulation. In the case of Argentina, the monitoring of the quantities for the Parana and Paraguay rivers is performed by INA. The Project will strength what INA does, improving the measuring points and data transmission.

Sub-component A. Identification of locations and forecasting requirements

This sub-component deals with the determination of the places or sections of the water courses where the short and long term prediction will be useful, identification of the extension and quality of the available information, and ways for improving the generation and exchange of information.

Sub-component B. Methodologies for the elaboration of water risk maps

This sub-component deals with collection, transmission, processing, evaluation and storage of the hydrological data, prediction models (analysis and discussion of the models and current procedures used and possibilities for improvement), improvement of the topographical maps (with a higher vertical resolution) over the flood valleys.

Sub-component C. Improved network operation system

This sub-component deals mainly with: (i) definition of the institutions that will be responsible for the coordination and operation of the network (only in the area of influence of the pilot project); (ii) compatibility with other existing alert systems; (iii) maintenance procedures for existing measuring locations; (iv) exchange of information with the hydropower operating centers and; (v) elaboration of training program for technical personnel from participating institutions.

Sub-component D. Social communication and relationship with users

This sub-component deals with improving the general consciousness of the various users and population (to encourage them participate and help improve the system). It includes a communication plans for dissemination of information on key subject areas (including variability and climate change, hydrological forecasting requirements) and the development of educational activities, including educational material, prizes, and graduate thesis work. The objective of these campaigns is to diminish the difference in perceived risks and real risks.

Component 2: Operational systems for modeling spills and contamination

The objective of this component is to develop an operational system for modeling spills and contamination which allows:

- i. Based on the communication to an Alert Center of a spill event (define product and location), develop the technological capacity to rapidly model (simulate) the extension, seriousness and magnitude of the contamination plume, and define the need to apply contingency plans;
- ii. Make available and accessible information of water quality and contamination, and enhance information exchange among leading institutions dealing with these issues;
- iii. Monitor water quality and follow-up of the physical, chemical and biological conditions related to water quality and quantity of surface waters and
- iv. Identification of potential pollution sources, simulation of management scenarios for decision making and application of action plans.

This component was subdivided into four sub-components: (a) information; (b) knowledge - process; (c) forecasting and; (d) results.

Component 3. Development of the Decision Support System (Binational Hydro Environmental Alert System)

The objective of this component is the development of a Decision Support System (“Binational Hydroenvironmental Alert System”), with a friendly graphical user interface, to facilitate organize the information and the models of components 1 (floods and droughts) & 2 (contamination) in order to: (i) to visualize and understand, in a clear and easy way, the results of different models; (ii) to develop, simulate and compare future scenarios in a structured, intuitively and easy to understand way (including by a non-technical person) and; (iii) to allow access, to parts of the system, to other institutions (including schools).

Component 4. Contingency Plans

The objective of this component is to improve, at the local and municipal level, the preparation and response capacity to emergency situations related to floods, droughts, and spills. A key element in the prevention of contingencies and responses to emergencies, is involvement of the public and local authorities in the development of strategies to implement safety measures to prevent or control risky situations.

This component includes: (i) improving the response capacity to emergency situations; (ii) developing flood contingency plans for Resistencia, Pilar and others; (iii) developing contamination / spills contingency plans for Resistencia, Pilar and others; (iv) revision of the Binational Contingency Plan; (v) training of key personnel; (vi) creation of a Binational Response Team; (vii) preparation and implementation of international workshops and courses on prevention, preparation, and responses to emergencies; (viii) preparation and implementation of training program and simulation of catastrophes; (ix) creation of a Communication Centre and; (x) development of mechanisms for participation and communication between countries.

It is very important the creation and establishment of a Joint Response Team, composed of federal, state and municipal representatives, responsible for the various activities related to the implementation of contingency plans and emergency responses. This team will prepare a Joint Contingency Plan to protect human health and the environment, through coordinated and resourceful actions. The work will focus on supporting the personnel and guiding the public at the different localities, to be effectively and swiftly respond and mitigate the effects of floods, and to ascertain that adequate resources are available at the time of an emergency.

Component 5. Supporting projects and studies

This component is related to studies and project that will support the “Binational Hydroenvironmental Alert System” (Decision Support System) be more effective on anticipating extreme hydrological events and accidents, and effectively minimize the impacts on life and property. It includes specific studies of vulnerable, critical and sensitive areas, and strategies for public involvement in the maintenance of the system. Table 1 shows components, activities, products and executing agencies.

Table 3. Components, Activities, Products and Executing agencies

Component / Sub-component / Activity	Products	Executing agencies
Component 1. Operational System for Forecasting and Hydrological Observation (predict floodings and droughts)		
Sub-component A. Identification of locations and forecasting requirements		
Activity 1A-1. Complementation and expansion of the locations and short term prediction needs	Attainment of an agreement document between the three countries about the necessities and hydrological forecast locations and ways of improving the operational questions with the incorporation of new generating and exchanging information technologies	Local teams at Resistencia and Pilar with the support of the institutions in Argentina (INA, SSRH de la Nación), Paraguay: ANNP, DMH-DINAC, Brazil (SMA, ANA, ANEEL, INMET); and expert consultant
Activity 1A-2. Complementation and extension of the locations and long term forecast necessities	Attainment of an agreement document between the three countries about the ways of improving the exchange of information	Local teams at Resistencia and Pilar with the support of the institutions in Argentina: SSRH de la Nación, INA, Province entities; Paraguay: ANNP, DMH-DINAC, University of Pilar; Brazil: SMA, ANA, ANEEL, CPTEC; Consultant
Sub-component B. Methodologies for the elaboration of water risk maps		
Activity 1B-1. Short term forecast system based on the rivers	Short term hydrological forecast models based on the rivers	Local teams at Resistencia and Pilar with the support of the institutions in Argentina (INA, SSRH de la Nación), Paraguay: ANNP, Brazil (SMA, ANA, ANEEL, INMET, CPTEC); and specialized universities and institutions and expert consultant (support and coordination)
Activity 1B-2. Short term forecasting system based on rain fall	Short term hydrological forecast models based on the rain	Local teams at Resistencia and Pilar with the support of the institutions in Argentina (INA, SSRH de la Nación), Paraguay: ANNP, DMH-DINAC; Brazil (SMA, ANA, ANEEL, INMET); and specialized universities and institutions and expert consultant (support and coordination)
Activity 1B-3. Long term forecasting system	Information exchange for the long term hydrological forecast (including regional climate forecast) for the planning and management of the water resources	Local teams at Resistencia and Pilar with the support of the institutions in Argentina: SSRH de la Nación, INA; Bolivia: SENAMHI; Brazil: SMA, ANA, ANEEL; Paraguay: ANNP, DMH-DINAC; Expert consultant in hydrological forecast and academic centers and institutions
Activity 1B-4. Determination of the de cartography and planaltimetry	Topographic maps with higher vertical resolution over the flood valleys in the Parana, Paraguay confluence	Local teams at Resistencia and Pilar with the support of the institutions in Argentina: SSRH de la Nación, INA, IGM and University of la Plata in Argentina; Brazil: SMA, ANA, ANEEL; Paraguay: ANNP, IGM Paraguay; specialized universities and institutions and expert consultant (support and coordination)

