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Report No: 22489

IMPLEMENTATION COMPLETION REPORT  
(CPL-35200; SCL-3520A; SCPD-3520S)

ON A

LOAN

IN THE AMOUNT OF 300 US\$ MILLION

TO THE

REPUBLIC OF ARGENTINA

FOR THE

YACYRETA HYDROELECTRIC PROJECT II

06/28/2001

**Country Management Unit  
Argentina, Chile, Paraguay, and Uruguay  
Latin America and the Caribbean Region**

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## CURRENCY EQUIVALENTS

(Exchange Rate Effective )

Currency Unit = Peso = \$  
\$ 1.00 = US\$ 1.00  
US\$ 1.00 = \$ 1.00

## FISCAL YEAR

January 1 December 31

## ABBREVIATIONS AND ACRONYMS

AyE	<i>Agua y Energía Eléctrica S. A.</i> (Federally-owned, electric and water utility)
EBY	Entidad Binacional Yacyretá (Entity in charge of the Yacyretá hydroelectric plant)
GOA	Government of Argentina
GOP	Government of Paraguay
ME	Ministry of Energy of Argentina
MECON	Ministry of Economy of Argentina
NIS	National Interconnected System of Argentina
SE	Energy Secretariat under MECON
SEGBA	<i>Servicios Eléctricos del Gran Buenos Aires</i> (Electric utility serving Buenos Aires area)
UESTY	Executing Unit for the Yacyretá Transmission System (under the SE)

## WEIGHS AND MEASURES

kVA	=	kilovolt-ampere
kW	=	kilowatt
kWh	=	kilowatt hour
GWh (gigawatt hour)	=	1,000,000 kWh
kV (kilovolt)	=	1,000 Volt
MVA (megavolt-ampere)	=	1,000 kVA
MW (megawatt)	=	1,000 kW
m	=	meter
km (kilometer)	=	1,000 meter
m <sup>2</sup>	=	square meter
ha (hectare)	=	10,000 m <sup>2</sup>
m <sup>3</sup>	=	cubic meter
sec	=	second

Vice President:	David de Ferranti
Country Manager/Director:	Myrna Alexander
Sector Manager/Director:	John Redwood
Task Team Leader/Task Manager:	Manuel Sevilla

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## ARGENTINA YACYRETA II

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<i>Project ID:</i> P006036	<i>Project Name:</i> YACYRETA II
<i>Team Leader:</i> Manuel Sevilla	<i>TL Unit:</i> LCSFU
<i>ICR Type:</i> Core ICR	<i>Report Date:</i> June 29, 2001

## 1. Project Data

*Name:* YACYRETA II

*L/C/TF Number:* CPL-35200;  
SCL-3520A;  
SCPD-3520S

*Country/Department:* ARGENTINA

*Region:* Latin America and  
Caribbean Region

*Sector/subsector:* PH - Hydro

### KEY DATES

	<i>Original</i>	<i>Revised/Actual</i>
<i>PCD:</i> 09/25/91	<i>Effective:</i> 01/13/93	01/13/93
<i>Appraisal:</i> 03/16/92	<i>MTR:</i> 06/30/94	06/30/94
<i>Approval:</i> 09/29/92	<i>Closing:</i> 12/31/98	12/31/2000

*Borrower/Implementing Agency:* ARGENTINE REPUBLIC/EBY

*Other Partners:*

STAFF	Current	At Appraisal
<i>Vice President:</i>	David De Ferranti	Shaïd Husain
<i>Country Manager:</i>	Myrna L. Alexander	Ping Cheung Loh
<i>Sector Manager:</i>	John Redwood	Alain Thys
<i>Team Leader at ICR:</i>	Manuel Sevilla	Nelson De Franco
<i>ICR Primary Author:</i>	Alvaro J. Covarrubias	

## 2. Principal Performance Ratings

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HL=Highly Likely, L=Likely, UN=Unlikely, HUN=Highly Unlikely, HU=Highly Unsatisfactory, H=High, SU=Substantial, M=Modest, N=Negligible)

*Outcome:* U

*Sustainability:* UN

*Institutional Development Impact:* M

*Bank Performance:* U

*Borrower Performance:* U

	QAG (if available)	ICR
<i>Quality at Entry:</i> S		S
<i>Project at Risk at Any Time:</i> Yes		

Project was at risk in 1998, 1999 and 2000 while IP and DO performance ratings of the project were rated as Unsatisfactory,

### 3. Assessment of Development Objective and Design, and of Quality at Entry

#### 3.1 Original Objective:

##### Background

Yacyretá hydroelectric scheme is a joint venture between Argentina and Paraguay on the Paraná River started in 1973, and implemented by an autonomous agency, *Entidad Binacional Yacyretá* (EBY) under the Yacyretá Treaty. Yacyretá is a complex, multi billion investment endeavor, consisting of a large earth dam, a power house with an ultimate capacity of 3,100 MW, and a program of infrastructure relocation, population resettlement and environmental impact mitigation. Under the Yacyretá Treaty, Argentina has sole responsibility for financing the project. The Bank and the IDB have supported Yacyretá through a series of loans to Argentina. In 1979 the Bank approved a US\$210 million loan to Argentina (Loan 1761- AR) for the Yacyretá Hydroelectric Project. In 1988, US\$250 million from the Electric Power Sector Project (Loan 2998-AR for US\$252 million) went in support of Yacyretá. In 1992, the Yacyretá Hydroelectric Project II (Loan 3520-AR for US\$300 million) was to finance completion of the project. And, in 1994, US\$146.6 million remaining from the SEGBA V project (Loan 2854-AR for US\$276 million) were reallocated to Yacyretá. Also, the Loans 3281-AR for US\$100 million (Water and Sewerage Project approved in FY91) and 3521-AR for US\$20 million (Flood Rehabilitation Project approved in FY93) have financed indirectly several components of Yacyretá. In addition, in 1995 the Bank approved a loan for US\$46.5 million to the Republic of Paraguay (Loan 3842-PA) of which US\$1.2 million were to finance civil works related to the resettlement activities under Yacyretá. The Inter-American Development Bank (IDB) has also financed, directly or indirectly, components of Yacyretá with several loans to Argentina totaling US\$880 million (Loans 346/OC-RG for US\$250 million in 1978, 555/OC-RG for US\$250 million in 1988, 583/OC-RG for US\$250 million and RG/0004 for US\$130 million in 1993), and Paraguay (Loan PR-0030 for US\$50 million, for the Yacyretá Transmission System).

The project's strategy, agreed with the Bank in 1992 for filling the reservoir, called for three stages starting in 1994 when the first turbine-generating unit was to be installed. The reservoir was then to be raised to elevation 76m in 1995 and to its final design level of 83m in 1998. This phased approach was agreed in order to bring into line the need for future financing with the filling of the reservoir, and environmental and resettlement works. Although it has to be recognized that this strategy was sound from a financial and engineering point of view, it failed to see the risks and, consequently, to design mechanisms to reduce and control such risks. In fact, only the first phase of filling (level 76m) was accomplished. When the reservoir was filled to level 76m in 1994, most but not all relevant actions in the agreed resettlement and environmental mitigation works needed for 76m were complete. Consequently, a number of actions, contained in a Plan A, were agreed with the Bank in order to complete the pending works during 1995. Also, as a consequence of second and third phases of reservoir filling not done, unanticipated social and environmental problems began to surface and Plan B had to be agreed with the Bank to mitigate impacts on the environment and population. Since 1994, the project has been operating at level 76m without serious adverse impacts on the environment.

*Original Objective:* The project was designed to: (a) help provide an efficient supply of energy in the mid 1990s by ensuring operation of Yacyretá 's first six units with an adequate transmission

system; (b) bring about improved environmental management and appropriate handling of social aspects in Yacyretá, and, (c) encourage private capital participation in Entidad Binacional Yacyretá (EBY).

### *3.2 Revised Objective:*

During implementation, the objectives remained unchanged.

### *3.3 Original Components:*

The project comprised five components: (a) completion of Yacyretá's basic permanent structures; (b) installation of Yacyretá's first six generating units; (c) implementation of the 500 kV Yacyretá-Resistencia transmission link; (d) implementation of Yacyretá's Resettlement and Environmental Management Programs (REMP) required for reservoir operation at 78m and assessment of the impact of such operation and of the possible rise of the reservoir above 78m; and, (e) assessment of the possible private capital participation in EBY.

The loan was to finance civil works and related engineering of components (a) and (b), and the technical assistance for components (c), (d), and (e).

### *3.4 Revised Components:*

Components were not revised.

Component;	Cost;	Rating
CONSTRUCTION OF CIVIL WORKS;	\$245,000,000.00;	S
ENGINEERING SERVICES FOR WORKS;	\$44,000,000.00;	S
CONSULTING SERVICES;	\$11,000,000.00;	S

### *3.5 Quality at Entry:*

At project appraisal, it was estimated that by mid-1990 the national power system would be in need of additional base load energy to meet growing electricity demand. The completion of Yacyretá was assessed to be the least cost option for base load power generation expansion when compared with expansions comprising thermal power plants. Consequently, it was a logical decision to complete the civil works and other basic infrastructure of Yacyretá hydroelectric plant, and to install and commission at least 6 power-generating units by mid-1994. In 1992, those works were already partially completed. Also, the construction of the 500kV line to transport electricity produced by Yacyretá to the national interconnected system had to be done. Thus, these two objectives were fully justified.

At project appraisal, it became apparent that the filling of the reservoir at water levels higher than level 76m required effective management of the environmental impacts of the project, and the full implementation of the population resettlement program for the cities of Posadas in Argentina and Encarnación in Paraguay. It was estimated that operation of Yacyretá at an initial reservoir level of 76m in 1994, and one year later at 78m, would generate the additional revenues necessary to finance the completion of the resettlement program and, therefore, the raising of the reservoir to

level 83m, allowing Yacyretá's operation at its design parameters. A satisfactory Environmental Impact Assessment of the project was submitted to the Board in April 1992, as required by Bank norms. Consequently, the objective of improving environmental management and handling of social aspects of the project was also fully justified.

Argentina has the sole responsibility for financing Yacyretá. In addition to borrowings from the Bank, IDB and commercial banks and export and suppliers credits, the provision of counterpart funds had been a heavy burden on Argentine's fiscal budget. This, combined with the increasing difficulties faced by the GOA in the early 1990s, in obtaining further project financing from international and commercial sources, led the Bank and the GOA agree on the need to explore the possibility of private capital participation in EBY permitting completion of the project through either a management contract or ownership. This was also a sound objective of loan 3520-AR.

The Bank addressed anticipated project risks with a comprehensive set of conditions to be met by GOA, GOP and EBY on project management, availability of counterpart funds, completion of flood control works, completion of the resettlement program, implementation of the environmental management program, procuring goods and services for the power transmission system, and securing independent advice and reporting from internationally recognized consultants on dam safety and reservoir operation. Moreover, the Bank committed itself, in principle, to help future project financing by restructuring the SEGBA V project supported by Loan 2854-AR that was not longer relevant when SEGBA was privatized.

