

**GLOBAL ENVIRONMENT FACILITY
PROPOSAL FOR PROJECT DEVELOPMENT FUNDS (PDF)
BLOCK B GRANT**

Countries:	Argentina, Brazil, Paraguay and Uruguay
GEF Focal Area:	International Waters (OP #8 - Waterbody-Based Operational Program)
Project Title:	Environmental Protection and Sustainable Integrated Management of the Guarani Aquifer
Requesting Agency:	World Bank
Executing Agency (PDF):	Organization of American States (OAS)
Country Implementing Agencies:	Governments and universities in the four countries
Total Project Cost:	US\$ 15.0 – 25.0 million
Financing Plan:	US\$ 10.0 - 14.0 million (GEF) US\$ 5.0 - 11.0 million (Governments of Argentina, Brazil, Paraguay and Uruguay; Brazilian states)
Project Duration:	4 years
Preparation Costs:	US\$741,000
PDF Block B Funds Requested:	US\$350,000
Block A Grant Awarded:	No

1. Project Objectives

The main objective of the proposed project would be to support Argentina, Brazil, Paraguay and Uruguay in jointly elaborating and implementing a common institutional framework for managing and preserving the Guarani Aquifer for current and future generations. The project would be of a preventive nature and would include interventions regarding (1) expansion and consolidation of the current knowledge base, (2) joint development and implementation of a Guarani Aquifer Management Framework, (3) public participation through an appropriate information and institutional framework, (4) monitoring and evaluation, and (5) implementation of measures to deal with non-point source pollution.

The project would deal with the water resources and environmental issues in an integrated manner, targeting pollution as well as over-exploitation of the Guarani Aquifer. Given the susceptibility of groundwater resources to pollution and the high costs and quasi irreversibility of polluted groundwater sources, as well as the effects of localized over-exploitation, a management mechanism that would prevent these undesirable impacts would have high payoffs.

2. Background and Strategic Issues: Groundwater, the Guarani Aquifer and Environmental Concerns

The importance of groundwater, especially of large, deep aquifers stems mainly from the fact, that they constitute a strategic reserve for water supply. Another advantage of groundwater is that it generally does not need to be treated for consumption. Natural biogeochemical filtering processes of the subsoil achieve a quality far beyond what could be obtained, in technical or economic terms, by the usual treatment methods of water withdrawn from rivers, lakes and dams. Groundwater is frequently the most viable water supply alternative, especially where surface waters are increasingly more polluted by the dumping of untreated domestic and industrial effluents, by improperly disposed solid waste, and runoff contaminated by chemical inputs used in agriculture. Consequently, sustainable use, safe development and recharge, diligent conservation and consistent protection of aquifers against pollution should be important concerns of humanity.

The Guarani Aquifer, named in honor of the Guarani Indian Nation, is one of the largest groundwater reservoirs in the world. It is located under the sub-surface of the four MERCOSUR countries Argentina, Brazil, Paraguay and Uruguay. Until the relatively recent discovery of the Guarani as one interconnected system the aquifer was also known by the names of Botucatu in Brazil, Tacuarembó in Uruguay and Argentina, and Misiones in Paraguay.

The Guarani Aquifer extends from the center-west region of Brazil, passing through Paraguay and regions in southeastern and southern Brazil, reaching northeastern Argentina and central-western Uruguay, with a total surface area of approximately 1.2 million square kilometers (839,800 km² in Brazil, 225,500 km² in Argentina, 71,700 km² in Paraguay and 45,000 km² in Uruguay). Its extension in Brazil alone, equivalent to 2/3 of the total area and extending through eight Brazilian states, is equal to the areas of England, France and Spain combined.

15 million people live in the aquifer's area of surface influence. The volume of freshwater reserves stored today is estimated at around 40,000 km³ that is equivalent, for example, to the totality of water of the Paraná River with a module of 10,000 m³/sec for 19 years. Sustainable extraction is estimated to be able to meet the water demands of a population of 360 million people, based on a per capita use of 300 l/hab/day.

Only 10% of the reserves is estimated to be able to meet the water demands of a population of 360 million people based on a per capita use of 300 litres per day for 105 years.

The aquifer's thickness is an average 250 meters and reaches up to 1,000 meters. Its depth varies from almost zero in Brazil to more than 1,000 m in Argentina. The aquifer carries potable water in most of the basin (around 90%). Locally (less than 10%), alterations in potability may occur, due basically to an increase in salinity and fluor

content. Current usage, from deep wells, allows a per unit extraction of up to 1,000,000 l/hour.