Component / Sub-component / Activity	Products	Executing agencies
Activity 1B-5. Information Systemization	Dynamic GIS with the capacity to be updated with new georeferenced hydrological information data, topographical maps (DEM), etc. in the influence area.	Local teams at Resistencia and Pilar with the support of the governmental institutions which performs similar activities inside the influence area, Universities, Institutions, IBGE, INDEC, IGM (Argentina, Bolivia), IBGE (Brazil) and SGM (Paraguay and Uruguay), CITEC-FIUNA and in specific cases, consultants
Sub-component C. Improved network operation system		
Activity 1C-1. Coordination workshops for operation of the network	Network operation in the area of influence	Local teams at Resistencia and Pilar with the support of the institutions in Argentina: SSRH de la Nación, INA, IGM y University of la Plata en Argentina; Brazil: SMA, ANA, ANEEL; Paraguay: ANNP, DMH-DINAC; expert consultant
Activity 1C-2. Network complementation and operation plan	Complementation and operation plan network	Local teams at Resistencia and Pilar with the support of the institutions in Argentina: SSRH de la Nación, INA,; Brazil: SMA, ANA, ANEEL; Paraguay: ANNP, DMH-DINAC; Expert consultant
Sub-component D. Social communication and relationship with users		
Activity 1D-1. General consciousness of the population and the different users and information diffusion	Communication plan	Local teams at Resistencia and Pilar with the support of the institutions in Argentina: SSRH de la Nación, INA,; Brazil: SMA, ANA, ANEEL; Paraguay: ANNP, DMH-DINAC; Expert consultant
Activity 1D-2. Activity at educational level	Activities and educational material	Local teams at Resistencia and Pilar with the support of the institutions in Argentina: SSRH de la Nación, INA,; Brazil: SMA, ANA, ANEEL; Paraguay: ANNP, DMH-DINAC; specialized universities and institutions and expert consultants (support and coordination)
Component2: Operational systems for modeling spills and contamination		
Sub-component A. Information		
Activity 2A-1. Identification of Institutions	Detailed list of the institutions in charge and their responsibilities.. Array of strengthening activities distinguished by institutions and expected results.	Argentina: INA, SSRH de la Nación, Secretary of the Environment and Sustainable Development ; Naval prefectural; Water Resources Institutions of the Provinces; Paraguay: SEAM and la UNA, ANNP, CEN, ESSAP, SENASA, UNP, governments and municipalities; Brazil – SRH/MMA, SMA, ANA, ANEEL; Cities Ministry; IBAMA; Bolivia – SENAMHI; Institute of Chemical Research - University Mayor de San Andrés
Activity 2A-2. Systemization of quality sampling in the Parana and Paraguay rivers	Execution of a station network for the operation of the water quality hydrological alert system. Information	Argentina: INA, SSRH de la Nación, Secretary of the Environment and Sustainable Development ; Naval

Component / Sub-component / Activity	Products	Executing agencies
	collection plan at the existing monitoring network Water quality data base	Prefectura; Water Resources Institutions of the Provinces; Paraguay: SEAM and la UNA, ESSAP, SENASA, UNP, governments and municipalities, FACEN; Brazil – SRH/MMA, SMA, ANA, ANEEL; Cities Ministry; IBAMA; Bolivia – SENAMHI; Institute of Chemical Research - University Mayor de San Andrés
Activity 2A-3. Contamination sources inventory	Georeferenced data base for the local discharges, industries, mining, non point source urban, rural and environmental liabilities, in the area of influence. Protocols and forms for the discharge inventories	Argentina: INA, SSRH de la Nación, Secretary of the Environment and Sustainable Development ; Naval Town Hall; Water Resources Institutions of the Provinces; Paraguay: SEAM and la UNA, ESSAP, SENASA, UNP, governments and municipalities, FACEN; Brazil – SRH/MMA, SMA, ANA, ANEEL; Cities Ministry; IBAMA; Bolivia – SENAMHI; Institute of Chemical Research - University Mayor de San Andrés
Sub-component B. Knowledge-Process		
Activity 2B.1 Ecological mathematical models	Ecological models data base Critical areas recognized and located on digital maps, with problem identification, main contamination sources	Argentina: INA, SSRH de la Nación, Secretary of the Environment and Sustainable Development ; Naval Prefectura; Water Resources Institutions of the Provinces; Paraguay: SEAM and la UNA, ANNP, CEN, ESSAP, SENASA, UNP, governments and municipalities; Brazil – SRH/MMA, SMA, ANA, ANEEL; Cities Ministry; IBAMA; Bolivia – SENAMHI; Institute of Chemical Research - University Mayor de San Andrés
Sub-component C. Forecasting		
Activity 2C.1 1 Ecological mathematical models – Forecast	Ecological models for priority contaminants Data base of the applied results of the designed models based on the contamination sources inventories and on results from the monitoring network	Argentina: INA, SSRH de la Nación, Secretary of the Environment and Sustainable Development ; Naval Prefectura; Water Resources Institutions of the Provinces; Paraguay: SEAM and la UNA, ANNP, CEN, ESSAP, SENASA, UNP, governments and municipalities; Brazil – SRH/MMA, SMA, ANA, ANEEL; Cities Ministry; IBAMA; Bolivia – SENAMHI; Institute of Chemical Research - University Mayor de San Andrés
Activity 2C-2 System consolidation – scenarios	Implemented System data base quality and contamination. Critical areas map documented with problem identification, main contamination sources and future	Argentina: INA, SSRH de la Nación, Secretary of the Environment and Sustainable Development ; Naval Prefectura; Water Resources Institutions of the Provinces; Paraguay: SEAM and la UNA, ANNP, CEN,

Component / Sub-component / Activity	Products	Executing agencies
	scenarios of water quality, based on ecological models.	ESSAP, SENASA, UNP, governments and municipalities; Brazil – SRH/MMA, SMA, ANA, ANEEL; Cities Ministry; IBAMA; Bolivia – SENAMHI; Institute of Chemical Research - University Mayor de San Andrés
Activity 2C-3 Development of Emergency Centers	Creation of an Emergency Center	Argentina: INA, SSRH de la Nación, Secretary of the Environment and Sustainable Development ; Naval Prefectura; Water Resources Institutions of the Provinces; Paraguay: SEAM and la UNA, ANNP, CEN, ESSAP, SENASA, UNP, governments and municipalities; Brazil – SRH/MMA, SMA, ANA, ANEEL; Cities Ministry; IBAMA; Bolivia – SENAMHI; Institute of Chemical Research - University Mayor de San Andrés
Sub-component D. Results		
Activity 2D-1 Legal Framework	Document with quality objective values for the shared courses, with justification and agreement between countries. Common reference values in the shared courses Water quality level map of the shared sections based on defined quality objectives.	Argentina: INA, SSRH de la Nación, Secretary of the Environment and Sustainable Development ; Naval Prefectura; Water Resources Institutions of the Provinces; Paraguay: SEAM and la UNA, ANNP, CEN, ESSAP, SENASA, UNP, governments and municipalities; Brazil – SRH/MMA, SMA, ANA, ANEEL; Cities Ministry; IBAMA; Bolivia – SENAMHI; Institute of Chemical Research - University Mayor de San Andrés
Activity 2D-2 Training and diffusion Program	Progress report and follow-up Support to the Institutions and countries with less knowledge of the subject Joint activities plan among institutions Activity Protocol for the standardization of the field activities. Adjusted methodological guide Assurance Politics for the analytical quality of the laboratories Common protocol for the analytical quality of the laboratories	Argentina: INA, SSRH de la Nación, Secretary of the Environment and Sustainable Development ; Naval Prefectura; Water Resources Institutions of the Provinces; Paraguay: SEAM and la UNA, ANNP, CEN, ESSAP, SENASA, UNP, governments and municipalities; Brazil – SRH/MMA, SMA, ANA, ANEEL; Cities Ministry; IBAMA; Bolivia – SENAMHI; Institute of Chemical Research - University Mayor de San Andrés
Component 3. Development of the Decision Support System (Binational Hydro environmental Alert System)		