All things considered, quality at entry can be considered as satisfactory.

#### **4. Achievement of Objective and Outputs**

##### *4.1 Outcome/achievement of objective:*

Objective (a): To help provide an efficient supply of energy in the mid 1990s by ensuring operation of Yacyretá's first six units with an adequate transmission system. This objective was partially achieved. The first unit was commissioned and began to supply energy to the 500 kV interconnected system on September 1994, as established in the original timetable. Each of the second to sixth units began operating a few weeks ahead of schedule. The seventh to twentieth unit were also commissioned a few weeks ahead of schedule. However, the turbine generating units are delivering about 2/3 of their design capacity as long as the reservoir remains filled to level 76m. To December 2000, Yacyretá has delivered a cumulative output of 56,226 million kWh worth US\$1,763 million, valued at the adjusted US\$30 per MWh established in the Yacyretá Treaty. Had the reservoir level been raised to level 78m in 1995 and 83m in 1998, Yacyretá would have been able to deliver a cumulative output of about 74,400 million kWh, worth US\$2,326 million when valued at the adjusted US\$30 per MWh of the Treaty. Thus, remaining at 76m represents a loss of US\$563 million. The loss would be about US\$1,620 million if the cumulative output-not-delivered by Yacyretá through December 2000 --because it operated at a reservoir level below 83m-- is valued at the actual average retail price per kWh.



Objective (b): To bring about improved environmental management and appropriate handling of social aspects in Yacyretá. This objective was achieved though with significant delays. The Bank and the GOA agreed in late 1994 that the environmental protection and population resettlement programs had progressed to a point where some pending actions were not significant enough to delaying the filling of the reservoir to level 76m. So, the reservoir was impounded to level 76m in 1994. The pending actions were subsequently included in the so-called Plan A. Later, the prolonged operation of the reservoir to level 76m began to induce unanticipated resettlement and significant environmental problems and additional actions were specified in a Plan B for long-term operation of reservoir at level 76m. Affected population, represented by a local NGO on the Paraguay side, filed a complaint with the Bank's Inspection Panel in September 1996. The Panel - *inter alia* - reviewed the adequacy of the Action Plans agreed by the Bank with the Governments and EBY to rectify the situation. It issued its report to the Board in September 1997. The report was very critical of the Bank's performance. Bank management responded by re-stating its commitment to stay the course and protect the well-being of the affected people, a position echoed by the Inspection Panel, in concluding that "Bank assistance will be vital to sustainable outcomes." The Bank, the Borrower and EBY moved rapidly to address the concerns reflected in the Panel's report. Plan A and Plan B, as agreed with the parties in response to deteriorated conditions in the area adjacent to the reservoir in Posadas and Encarnacion, are almost completed albeit with delays. The restructuring of Loan 3520-AR and Loan 2854-AR provided significantly increased Bank financing for resettlement and environmental mitigation, together with establishment of a trust account, to ensure full availability of funds needed for complete implementation. In addition, Bank supervision was shifted to the field and intensified. In addition, the Internal Audit Department carried out an audit of the Bank's oversight. The report was completed on June 1999. The audit looked into the adequacy and effectiveness of the past and present management decision-making processes, supervision, and mechanisms in place to exercise available legal remedies in the case of non-compliance of the Borrower. The report voices some of the same concerns as did the Inspection Panel Report about the prevalence of engineering considerations over environmental and resettlement in the early years of the project and the Bank's acceptance of continuous deferment and delays in meeting obligations which seem to have weakened the Borrower's accountability for results. It also cited deficiencies in past supervision practices.

Objective (c): To encourage private capital participation in Entidad Binacional Yacyretá (EBY). This objective was achieved. In 1994, EBY hired an international consulting firm to assess the viability of possible options for participation of private capital in the Yacyretá project. As preferred option, the consultants recommended to offer through an international competitive bidding a concession for marketing Yacyretá production, managing, maintaining, and operating safely the hydroelectric plant. EBY was to receive revenues from the sales of the energy to complete the project. A proposal to privatize Yacyretá was not approved by the Congresses of Argentina and Paraguay. However, the UESTY in the GOA succeeded in a timely privatization of the 500 kV lines linking Yacyretá with the national interconnected system. A toll paid for the power and energy transmitted through these 500 kV lines remunerates the owners of the lines.

### *Project Outcome*

Based on the above, it is clear that the project has not met its goals as there is no solution on how to terminate the project, and operate at full capacity. As explained, the project has operated for a prolonged period of time at an unintended level. In addition, the project presents a poor ERR, negative NPV recalculated by this ICR, and uncertain project sustainability. As a result, the outcome of Loan 3520-AR is rated unsatisfactory, and the outcome of the Yacyretá scheme as a whole is rated unsatisfactory mainly because of its big negative NPV.

#### *4.2 Outputs by components:*

##### Completion of Yacyretá's basic permanent structures.

The project completed: (a) an earth dam of about 65 km long with a uniform elevation above sea level of 86m, and a maximum height of 42m (1996); (b) two spillways with a total water discharge capacity of 95,000 m<sup>3</sup>/sec (1993); (c) a conventional covered power house to lodge 20 turbine-generators and their ancillary facilities (1994); (d) a structure to allow up-stream passage of fish (1996); (e) a navigation lock for ships of a maximum draft of 12 ft. (1996); (f) permanent villages to house supervisory personnel during construction and personnel in charge of project operation (1993); (g) about 90 km of roads linking Argentina and Paraguay; and (h) a 1,500 m long bridge/dike and water flow regulation over the Aña Cuá branch of the river. Works such as the Arroyos Flooding Program and sanitation works are on-going works expected to be completed in year 2001.

##### Installation of Yacyretá's first six generating units.

The installation of the first six generating units and units 7 to 20 was accomplished smoothly at intervals lower than the 72 days agreed in Loan 3520-AR as shown in the following table:

Unit #	Scheduled date	Actual date	Deviation days
1	09/01/94	09/01/94	0
2	11/12/94	11/08/94	-4
3	01/23/95	01/20/95	-3
4	04/05/95	02/27/97	-37
5	06/16/95	05/03/95	-44
6	08/27/95	07/28/95	-30
7	11/07/95	10/05/95	-33
8	01/18/96	11/21/95	-58
9	03/30/96	03/28/96	-2
10	06/10/96	05/03/96	-38
11	08/21/96	08/14/96	-7
12	11/01/96	10/11/96	-21
13	01/12/97	12/13/96	-30
14	03/25/97	02/18/97	-35
15	06/05/97	05/14/97	-22
16	08/16/97	08/08/97	-8
17	10/27/97	10/01/97	-26
18	01/07/98	11/28/97	-40
19	03/20/98	02/11/98	-37
20	05/31/98	04/16/98	-45

The turbines are of Kaplan type operating at 71.4 rpm, rated 155 MW at a net head of 21m. The generators are rated 172.4 MVA at 13.2 kV, 50Hz, with a power factor of 0.9. The 20 turbine-generator units are able to produce 19,200 GWh/year of electricity under normal hydrological conditions. The electricity is produced at 13.2 kV, elevated to 500 kV by a set of 3,500 MVA power transformers and linked to a 500 kV switchyard feeding two 500 kV lines.

The commissioning of the turbine generating units included testing and quality assurance and control of all the electric and mechanical equipment of the hydroelectric plant (auxiliary services, control, protection, and metering equipment, and computer systems, as well as control rooms, included installation,

#### Implementation of the 500 kV Yacyretá-Resistencia transmission link

Private investors selected through ICB were awarded the construction, ownership and operation of the 500 kV lines linking Yacyretá to the national interconnected system. The first stage was completed on time in 1994. It comprised a 269 km long 500 kV line between substations Resistencia and Rincón in Yacyretá, passing through the intermediate substation Santa María. The second stage was completed in 1997. It comprised a 507 km 500 kV line between substations Salto Grande and Rincón in Yacyretá, also passing through substation of Santa María. Additionally, an 85 km long 500 kV line was built between substations Posadas and Rincón in Yacyretá.

#### Implementation of Resettlement Program

The Resettlement and Rehabilitation Action Plan (RRAP), was prepared by EBY in 1992 based on a 1989-90 global census of population below level 83m. The Plan is partially completed. Although that census reported 7,193 urban and 1,262 rural families to be resettled, it did not identify the number of families located below level 76m, or the number of families located within the land stripe 76m-78m, or the number of brick-makers located in the peri-urban zone. EBY estimated in 1,017 the number of brick-makers to be resettled. In 1993, EBY modified the implementation plan of the RRAP to match it with the filling of the reservoir in three stages by including the number of families to be moved from the different elevations as reported by an updated population census. The implementation plan of the RRAP was again modified in May 1996 to contemplate the so called Plan A. Later, in 1997, the implementation plan of the RRAP had another modification, this time to consider the so called Plan B, containing actions to be completed to operate Yacyretá at level 76m for a prolonged period of time. The Board of Directors of the Bank endorsed the recommendation made by the Inspection Panel that the Bank should support vigorously implementation of Plan B in order to mitigate the effects of prolonged operation of Yacyretá at elevation 76m and achieve a sustainable outcome of the project.

In the period 1995-2000 EBY resettled a total of 2,707 urban and rural families, including relocation by GOA and GOP of 1,112 so-called additional families, those not included in the 1989-90 Census. The latter families had eluded lax control of the area to be flooded, moved in there, and later claimed compensation. The population was resettled at no cost to 4 new urban and 13 peri-urban or rural settlements with houses costing on average US\$25,000, including land and infrastructure services at no cost. Adding to that number the 1,483 families resettled in the

period 1980-1992, and the 1,188 families resettled in the period 1993-1994, EBY has resettled a total of 5,378 families. GOA and GOP are responsible for resettling additional families. The latest international independent evaluation of the RRAP reports a high degree of satisfaction of resettled families with the physical solutions provided to them by EBY. Urban families relocated close to places of work in Posadas and Encarnación continue to earn at least their former levels of income. In contrast, all families relocated at more distant sites have suffered economic dislocation, and see their income eroded by additional expenses incurred in transportation and services needed to reach their work places. According to the original design, the project was to compensated/relocate 1017 artisan brick-makers existing in 1993 (443 in Argentina and 574 in Paraguay) and finance the cost to excavate and salvage sufficient clay to allow relocated commercial ceramic industries to be in business for 25 years. Artisan brick-makers were to be offered a choice between rural or urban resettlement. But in 1994, EBY was forced to resolve protracted negotiations by offering all brick-makers either compensation in cash or relocation. From a total 443 artisan brick makers in Argentina, 94 were relocated, 334 compensated, and 17 provided with rural relocation/compensation. From a total of 574 artisan brick makers in Paraguay, 97 were relocated, 271 were compensated and 206 were compensated for loss of raw material (clay). From 104 commercial ceramic industries existing in Paraguay, 56 below level 83 were self-relocated and 48 sited elsewhere were compensated for loss of raw material (clay).