An important characteristic of the Guarani aquifer's waters is its thermal quality. In a number of regions, the water emerges naturally, with temperatures varying between 33 and 45 degrees Celsius and with a production of around 100,000 l/hour. At present, this water is principally used for thermal tourism, but could also be exploited as an alternative energy source, substituting non-renewable energy in the project area.

Despite large surface water reserves, the drinking water supply in this heavily populated region of the MERCOSUR is increasingly dependent on groundwater. Thus, future problems may occur if exploration does not take place in a sustainable manner or if waters are polluted. In the state of São Paulo in Brazil, estimates are that 60.5% of urban centers are served totally or partially by groundwater sources supplying a population of 5.5 million people. Forecasts for the immediate future are for a growing demand for groundwater, both due to demographic growth and economic expansion and the consequent pollution of surface waters.

In the MERCOSUR countries in general, the current situation is characterized by a short-term view of the use of groundwater resources, coupled with a lack of control and of legal and regulatory mechanisms. Both in Argentina and Brazil, for instance, significant pollution of shallow groundwater resources is occurring. Due to its significant average depth, the Guarani Aquifer still holds a privileged position in this situation. However, also the Guarani, especially in its shallow areas, is being used in an alarming manner with negative impacts on quality.

The Guarani Aquifer thus is a strategic water resource in the MERCOSUR region, which can still be preserved if adequately protected and managed. The main threat to the resource stems from uncontrolled pollution in its extraction and recharge areas. Given that groundwater pollution is reversible only at very high costs, if at all, the merit of protecting the Guarani Aquifer today for current and future generations is clear.

3. Technical Knowledge and Legal-Institutional Issues

The following table summarizes the importance of and current knowledge about the Guarani in the four countries.

Table 1: Current Knowledge and Importance of the Guarani Aquifer in Argentina, Brazil, Uruguay, and Paraguay

	Argentina	Brazil	Paraguay	Uruguay
Approximate extension of the Guarani Aquifer (km²)	225,500	839,800	71,700	45,000
Surface of territory occupied by the aquifer (%)	5.9	9.8	17.6	25.3
Characteristics	Supply source	Recharge and supply area	Recharge and supply area	Recharge and supply area
Extent of exploitation	6 deep wells for thermal use; about 100 wells for drinking and irrigation	Between 300 to 500 cities partially or entirely supplied by the Guarani Aquifer	About 200 wells	347 wells for public supply (250), irrigation (90), and thermal tourism (7)
Main environmental issue	1. Potentially uncontrolled drilling and extraction 2. Subject to pollution effects from other countries	1. Point and non-point source pollution 2. Uncontrolled drilling and extraction	1. Point and non-point source pollution 2. Uncontrolled drilling and extraction 3. Subject to pollution impact from other countries	1. Point and non-point source pollution 2. Uncontrolled drilling and extraction 3. Subject to pollution impact from other countries
Level of information	Limited information available	Considerable information available but dispersed in different states and institutions	Limited structured information available	Considerable information available

The table illustrates that actions in one country have effects on the others, i.e. uncontrolled drilling and extraction in one country, combined with pollution, will not affect only that country but also others. Therefore each country needs to jointly participate in the management of the resource to preserve its share for the future.

The general issue affecting all countries is, as previously mentioned, the current lack of a management mechanism controlling drilling, extraction and pollution. Regarding long-term investment activities, such as non-point source pollution control in recharge areas, any firm recommendations in this regard would be an outcome of both project preparation and implementation activities.

In the same way as technical information, the diverse legal and institutional planning on water in the four countries is also very uneven. Brazil is the only country that has legislation foreseeing the sustainable use of water resources, including groundwater. However, the legal basis is still relatively fragile and needs to be further developed. Uruguay is operating through its 1979 Water Code which does not foresee an economic value for water. Argentina's Constitution states that provinces have ownership over all natural resources in their territories. The main feature of the Argentine institutional framework is the distribution of responsibilities and decision-making at different levels. Regarding Paraguay, the situation is similar, although some attempts are being made by the Ministry of Planning (STP) to improve the coordination and regulatory framework for water resources management.

4. Linkages of the Project to On-going Activities (Baseline)

4.1 World Bank financed

The proposed Project is consistent with the Bank strategies in the affected countries. This is principally the case in Brazil and more recently in Argentina where strategies and diagnostics regarding the Bank's involvement in the water resources sector exist. These documents recognize the importance of environmental protection as well as the need to regard water as an economic resource which has an opportunity cost and which should not be wasted, be it through pollution or inefficient use.