Component / Sub-component / Activity	Products	Executing agencies
Activity 3.1 Data Base Model	Data Base Model	Local teams at Resistencia and Pilar with the support of the institutions in Argentina: SSRH de la Nación, INA,; Brazil: SMA, ANA, ANEEL; Paraguay: ANNP, DMH-DINAC; CITEC-FIUNA; specialized universities and institutions and expert consultants (support and coordination)
Activity 3.2 Models Module (quantity and quality)	Models (quantity and quality)	Local teams at Resistencia and Pilar with the support of the institutions in Argentina: SSRH de la Nación, INA,; Brazil: SMA, ANA, ANEEL; Paraguay: ANNP; specialized universities and institutions and expert consultants (support and coordination)
Activity 3.3 Graphical Interface Module	Graphical Interface	Local teams at Resistencia and Pilar with the support of the institutions in Argentina: SSRH de la Nación, INA,; Brazil: SMA, ANA, ANEEL; Paraguay: ANNP, DMH-DINAC; CITEC-FIUNA; specialized universities and institutions and expert consultants (support and coordination)
Activity 3.4 Communication Module with centers in Argentina and Paraguay	Communication with centers in Argentina and Paraguay	Local teams at Resistencia and Pilar with the support of the countries institutions linked with Civil Defense for social aspects: SIFEM and PC in Argentina; SEDEC in Brazil; CEN in Paraguay. More-over, the countries institutions linked to the environmental defense mainly for the fauna and flora remediation in emergency situations. Universities and Regional Training Centers
Component 4. Contingency Plans		
Activity 4.1 Contingency Plans Activity 4.1a Water Contingency Plans- floods and droughts for Resistencia, Pilar and others Activity 4.1b Water Contingency Plans- Contamination / Spills for Resistencia, Pilar and others Activity 4.1c Revision of the Binational joint contingency plan (PCCB) Activity 4.1d Training of the key technical personnel Activity 4.1e Creation of the Binational joint response team (ERC) Activity 4.1f International workshops and courses on prevention, preparation and responses to emergencies	Transboundary risk monitoring contingency plan. Elaboration of a technical cooperation network	Local teams at Resistencia and Pilar with the support of the countries institutions linked with Civil Defense for social aspects: SIFEM and PC in Argentina; SEDEC in Brazil; National defense ministry of Bolivia; CEN in Paraguay; SNE in Uruguay. More-over, the countries institutions linked to the environmental defense mainly for the fauna and flora remediation in emergency situations. Universities and Regional Training Centers

Component / Sub-component / Activity	Products	Executing agencies
Activity 4.1g Training and simulation program Activity 4.1h Creation of a Communication Centre Activity 4.1i Mechanisms for participation and communication between countries Activity 4.1j Development of Warning Protocols and Procedures		
Component 5. Support projects and studies		
Activity 5.1 Education for the preservation of drainage system (including lagoons) and environmental protected areas in Resistencia	Education for the drainage system preservation (including lagoons) and environmental protected areas in Resistencia	Resistencia local teams
Activity 5.2 Water risk zoning in the Paraná and Paraguay rivers	Water risk zoning in the Paraná and Paraguay rivers	Resistencia and Pilar local teams, CITEC-FIUNA
Activity 5.3 Environmental evaluation of the floods and drainage impacts in the wetlands in Pilar	Environmental evaluation of the floods and drainage impacts in the wetlands in Pilar	Pilar local teams, SEAM

3. Existing Studies to subsidize the Project

Existing Hydrological Alerts Systems

ARGENTINA

Argentina is the only country belonging to the La Plata basin that has a Hydrological Alert system in its territory. The Water National Institute, (INA) connected to the Water Resources sub-secretary (SSRH) is responsible for the development and operation of the Hydrological Alert system of the La Plata basin. The information is provided by the Prefectura Naval which realizes two daily hydrometrical measurements in its 82 stations belonging to the National Navigable Routes Institute.

The water quantities monitoring of the Parana and Paraguay rivers is efficiently done by the National Water Institute – INA. The Water Resources sub-secretary (SSRH) has a hydrological network around the country, that at the present moment does not work in real-time, limiting the use of the Hydrological Alert system.

The Bermejo river commission (COREBE) implemented a Hydrological Information System (SIH) in the Bermejo river basin with the objective of concentrating the hydrological data of the basin for evaluation, storage and diffusion in useful time.

The naval hydrographic service operates a hydrometric network with 4 stations to forecast the La Plata river levels and a pluviometric network with 2 stations Oyarbide and Isla Martin García, in the la Plata river. The National institute of navigable routes has a tidal network controlled by Hydrovia SA, with 24 measuring stations.

PARAGUAY

The entire country is located in the La Plata basin. There are 2 national Institutes in charge of the monitoring, storage and diffusion of the hydrometeorological information. The Meteorological and Hydrological Institute provides meteorological forecast mainly for the aviation, and for the public in general. It is the national technical institute affiliated to OMM.

The National Navigation Administration and Ports (ANNP), has 22 hydrometric stations to control the navigation of the Paraguay river. In addition, ANDE National Electricity Administration generates useful hydrometeorological data. Furthermore, Itaipu has a useful hydrometeorological data in Paraguay. It is automatized with satellite data transmission.

BRASIL

On the Brazilian side of the La Plata basin there isn't a systemized program for observation and measurements of floods. In some sections of the Paraná river the flood alert are based on the river water level or in the short term meteorological forecast, like in the lower Parana river, the Pantanal, Paraguay and Iguazu rivers.

The meteorological centers of the states together with the Meteorological Federal Agencies (CPTEC, INMET) inform the Municipal civil defense the alert and decisions taken.

In the city of São Paulo city, there is a flood alert system (SAISP), based on meteorological radar, and which works together with Emergency Management Center of Sao Paulo (CGE). It is controlled by the Water Technological Center Foundation (FCTH), generating reports on rainfall and impacts, every 5 minutes. The hydrological monitoring of the SAISP is performed by the Water and Electric Power Department of the State of Sao Paulo (DAEE)and by radar.

In the Brazilian side of the La Plata basin the pluviometric network has 694 station and the 433 hydrometric stations. The National Water Agency (ANA) controls a telemetric network of automatized pluvio-hydrometric stations together with CPTEC. The network is composed by 52 stations and provides measurements of the precipitation and river water levels every hour.

Another example of Hydrometeorological Alert system in Brazil is the Technological Institute SIMEPAR, ex-Meteorological Service of the State of Parana. It is a private entity that provides meteorological, environmental and hydrological data forecast. It also forecast extreme events with emphasis in the impacts on the hydropower sector.

BOLIVIA

The problem is that there isn't any specialized institution to perform hydrological forecasts in the region. According to a research realized by GEF in 2002, the information exchange by the hydrological station of the country, is neither permanent nor periodic at national or international level.

Besides SENAMHI there are other institutions the provide data but the exchange among them is null. In the Bermejo basin, PEA is establishing a network which will provide real time data to a center in Argentina and Tarija. In the Pilocomayo basin there is a hydrological monitoring project

In summary in Bolivia there isn't any strategy to exchange hydrological forecast information, because they are not performed in a systematic way and the information management is very weak.

SUSTAINABILITY

Institutional

The project should be developed using local human resources of national and local institutions to guarantee project sustainability. The project will be managed jointly by local teams from Resistencia (composed by members of INA and APA) and Pilar (composed by members of SEAM, the National University of Asunción, University of Pilar, and the National Emergency Committee). The execution teams will be supported by various institutions of the countries: Argentina (INA, SSRH, Provincial Institutions, SIFEM); Bolivia: SENAMHI, universities; Brazil (SMA, ANA, ANEEL, INMET, IBGE, SEDEC) and; Paraguay (UNA, ANNP, DMH-DINAC, CEN, ESSAP, governances and municipalities).

The local teams will be: (i) in the case of Resistencia-Argentina, INA and the Provincial Water Administration (APA) and; (ii) in the case of Pilar-Paraguay, the Secretary of Environment (SEAM), through the Governance of Neembucu, and with additional support from the National University of Asunción, Faculty of Engineering, University of Pilar, and the National Emergency Committee. All of them will be coordinated by the SEAM, General Directorate for Protection and Conservation of Water Resources.

The sustainability of the project would also be provided through the involvement of the Intergovernmental Coordinating Committee of the Plata Countries (CIC), the countries, provinces or directorates, the universities, etc. The integration and exchange of information among national and international governmental and non-governmental entities as well as scientific communities also contributes towards project sustainability.

Environmental

The project will promote research to increase the knowledge and understanding of the effects of extreme hydrological events (due to climate changes) and/or spills (contamination) on the population and environment. The project will improve the capacity to forecast, communicate and act upon the occurrence of extreme hydrological events and spills (contamination) in the region of the confluence of the Parana and Paraguay rivers. Important water users and economic activities will benefit including urban planning, agriculture and ranching, navigation and hydropower generation plants. The continuous improvement in predicting future scenarios on climate and hydrology will benefit, at the local and regional level, land use planners, design engineering, and water resources works.