In the case of rural farm families, irrespective of whether they had title to land expropriated or not, they were to be provided with a minimum of 7.5 ha of replacement farm land at no cost for the affected family. Farmers with title to land expropriated were to be entitled to a quantity of replacement land equal to the amount taken up to a maximum of 20 ha, beyond which only cash compensation was paid. EBY also had to provide drinking water, wells, fencing materials, waste disposal system, school buildings and community centers. Also, these farmers were to receive health, education, and social work services. As of today, 743 rural families were resettled in 6 resettlement sites (5 in Paraguay and 1 in Argentina) with benefits as planned although with adjustments in the land size delivered to some rural families resettled in Paraguay. However, completion of the resettlement necessary to raise the reservoir to level 83m still requires EBY to relocate 7,370 families living below level 83m (2,651 in Argentina and 4,719 in Paraguay) and 3,258 families affected by overflow of creeks (Arroyos) into the Yacyretá reservoir (2,157 in Argentina and 1,101 in Paraguay). When fully completed, the project will have resettled a total of about 17,200 families affected by the filling of the Yacyretá reservoir. This total, will be increased by about 700 merchants not yet relocated/compensated.

Pending actions expected to be completed in 2001 are: (a) construction of the Municipal market in Encarnación; its construction is on hold while the design of the main building is reviewed; (b) construction of the potable water and sewage networks in Encarnación - a consultant firm is preparing the executive design of these networks; and (c) issuing of titles to 145 families in the Argentinean side and to 47 families in the Paraguayan side. In the Argentinean side, signing of some titles is pending while family problems are being settled in the court system (inheritance disputes, divorces, and deaths). Other families are conditioning the signing of titles to the solution of questionable claims. On the Paraguayan side, existing plans indicate that pending titling will be completed in the course of 2001.

### Implementation of the Environmental Management Program (EMP)

The EMP is partially completed. The EMP was designed by EBY in 1992 and implemented to match the filling of the reservoir to level 76m, and possibly to a higher level later on. In 2000, the EMP was updated following a participatory process incorporating new environmental criteria, lessons learned from long-term operation of the reservoir at level 76m, and alternatives to fill and operate the reservoir. The EMP has implemented:

- (a) Four new protected areas that are representative of the different ecosystem affected by the project. These areas are Apipe Grande, Galarza, and Santa María in Argentina, and Isla Yacyretá in Paraguay totaling about 56,000 hectares. Protected areas exceed the land area flooded by the Yacyretá reservoir at level 76m. These areas have clear legal status, physical demarcation, adequate facilities, equipment, personnel for protection and management, and a management plan supported by resources amounting to US\$300,000 annually to cover recurrent costs;
- (b) A separate spillway on the Aña Cuá Branch of the Paraná river to guarantee a minimum ecological flow of 1,500 m<sup>3</sup>/sec, maintaining the river at near natural state. The building of the proposed 250 MW hydroelectric plant at the Aña Cuá Branch would be also environmentally beneficial by reducing gas super saturation down stream;
- (c) A program to support two captive populations, and reintroduction trials of globally threatened *Aylacostoma* snails which lost their Paraná River habitat when the reservoir was filled to 76m.
- (d) a facility to transfer fishes up stream through the main Yacyretá dam allowing migration, completion of the breeding cycle and protection of the species;
- (e) a security zone in the Paraná River up and down stream from the Yacyretá dam to ensure an effective control of illegal fishing;
- and (f) A program to manage productive areas creating the appropriate environment needed by the saffron-scowled blackbird or Chopi Say Ju (*xanthopsar flavus*).

Still there are several pending actions, including: (a) Implementation of an updated Environmental Management Plan, including re-organization of the Environmental Unit of EBY, better budget allocation, dissemination activities, and preparation of operation rules for the reservoir; (b) Adopting a decision to build a 250 MW hydroelectric plant on the Aña Cuá branch of the Paraná river (this decision is not included as a condition of the loan agreement). This plant, in addition to generating electricity, is desirable because of its beneficial impact on the environment; (c) Retrofit of deflectors on the Main Branch spillway, to reduce gas super saturation which harms fish below the dam; (d) Study the relative biodiversity significance of natural habitat areas to be flooded between levels 76m and 83m, specially at the still not flooded Aguapey and Tacuary Valleys, and the extensive sand dunes at the east end of Yacyretá Island; (e) Construction of the slaughter house in the city of Encarnación. The site for the slaughterhouse was selected and its construction is under bidding. The Environmental Impact Study is expected to be approved soon by Secretariat of Environment; and, (f) Construction of sanitation works in the city of Encarnación. Its construction was on hold awaiting expropriation of land to site it. Since the Expropriation Law was approved in January 2001, the sanitation works are expected to be constructed as soon as the contractor is selected through an ICB.

Raising the reservoir to a level above 76m would generate a number of significant impacts on the environment whose mitigation would be very costly. A decision to raise the reservoir level will require a thorough analysis to find an optimum level compromising the benefits of the incremental

power generation by Yacyretá and the costs of both the mitigation of additional environmental impacts and the additional resettlement. It corresponds to GOA, GOP and EBY to decide the raising of the reservoir level and the filling strategy. The role of the Bank is to enforce--based on the Loan, Project and Third Party Agreements and their amendments-- the conditions to be complied with, in light of the decisions made by GOA, GOP and EBY.

#### Future Intensive Learning from the Yacyretá Project.

As explained, both the resettlement and environmental management programs continue to be implemented with financing provided by Loan 2854-AR (SEGBA-V). Activities are progressing with delays and under close Bank supervision. In addition, considerable discussion have taken place regarding the long term future of Yacyretá and the final level of operation of the reservoir but no final decision has been made. A full, intensive learning ICR will be conducted upon closing of Loan 2854-AR, in October 2002. This intensive learning ICR will include inputs from affected people, NGO's and other project stakeholders.

#### To assess possible private capital participation in EBY.

The options to be assessed by an international consulting firm were described in an Exchange of Diplomatic Notes between Argentine and Paraguay done in 1995. The preferred option recommended by the consultant --a concession arrangement to market electricity produced by Yacyretá combined with operation and maintenance of the hydroelectric plant plus commitment to complete the project-- was not approved by the Congresses of Argentine and Paraguay (see paragraph 4.1 above). However, GOA succeeded in attracting private capital for building, owning and operating the 500 kV transmission lines.

#### *4.3 Net Present Value/Economic rate of return:*

The *ex-post* calculation of net present value (NPV) and economic rate of return (ERR) of the project was done under the assumption that the reservoir level will be raised to level 78m in 2004 and to 83m in 2005. Also, two approaches to the valuation of the electricity produced by Yacyretá were applied as follows:

(a) The first approach considers EBY as a company whose electricity output delivered to the 500 kV system is remunerated with the adjustable price of US\$30 per MWh as established in the Yacyretá Treaty. In this case, the recalculated ERR of the project is 15.8 percent (NPV is US\$935 million at 10 percent discount rate) if only the additional investment done from 1992 plus that estimated to complete the project are factored in. This value compares well to the 13.3 percent ERR estimated at appraisal. The ERR drops to 3.4 percent (NPV is negative US\$2,065 million at 10 percent discount rate) if all investment already done plus that estimated to complete the project are taken into consideration. The appraisal did not estimate the ERR including the sunk cost.)

(b) The second approach values electricity produced by Yacyretá as it were a generator of the wholesale market, i.e., at the price prevailing in the Argentine spot market. In this case the

calculation of the ERR includes as cost the price to transport Yacyretá electricity through the 500kV lines linking Yacyretá to the national interconnected system plus the cost of CAMMESA's services. The resulting ERR is 9.5 percent (NPV is negative US\$80 million at 10 percent discount rate) if only additional investment done since 1992 are considered. This ERR is that low because the spot price has been (and estimated to remain so after year 2001) lower than US\$30 per MWh. This value of the ERR is significantly lower than the 17 percent estimated at project appraisal, which assumed the Yacyretá output sold at the price for the final retail consumer. The ERR plummets to 1.3 percent (NPV is negative US\$2,365 million at 10 percent discount rate) if all investment already done plus that estimated to complete the project are taken into consideration. The appraisal did not estimate the ERR including the sunk cost.)

The above results also point out to the shortcomings of *ex-ante* calculations of the ERR based only on the incremental cost needed to complete a project without regard to the investment already done (sunk cost method used at appraisal). In evaluating the economic merits of the additional funds needed to complete a project it would be also valuable to do *ex-ante* sensitivity analyses of the ERR and NPV including sunk costs to assess the future commercial and financial viability of the project. Of course, such approach is more relevant when the project is in its early stages of implementation and canceling it is still possible at a relatively low cost.

#### *4.4 Financial rate of return:*

It was not calculated at appraisal.

#### *4.5 Institutional development impact:*

The project did not have an explicit institutional development objective but had some impact on the organization of EBY. Since 1992 the project made modest contributions toward improving EBY structure and management effectiveness, transparency, internal controls, re-organizing the functions of field staff, and concentrating staff and operational decisions in the field and not in Buenos Aires. Also, EBY staff received comprehensive training on environmental, resettlement and social matters, which were essential for performing their duties. Moreover, the management and monitoring of the environmental and social impacts of the project impacts are being carried out with participation of NGOs and local and provincial institutions. However, in spite of project efforts and some recent progress, EBY's institutional capacity remains a major challenge, and any attempt to raise the level of the reservoir would have to design and implement actions to deal with slow and complicated procedures, over centralization, weak coordination and transparency, and limited control and supervision capacity.

## **5. Major Factors Affecting Implementation and Outcome**

### *5.1 Factors outside the control of government or implementing agency:*

Project implementation progressed without major delays and complications from 1992 to 1994. The main civil works and structures of the hydroelectric plant were completed, the reservoir was impounded to level 76m and the turbine generating sets began to be routinely commissioned since September 1994. Project implementation --other than installation of the turbine generating units

and the 500 kV transmission system-- began to slow down in 1995 when counterpart funds from the GOA dried up, and disappeared completely in 1995 and 1996 as a result of the macro economic crises triggered by the so called "Tequila effect". Lack of counterpart funding prevented any significant progress in the implementation of the resettlement and environmental program and infrastructure works of the project, and eventually led to postponing the raising of the reservoir above level 76m year. At that time, the alternative envisaged was to attract private capital to the project by selling future electricity generation, and contracting management and operation of the power plant. The situation was further complicated as a result of GOP increasing lack of commitment to the project, and the resulting slow progress in the resettlement and environmental components on the Paraguayan side.