In Uruguay, the Bank is involved in a series of water resources management related issues through the activities financed by the Irrigation and Natural Resources Project (Loan 3697-UR). Regarding Paraguay, the country is engaged in a natural resources management project which also involves water resources management issues. In addition, the Bank has been involved for more than 20 years in the financing of rural water supply projects. However, few hydrogeological studies have been undertaken to investigate the impact of these projects and to our knowledge no formal water resources management strategy has been developed by the Paraguayan authorities. In this sense the proposed project would make an important contribution to on-going activities in Paraguay, by providing more background data and laying the basis for further environmental work.

The proposed project would complement other on-going activities in the four countries. In the case of Brazil, World Bank-financed land management projects related to microcatchments are under implementation in Paraná, Santa Catarina and Rio Grande do Sul. In addition the PROAGUA II project is currently under preparation, which has as its aim to improve water resources management, including groundwater, in the southern

Brazilian states. The project will include support to implementation of sustainable water resources policies as well as needed infrastructure investments.

4.2 Other financing

In the state of São Paulo, where the aquifer is already experiencing significant exploitation, extensive zoning work conducted in the Mogi Guaçu, Pardo and Médio Grande watersheds identified the protection of the aquifer as one of the main objectives of watershed and natural resources management in those regions. A proposal has been developed to protect the recharge areas of the aquifer (ecological zoning) in these basins. The proposal was developed around the existing State Groundwater Law. (São Paulo Groundwater Legislation may actually come to serve as a supporting pillar for the development of an operational agreement for aquifer management and use among the four countries.)

In addition, a workshop was held in São Paulo during the first week of December/99 to discuss the use and protection of the aquifer in the State. The workshop received support from a German Technical Assistance agreement and representatives of all four countries met in São Paulo. There are indications that similar activities are under consideration in other Brazilian states, as well as a proposed new initiative to obtain funding to support research on the Guarani aquifer in Paraguay. Further information on these initiatives would be obtained during project preparation, particularly aimed at identifying potential areas of collaboration and financing.

4.3 Other GEF Projects

The GEF is financing a number of projects in the Guarani area, which however principally deal with surface water resources. Among those are the Rio Bermejo and the Pantanal water resources management projects, both of which are executed by UNEP/OAS. A new UNDP/GEF initiative is at the early stages of identification for the Uruguay River Basin, which would place special emphasis on the protection of key habitats in the river and its major tributaries as corridors for the protection of biological diversity of regional and global importance. This project would be envisaged as a component of a wider GEF Strategic Approach for the Plata Basin. While the former projects have no direct linkages with the proposed Guarani project, the GEF activities relating to the Plata Basin project focus on roughly the same geographic area. Project activities would take ongoing activities in the Plata basin into account to achieve synergies where appropriate. From a managerial and hydrological point of view, however, the Guarani is a distinct system and needs to be treated as such to achieve the project objectives.

5. Global Significance

The Guarani Aquifer is a clear example of an international (*transfronterizo*) water body threatened by environmental degradation through pollution as defined and included in the GEF Operational Program Number 8.

In the absence of a strategic intervention supported by the GEF, the likelihood is that business-as-usual would prevail in the four countries. At the aquifer's current use rate, and considering the growing use of groundwater for human consumption, it is easy to foresee the increasing threat of pollution in the not too distant future. The uncontrolled use of the aquifer, without rules or regulation, can change it from its current status as a strategic reserve of drinking water for the population in the Southern Cone, into a focus of generalized degradation and conflicts of use among countries. If nothing is done, the future scenario of this underground treasure will be the same as that faced by more shallow aquifers, which tend to become both polluted and over-exploited.

The global benefit of the proposed project is thus the preservation of this transboundary resource for current and future generations. In the specific case of the Guarani Aquifer, there is the opportunity to exploit the advantages of preventive activity. The project would ensure that in the face of increasing scarcity and pollution of surface water sources in the beneficiary countries, this resource will be available as a strategic reserve when needed.

An important issue to additionally be considered is the fact that an international legal framework for the management of transboundary groundwater resources currently does not exist. Neither does the World Bank, for example, have a specific policy on this type of water resource. This issue is now being addressed in the evaluation of the Bank's Water Resources Policy Paper of 1993. It is generally recognized that transboundary groundwater issues need to be addressed as projects are often proposed and implemented in areas where a situation of scarcity and competition already exists (e.g. North Africa and Middle East). In the case of the Guarani aquifer, the Bank/GEF could make a contribution by helping to shape an institutional framework regarding transboundary groundwater which could serve as a replicable model to other countries and regions. In addition, the experience derived from this project could contribute to GEF and Bank thinking with regard to transboundary groundwater issues.