Financial

The Framework Program is an initiative of Argentina, Bolivia, Brazil, Paraguay and Uruguay for the integrated management of the water resources of La Plata Basin. The Intergovernmental Committee of La Plata Basin Countries (CIC) will be the local executing agency; the Organization of the American States (OAS) will be the executing agency; and the United Nations Environmental Program (UNEP)

will be the implementing agency. The PP-Hydrologic Alert System will be financed by Global Environmental Facility (GEF) and by cash funds from the countries (as counterparts).

REPLICABILITY

It is important to emphasize the interrelationship of the PP-Hydrologic Alert System with the different components of the Marco Program, and the importance of the replicability of the Pilot Project to other vulnerable locations in the La Plata Basin.

At the end of the execution of the PP-Hydrologic Alert System, it is expected that the two countries (Argentina and Paraguay) will have a workable Bi-national hydro environmental alert system for risk management (prevention, contingency and rehabilitation) for the metropolitan axis of Resistencia-Corrientes (Argentina) and Pilar (Paraguay), to address the extreme hydrological effects of climate variability and change, to prevent flood and drought-related disasters, and to implement mitigation actions in partnership with Civil Defense authorities. The alert system additionally contemplates modelling and notifications of the extent, seriousness and magnitude of contaminant spills and preparation of contingency plans. It also contributes to the improved knowledge of transboundary critical issues related to hydrological extremes, contingency planning and water quality.

Replicability of the project execution will be assured through its incorporation into the Marco Program. The success experiences of the PP-Hydrologic Alert System will be replicated and applied in other areas of the La Plata Basin. Replicability of the project should be assured by including key stakeholders from Argentina, Bolivia (especially from the Bermejo – SAP Bermejo and Pilcomayo), Brazil, Paraguay, and Uruguay.

MONITORING AND EVALUATION PLAN

The Monitoring and Evaluation Plan (M&E Plan) is an integral part of Project Management and seeks to provide the means to monitor and evaluate progress and performance in all components of the Project, and achievement of its goals. The M&E Plan for the PP-Hydrologic Alert System is comprised by two components: (i) Monitoring of progress; and (ii) Evaluation of performance and achievement as in Tables 4&5.

Table 4. List of Performance and Achievement Indicators and means of verification

Indicator/ Description	Parameters measured	Baseline value	Means of Verification
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Indicator/ Description	Parameters measured	Baseline value	Means of Verification
Hydro Environmental Alert System – Floods and droughts in the confluence area of the Paraguay and Parana rivers (Argentina and Paraguay) in the axis Resistencia-Corrientes (Argentina) – Pilar (Paraguay) Binational Hydroenvironmental Alert System Community Contingency and Hydraulic Works Safety Plans Transboundary Water Alert Committee	Design of an Alert System Risk maps Environmental Assessment of extreme hydro-meteorological events Dynamic GIS Contingency plans Experts exchanges and technology transfer	N/A	Project progress and final reports Maps & GIS database Minutes and reports from the Committee’s meetings Letters and other formal endorsements to the plans

Table 5. List of Process Indicators, baseline values and means of verification

Indicator/ Description	Parameters measured	Baseline value	Means of Verification
Impact of extreme events on economic development, and standard of living	Economic losses (in USD,) number of deaths, and type of diseases and hospital records measured after extreme events	To be established by the Project [In the last three ENSO-related events the number of people affected in the Argentine area was about 150,000 in each event, with economic losses that reached US\$17.50M and affected an area of 18.50 millions of hectares (1997-1998)]	To be identified based on existing monitoring and evaluation instruments/systems available in the la Plata Basin countries

Execution chronogram

The execution chronogram of components and activities is presented in Table 7.

Table 7. Chronogram of components/activities

Component/Activity	Year 1						Year 2						Year 3					
	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Component 1																		
Sub-component A																		
Activity 1A-1																		
Activity 1A-2																		
Sub-component B																		
Activity 1B-1.																		
Activity 1B-2																		
Activity 1B-3																		
Activity 1B-4																		
Activity 1B-5																		
Sub-component C																		
Activity 1C-1																		
Activity 1C-2																		
Sub-component D																		
Activity 1D-1																		
Activity 1D-2																		
Component2																		
Sub-component A																		
Activity 2A-1																		
Activity 2A-2																		
Activity 2A-3																		
Sub-component B																		
Activity 2B.1																		
Sub-component C																		
Activity 2C.1																		
Activity 2C.2																		
Activity 2C.3																		
Sub-component D																		
Activity 2D.1																		
Activity 2D.2																		
Component 3																		
Activity 3.1																		
Activity 3.2																		
Activity 3.3																		
Activity 3.4																		

The project should be developed with national and local human resources to guarantee sustainability of the project. Consulting activities should be minimized in order to strengthen local capacities. Consulting should be for support/coordination, but with specific scopes and limited timeframes.

Strong participation of universities and specialized institutes in Paraguay and Argentina is encouraged, including graduate study scholarships, and salaries to professors/universities. Several of the modeling requirements and baseline studies can be included on Master's thesis work, and implemented locally (Resistencia and Pilar). Exchange programs between universities in Argentina and Paraguay is encouraged.

It would be interesting to evaluate the possibility of including part of the information data base from the biodiversity demonstration project, to generate benefits and synergies among projects.

An essential aspect is to include in the project the gender issue and to promote the participation of woman, as well as ethnical minorities.

In case of budget limitations, it is recommended that priority be given to the activities related to the operational forecasting and hydrological observation system (Component 1), and related contingency plans for floods and droughts (Component 4). In second place, it is recommended the modeling systems of spills and contamination (Component 2), and related contingency plans for contamination (Component 4). In third place, it is recommended the development of the Decision Support System (Component 3) or the Support Project and Studies (Component 5), depending on the interest of the executing teams.

Priority should be given to defense structures (including maintenance), and measures to extend consciousness and knowledge of the risks from extreme events.

The system will be a joint initiative from the teams of Argentina in Resistencia, and Paraguay in Pilar. However, it will incorporate existing models and information from associated institutions in Argentina, Paraguay, Brazil and Bolivia, thus, making sure that there isn't duplication of efforts.

It is important to emphasize the interrelationship with the different components of the Marco Program with the Pilot Project and the importance of the replicability of the Pilot Project to the La Plata Basin.

The Director of the PP-Hydrologic Alert System project is the Director of the Marco Program (also Secretary of the CIC). There will be 3 national coordinators designated by each country. The International Technical Coordinator of the PP-Hydrologic Alert System project will be elected following the methodology established for the Marco Program, and will coordinate the consultants. The International Technical Coordinator of the PP-Hydrologic Alert System is responsible for the execution of the PP-Hydrologic Alert System, with support from the technical coordinator of the Marco Program. The International Technical Coordinator of the PP-Hydrologic Alert System will depend technically of the international technical coordination of the Marco Program. Routine and frequent coordination meetings will be held. OAS as executing agency will perform the financial administration of the Marco Program.