In 1996 a Paraguayan NGO requested an investigation by the Bank's and IDB's Inspection Panels. Affected population, represented by a local NGO on the Paraguay side, filed a complaint with the Bank's Inspection Panel in September 1996. The Panel, *inter alia*, reviewed the adequacy of the Action Plans agreed by the Bank with the Governments and EBY to rectify the situation. It issued its report to the Board in September 1997. The report was very critical of the Bank's performance. Bank management responded by re-stating its commitment to stay the course and protect the well-being of the affected people, a position echoed by the Inspection Panel, in concluding that "Bank assistance will be vital to sustainable outcomes." The Bank, the Borrower and EBY moved rapidly to address the concerns reflected in the Panel's report. Plan A and Plan B, as agreed with the parties in response to deteriorated conditions in the area adjacent to the reservoir in Posadas and Encarnación are almost completed albeit with delays. The restructuring of Loan 3520-AR and Loan 2854-AR provided significantly increased Bank financing for resettlement and environmental mitigation, together with establishment of a trust account, to ensure full availability of funds needed for complete implementation. In addition, Bank supervision was shifted to the field and intensified. In addition, the Internal Audit Department carry out an audit of the Bank's oversight. The report was completed on June 1999. The audit looked into the adequacy and effectiveness of the past and present management decision-making processes, supervision, and mechanisms in place to exercise available legal remedies in the case of non-compliance of the Borrower. The report voices some of the same concerns as did the Inspection Panel Report about the prevalence of engineering considerations over environmental and resettlement in the early years of the project and the Bank's acceptance of continuous deferment and delays in meeting obligations which seem to have weakened the Borrower's accountability for results. It also cited deficiencies in past supervision practices and recommended more attention to project issues and situations that are more political than technical.

The main factors affecting implementation and outcome are:

The "Tequila effect". In 1994, the Mexican financial crisis spread over the Latin American region affecting countries with varying degrees of intensity. The effect on Argentina was severe to the point that the GOA had to introduce drastic macro economic measures particularly in the priorities for using the fiscal budget. At that time, Yacyretá was not among the priorities of GOA and hence counterpart contributions to the project were stopped in 1995 and 1996. Since then, EBY has had to rely mainly on its own revenues and international and commercial loans to finance its current expenses and the implementation of Plan A and, later Plan B. In 1997, the GOA



opened a Trust Account to help finance part of the cost of resettling additional families not accounted for in 1990-1990 census. A total of US\$3.2 million deposited by GOA in that Trust Account helped financing 361 houses for families not included in the 1989-1990 census.

Intervention of NGOs. The claim presented to the Bank by a Paraguayan NGO on behalf of the communities affected by the Yacyretá project, --based on undesirable impacts of the Yacyretá reservoir at level 76m -- brought to the public knowledge legitimate concerns about unanticipated environmental impacts and social issues. However, other local groups and individuals created and amplified expectations of the population about potential compensations to be obtained from EBY. The time-consuming resolution of these claims has been and continues to be a factor in the slowing down of pending actions on resettlement implementation. This has led to frequent social and political conflicts with respect to a broad range of issues. The most important type of conflicts is that occurring between EBY and some affected families that are not satisfied with the quantity or quality of the compensation they have received, or with the accessibility of the new sites with respect to public services and the job market in the urban centers of Posadas and Encarnación. A further source of conflicts refers to pressures on EBY to extend compensation benefits to new groups with questionable and exaggerated claims. Management of these situations has been complicated by premature decisions adopted by EBY to pay cash compensations in cases with little technical justification. With Bank support, EBY is currently undertaking a study aimed at identifying real socioeconomic impacts that need to be compensated. In addition, discussions are under way for the purpose of creating a mechanism that would help EBY prevent and solve conflicts.

Paraguay Expropriation Law. Approval of the law to expropriate land within the boundaries of the Yacyretá project in the Paraguay side took an extremely long time. The approval of the expropriation law took place only in January 2001. It will be now possible to make progress in completing pending actions on resettlement implementation in Paraguay, an activity that was practically paralyzed.

GOP Trust Account. In 1997 the GOP was supposed to open a Trust Account in which it had to deposit the funds required to finance improvements in services and infrastructure of families already resettled to Ita Paso, Paraguay. GOP delayed the opening of the Trust Account until year 2000. This contributed to delay the execution of those improvements.

Opposition of Argentine and Paraguay Congresses to privatize Yacyretá in 1995. In line with conditions of Loan 3520-AR, EBY contracted an international consulting firm to assess the economic and financial viability of attracting private capital to Yacyretá. Based on the recommendations made by the consulting firm, the GOA and GOP cast a proposal in a Protocol to be signed by both countries amending the Yacyretá Treaty. The proposal was to sell the future electricity generation of Yacyretá to private investors, contract the management and operation of the power plant, and complete the project. This attempt was short lived since it encountered opposition in the Congresses of Paraguay and Argentina. Later, a Blue Ribbon Panel appointed by the Bank in 1999 recommended privatizing Yacyretá and raising the reservoir above level 77m.

## *5.2 Factors generally subject to government control:*

Counterpart funds. Although the financial crisis of Argentina imposed serious constraints on the size and use of the 1995 and 1996 fiscal budget, the GOA could have maintained Yacyretá as a priority project in the fiscal budget, and allocated the funds required to keep the pace of project implementation as originally planned. The decision to stop counterpart contributions to the project demonstrated an increased trend of weakened commitment of GOA to Yacyretá during those years.

Intervention in Yacyretá operations. Frequent change of the Yacyretá's Executive Director made by the GOA (5 in the period 1992-2000) has had influence in EBY performance. The discontinuity in the top management of Yacyretá resulted in changes in the decision making and administrative procedures of EBY, contributing to delays in project execution.

Inadequate control of areas to be flooded. An initial poor control of areas to be flooded by the Yacyretá reservoir permitted an invasion of those zones by families and individuals seeking resettlement compensation. Those families were not part of the 1989-1990 census, and consequently, the GOA and the GOP were made responsible for resettling them. Since 1997, control of areas within the boundaries below level 83m has significantly improved in both the Argentine and Paraguay sides. Only a few families have been able to evade controls and settle in the restricted areas.

Limitations to eligible resettlement compensation. There is an important restriction on the scope of eligible compensation to be given to resettled families: any improvement or additions made to a house after 1992 is not eligible for compensation. This GOA's and GOP's resettlement policy has inhibited dwellers from investing in improvements in their houses, and made them live during many years at standards below those they would have otherwise been able to enjoy. This situation has contributed to create a climate of anxiety and frustration among families located in the land stripe 78m-83m, waiting to be resettled.

### *5.3 Factors generally subject to implementing agency control:*

Lack of integration of the resettlements within the existing urban and rural organization. EBY acquired certain areas for resettlement without technical criteria, and without considering the integration of those zones into the existing urban and rural infrastructure, generating problems and additional costs. Some of the urban resettlements were located far from the city center, which caused isolation of families from workplaces, particularly for those who hold "informal" jobs, which are tied to the commercial centers of Encarnación and Posadas.

Lack of consultation and participation of the population to be resettled. Some areas for resettlement were acquired by EBY without consulting or seeking the participation of the people to be relocated, in regards to location and housing options. This caused problems in the resettlement process and became a source of conflicts. With Bank advice, EBY is adopting a more participatory approach, including more systematic consultations and dissemination of information. To increase informed citizen consultation and participation, EBY has established documentation centers in their local offices in Posadas and Encarnación. People may read and obtain copies of all resettlement and environmental plans; monitoring reports on water quality,

disease vectors, fisheries, resettlement, etc.; and consultant reports as well as bi-monthly progress reports to the Bank. In addition, EBY now publishes a monthly bulletin to inform the public on the progress of resettlement and environmental operations. It continues its long-standing social work program, through which social workers are based in neighborhood offices before and after relocation to facilitate direct participation of families it is responsible for relocating. In addition, EBY organized, with the support of the World Bank and IDB, several town-hall meetings to discuss existing problems in the resettlement of families affected by the Yacyretá project, and the future of the project. Finally, EBY has contracted advisory services from an international NGO to improve consultation and participation.

Administrative processes associated with the resettlement. The institutional structure of EBY was slow in performing land acquisitions, housing construction, acquisition of components, etc.

#### *5.4 Costs and financing:*

Project Cost: The most recent estimate of the total investment cost of the Yacyretá scheme is about US\$6,437 million in current US\$ dollars, excluding the cost of the private 500kV transmission lines and the unsettled claims made by the contractor of the main civil works. That total investment cost is the cumulative amount of US\$ 3,408 millions invested since initiation of the project in 1978 through 1991, plus US\$2,019 million invested in the 1992-2000 time slice (period of loan 3520-AR) and US\$1,010 million estimated to complete Yacyretá in 2005. Those amounts adjusted to constant year-2000 US\$ using the MUV index are respectively US\$7,090 million, US\$4,224 million, US\$1,856, and US\$1,010 million. A meaningful comparison of costs can be done by expressing costs in constant US\$ of a chosen year because it eliminates the inflation factor from the investment cost equation. A comparison between the total investment cost originally estimated of US\$ 5,555 million in the SAR of August 31, 1992 and the most recent estimate of the total investment cost of the project indicates a cost overrun of 16 percent. However, the cost overrun of total costs measured in constant US\$ is 14 percent. At appraisal of the second Yacyretá project (financed by loan 3520-AR), the cost of completing the project, excluding the 500kV transmission lines, was estimated at about US\$2,147 million expressed in 1992 US\$, or US\$1983 million expressed in constant 2000 US\$. Consequently, the project as defined in Loan 3520-AR would have a cost overrun of 45 percent in constant dollars.

Project Financing: Financing the US\$1,362 million of the original project time slice 1992-1995 (excluding the 500kV transmission lines) was to be done by (a) GOA contributions: US\$378 million, (b) export and supplier credits for electrical equipment: US\$564 million; (c) EBY internally generated funds: US\$91 million (based on electricity sales at a December 31, 1991 rate of US\$30/MWh); (d) loan 3520-AR: US\$300 million; and (e) IDB loan: US\$31 million. Actual financing of the US\$2,021 million of the 1992-2000 time slice investment resulted as follows: (a) GOA: US\$219 million; (b) EBY: US\$523 million; (c) export and supplier credits: US\$668 million; (d) loan 3520-AR: US\$300 million; (e) Loan 2844-AR: US\$108 million; (f) IDB: US\$13 million; and BBV: US\$190 million. The actual financing resulted as follows: (a) GOA: US\$219 million; (b) EBY: US\$523 million; (c) loan 3520-AR: US\$300 million; (d) loan 2854-AR: US\$108 million; (e) suppliers credits: US\$668 million; (f) BID: US\$13 million; and (g) BBV: US\$190 million. It is noticeable the significant recent contributions of EBY to project financing

from electricity sales, and the reduction of GOA contributions to zero in 1995 and 1996 as a consequence of the macro-economic crises triggered by the "Tequila effect".

Disbursement of loan 3520-AR took two years longer than planned. Four amendments were made to reallocate funds among loan disbursement categories, the last one in 1997 to also extend the loan closing date to December 31, 2000. The US\$300 million loan was fully disbursed --the last disbursement took place on October 2000.