6. Project Description

The proposed project would support Argentina, Brazil, Paraguay and Uruguay in jointly elaborating and implementing a common institutional framework for managing and preserving the Guarani Aquifer for current and future generations. The project would be of a preventive nature and would include interventions regarding (a) expansion and consolidation of the current knowledge base, (b) joint development and implementation of a Guarani Aquifer Management Framework, (c) public participation through an appropriate information and institutional framework, (d) implementation of measures to deal with non-point source pollution, and (e) monitoring and evaluation.

Project components and their related activities would be:

a. *Expansion and Consolidation of Knowledge Base*

- Promote an equalization of technical-scientific knowledge about the aquifer, by consolidating and sharing existing data;
- Expand technical-scientific knowledge about the aquifer through collection of further strategic data to define its physical limits, recharge and discharge sites and their mechanisms, types and quantity of pollution, transmissivity of the aquifer, etc. This may imply drilling of some more, strategically located, wells as well as geophysical studies;
- Evaluate uses and technologies for use of groundwater, in order to determine the region's future demands in relation to water resources;
- Create a multilateral information system to recover all available data and organize it to be shared among the four countries. This activity could include the following sub-activities:
 - Initial workshop on raising awareness and updating knowledge;
 - Determination of parameters to be measured;
 - Survey of all existing data;
 - International standardization of means of obtaining data;
 - In a first step, implementation of a data sharing network as well as a cadastre of institutions of importance to the management of the aquifer;
 - In a second step, definition of most appropriate software or contracting of specific (tailored) software for a comprehensive homogenous information system, including GIS, compatible with the software of the monitoring network;
 - Set-up of the information system and monitoring network for the aquifer, which should consider all existing information on the aquifer and define what information is missing (surface and limits, temperatures, depths, geological data, available physical, chemical and bacteriological tests, movements and flows, definition of recharge zones, confining layers, volumes of contribution and withdrawals, existing wells, current availability of water, outflow, emergence, flow networks, contamination, pressures, saline intrusion, etc.);
 - Creation of a monitoring network to monitor the evolution of the physical, chemical and bacteriological features of the aquifer in order to ensure its future use. The activities foreseen are, among others: Workshop on awareness and skills updating; Determination of parameters to be constantly measured; determination of the frequency of measuring each parameter; Definition and standardization of means of data collection; Definition and contracting of the most adequate software to manage the monitoring network; Beginning (start-up) of monitoring network's operation.
 - Development of geo-hydrological models;

- Evaluation and projection of the region's future demands for water, considering all possible uses, in order to determine which volumes are sustainable and possible to use;
- Evaluation and comparison of groundwater extraction technologies and the production of drinking and non-drinking water of surface origin;
- Technical training of staff in the respective institutions for adequate maintenance of the information system.

b. *Joint Development of a Guarani Aquifer Management Framework*

- Creation of a legal framework for Guarani aquifer management (e.g. elaboration of an international treaty between the four countries; achieving compatibility of the countries' environmental and groundwater legislation and norms, etc.);
- Preparation of a Strategic Action Plan (SAP) for the Sustainable Development and Environmental Protection of the Guarani Aquifer, with rules and regulations to be followed by all users, regardless of their country of origin, as well as pilot projects to validate the SAP's conclusions;
- Evaluation and survey of the legal frameworks dealing with the issue of natural resources management and water resources management in the four countries;
- Assistance with the revision and/or preparation of new legislation and regulations for the countries to improve their respective legal frameworks;
- Evaluation and survey of all existing international and multilateral agreements on the issue and/or related to it;
- Evaluation and survey of the entire institutional framework dealing with the issue of natural and water resources management in the four countries;
- Assistance with the preparation of new institutional arrangements and/or, where applicable, creation of new agencies or institutions;
- Development of an appropriate multilateral institutional arrangement for the future management of an information system and a monitoring network shared among the four countries;
- Development of an appropriate multilateral institutional arrangement for monitoring and managing the Aquifer's Strategic Action Plan;
- Workshops involving the four countries on issues contained in the component.

c. *Public Participation through an Appropriate Information and Institutional Framework*

- Implementation of a Public Opinion Survey to assess the population's level of knowledge about the aquifer;
- Design and implementation of pilot processes to improve the public's awareness of the existence and strategic importance of the Guarani Aquifer;
- Strengthening of public and community institutions that are involved in the project and ensure their participation in the formulation and execution of