List of Acronyms

ANNP: Paraguay Navigation and Ports Administration	INTA: National Institute for Agricultural Technology, Argentina
ANA: National Water Agency, Brazil	IPMET: Meteorological Research Institute, São Paulo, University-USP
ANNEL: National Water and Electric Power Agency, Brazil	IPH: Hydraulic Research Institute, UFRS, Brazil
CBRB: Binational Commission for the Development of the upper basin of Bermejo river and Grande de Tarija river	IAG: Agriculture and Kettle Ranching Institute
CdP: la Plata River Basin	IAG/USP: Astronomy and Geophysics Institute-São Pulo University
CEN: National Emergency Committee	IAI: Interamerican Global Change research Institute
CIC: Intergovernmental Coordinating Committee for the la Plata Basin countries	IPH: Hydraulic Research Institute, UFRS
CIMA: Meteorological and Atmospheric Research Centre, Argentina	MAG: Agriculture and Kettle Ranching Ministry, Paraguay
CPTEC/INPE/MMA: Weather Forecast and Climate Studies Centre, Brasilia	OMM/ WMO: World Meteorological Organization
COHIFE: Federal Water Council, Argentina	PEA: Binational Commission of the Bermejo river basin. Action Strategic Program
CONAE: National Spatial Activities Commission, Argentina	PCD: Data collection platform
CONICET: National Science and Technology Council, Argentina	PM: Marco Project
EMBRAPA: Brazilian Agricultural Research Enterprise, Brazil	PNUMA: United Nations Environmental Program
ENOS: El Niño-South Oscillation	PECHCP: Hydrological and Climatic scenarios development program in the CdP
ENSO: El Niño-South Oscillation	PRONAEC: National Climatic scenarios Program
ESSAP: Company of Sanitary Services of Paraguay	SAR: Second Assessment Report of the IPCC
FONPLATA: Fund for the Development of the la Plata Basin.	SRES: International Program for Climate Change Special Report on Emissions Scenarios
FREPLATA: Environmental Protection Project of the la Plata River and its Maritime Front.	SEAM: Environment Secretariat, Paraguay
GEF: Global Environment Facility	SENASA: National Sanitary and Quality Agro-foods Service, Argentina
GPS: Global Positioning System	SGM: Military Geographical Services, Paraguay and Uruguay
IBGE: Brazilian Institute of Geography and Statistics	SIG: Geographical Information System
IGM: Military Geographical Institute, Argentina, Bolivia	SSRH: Water Resources sub-secretary, Argentina
IMFIA: Institute of Fluid Mechanics and Environmental Engineering, Uruguay	UBA: University of Buenos Aires, Argentina
INDEC: National Institute of Statistics and Census, Argentina	UDELAR: University of the Republic, Uruguay
INA: National Water Institute, Argentina	UFPR: Federal University of Paraná, Brazil
INMET/MAPA: National Meteorological Institute, Brazil	UNA: National University of Asunción, Paraguay
INPE: National Space Research Institute, Brazil	UNEP: United Nations Environment Programme
	UNESP: State University of Sao Paulo, Brazil
	UNP: National University of Pilar
	UNSL: San Luis National University, Argentina
	UR: Republic University
	USP: University of Sao Paulo, Brazil

Priority Project

PROJECT TITLE: *FLUVIAL ECOTOURISM IN THE LOWER URUGUAY RIVER AND PARANÁ DELTA* (Argentina-Uruguay)

EXECUTING AGENCIES:

PUBLIC-PRIVATE PARTNERSHIP UNDER THE LEADERSHIP OF THE CIC IN AGREEMENT WITH CARU AND WITH THE PARTICIPATION OF THE SUB SECRETARY OF WATER RESOURCES OF ARGENTINA, THE NATIONAL OFFICE OF HYDROLOGY OF URUGUAY, THE MINISTRY OF TOURISM OF URUGUAY AND THE SECRETARY OF TOURISM OF ARGENTINA AND, THE ENVIRONMENTAL AUTHORITIES IN BOTH COUNTRIES.

DURATION: 22 MONTHS

PROJECT SUMMARY

Background

The Uruguay River is one of the three main rivers of La Plata system; rises in the hills of Southern Brazil and is over 1000 miles (1670 km) long. The river flows in an arc West, South-West, and South. At the point in which it receives from the right side the Cuareim/Quaraí River - border between Brazil and Uruguay – it becomes the border between Uruguay (left) and Argentina (right). In 1974, both countries built a hydro-electrical dam in this portion of the river, at the Salto Grande waterfalls, that generates over this place a big reservoir. At its end, the Uruguay River joins the Parana River just in front of its impressive delta and the metropolitan area of Buenos Aires, in the Argentinean side. Together, the Uruguay and the Parana rivers form the La Plata River. The metropolitan area of Buenos Aires is expanded over the Parana delta with a very important number of nautical clubs, infrastructure and equipment that shows the interesting potential to expand activities over new attractions, provided the conditions exist. In front of Buenos Aires is the city of Colonia del Sacramento, in the Uruguayan side. This is a relatively small city established in the XVII Century by the Portuguese, . and declared a World Human Heritage by UNESCO in 1995. Colonia del Sacramento is an important touristic attraction that has developed nautical infrastructure to support tourism. Based on these two points and on the possibility to develop the opportunities offered by the cultural and natural attractions using the river as a waterway, this proposed project was considered a priority, to help in the sustainable management of the natural and cultural resources linked to the rivers.

In 1961, the Governments of Argentina and Uruguay signed the Uruguay River Border Treaty, and in 1971 the Uruguay River Statute created the Administrative Commission for the Uruguay River, named CARU, a bi-national organization located at the city of Paysandú, Uruguay, to administrate the bi-national portion (Ar-Ur), of the Uruguay River.

Project rationale

This proposed project study seeks to introduce the private sector, organized in nautical clubs and ecotouristic companies and organizations, into a sustainable development initiative based on the tourism sector, under environmental rules and objectives. This will allow for a better accessibility to the natural and cultural resources existing in the lower Uruguay River and the Paraná Delta.

CIC and CARU commissions, under agreement with key national institutional partners and the private sector, will lead the preparation of this priority project, helping to develop the nautical eco and cultural tourism, using the Uruguay River as a waterway to protect the natural resources and to promote sustainable development in the Uruguay River and Paraná Delta.

The river is wide and particularly attractive, characterized for a big chain of beautiful islands, large coasts that combine stoned cliffs, sandy beaches, rich wetlands and forested lands. One of the most important natural attractions of the Uruguay River basin is the richness of species of birds that gave the name to the river. In fact, “Uruguay” in Guaraní language, means “river of the depicted birds”, reflecting the particular interest for “birds’ watchers”, an important specialized tourism activity in the world. The expected interchange between tourists and the local communities, will constitute a key educational factor on the value of this resources and their habitats. The local communities, on both sides of the river, the islands, and the Paraná Delta, living in permanent contact with the richness of birds, are not aware about the necessity of conserving and protecting these resources. The presence of the river and small lagoons in its borders, added to the coastal forests and wetlands, are key factors to maintain this biological resource.

The Uruguay River is navigable through the harbors of Concordia (Argentina) and Salto (Uruguay), just before the Salto Grande and Salto Chico waterfalls, today under the waters of the reservoir of Salto Grande dam. A number of small and big harbors as Paysandú, Fray Bentos and Nueva Palmira have been established on the Uruguayan side, as well as Concordia, Concepción del Uruguay and Colón on the Argentinean coast.

During XVII, XVIII, XIX and beginning of XX centuries, meat commerce sent to Europe, the Caribe and North America (“*charque*” –salted meat-, and frozen or processed meat), was particularly active on the Uruguay River. Numerous establishments related to meat commerce were established on its coasts. Initially, these were slaughterhouses and salting houses, who were later complemented with big industrial processing, and cold storage meat plants, after refrigerated transportation started to operate. The “Frigorífico Liebig” in Colón, Argentina or the “Frigorífico Anglo” in Fray Bentos, Uruguay, arrived with their products, known for best quality, to the European markets. They mark the river, in this key stage of the industrial development of the La Plata Basin with huge industrial plants and piers. Today, these are no longer operational, and the empty infrastructure has become a high-level tourist and cultural attraction, best accessed through the river. In some cases, the urban development generated, lost their dynamics, having languished and deteriorated on the riverside. They are appealing historical towns, with similar traditional homes, shops, and churches of particular historic styles and interest.

The Uruguay River summarizes the history of the relationship between Spain and Portugal in the region formalized in the Colonia del Sacramento old town. It was the scenario of the main pro-independence movements that gave shape to Argentina and Uruguay. Leaders and national heroes from both countries had part of their history in the surrounding of the Uruguay River. In Argentina, San Martín, a national hero, lived part of his childhood, at the ranch “Calera de las Huérfanas”, located in the Department of Colonia, Uruguay. Urquiza, leader of Entre Ríos Province and a very important figure of Argentinean federalism, had his residence in the “San José” Palace, located close to the harbor city of Concepción del Uruguay, Argentina, where he kept valuable art collections. Artigas, Uruguayan national hero, established the first capital of the independent country of Uruguay, in Purificación, a plateau over the Uruguay River. Today, at the top of the coastal plateau, it is possible to see an impressive sculpture of his head overlooking the river. Going north, the three times besieged and destroyed city of Paysandú, reminds one of the La Plata basin historical milestones: Its heroic resistance to the final siege in 1865, involved Uruguayan, Paraguayan Argentinean and Brazilian interests. The river also had been highlighted from several navy battles between French’s, English’s and Portuguese’s-Brazilians forces in the region.