## **6. Sustainability**

### *6.1 Rationale for sustainability rating:*

Sustainability of the Yacyretá project can be considered as unlikely. Main factors behind this rating are the following: (a) Argentina in general, and EBY in particular have the necessary technical and managerial competence to ensure a quality operation and maintenance of the hydroelectric plant. Thus, electricity production by the hydroelectric plant is not at issue. However, operation of the turbines with the reservoir at a level lower than the design level (83m) has started to induce some erosion in the turbine runners, a situation that may lead to a shortening of their physical life. The manufacturers of the turbine runners are expected to propose an operational solution for this technical problem. In case that no solution is found, the option for EBY would be to replace the turbine runners more often than originally planned. (b) The environmental management program is expected to create the necessary institutional arrangements allowing appropriate monitoring of the measures taken to mitigate the environmental impacts of the project operating at level 76m. (c) The resettlement program up to level 76m is practically completed. However, permanent and definite operation of Yacyretá at level 76m will require addressing the issue of how to compensate the population still located below level 83m. The resolution of this issue will likely involve high cost in settling the legal claims presented by families that were prevented from innovating in their properties. (d) Finally, the option of raising the level of the reservoir above its current 76m level would require additional and considerable investments. It seems unlikely that a project of the magnitude of Yacyretá would not be financially supported by the GOA in the search for a solution to complete the project to a level above 76m. But it is unclear how servicing of the high debt of Yacyretá will be accomplished.

### *6.2 Transition arrangement to regular operations:*

Two technical options are being explored by the GOA and GOP for future regular operation of the project: (i) to operate Yacyretá permanently at level 76m or (ii) to operate Yacyretá at a level higher than 76m. The combination of these options with private capital participation is still being considered for completing Yacyretá. For option (i), the completion of the pending actions under Plan B can be considered as the transition arrangements for regular operation of Yacyretá at level 76m. For option (ii), EBY has prepared a plan for raising the reservoir above level 76m. This plan was submitted to the Bank on February 28, 2001.

The Bank has analyzed the proposed plan in order to ensure that the Bank's environmental and resettlement policies are taken into account, and provided a response on April 2001, indicating that the Plan as presented is not considered feasible. The Bank recommended increased and more

systematic consultations with civil society groups and other project stakeholders, adoption of a plan to strengthen EBY's institutional capacity, and other activities aimed at preventing and dealing with possible adverse effects. In addition, the Bank has indicated that a feasible Plan needs to take into account all conditions established in existing legal documents.

## **7. Bank and Borrower Performance**

### **Bank**

#### *7.1 Lending:*

Project preparation and appraisal can be rated as marginally satisfactory.

During project preparation the Bank was aware of the difficulties the GOA had in the Yacyretá I project (Loan 1761-AR), mobilizing and allocating financial resources needed to implement the project in accordance with original agreements. However, project preparation was driven mainly by engineering and economic considerations. The Bank failed to reconcile the high political interest of the GOA in finishing the main civil works, and installing the turbine generating units, with the existing technical concerns about the project's resettlement and environmental impacts. It is in this context that the option of raising the level of the Yacyretá reservoir in stages allowing operation of the units at reduced output --but generating revenues for project financing-- emerged as the most feasible solution. An economic and financial analysis showed that raising the reservoir level in three stages, 76m, 78m and 83m, starting in 1994 and finishing it in 1998, would permit to complete the dam, power house, other permanent civil works, and the resettlement and environmental programs in accordance with the original project design, provided that financial support from the Bank, co-financiers, GOA, and the sale of energy by EBY were made available to the project. The agreement on reduced operation of Yacyretá took lengthy negotiations between Argentina and Paraguay. It also required the adoption of other key agreements such as streamlining EBY's organization, setting of tariffs, and amending contracts of civil works. The Bank provided valuable advice to GOA, GOP and EBY in addressing those issues and, as required, a satisfactory Environmental Impact Assessment of the project was submitted to the Board.

Project appraisal is well documented in the SAR. In particular, the resettlement and environmental programs were analyzed in great detail, and actions were designed to mitigate undesirable negative impacts of the project. Project appraisal found that the financial plan of the project was viable under the assumptions that counterpart funds were to be readily available and that project completion was to be achieved as planned. However, the appraisal did not take into account lessons learned during implementation of the Yacyretá I project, where the lack of counterpart funds was one of the main reason for the project not being completed. Appraisal failed to evaluate and cover the risks of the GOA not being able to provide the counterpart funds to complete the project and the GOP not complying with key actions necessary to implement the resettlement and environmental program in Paraguay. Appraisal did not recognize that the materialization of those risks, a catastrophic scenario, was indeed very likely to occur. Thus, the appraisal accepted that project risks were to be covered with standard Bank remedies in case GOA, GOP and EBY were in non compliance with a comprehensive set of conditions on availability of counterpart funds, project management, completion of flood control works,

completion of the resettlement program, implementation of the environmental management program, procuring goods and services for the power transmission system, and securing independent advice from internationally recognized consultants on dam safety and reservoir operation. Further, the Bank committed itself, in principle, to help future financing of the project by allocating funds to Yacyretá from the undisbursed amount of Loan 2854-AR (SEGBA V project) which were not needed anymore because SEGBA had been privatized.

## *7.2 Supervision:*

Bank supervision during the entire life of Loan 3520-AR is rated as unsatisfactory. The Bank has deployed a significant amount of resources in project supervision. Through mid-FY01, the Bank has spent about US\$1.8 million in project supervision. A total of 16 supervision mission, unevenly distributed, were carried out from December 1992 to October 2000 averaging one supervision mission per year from 1992 to 1995, and averaging 3 supervision per year thereafter. Since 1992, the project team was led by a rotation of 5 Task Managers, a factor that affected continuity in the relationship between the Bank and GOA/EBY. Supervision became more intensive since 1998 when the Task Manager moved to the Office of the Bank in Buenos Aires to be close to the field, and a specialist in Civil Society issues was assigned to the Bank's Office in Asunción, Paraguay, to deal with the social aspects of Yacyretá. Supervision reports were relatively brief through 1994 but became specially detailed when the project entered in a financial crisis in 1995-1996, and in 1997 during negotiations of the third amendment to the loan documents. Supervision efforts were increased in 1996, following the Inspection Panel Report.

Initially, the Bank was very flexible in dealing with the problems faced by GOA, EBY and GOP in project implementation. It amended the loan documents in September 1993 to reallocate funds in accordance with the financial needs of the contract for the major civil works of the project and again in December 1993 to postpone dated covenant related to studies on protection of the Aguapey creek, reservoir sedimentation, and emergency preparation plan. Moreover, the Bank did not object to the proposal to raise the level of the reservoir in 1994. In hind sight, agreeing in 1994 to the raising of the Yacyretá reservoir to level 76m, was likely a mistake.

Bank supervision faced considerable difficulties during the period 1995-1997. First, the GOA informed the Bank that the macro economic crisis triggered by the "Tequila effect", prevented any further allocation of counterpart funds to the Yacyretá project. In response, the Bank expressed its intention of not including in the CAS any future Bank support to investment projects in Argentina unless GOA showed continue support to the Yacyretá project. Second, in 1996 a Paraguayan NGO filed a claim to the Bank requesting the intervention of a special inspection panel to investigate violation of Bank policies and procedures resulting in negative impact of the project on the environment, and on social and economic aspects affecting population as a consequence of the reservoir being operated at level 76m, compounded with lax Bank supervision. Taking into account the Inspection Panel Report, the Bank undertook a series of positive actions: (a) committed GOA, EBY and GOP to complete by 1998 the resettlement and environmental actions left pending when the reservoir was impounded to level 76m (Plan A) and actions for prolonged operation of the reservoir at level 76m (Plan B); (b) committed GOA, GOP and EBY to deposit in separate Trust Accounts the counterpart funds needed for completing resettlement of additional families in Argentina and Paraguay respectively; (c) restructured Loan

2854-AR to make funds available to Yacyretá for implementing part of the resettlement and environmental programs; (d) included explicitly in the EMP completion of some important infrastructure works and measures; (e) committed GOA, GOP and EBY to a revised timetable for the implementation of the EMP; and (f) committed EBY to restructure its organization and reinforce it with external consultants in the management of its resettlement and environmental units. All these measures, included in the third amendment of Loan 3520-AR and the fourth amendment of Loan 2854-AR, became effective in December 1997. Also, as indicated above, project supervision by the Bank was reinforced and the Bank Inspection Panel began to report periodically to the Board. The direct involvement that Senior Management of the Bank had in project supervision at that time, and the support it gave to Bank staff were key factors in the satisfactory outcome of the negotiations held with GOA, GOP, and EBY in formulating the third amendment to the loan.

Later, in 1998, a Blue Ribbon Panel on Yacyretá was formed to advise Bank management on options for future operation of the project.

### *7.3 Overall Bank performance:*

All things considered, Bank overall performance is rated as unsatisfactory.

### **Borrower**

### *7.4 Preparation:*

Preparation can be considered as satisfactory.

The Borrower, the Republic of Argentina, showed a strong commitment and support to project preparation but relied mainly in EBY and consultants for carrying out the preparation activities. In particular, the GOA expressed its commitment to provide the counterpart funds required by project implementation.

### *7.5 Government implementation performance:*

Performance was mixed. From 1992 to 1994, it was satisfactory, giving strong financial and political support to the completion of the dam, power house, permanent infrastructure works, and installation of generating units, in accordance with agreed timetable and plans to deliver promised electricity to the interconnected power system. It also succeeded in obtaining private participation in the construction, ownership, and operation and maintenance of the 500 kV transmission lines connecting Yacyretá to the 500 kV interconnected system. But GOA performance turn out to be highly unsatisfactory from 1995 to 1997 by (a) cutting off counterpart contributions to the project resulting in a severe delay in project implementation that induced social problems among the population not resettled, and created unanticipated environmental impacts; (b) being ineffective in obtaining political support to bringing private capital to EBY. Although the GOA performance improved after the third amendment to the loan became effective in December 1997, it has been ineffective in moving Paraguay to meet key commitments established in the Third Party Agreement, particularly the approval of the Expropriation Law

permitting the acquisition of land located in the Paraguayan side of the project. Only in mid-January 2001 the Paraguayan Congress approved the expropriation law. Lack of an Expropriation Law generated delays and bottlenecks for resettlement activities in Paraguay. Regarding privatization, the GOA explore ways of moving forward during the period 1994-96 but was unable to obtain legislative support.

In balance, Bank overall performance during implementation of Loan 3520-AR is rated as unsatisfactory.

#### *7.6 Implementing Agency:*

Performance of EBY has been mixed during project implementation but overall can be rated as marginally satisfactory mainly in merit to its highly satisfactory performance during the period 1992-1994 as demonstrated by making their contractors complete the dam, the permanent infrastructures works, the power house and the installation of the first 6 turbine generating units in timely manner, and install units 7 to 20 afterwards. However, EBY performance decayed after 1995 and project implementation was delayed mainly as a result of the cutting off the counterpart funds decided by the GOA, compounded with inefficiencies in its organization and lack of an expropriation law in Paraguay. The Paraguayan Congress only in mid-January 2001 approved that expropriation law.