- management and monitoring activities by explicitly including them in the institutional set-up for Guarani Aquifer Management at different levels;
- Participatory design and implementation of a Social Communication Plan (formal and informal environmental education) aimed at the population residing in the region of the aquifer, with emphasis on the population residing in recharge areas;
 - Evaluation and provision of technical assistance for change in sector policies to achieve sustainable management of the aquifer.

d. Implementation of measures to deal with non-point source pollution

Given that indications are that pollution threatens to the aquifer stem, to a significant degree, from non-point source pollution activities, the project would identify and implement on a pilot basis, improved management procedures to tackle land-based, non-point source pollution in recharge areas. Substantial baseline funding/leveraging could contribute to component costs.

e. Project Monitoring and Evaluation

A monitoring and evaluation plan would be implemented to ensure monitoring and evaluation of project results. The M&E plan would be used on a continuing basis during and after project implementation and as a basis for dissemination of project results to other countries/regions. Key indicators to be monitored would be (a) improved knowledge of the physical characteristics of the Guarani Aquifer; (b) implementation of the shared data network and information system, (c) access to Guarani data by all interested parties, including civil society, (d) existence of a joint Guarani Aquifer Management Framework, (e) increased awareness by decision makers and civil society regarding the value and importance of the Guarani Aquifer, (f) strengthened institutions at all levels of society (governments, municipalities, universities, riverbasin committees, other NGOs) in the countries for aquifer management, and (g) implemented pilot projects in recharge areas.

The results of the Project would be disseminated to other countries, regions and institutions. Replication elsewhere would be supported by production of written material as well as participation in international workshops and task forces.

f. Project Management and Capacity Building

A project management component would strengthen institutional capacity in the different countries for Project implementation. Activities could include the building up and training of staff in a shared MIS (Management Information System) as well as financial management procedures. The scope of this component will depend on the institutional arrangements agreed for project management as a result of PDF activities.

7. Stakeholders and National Level Support

Initially, information about the Guarani Aquifer had been forthcoming to the Bank principally through universities from the four countries involved in the research (Universidad Nacional del Litoral and Universidad de Buenos Aires, Argentina; Universidade Federal do Paraná, Brazil; Universidad Nacional de Asunción, Paraguay; and Universidad de la República Oriental del Uruguay). In discussions during an initial mission in November 1999 it became clear that all government representatives contacted in the four countries were also very positive regarding the proposal. Key governmental agencies such as the Secretaria dos Recursos Hídricos of the Ministry of Environment and State of São Paulo Secretariat of Environment in Brazil; the Sub-Secretaria de Recursos Hídricos in Argentina; DINAMA and the Dirección Nacional de Hidrografía in Uruguay; and the Vice-Ministry of Energy and Mining of the Ministry of Public Works in Paraguay expressed their keen interest and support.

An additional regional stakeholder is the MERCOSUR. Initially created as a trade mechanism, MERCOSUR is now also developing other areas of collaboration. It has 12 sub-groups dealing with different issues, one of which is the environment (Sub-grupo 6). The Sub-group 6 recently finalized a preliminary proposal for joint environmental legislation for the MERCOSUR countries. The proposed project would need to incorporate the MERCOSUR as an important institutional stakeholder at the regional level. Contacts with members of the Sub-group 6 during the mission gave a clear indication of the interest of this working group, which meets on a regular basis, in supporting the proposed project.

Based on the results of the mission, a Concept Note was prepared and stakeholders from the four countries were invited to participate in a joint workshop in Foz de Iguazu, which was held on January 31 and February 1, 2000. Confirming the importance of the subject for the region, more than 70 representatives from central and state governments, from universities who have been conducting research about the aquifer, from NGOs, municipalities, international organizations (OAS, IICA) and other interested parties participated in the workshop. The Concept Note was discussed and endorsed in its overall approach.¹ A number of changes were agreed and incorporated into this PDF request, which is the follow-up to the initial Concept Note. An endorsement letter has been received from the Paraguayan GEF Focal Point². Brazil, Paraguay and Uruguay have already designated project preparation units and/or preparation working groups and counterparts.

Section 11 of this document outlines the institutional set-up for project preparation and illustrates how the different stakeholders, including different government levels and civil society, will continue to be involved in the preparation process. It is considered essential that both preparation and implementation of this project be designed

¹ A comprehensive workshop report is forthcoming and will be widely disseminated.

² Letter of 27 January 2000. Secretaría Técnica de Planificación.

to incorporate true participation of civil society as well as other stakeholders to ensure project success and sustainability.