In addition to the natural, cultural, and historical attractions mentioned, it is necessary to consider the values of the Delta del Paraná, the national parks and protected areas that reach the riverside in both countries. The National Park of “El Palmar”, close to Colón, in Argentina, or the “Anchorena” ranch in Colonia, Uruguay with their exotic forests and beautiful gardens are attractions of particular

interest. It is necessary to emphasize the presence of the thermal corridor of the Guaraní Aquifer, in the North and in both sides of the Uruguay River, not integrated to the river, but with potential for tourism development.

The project would not be justified in the absence of a market and a demand for these natural, cultural, and historical values.. As the demand exists, it clearly defines the potential and opportunity to join efforts between the public and private tourist sectors of both countries with the environmental institutions and organizations working to protect the natural values. These efforts will be essential in order to preserve the coastal and fluvial ecosystem, the wetlands, the islands, and the milestones of the culture and history of the La Plata basin, particularly those of the Uruguay River. Indeed, the Buenos Aires metropolitan area placed within the Delta del Parana hundred of nautical clubs and thousands of boats of different sizes. This equipment, together with the one of Carmelo and Colonia del Sacramento in front of Buenos Aires, Montevideo, and the tourist area of Punta del Este, are potentially interested to open or strengthen commercial and conservative tourist activities (natural and cultural nautical tourism). On the other side, the institutions responsible for the tourism and navigation sector of both countries, are ready to help coordinating strategic actions, improving roads, access, and mooring equipment and lodging in areas of particular interest on both riversides. Actually, the nautical tourism is mainly sport and fishing rarely going upstream of the Uruguay River, except for events as the historical “Meseta de Artigas” boat race.

An important factor to take into account is the traditionally good relations between Uruguay and Argentina to work together. In this case, they will develop a coordinated and positive understanding to work toward sustainable development, with a public-private partnership that will benefit both countries and the local communities. The natural resources and the beautiful landscape on the Uruguay River, together with the islands, birds and wetlands, are great values of the La Plata basin, with global importance, that needs to be protected.

Project Objectives

The aim of this activity is to prepare a specific project as a public-private partnership to promote the nautical tourism in the lower Uruguay River and the Delta del Paraná area, as an important opportunity to protect and promote the sustainable use of the natural and cultural resources of the Uruguay River in Argentina and Uruguay

Based in the project, the natural resources and the ecosystems present at the Uruguay River and the Paraná delta and the cultural and historical values of the area will be strengthen and protected under the interests of this partnership and bi-national coordination. The project will also support the public participation process, and reinforce the good relations between the communities involved in both riversides, who share a similar history, as well as commercial and family links.

Expected Project Outcomes.

1. Three levels of agreements to prepare and to execute the project study.
 - Agreement signed between CIC, CARU, Subsecretaría de Recursos Hídricos de Argentina, Dirección Nacional de Hidrografía de Uruguay and environmental and tourism institutions of both countries.
 - An important number of Letters of Understanding with the private organizations interested in participating in the preparation of the Project and the future execution, defining how they will participate.
 - The official establishment of a working group in the framework of the FSAP.
2. A public-private partnership established and formalized in a Project Document as a priority project for the Plata Basin, including:
 - Specific studies on the natural and cultural resources accessible from the Uruguay River, defining the main routes to promote nautical eco and cultural tourism, with the Uruguay River as a waterway, identifying the particular natural and cultural characteristics, the potential uses and related legal and natural restrictions for tourism use.

- Selected areas of natural and cultural values to be sustainably managed, and terms of reference to develop the corresponding Management Plan in order to assure sustainable tourism use in each area.
- Study of the existing infrastructure and equipment, needs assessment and estimated costs to develop new investments in this area.
- A Demand study with identification and quantification of the nautical eco and cultural tourism potential in Argentina and Uruguay, including bird watching by tourists from North America and Europe.
- The institutional and organizational arrangements for the execution of the Project and the partnership.
- An economical and financial feasibility study for the sustainable development of this priority project, including financial mechanism to develop and to sustain it.
- The base line for the Priority Project defined and a Monitoring and Evaluation component with proposed indicators to ascertain the benefits derived of the execution of the priority project.

Activities and financial inputs needed to enable changes

Activity 1. Study of the ecotourism and cultural offer. Data collection and assessment of: i) the natural and cultural resources accessible by the Uruguay River and the Paraná Delta, identifying the legal status of the tourist attractions and the related areas to be included as part of tourist routes; ii) the existing services and the logistical needs to facilitate the access and lodging in the areas; the existing routes and organizations working in related activities. This activity will be developed based on the existing studies done by the CARU Bi-national Commission and on direct research trips, with the support of a consultant who will travel to recognize the resources, attractions and services and will prepare a complete report, with support materials, to show the natural and cultural tourist offer. This study will identify the legal status of the main attractions and the existing facilities to develop local activities and the interest of the local communities to promote and develop tourism based in these resources, with the identification of need for capacity building and adequate development of the areas affected. In addition, an analysis of the sustainable capacity of the resources will be conducted so as to establish the natural resilience to tourism activities and possible environmental impacts, proposing draft terms of reference to develop Management Plans needed to protect the biological, natural, and landscaping values. This activity will guide the Technical Unit of the FSAP in the identification of key partners in the private sector for possible involvement in Project activities, with the inclusion of a broad spectrum of companies, nautical clubs and tourism companies in both countries and upstream the Uruguay River, including the Paraná delta and Colonia del Sacramento areas.

Output. Final report and support materials, including the proposal for the development of the ecotourism and cultural offer, the identification of the legal status, and an assessment of the interest of local communities in the development of this activity. The activity will also result in a number of terms of reference to develop specific management plans for the sustainable use of each of the areas of natural or cultural interest identified and included as part of the proposal..

Activity 2. Study of the nautical tourism offer. This activity, to be developed in close coordination with the private sector of both countries, will seek to establish and describe the available infrastructure and equipment for nautical activities in the lower Uruguay River, the Paraná Delta and the area of influence. The study will cover the groups of interest and include a specific research on the main driving forces and restrictions that can orient the proposed development.

Output. Report describing the location and quantification of the infrastructure and equipment for nautical activities and related services in the region, and the interest and behavior of the different segments of this sector.

Activity 3. Study of the potential tourism demand. The study will be developed by two consultants (one for each country), in close relation with the private sector and the tourism authorities of both countries. The objective is to define the characteristics of the different groups of interest and to quantify the possible tourism-related travels from both sides of the Uruguay river. A particular

international study will be developed to ascertain the possibility of linking the proposed nautical tourism with the international travels of birdwatching tourists, seeking to develop this kind of tourism in the area.

Output. A complete report of the potential demand for the nautical ecotourism with the identification of different segments of interest.

The final reports of the Activities 1, 2 and 3 will be used to develop the base line for this Priority Project.

Activity 4. Development of proposals for nautical routes and circuits for eco and cultural tourism.

This activity will be developed in close coordination with the national institutions responsible for navigation in the Uruguay River and the Paraná Delta, and the participation of the private sector. The activity will analyze the characteristics of the river and alternative navigation routes to access the resources identified. A proposal for alternative routes to access the eco and cultural resources will be developed, identifying the main restrictions and considerations to take care of, and including costs of the different nautical routes. This activity will be complemented with the identification of key private companies or organizations with which to establish memorandums of understanding (MOU) for partnerships.

Output. Report, including nautical maps for the proposed routes and circuits for the development of eco and cultural tourism, and a list of key possible private partners to negotiate MOU.

Activity 5. Study of required investments. This activity will be the result of the proposed developments and will be conducted in close consultation with the private sector involved in the projects and the local communities. The different specific pre-designs and the identification of investments needed and the financial arrangements with the private sector will be the main results of this activity.