EBY restructuring and streamlining made in 1997, linked to the modifications made to the implementation of the resettlement and environmental management programs and the setting of Trust Account mechanisms facilitating availability and transfer of funds to EBY, improved its performance. But after 1998, EBY performance became again unsatisfactory to the point where the achievements of the project development objectives were at risk. EBY performance improved since late 1999, in an effort to comply with conditions needed to obtain an extension of the closing date of Loan 2854-AR from December 31, 2000, to October 31, 2002. In early 2001 EBY performance is considered to be satisfactory and in compliance with its commitment set forth in the Project Agreement. The Yacyretá project has been rated unsatisfactory since 1998 due to delays in implementing key activities of the resettlement and environmental plans, financed by loan 2854-AR. In the same way, since 1998 EBY's performance was rated unsatisfactory due to failure to adopt proper planning and control methods, poor monitoring of agreed upon actions, slow adoption of more flexible and agile procedures, weak coordination and consultation with key Government agencies and other project stakeholders, and slow progress in implementing administrative and management recommendations formulated by the Bank supervision missions. However, during the 1999-2000 period EBY made significant efforts and accomplished sufficient improvements with respect to all issues previously mentioned. Consequently, EBY performance was rated satisfactory in year 2000 even though the overall project rating remained unchanged.

EBY finances: Financial viability of EBY hinges around its prospects to service its large debt with the GOA, estimated, as of Dec. 31, 1999, in US\$9.4 billion. Of this total debt, US\$7.7 billion corresponds to funding provided directly by GOA, and US\$347 million represent IBRD resources. Currently, EBY is not servicing this debt other than through the application of the subsidy arising from the differential between the market price and the Treaty price of 30.76



US\$/MWh. EBY's debt with GOA, before considering capital expenditures required for raising the level 83m, will rise by US\$1.4 billion by 2004. The debt will then be approximately US\$9 billion, and generate interest expenses which could exceed the subsidy arising from the price differential at current market prices and thus continue to grow.

The projections beyond 2004 would have to consider both the additional capital expenditures (about 1.1 billion) and the higher income associated with going to level 83m in the reservoir. It is not clear where financing will originate for the US\$1.1 billion but it is unlikely that the GOA will obtain any relief, under this scenario, before 2012. Also, unless private participation in Yacyretá includes the Aña Cuá investment (about US\$125 million), EBY's dependency on the GOA will be increased further.

The Bank is ready to analyze any plan to raise the level of the reservoir, and ensure that financial arrangements and related debt levels are in line with existing legal agreements.

#### *7.7 Overall Borrower performance:*

All things considered, GOA and EBY combined performance during the life of Loan 3520-AR can be considered as unsatisfactory.

### **8. Lessons Learned**

Implementation of Yacyretá Project has generated valuable lessons relevant for other large infrastructure with large resettlement and environmental impacts. A total of thirteen lessons are offered:

Lesson 1: Bank loans should be better allocated to finance high cost critical project components which are at substantial risk of not being timely completed because of a shortage of Borrower's counterpart funds. It would be advisable that Borrower's counterpart funds be better allocated to finance project components which are easy to procure and less complex to implement. In Yacyretá, the Bank loans were allocated to the financing of civil works, a very clearly defined component of the project to be built by an international consortium. However, counterpart funds were allocated to finance the multiple and very complex works and activities comprising the resettlement and environmental components. Completion of these components was essential for filling the reservoir to its design level (83m.) but scarcity of counterpart funds to finance their completion --compounded with other factors-- impeded to reach levels higher than 76m.

Lesson 2. Yacyretá was a complex project that require coordination and support from central and local government agencies, in order to complete resettlement of affected people. The Bank was excessively optimistic in assuming that resettlement and environmental activities could be completed within the agreed time in a manner acceptable to the Bank. Because the scale of the resettlement and environmental plan and its highly political nature, the resettlement and environmental programs should have been designed as the major activity of the project. In the same way, the Bank should have dealt with the political implications of the resettlement and environmental programs early in the life of the project and in a persistent manner along

implementation.

Lesson 3. The Borrower failure to initiate agreed activities in a timely manner should have trigger an early application of legal remedies, as specified in legal documents. However, Bank supervision was too accommodating and ready to reschedule targets and renegotiate plans.

Lesson 4. Political commitment is key to project success. Good project design needs to identify necessary ways in which political commitment of borrower needs to materialize to ensure success. In the case of Yacyretá political commitment should have been measured by approval of the expropriation law, institutional reform of EBY, and allocation of counterpart funding. In the same line, project supervision needs to focus not only on technocratic issues but also on those that represent a test of the political commitment of the borrower, dealing with them appropriately.

Lesson 5. Binational projects represent a major challenge. Experience indicates that the binational nature cannot and should not be translated into cumbersome structure and weak accountability. In the case of Yacyretá these issues were not properly tackled during appraisal and implementation.

Lesson 6: Bank loan resources become available to the project in the Special Account as soon as the loan becomes effective. In order to achieve an equivalent assurance of availability of counterpart funds, it would be advisable to condition either effectiveness or disbursement of the Bank loan to the opening by the Borrower of a Trust Account to be replenished from a reliable source of financing. The Trust Account mechanism was introduced in the third amendment to loan 3520-AR in order to ensure availability of funds to finance pending resettlement and environmental measures of Plans A and B of the resettlement and environmental management program. This mechanism worked very well.

Lesson 7: In dealing with large bi-national infrastructure project, and whenever possible, the Parties should design the project sharing a balanced responsibility in the financing of the project, i.e., by avoiding to place the major burden of project financing in one of the parties only. While a more balanced participation of the parties in project financing would provide incentives to both parties to complete the project efficiently and in a timely manner, an unbalance distribution of responsibilities increases the risk of a project not being completed because of a financing shortage on the most burdened party and a potential lack of interest in the other party due to perverse incentives. Most of the delays in implementing Yacyretá can be attributed to Argentina having the sole responsibility for project financing. Paraguay has contributed to project financing with a relatively very small initial equity amount of only US\$50 million. As a result, Paraguay and Argentina have confronted different sets of incentives when dealing with the project.

Lesson 8. Direct involvement of senior Bank managers during the implementation of a large and lumpy investment project is desirable in a continuous manner and linked to giving a strong support to the project team. This would permit early intervention of Bank managers in situations that have the potential to produce critical situations in the project. In the Yacyretá II project, the financial and public image crises of project were resolved only after they had unfolded thanks to a careful but energetic handling of the situation by Bank management and project team.

Lesson 9. Land acquisition and resettlement of population must be closely coordinated in time. Given the case, this requires early enacting of expropriation laws and a census of lots and owners from whom the land will be expropriated. The timetable for relocation of people should be in harmony with the timetable for land acquisition, supported with timely availability of funds for payment of land expropriated, and driven by the deadline to impound the reservoir.

Lesson 10. In order to avoid settlement of new families or merchants within the boundaries of the project to be affected by the impoundment of the reservoir, the project-implementing agency should monitor and enforce strict control measures to impede access of new people to the affected areas, early in project implementation.

Lesson 11. In order to minimize the dislocation of family incomes and their access to community services, the sites for resettlement should be chosen as close as possible to the original employment sources of the family members.

Lesson 12. Although the EMP called for a high level Environmental Unit, with executive and decision making capabilities, loan agreement did not call for the establishment of such arrangement. Therefore, the technical staff in the organizational scheme of EBY has always been unable to promote effectively environmental issues and ensure a proper balance between environmental, financial and technical concerns. Environmental issues in a project such as Yacyretá require that environmental staff be placed at the highest levels of decision making within the organization.

Lesson 13. Procurement and decision making procedures regarding contracts and legal agreement in EBY were designed to deal with major infrastructure works and electromechanical equipment. EMP activities involve a series of punctual and individual activities but of much lower amounts than any civil works or equipment. However, EBY applies the same procedures to all transactions. Monitoring efforts, carried out under Convenios with NGOs and other institutions, have to be approved through the same cumbersome process each year. EMP activities have suffered delays because of these procedures, creating delays in planning efforts by the environmental unit, and lowering morale in environmental unit staff. The Bank could have prevented some of this problems but fail to do so.

## **9. Partner Comments**

*(a) Borrower/implementing agency:*

Copies of the draft ICR were provided to the Borrower through the Ministry of Infrastructure and Housing, and also to the implementing agency, Entidad Binacional Yacyretá (EBY). In both cases, comments to the draft ICR were requested, and both the Borrower and EBY were invited to provide their assessment of the experience implementing the Yacyretá project and working in partnership with the Bank.

EBY provided in Spanish extended and detailed comments to the draft ICR which are available for consultation in the project files. Most of EBY's comments were taken into account in preparing the final version of the ICR.

Following are some substantive issues raised by the implementing agency EBY, including some where their views differ from those presented in this ICR:

(a) Contrary to ICR's position, EBY considers that the Bank's no-objection to the raising of the reservoir level to 76m, granted in 1994, cannot be considered as a mistake. When the decision was adopted, the intention was to operate at 76m for only one year and then to move forward toward the 83m level. Negative consequences were generated as a result of unanticipated situations.

(b) EBY considers that the only real option for final operation of Yacyretá is to raise the level of the reservoir to its original design level of 83m. In this context, there is no need to search for an "optimum level" of operation other than 83m. Operating at level above 76m but below 83m has never been fully analyzed, it is not contemplated in the Binational Treaty and/or the legal agreements with the Bank, and would probably imply higher cost than going to 83m. Furthermore, EBY points out that raising the level to 83m was endorsed by the Bank's Blue Ribbon Panel Report as the best option.

(c) Suspension of counterpart funding and changing original plans was not only the result of the so-called " Tequila Crisis". Other factors, not explicitly cited by EBY, play a role. In addition, following the Tequila Crisis, EBY and the borrower made efforts to overcome financial constraints and continue with agreed upon plans.

(d) EBY considers that NGO interventions have not helped identify unforeseen impacts or situations not properly anticipated by the implementing agency. There were unanticipated impacts but EBY acted timely and effectively to correct them.

(e) When analyzing the project costs, EBY considers that financial cost should not be included as part of project investments. This criteria was the one adopted by the Bank at appraisal.

(f) Finally, EBY points out that Argentina and Paraguay have never rejected the possibility of private capital participation in the completion of the project. Parliament in both Argentina and Paraguay rejected the option of transferring ownership over the entire project to private interest. Private capital participation in fact is considered as a necessity in order to complete the project and raise the level of the reservoir to 83m.

*(b) Cofinanciers:*

#### **Comments from Interamerican Development Bank**

As cofinancier of the Yacyretá Project, the Interamerican Development Bank (IDB) provided detailed comments to the draft ICR. A full copy of IDB's comments is available in the project files. Main points made by IDB are related to lessons learned during project implementation stressing the following issues:

(a) During project implementation, EBY has been subject to excessive political pressures. As a

result, EBY has reacted to situations and problems under the influence of political circumstances, and reacted to current events. Political considerations and interference are also responsible for frequent changes in EBY's management and the associated discontinuities.

(b) Project was affected by an excessive concentration of decisions making authority in EBY's senior management. This situation was responsible for delays implementing plans and agreed upon actions.

(c) The bi-national nature of EBY generated difficulties and complications insofar as it forced the project to operate with not necessarily similar criteria and rules.

(d) In spite of recent improvements, EBY was slow in recognizing above mentioned problems and searching for solutions.