8. Incremental Cost Framework

Although a number of baseline activities exist which touch upon the area of the proposed project, the incremental costs are expected to be substantial. This is mainly due to the fact that the activities proposed here relate to international cooperation which at present does not exist with regard to the Guarani. Project investment would generate and bring together new data – of interest to all four countries – and would put in place a joint institutional arrangement for aquifer management, which would otherwise not exist. For this reason the costs of the proposed project are largely incremental, with the exception of some monitoring activities in place in Brazil and Uruguay, implementation of non-point source pollution control activities, and the implementation of groundwater legislation in Brazil. For the latter, the cost of this implementation will have to be quantified.

The benefits to be expected from the project are of both national and global nature and mainly relate to avoidance of future cost. Groundwater pollution is extremely difficult to remediate and by putting into place a preventive mechanism, damage and thus clean-up costs would be avoided. A further benefit would be the preservation of a strategic resource to be used in the long run once other water supply options are exploited. Uruguay's Water and Sanitation Agency estimates, for example, that it is cheaper to pump clean Guarani water from significant depths than to treat contaminated surface water. The benefit is global in the sense that Uruguay is located downstream from Brazil where measures need to be taken to not pollute Guarani Aquifer water for the downstream users. It can be expected that, as other sources become more polluted, the Guarani Aquifer increasingly becomes the economically viable source of choice.

9. Sustainability

Sustainability of the project achievements would be attained by involving stakeholders from the beginning. As previously mentioned, the demand for the project originated in the countries. By building up institutional capacity, especially within the framework of the MERCOSUR, and further sensitizing stakeholders, including civil society, it is expected that the collaborative framework built up by the project will be a sustainable mechanism which will function after the end of the project. Certain costs of the project, such as maintaining the information system, are of a recurrent nature and would require financing by the governments after project completion.

10. Replicability

As stated previously, an international legal framework for the management of transboundary groundwater resources currently does not exist. On the other hand, transboundary groundwater issues do need to be addressed as initiatives are often

proposed and implemented in regions subject to scarcity and competition (e.g. North Africa and Middle East). In the case of the Guarani Aquifer, the Bank/GEF could make a contribution by helping to shape an institutional framework regarding transboundary groundwater which could serve as a replicable model to other countries and regions. In addition, the experience derived from this project could contribute to GEF and Bank thinking with regard to transboundary groundwater issues and to the development of consistent policy approaches.

For this purpose, the project monitoring and evaluation component will be geared towards documenting both process and outcomes of the project, and the dissemination of reports and participation in efforts related to transboundary groundwater in other regions will be encouraged.

11. Description of PDF Activities

The expected outputs from project preparation activities are summarized below. The table at the end of the document summarizes the costs of each of the preparation activities and the proposed GEF PDF contribution.

General Activities:

- Workshops with stakeholders in the four countries for project definition and preparation of specific components;
- A Preparation Unit will be housed within the OAS to prepare the Project. PDF funds will be used to help cover costs of this unit (consultants, operational and administrative costs). Part of the costs, notably those related to the use of in-house expertise, space and equipment, will be covered by the OAS.
- Specialized consultancies and studies for detailed project and component design, including preparation of the project document (PAD). This would specifically include:
 - Incremental Cost Analysis;
 - Definition of national counterpart and donor contributions to baseline and project costs;
 - Preparation of a project budget and schedule.

Activities Related to the Different Project Components

a. Expansion and Consolidation of Knowledge Base

- Exhaustive survey of all existing technical data on the aquifer (understood here as information on the existence of the data, not its collection or any more technical work on it);

- With the aid of a specialist, define the most relevant physical, chemical and bacteriological data and the frequency of obtaining them, to be used as a basis for building up the aquifer monitoring network;
- Initial exploratory survey on the actual uses and projected future use of the aquifer.

b. Joint Development of a Guarani Aquifer Management Framework

- Survey of the legal-institutional frameworks of the Guarani Aquifer.
- Elaboration of TORs for the Strategic Action Plan
- Institutional Assessment of all public and non-public agencies to be involved in the Project

c. Public Participation through an Appropriate Information and Institutional Framework

- Participatory design of a Social Communications Program for the aquifer.

d. Implementation of measures to deal with non-point source pollution

- Identification of pilot area candidates for implementation of non-point source pollution programs.
- Feasibility Studies and Design of TORs for such programs.

e. Project Monitoring and Evaluation

- Elaboration of a Project Monitoring and Evaluation Plan including preparation of a dissemination and replication strategy.
- Cross-fertilization/learning from GEF-financed activities in other regions where similar projects are being developed.

f. Improvement of Project Management Capacity

- Assessment of needs for a Management Information System.
- Design of institutional arrangements for Project implementation.