Output. An investment plan and financial arrangements, with a description of the different steps to be developed.

Activity 6. Arrangements for the Execution and the Replication of the Project. This activity will be conducted by the Technical Coordinator of the FSAP with the help of: i) an assistant lawyer, to develop the partnership with the different key actors involved and the private sector, and to propose the needed activities to be carried out to resolve legal aspects related to the proposed development and prepare and finalize the different agreements needed; ii) a social assistant to organize the local communities, to help the process of public participation and community involvement; iii) a publicist or communication expert, to design an advertising campaign and dissemination tools, and iv) a project economist, specialized in environmental projects, to integrate and evaluate in economic, financial and environmental terms the base line of this project and the proposal, and include economic mechanisms to assure the capacity to transfer funds for the protection of the natural resources and ecosystems involved. This specialist will also be responsible for preparing the M&E Plan for the execution of this Priority Project.

In addition, the project will prepare a publication describing the activities, arrangements, and benefits of the project, so as to promote and disseminate the activity internationally. The project will include a budget for the promotion of the project in international markets and conventions.

Outputs. Three kinds of agreements signed to assure the public-private partnership. Different local organizations to be strengthened, based on the identification and analysis of communication and technical capacity building needs. The project document proposal structured and evaluated in economic, financial and environmental terms, including economic mechanisms to protect the natural resources involved. A dissemination plan to promote the activity. A publication prepared and disseminated describing the activities, arrangements, and benefits of the project, to be used to highlight the project in international meetings.

4. RISK AND SUSTAINABILITY

The sustainability of this proposed priority project is related to its own characteristic as a public – private partnership to start a process for sustainable development. The tourism activity, as commercial one, relates with the private sector interests, but in this case, the private sector will collaborate to develop an activity to finance the protection of the natural and cultural values that are of global interest. As the proposal is related to the preparation of a study to help determine the feasibility of the activity, the sustainability is linked to the results of the economic, financial and environmental evaluation, with the benefits derived from the local capacity to protect the natural resources, ecosystems, and cultural values of this region. If the studies demonstrate the feasibility of the project, once the project is finished, a basic infrastructure and local and bi-national arrangement will be established to allow the continuation of the activities into the future by the private sector.

The main risk of this project will be the difficulties to arrive to concrete agreements to establish a solid public-private partnership, and to assure the necessary demand that will make the activity economic and financially feasible..

This proposal was identified by the FSAP preparation during Block B phase, and conceived by the national institutions involved in the project, with particular interest of the Ministries of Environment and Tourism of Uruguay. The proposal was approved at the Project Steering Committee and considered a priority project at the CIC meeting.

. The project will make use of the water resources in a sustainable way and as a natural service, helping to protect the environmental values of the ecosystems, the landscape and the heritage of the lower Uruguay River and the Paraná Delta areas. To assure the start and the preparation of the activity, there is a basic incremental financial need to build the partnership with the private sector and to subsidize the risk investment involved.

5. REPLICABILITY

This study and the proposed project to be developed will look for opportunities to combine the existing nautical equipment, infrastructure and services, with the sustainable use of the existing natural and cultural resources of the lower Uruguay River and the Paraná Delta. It is based on the synergy to be created by linking the public and private sectors in the development of a particular type of tourism activity.

Also, as a public-private partnership, this activity will represent a good case of study for future working agreements at the CIC and CARU Commissions in the Plata Basin, and as model to be replicated in other parts of the world.

The project under this planning phase will prepare a small publication showing the existing base line for this activity, and the arrangements and benefits of the project. This will enable its promotion and dissemination in international markets, and help establish a starting point for the evaluation. For this purpose, a specific budget has been included to assure the capacity to promote the project between the private sector and in the international markets and conventions (see Activity 6).

6. STAKEHOLDER INVOLVEMENT

As a public-private initiative, the project will rely on the establishment of agreements with key stakeholders. Also, , and given the involvement and interest of local communities in the project benefits, they will be organized and trained to develop local activities in support of tourism.. Local communities will be involved as guide personnel for ecotourism; will develop needed local services, and help transmit local knowledge and cultural heritage to the visitors. In some cases, the municipalities will be involved as partners.

B. MONITORING AND EVALUATION PLAN

Monitoring & Evaluation Plan (M&E Plan)

The public-private agreements will define the ways in which the private sector and the different institutions involved in the project execution will follow the project activities, and how key indicators can be used to control the process in a positive and constructive way. The base line of this project will be established during the project study and proposal, and will define the indicators to measure the benefits and the progress of projects activities. The preparation of this priority project will take two years. The preparation of the study for the project will be analyzed during the mid term evaluation to the FSAP. If the project demonstrates economic, financial, and environmental feasibility, the initiative will be developed and implemented with institutional support from CIC. The M&E plan will be prepared by the environmental economist to be hired for Activity 6. The estimated time to prepare it is one (1) month, using the base line information received by the technical reports of the consultants working in Activities 1, 2 and 3. The estimated GEF cost for the total preparation of the M&E plan is US\$ 4.500 and the cost for the counterpart is estimated in US\$ 3.000.

The monitoring and evaluation plan for the study will use process indicators to follow the six activities in which the study is organized. These indicators are:

1. Agreements signed between:
 - CIC, CARU, Subsecretaría de Recursos Hídricos de Argentina, Dirección Nacional de Hidrografía de Uruguay and environmental and tourism institutions of both countries.
 - Number of Letters of Understanding with the private organizations interested to participate in the preparation of the project and its future execution.
2. A Working Group of the public-private partnership established within the framework of the CIC.
3. Study completed of the nautical eco and cultural tourism offer, including an assessment of the need to protect the natural and cultural resources.
4. Study completed of the potential tourism demand.
5. Proposals for nautical routes and circuits for eco and cultural tourism with maps produced.
6. Investments needed identified and quantified , including financial proposals and arrangements.
7. Project document finalized, including the arrangements for the execution and the replication of the Project.

7. FINANCING PLAN

The preparation of this priority project will be part of the FSAP execution; GEF resources will be used to finance incremental costs for consultants, research travels and meetings, and operative cost for the work to be completed. The private sector is considered as a partner bringing its times and operative costs to help prepare the project. These private partners will be involved at the onset of the project preparation, and the agreements to be signed will include their co-financing support. The national institutions involved will participate and collaborate with personal time of the authorities and technical personnel, and with logistic and operative costs. The total cost of the priority project preparation, as shown in the following Table, amounts to US\$ 355.000. From this amount, US\$ 180.000 represents the GEF contribution, and US\$ 155.000 co-financing resources from the private sector and the national institutions.

TABLE
Cost of the Priority Project Preparation and Financial Arrangements

ACTIVITY	NEEDS	GEF SUPPORT	CO-FINANC.
1(*)	1 consultant to study the natural and cultural offer 6m@3.000 Films and pictures Travel costs by the Uruguay River and Parana Delta	18.000 3.000 5.000	15.000priv 2.000public
		26.000	17.000
2(*)	2 consultants for the study of nautical infr. and equip.in both countries <u>2x2m@3.000</u> Travel costs to nautical clubs and harbors.	12.000 3.000	25.000priv 3.500public
		15.000	28.500
3(*)	2 consultants for the eco and cultural tourism demand study 2x <u>2@3.000</u> (1m for Ur and 3 m in Ar) 1 internac. specialist in birds tourism 1m@ 4.000 Travel costs	12.000 4.000 6.000	3.000priv 3.500public
		22.000	6.500
4	1 specialist in navigation of the Uruguay River and Parana Delta routes 3m@3000 Maps and printed materials Travel costs	9.000 2.000 2.000	5.000priv 5.000public
		13.000	10.000
5	1 consultant f/identification of infrastructure and equipment needed <u>4m@3.000</u> Pre-designs of ing. and architecture	12.000 25.000	60.000priv 3.000public
		37.000	63.000
6(*)	1 lawyer consultant <u>3m@3.000</u> 1 social consultant 3m@3.000 1 publicist or communicator <u>1m@3.000</u> 1 project env. economist <u>6m@3.000</u> Travel costs Operating costs 6 Meetings Partnership Working Group Publications and communication	9.000 9.000 3.000 18.000 5.000 1.000 12.000 10.000	20.000priv. 10.000public
		67.000	30.000
Total US\$	US\$ 335.000	180.000	155.000

(*) Include costs to prepare the M&E plan for an estimated GEF total amount of US\$ 4500, included in Activities 1, 2, 3 and 6, and an estimated of US\$ 155.000 from the counterparts.