*(c) Other partners (NGOs/private sector):*

## **10. Additional Information**

See Annex 7 for list of additional information and supporting documents

## Annex 1. Key Performance Indicators/Log Frame Matrix

### Outcome / Impact Indicators:

Indicator/Matrix	Projected in last PSR <sup>1</sup>	Actual/Latest Estimate
<p>(i) Provide an efficient supply of energy in the mid 1990s by ensuring operation of Yacyretá's first six units with adequate transmission system</p>		<p>The 20 turbine generating units are delivering about 2/3 of their design capacity as long as the Yacyretá reservoir remains filled to level 76m only. To December 2000, Yacyretá has delivered a cumulative output of 56,226 million kWh worth US\$1,763 million valued at the adjusted US\$30 per MWh established in the Yacyretá Treaty. Had the reservoir level been raised to level 78m in 1995 and 83m in 1998, Yacyretá would have delivered a cumulative output of about 74,400 million kWh worth US\$2,326 million valued at the adjusted US\$30 per MWh of the Treaty, or a financial loss of US\$563 million. The financial loss is about US\$1,620 million if the cumulative output-not-delivered by Yacyretá through December 2000 is valued at the actual average retail price of kWh.</p>
<p>(ii) Tighter environmental protection and appropriate handling of social aspects in Yacyretá</p>	<p>The prolonged operation of the reservoir at level 76m produced unanticipated environmental, resettlement and civil society problems.</p> <p>Mitigation of those problems is being done through Plan B requiring to: (a) resettle all families from the land stripe 76m-78m; (b) accelerate construction of sewerage system for the cities of Posadas and Encarnación; (c) relocate a polluting slaughterhouse; (d) control illegal squatters; and (e) contract an independent evaluation of the environmental management.</p>	<p>The Yacyretá reservoir was impounded to level 76m in September 1994. In May 1996, the parties agreed on Plan A to complete pending actions related to premature filling of the reservoir to level 76m. The actions were completed in December 1998.</p> <p>Plan B completed resettlement of all families of the strip 77-78m. Also the water treatment plant was built and the EMP was evaluated by independent consultants.</p>
<p>(iii) Private capital participation in Entidad Binacional Yacyretá (EBY)</p>		<p>In April 1997, the Congresses of Argentina and Paraguay did not endorse an Agreement between the GOA and the GOP --based on the recommendation made by an international consultant-- to call an ICB to select a private concessionaire for marketing Yacyretá production, operating and doing maintenance of the hydroelectric plant, and completing the project.</p> <p>Argentina succeeded in privatizing the 500 kV lines linking Yacyretá with the national interconnected system. A toll paid for the power and energy flowing through these 500 kV lines remunerates the owners of the lines.</p>

**Output Indicators:**

Indicator/Matrix	Projected in last PSR	Actual/Latest Estimate
(i) Completion of Yacyretá's basic permanent structures		<p>The project completed: (a) an earth dam of about 65km long with a uniform elevation above sea level of 86m, and a maximum height of 42m (1996); (b) two spillways with a total water discharge capacity of 95,000 m<sup>3</sup>/sec (1993); (c) a conventional covered power house to lodge 20 turbine-generators and their ancillary facilities (1994); (d) a structure to allow up-stream passage of fishes (1996); (e) a navigation lock for ships of a maximum draft of 12 ft. (1996) (f) permanent villages to house supervisory personnel during construction and personnel in charge of project operation (1993); (g) about 90 km of roads linking Argentina and Paraguay; and (h) a 1,500 m long bridge/dike and water flow regulation over the Aña Cuá branch of the river. Works such as the Arroyos' (houses and infrastructure for the Creek Overflow Program, COP) and sanitation works, are on-going. The COP is expected to be completed at the same time that the Plan B.</p>
(ii) Installation of Yacyretá's first six generating units		<p>The first unit was commissioned on schedule and began to supply energy to the 500 kV national interconnected system in September 1994. Each of the second to sixth unit, as well as the seventh to twentieth unit, were commissioned a few weeks ahead of schedule. The last generating unit was commissioned in May 1998.</p>
(iii) Implementation of the 500 kV Yacyretá-Resistencia transmission link		<p>Private investors selected through ICB were awarded the construction, ownership and operation of the 500 kV lines linking Yacyretá to the national interconnected system. The first phase was completed on time in 1994. It comprised a 269 km long 500 kV line between substations Resistencia and Rincón in Yacyretá, passing through the intermediate substation Santa María. The second phase was completed in 1997. It comprised a 507 km 500 kV line between substations Salto Grande and Rincón in Yacyretá, also passing through substation Santa María. Additionally, a 85 km long 500 kV line was built between substations Posadas and Rincón in Yacyretá.</p>

<p>(iv) Implementation of Resettlement Program</p>	<p>Pending Actions:  (a) Issuing of titles to 145 families in Argentina and 47 families in Paraguay;  (b) Construction of the Municipal market in city of Encarnación;  (c) Carry out a study on sedimentation in the reservoir, particularly in the zone close to the main dam.  Families to be resettled: below level 83m: 7,370  Creeks flooding: 3,258  Total to be resettled: 10,628  Also, about 700 merchants and 460 brick makers are to be relocated or compensated.</p>	<p>Families already resettled:  period 1980-1992: 1,438  period 1993-1994: 1,118  period 1995-2000: 2,707  Total resettled: 5,378  Urban families were resettled to 4 new urban settlements. Rural families were resettled to 6 rural places.  Also, 808 brick makers were either resettled into 3 sites and 209 compensated in cash for the loss of the raw material (clay).</p>
<p>(v) Implementation of Environmental Management Program</p>	<p>Pending actions:  (a) Updated Environmental Management Plan. It is not a requirement of Yacyretá II, but in order to raise the reservoir level above 79m, an updated environmental management plan needs to be prepared to the satisfaction of the Bank. The updated plan should include, but not be limited to, re-organization of the EBY Environmental Unit, better budget allocation, dissemination activities, and preparation of operation rules for the reservoir.  (b) Decision to build a 250 MW hydroelectric plant on the Aña Cuá branch of the Paraná river. Construction of this plant is not a condition of the Bank loan. however, in addition to generating electricity, the plant is desirable because of its beneficial impact on the environment;  (c) Retrofit of deflectors on the Main Branch spillway, to reduce gas supersaturation which harms fish below the dam;  (d) Study of the relative biodiversity significance of natural habitat areas to be flooded between levels 76m and 83m, specially at the still unflooded Aguapey and Tacuary Valleys, and the extensive sand dunes at 76m east end of Yacyretá Island;  (e) Construction of the slaughter house in city of Encarnación. The site of the slaughter is decided, its construction is under bidding, and the approval of its environmental assessment has been requested to the SEM.  (f) Construction of sanitation works in cities of Posadas and Encarnación.</p>	<p>The project implemented:  Four new protected areas totaling about 55,000 hectares were implemented: Apipé Grande, Galarza, Santa María and Isla Yacyretá. These areas are greater than the area flooded by the filling of the reservoir to level 76m and are representative of the ecosystem affected by the project.  A spillway built in the Aña Cuá branch of river Paraná guarantees a minimum flow of 1,500 m3/sec maintaining the river in a near natural state.  A facility built in the main dam transfers fishes up stream to allow them migrate, complete their breeding cycle, and maintain the survival of the species.  A security zone in the Paraná river to ensure an effective control of illegal fishing.  A program to support two captive populations and reintroduction trials of globally threatened Aylacostoma snails which lost their Paraná River habitat when the reservoir was filled to 76m.  A program to manage productive areas and provide a living environment to the saffron-cowled Backbird or Chopi Say'ju (<i>xanthopsar flavus</i>).</p>
<p>(vi) Assessment of possible private capital participation in EBY</p>		<p>The assessment was done in 1995 by an international consulting firm. The recommendation to privatize Yacyretá was rejected in 1997 by the Congresses of Argentina and Paraguay. As a result, expected completion of Yacyretá by private investors did not materialize.</p>

End of project



## Annex 2. Project Costs and Financing

Project Cost by Component (in US\$ million equivalent)

Project Cost By Component	Appraisal Estimate US\$ million	Actual/Latest Estimate US\$ million	Percentage of Appraisal
Hydroelectric Plant	1215.00	3028.00	249
Transmission System	10.60	1.00	9
<b>Total Baseline Cost</b>	1225.60	3029.00	
<b>Physical Contingencies</b>	167.40		
<b>Total Project Costs</b>	1393.00	3029.00	
<b>Total Financing Required</b>	1393.00	3029.00	

Total financing required does not include Interest During Construction

Project Costs by Procurement Arrangements (Actual/Latest Estimate) (US\$ million equivalent)

Expenditure Category	ICB	Procurement Method <sup>1</sup>			N.B.F.	Total Cost
		NCB	Other <sup>2</sup>			
<b>1. Works</b>	380.10 (241.90)	0.00 (0.00)	0.00 (0.00)	73.40 (0.00)	453.50 (241.90)	
<b>2. Goods</b>	689.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	689.00 (0.00)	
<b>3. Services</b>	66.70 (48.10)	0.00 (0.00)	0.00 (0.00)	11.80 (10.00)	78.50 (58.10)	
<b>4. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	
<b>5. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	
<b>6. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	
<b>Total</b>	1135.80 (290.00)	0.00 (0.00)	0.00 (0.00)	85.20 (10.00)	1221.00 (300.00)	

<sup>1/</sup> Figures in parenthesis are the amounts to be financed by the Bank Loan. All costs include contingencies.

<sup>2/</sup> Includes civil works and goods to be procured through national shopping, consulting services, services of contracted staff of the project management office, training, technical assistance services, and incremental operating costs related to (i) managing the project, and (ii) re-lending project funds to local government units.

**Project Financing by Component (in US\$ million equivalent)**

Component	Appraisal Estimate			Actual/Latest Estimate			Percentage of Appraisal		
	Bank	Govt.	CoF.	Bank	Govt.	CoF.	Bank	Govt.	CoF.
Hydroelectric Plant	297.50	468.70	595.70	462.20	1084.30	1562.50	155.4	231.3	262.3
Transmission System (first stage)	1.00	125.40	0.00	1.00	0.00	0.00	100.0	0.0	0.0
<b>TOTAL</b>	298.50	594.10	595.70	427.20	1084.30	1562.50	143.1	182.5	262.3

Bank includes US\$ 300 million from Loan 3520-AR and US\$ 127.2 million from loan 2854-AR.

Government includes EBY, Central Bank, and National Government.

Co-financing includes IDB loans, suppliers, credits, export agencies, other sources.