12. Institutional Arrangements for Project Preparation

Given the multi-country nature of the project, the OAS would be the executing agency for project preparation. It is not desirable to split project funds into four country sub-budgets, so the OAS would fulfill an integrating function. Consequently, the role of the OAS in the preparation of the project is envisioned as the administrator/manager of the Block B grant. A Central Project Preparation Unit (UCPP) would be established, responsible for both multi-country studies and consultancies, as well as integrating the

contributions to project design by the national agencies in each of the four countries. The Bank would have overall responsibility for the coordination of the preparation effort, for the quality of the resulting products, and the development and processing of the required project documents.

In addition to the Central Project Preparation Unit housed within the OAS, a Project Steering Committee (CSPP) would be created by the four countries. The CSPP would have eight members, one government representative of each country and one representative of the Sub-group 6 of the MERCOSUR. The CSPP would draw upon the help of National Preparation Units (UNPP) as technical advisory members. These Units would include further government representatives (federal, state, provincial, etc.), universities, riverbasin committees, and other members of civil society, as determined by each country. The institutional arrangements are summarized in Annex 1.

Project implementation arrangements would be defined during the preparation process.

13. Expected Date of Project Completion

It is presently anticipated that Project preparation will be substantially completed by January 2001 and that the Project will be ready for final Bank approval by April 2001. This schedule assumes timely availability of preparation funds and effective coordination between the four country governments.

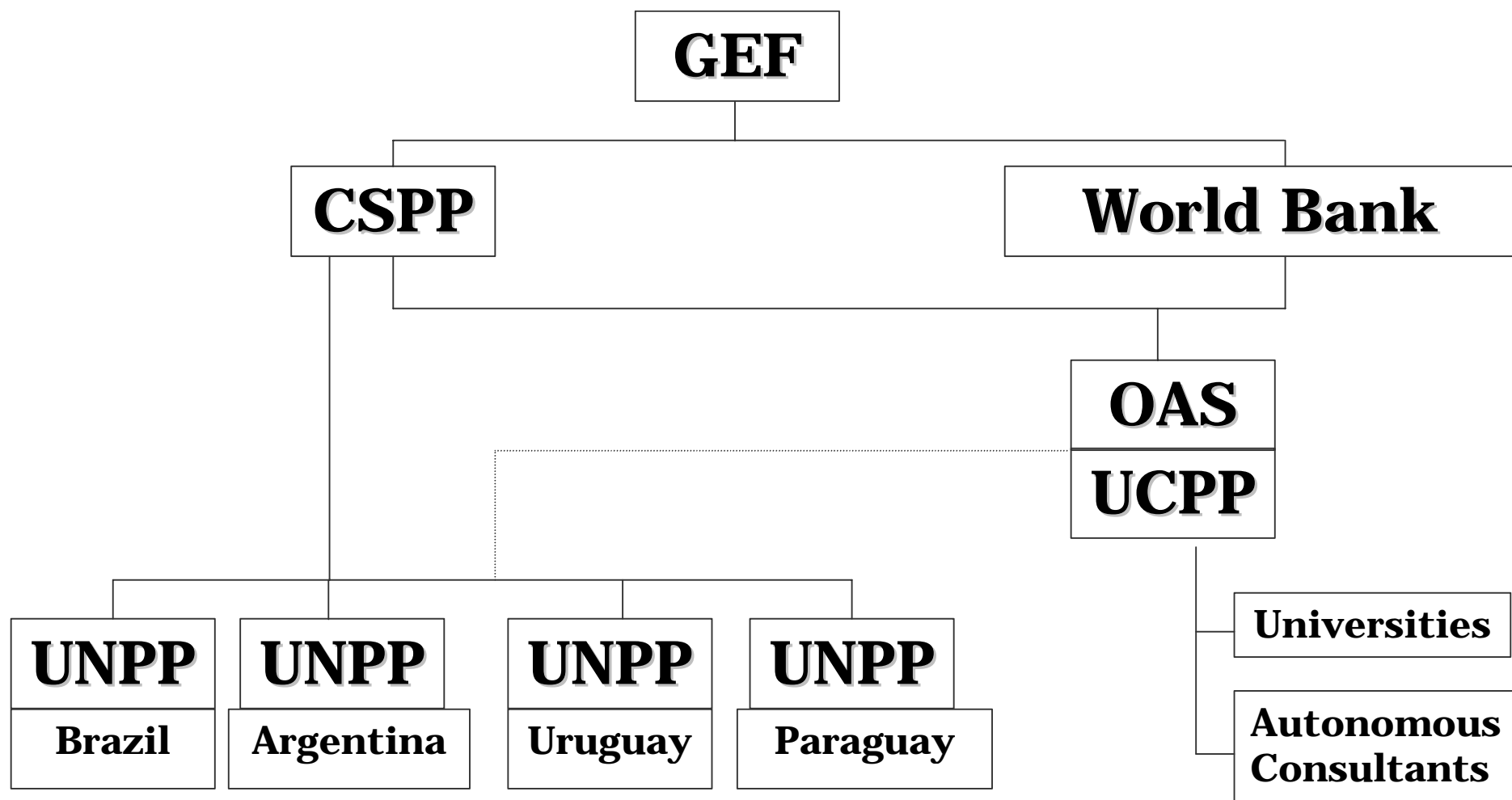
Date	Activity
Jan 31 – Feb 1 2000	First Preparation Workshop with representatives from governments, MERCOSUR and civil society to further define project and preparation requirements and obtain inputs to produce draft PDF proposal
March 2000	Submission of PDF Block B
May-Dec. 2000	Project Preparation
January 2001	GEF Council
April 2001	Board Presentation
June 2001	Project Launch Workshop