ANNEX 9

RECONCILIATION BETWEEN GEF ACTIVITY BASED BUDGET AND UNEP BUDGET BY EXPENDITURE CODE (GEF FINANCE ONLY)

Project No:

Project Name: Plata FP - SAP formulation

Executing Agency: GS/OAS

Source of funding (noting whether cash or in-kind):

GEF

(Preliminary budget breakdown subject to refinement
on an activity per activity basis during appraisal phase)

UNEP BUDGET LINE/OBJECT OF EXPENDITURE		ALLOCATION BY CALENDAR YEAR **					Total US\$
		Year 1 US\$	Year 2 US\$	Year 3 US\$	Year 4 US\$	Year 5 US\$	
10	PROJECT PERSONNEL COMPONENT						
1100	Project Personnel w/m (Show title/grade)						
1101	Int'l Technical Coordinator @USD 5,250/yr	63,000	63,000	63,000	63,000	63,000	315,000
1102	Ass't Int'l Tech. Coordinator @USD 4,250/yr	51,000	51,000	51,000	51,000	51,000	255,000
1103	Bilingual Admin Ass't @USD 2,100/yr	25,200	25,200	25,200	25,200	25,200	126,000
1199	Sub-Total	139,200	139,200	139,200	139,200	139,200	696,000
1200	Consultants @ USD 5000/m (Give description of activity/service)						
1201	Institutional Strengthening and CapBldg	60,000	90,000	75,000	45,000	30,000	300,000
1202	Harmonization legal framework	15,000	15,000		5,000		35,000
1203	Decision support system	75,000	75,000	60,000	45,000	45,000	300,000
1204	Communication and Promotion of PF	15,000	15,000	15,000	15,000		60,000
1205	Environmental Educator		90,000	45,000	45,000		180,000
1206	PPP Fund			15,000			15,000
1207	Water Quality Monitoring and Asst	90,000	75,000	60,000	45,000	30,000	300,000
1208	Groundwater (SAYTT)	90,000	75,000	60,000	45,000	30,000	300,000
1209	Water balance	90,000	30,000				120,000
1210	Biodiversity management-protected area (Agua Boa, Selva Misionera & Parana sub projects)	60,000	90,000	90,000	60,000	30,000	330,000
1211	SLM		90,000	30,000			120,000
1212	Sustainable devpt opportunities		60,000	60,000			120,000
1213	Ecotourism - river morphology		60,000	60,000			120,000
1214	Alert system	20,000					20,000
1215	IWRM - Competing Uses	15,000					15,000
1216	Mining contamination	15,000					15,000
1217	Planning -TDA-SAP		60,000	70,000	60,000	60,000	250,000
1218	Climate forecasting system	30,000	30,000		15,000		75,000
1219	Climate modeling		50,000	50,000	45,000		145,000
1220	Vulnerability assessment	30,000	45,000	40,000	30,000		145,000
1221	Definition of SR, ES and P indicators and baseline	15,000			15,000		30,000
1299	Sub-Total	605,000	950,000	730,000	470,000	225,000	2,995,000
1600	Travel on official business (above staff)						
1601	Travel Technical Unit	20,000	20,000	20,000	20,000	19,000	99,000
1699	Sub-Total	20,000	20,000	20,000	20,000	19,000	99,000

* Provide description of component/activity

** Insert actual year and add additional years as required

UNEP BUDGET LINE/OBJECT OF EXPENDITURE	ALLOCATION BY CALENDAR YEAR **					Total
	Year 1	Year 2	Year 3	Year 4	Year 5	
	US\$	US\$	US\$	US\$	US\$	US\$
1999 Component Total	764,200	1,109,200	889,200	629,200	383,200	3,790,000

* Provide description of component/activity

** Insert actual year and add additional years as required

UNEP BUDGET LINE/OBJECT OF EXPENDITURE		ALLOCATION BY CALENDAR YEAR **					Total US\$
		Year 1 US\$	Year 2 US\$	Year 3 US\$	Year 4 US\$	Year 5 US\$	
20	SUB-CONTRACT COMPONENT						
2200	Sub-contracts (MoU's/LA's for non-profit supporting organizations)						
2201	Institutional strengthening	150,000	180,500	180,000	180,000	139,000	829,500
2202	Decision support system	100,000	100,000	100,000	19,000	15,000	334,000
2203	Communication and Promotion of PF	28,000	28,000	28,000	28,000	28,000	140,000
2204	Environmental Educator		28,000	28,000	14,000		70,000
2205	PP Fund		90,000	48,000	47,000		185,000
2206	IWRM Water Quality	236,600	218,300	218,300	218,300	200,000	1,091,500
2207	IWRM Groundwater SAYTT	190,000	160,000	160,000	160,000	130,000	800,000
2208	IWRM Water Balance	30,000	82,000	82,000	56,000	30,000	280,000
2209	IWRM Biodiversity Management	134,000	134,000	134,000	84,000	84,000	570,000
2210	IWRM SLM		99,000	85,000	75,000	71,000	330,000
2211	IWRM development opportunities		35,000	35,000	35,000	25,000	130,000
2212	Demo project -Parana	20,000	35,000	35,000	35,000	5,000	130,000
2213	Demo project - Alert system	20,000	85,000	75,000	35,000	15,000	230,000
2214	Demo project - Use conflict - Quareim	25,000	85,000	75,000	35,000	15,000	235,000
2215	Demo project - Pilcomayo	30,000	85,000	75,000	35,000	10,000	235,000
2216	TDA-SAP	109,000	139,000	159,000	149,000	139,000	695,000
2217	Climate forecasting system	45,000	50,000	50,000	45,000	35,000	225,000
2218	Climate modeling	30,000	37,000	35,000	35,000	18,000	155,000
2219	Vulnerability assessment and map	30,000	37,000	35,000	35,000	18,000	155,000
2299	Sub-Total	1,177,600	1,707,800	1,637,300	1,320,300	977,000	6,820,000
2999	Component Total	1,177,600	1,707,800	1,637,300	1,320,300	977,000	6,820,000
30	TRAINING COMPONENT						0
3200	Technical Workshops						0
3201	Legal framework validation				25,000		25,000
3202	TDA validation Workshop			50,000			50,000
3203	SAP Validation Workshop					45,000	45,000
3204	GEF IW Conference participation		2,500		2,500		5,000
3299	Sub-Total	0	0	50,000	25,000	45,000	125,000
3999	Component Total	0	0	50,000	25,000	45,000	125,000
50	MISCELLANEOUS COMPONENT						

* Provide description of component/activity

** Insert actual year and add additional years as required

UNEP BUDGET LINE/OBJECT OF EXPENDITURE	ALLOCATION BY CALENDAR YEAR **					
	Year 1 US\$	Year 2 US\$	Year 3 US\$	Year 4 US\$	Year 5 US\$	Total US\$
5300 Sundry (communications, postage, freight, clearance charges, etc)						
5301 Communication cost Technical Uni	10,000	10,000	10,000	10,000	9,750	49,750
5302						0
5303						0
5399 Sub-Total	10,000	10,000	10,000	10,000	9,750	49,750
5500 Evaluation (consultants fees/travel/ DSA, admin support, etc. internal projects)						
5501 MTE			25,000			25,000
5502 FE					45,000	45,000
5503						0
5599 Sub-Total	0	0	25,000	0	45,000	70,000
5999 Component Total	10,000	10,000	35,000	10,000	54,750	119,750
TOTAL COSTS	1,951,800	2,827,000	2,611,500	1,984,500	1,459,950	10,854,750

* Provide description of component/activity

** Insert actual year and add additional years as required