14. Project Preparation Activities - Budget

Preparation Activity	GEF US\$	Part. Countries US\$	OAS US\$	TOTAL
<u>General Preparation and Design Studies</u>				
Initial workshop to discuss Project Concept		45,000		45,000
Incremental Cost Analysis	10,000			10,000
Definition of national counterpart and donor contributions to baseline and project costs and preparation of a project budget and schedule	10,000			10,000
Financial Management and Procurement Assessment	10,000			10,000
Preparation Coordination	35,000	15,000	50,000	100,000
Subtotal	65,000	60,000	50,000	175,000
<u>Expansion and Consolidation of Knowledge Base Component</u>				
Survey of all existing technical data on the aquifer	30,000	20,000		50,000
With the aid of a specialist, define the most relevant physical chemical and bacteriological data and the frequency of obtaining them, to be used as a basis for building up the aquifer monitoring network	10,000	50,000		60,000
Workshop to define technical needs for building up data network, information system and aquifer monitoring network; including production of relevant TORs	22,000	25,000		47,000
network, information system and aquifer monitoring network; including production of relevant TORs				0
Initial exploratory survey on the actual uses and projected future uses of the aquifer	20,000	20,000		40,000
Subtotal	82,000	115,000		197,000
<u>Joint Development of a Guarani Aquifer Management Framework</u>				
Survey of the legal-institutional frameworks of the Guarani Aquifer.	33,000	30,000		63,000
Workshop with legal experts, government representatives and other stakeholders regarding existing legal-institutional frameworks of the Guarani Aquifer and identification of Project needs	15,000	35,000		50,000
Preparation of TORs for a Strategic Action Plan	35,000	20,000		55,000
Subtotal	83,000	85,000	0	168,000

<u>Public Participation through an Appropriate Information and Institutional Framework</u>				
Participatory Design of a Social Communications Program for the Aquifer (including stakeholder workshops)	30,000	40,000		70,000
Subtotal	30,000	40,000	0	70,000
<u>Implementation of measures to deal with non-point source pollution</u>				
Identification of pilot area candidates for implementation of non-point source pollution programs	14,000	10,000		24,000
Development of TORs for development of pilot programs	14,000			14,000
Subtotal	28,000	10,000	0	38,000
<u>Project Monitoring and Evaluation</u>				
Elaboration of a Project Monitoring and Evaluation Plan.	12,000			12,000
Crossfertilization/learning from GEF-financed projects that are being prepared in other regions (e.g. partic. in seminars, workshops)	12,000	5,000		17,000
Subtotal	24,000	5,000	0	29,000
<u>Project Management</u>				
Institutional Assessment of all public and non-public agencies to be involved in the Project	10,000	10,000		20,000
Development of TORs for strengthening of existing Project Management Information Systems	13,000	6,000		19,000
Design of institutional arrangements for Project implementation	15,000	10,000		25,000
Subtotal	38,000	26,000		64,000
TOTAL	350,000	341,000	50,000	741,000

Annex 1: Institutional Arrangements for Project Implementation



CSPP – Project Steering Committee (Consejo Superior de Preparación del Proyecto)

UCPP – Central Project Preparation Unit (Unidad Central de Preparación del Proyecto)

UNPP – National Preparation Unit (Unidad Nacional de Preparación del Proyecto)

OAS – Organization of American States (Organización de Estados Americanos)