### Annex 3. Economic Costs and Benefits

#### Annex 3. A1: YACYRETÁ HYDROELECTRIC PROJECT II

Economic Rate of Return - Incremental investment cost only (Supply to 500 kV lines)

Year	Costs				Benefits					Net Benefit 2,000 US\$million	MUV Factor	
	Investment (US\$ million)		O&M	Total	Sales	Price	Revenues	Net Benefit				
	Generation	Transmi	Distrib	US\$million	US\$million	(GWh)	US\$/MWh	US\$million	US\$million			
1,992	141.8				141.8					-141.8	-134.2	1.056
1,993	433.5				433.5					-433.5	-411.7	1.053
1,994	430.9			1	431.8	354.9	30.00	10.6		-421.2	-385.7	1.092
1,995	360.4			4	364.3	3,783.2	30.00	113.5		-250.8	-212.9	1.178
1,996	231.4			33	264.0	6,337.8	30.00	190.1		-73.9	-65.7	1.125
1,997	129.2			55	184.1	10,246.4	34.72	355.8		171.7	160.1	1.072
1,998	143.5			55	198.6	11,733.9	30.98	363.5		165.0	156.8	1.052
1,999	72.1			43	115.3	11,879.8	30.41	361.3		246.0	240.2	1.024
2,000	77.4			43	119.9	11,890.4	30.98	368.4		248.5	248.5	1.000
2,001	101.0			43	144.0	11,692.0	31.75	371.2		227.2	227.2	1.000
2,002	202.0			43	245.0	12,064.0	31.75	383.0		138.0	138.0	1.000
2,003	252.0			43	295.0	12,281.0	31.75	389.9		94.9	94.9	1.000
2,004	252.0			43	295.0	13,666.0	31.75	433.9		138.9	138.9	1.000
2,005	203.0			50	253.0	15,192.0	31.75	482.3		229.3	229.3	1.000
2,006				50	50.0	19,405.0	31.75	616.1		566.1	566.1	1.000
2,007				50	50.0	19,405.0	31.75	616.1		566.1	518.4	1.092
2,008				50	50.0	19,405.0	31.75	616.1		566.1	480.6	1.178
2,009				50	50.0	19,405.0	31.75	616.1		566.1	503.2	1.125
2,010				50	50.0	19,405.0	31.75	616.1		566.1	528.1	1.072
2,011				50	50.0	19,405.0	31.75	616.1		566.1	538.1	1.052
2,012				50	50.0	19,405.0	31.75	616.1		566.1	552.8	1.024
2,013				50	50.0	19,405.0	31.75	616.1		566.1	566.1	1.000
2,014				50	50.0	19,405.0	31.75	616.1		566.1	566.1	1.000
2,015				50	50.0	19,405.0	31.75	616.1		566.1	566.1	1.000
2,016				50	50.0	19,405.0	31.75	616.1		566.1	566.1	1.000
2,017				50	50.0	19,405.0	31.75	616.1		566.1	566.1	1.000
2,018				50	50.0	19,405.0	31.75	616.1		566.1	566.1	1.000
2,019				50	50.0	19,405.0	31.75	616.1		566.1	566.1	1.000
2,020				50	50.0	19,405.0	31.75	616.1		566.1	566.1	1.000
2,021				50	50.0	19,405.0	31.75	616.1		566.1	566.1	1.000
2,022				50	50.0	19,405.0	31.75	616.1		566.1	566.1	1.000
2,023				50	50.0	19,405.0	31.75	616.1		566.1	566.1	1.000
2,024				50	50.0	19,405.0	31.75	616.1		566.1	566.1	1.000
2,025				50	50.0	19,405.0	31.75	616.1		566.1	566.1	1.000
Total	3,030.3			1,455	4,485.1	509,221.4		16,145.8	11,660.6	11,470.7		
	1,730.3			368	2,034.3	112,878.4		3,571.0	917.0	935.3	NPV	
									15.4%	15.8%	ERR	

Annex 3. A2: YACYRETÁ HYDROELECTRIC PROJECT II

Economic Rate of Return - All investment cost (Supply to 500 kV lines)

Year	Costs				Benefits					MUV Factor
	Investment (US\$ million)	O&M US\$mill	Total US\$millio	Sales (GWh)	Price US\$/MWh	Revenues US\$million	Net Benefit US\$million	Net Benefit 2,000.0 US\$million		
1,979	266		266				-266.2	-409.6	0.650	
1,980	383		383				-383.1	-537.3	0.713	
1,981	220		220				-219.6	-306.8	0.716	
1,982	161		161				-160.7	-227.9	0.705	
1,983	69		69				-69.4	-100.8	0.689	
1,984	197		197				-197.2	-292.1	0.675	
1,985	159		159				-158.9	-233.7	0.680	
1,986	284		284				-284.5	-354.7	0.802	
1,987	310		310				-310.0	-352.2	0.880	
1,988	445		445				-444.9	-471.3	0.944	
1,989	366		366				-366.0	-390.2	0.938	
1,990	314		314				-314.1	-316.9	0.991	
1,991	233		233				-233.4	-230.4	1.013	
1,992	142		142				-141.8	-134.2	1.056	
1,993	434		434				-433.5	-411.7	1.053	
1,994	431		1 432	354.9	30.00	10.6	-421.2	-385.7	1.092	
1,995	360		4 364	3,783.2	30.00	113.5	-250.8	-212.9	1.178	
1,996	231		33 264	6,337.8	30.00	190.1	-73.9	-65.7	1.125	
1,997	129		55 184	10,246.4	34.72	355.8	171.7	160.1	1.072	
1,998	143		55 199	11,733.9	30.98	363.5	165.0	156.8	1.052	
1,999	72		43 115	11,879.8	30.41	361.3	246.0	240.2	1.024	
2,000	77		43 120	11,890.4	30.98	368.4	248.5	248.5	1.000	
2,001	101		43 144	11,692.0	31.75	371.2	227.2	227.2	1.000	
2,002	202		43 245	12,064.0	31.75	383.0	138.0	138.0	1.000	
2,003	252		43 295	12,281.0	31.75	389.9	94.9	94.9	1.000	
2,004	252		43 295	13,666.0	31.75	433.9	138.9	138.9	1.000	
2,005	203		50 253	15,192.0	31.75	482.3	229.3	229.3	1.000	
2,006			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,007			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,008			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,009			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,010			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,011			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,012			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,013			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,014			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,015			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,016			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,017			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,018			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,019			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,020			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,021			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,022			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,023			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,024			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
2,025			50 50	19,405.0	31.75	616.1	566.1	566.1	1.000	
Total	6,438		1,455 7,893	509,221.4		16,145.8	8,252.7	7,522.2		
	2,302		368 2,390	112,878.4		3,571.0	-1,535.4	-2,065.3	NPV	
							4.08%	3.35%	ERR	

Annex 3. B1: YACYRETÁ HYDROELECTRIC PROJECT II

Economic Rate of Return - Incremental investment cost only (Supply to spot market)

Year	Costs					Benefits							2000 US\$millio n	MUJ Factor	
	Investment (US\$ millio)		O&M	Total	Sales	SPOT	Paragua	Price	Parag	Revenues	Net Bene				
	Genera	Trans & CAM	Dis	US\$mil	S\$millio	Total (GWh)	(GWh)	(GWh)	Spot US\$/ MWh	US\$/ MWh	Total US\$mill	US\$millio			
1,992	142				142							-141.8	-134.2	1.056	
1,993	434				434							-433.5	-411.7	1.053	
1,994	431	0.5		1	432	355	355		27.02		9.6	-422.7	-387.1	1.092	
1,995	360	9.7		4	374	3,783	3,783		25.27		95.6	-278.4	-236.3	1.178	
1,996	231	43.3		33	307	6,338	6,332	6	23.69	30.00	150.2	-157.1	-139.7	1.125	
1,997	129	57.6		55	242	10,246	10,061	185	19.92	32.46	206.4	-35.3	-32.9	1.072	
1,998	143	48.8		55	247	11,734	11,617	116	19.55	30.98	230.7	-16.6	-15.8	1.052	
1,999	72	57.3		43	173	11,880	11,834	46	21.91	30.38	260.7	88.1	86.1	1.024	
2,000	77	53.4		43	173	11,890	11,860	30	24.21	30.96	288.1	114.8	114.8	1.000	
2,001	101	54.0		43	198	11,692	11,634	58	26.10	31.75	305.5	107.5	107.5	1.000	
2,002	202	54.0		43	299	12,064	12,004	60	25.10	31.75	303.2	4.2	4.2	1.000	
2,003	252	52.7		43	348	12,281	12,220	61	19.60	31.75	241.4	-106.3	-106.3	1.000	
2,004	252	54.2		43	349	13,666	13,598	68	22.90	31.75	313.6	-35.6	-35.6	1.000	
2,005	203	55.9		50	309	15,192	15,116	76	26.20	31.75	398.5	89.6	89.6	1.000	
2,006		51.1		50	101	19,405	19,308	97	25.20	31.75	489.6	388.5	388.5	1.000	
2,007		30.9		50	81	19,405	19,308	97	24.20	31.75	470.3	389.4	356.6	1.092	
2,008		30.5		50	81	19,405	19,308	97	23.20	31.75	451.0	370.5	314.5	1.178	
2,009		24.7		50	75	19,405	19,308	97	22.20	31.75	431.7	357.0	317.3	1.125	
2,010		8.1		50	58	19,405	19,308	97	21.20	31.75	412.4	354.3	330.5	1.072	
2,011		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	379.7	1.052	
2,012		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	390.1	1.024	
2,013		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000	
2,014		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000	
2,015		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000	
2,016		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000	
2,017		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000	
2,018		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000	
2,019		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000	
2,020		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000	
2,021		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000	
2,022		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000	
2,023		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000	
2,024		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000	
2,025		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000	
Total	3,030	823		1,455	5,308	509,221	506,574	2,646			11,936.8	6,628.5	6,572.7		
	1,730	327		368	2,304	112,878	112,246	764			2,620.1	-138.8	-80.2	NPV	
											9.2%	9.5%	ERR		

Annex 3. B2: YACYRETÁ HYDROELECTRIC PROJECT II

Economic Rate of Return - Incremental investment cost only (Supply to spot market)

Year	Costs					Benefits							Net Benefit 2000 US\$mill	MLV Factor
	Investment (US\$ million)		O&M	Total	Sales	SPOT	Paragua	Price	Paragua	Revenues	Net Bene			
	Gen'tn	Trans & CAMM	Dis US\$mil	US\$mil	Total (GWh)	(GWh)	(GWh)	Spot US\$/MW	US\$/M	Total US\$mil	US\$mill			
1,979	266				266							-266.2	-409.6	0.650
1,980	383				383							-383.1	-537.3	0.713
1,981	220				220							-219.6	-306.8	0.716
1,982	161				161							-160.7	-227.9	0.705
1,983	69				69							-69.4	-100.8	0.689
1,984	197				197							-197.2	-292.1	0.675
1,985	159				159							-158.9	-233.7	0.680
1,986	284				284							-284.5	-354.7	0.802
1,987	310				310							-310.0	-352.2	0.880
1,988	445				445							-444.9	-471.3	0.944
1,989	366				366							-366.0	-390.2	0.938
1,990	314				314							-314.1	-316.9	0.991
1,991	233				233							-233.4	-230.4	1.013
1,992	142				142							-141.8	-134.2	1.056
1,993	434				434							-433.5	-411.7	1.053
1,994	431	0.5		1	432	355	355		27.02		9.6	-422.7	-387.1	1.092
1,995	360	9.7		4	374	3,783	3,783		25.27		95.6	-278.4	-236.3	1.178
1,996	231	43.3		33	307	6,338	6,332	6	23.69	30.00	150.2	-157.1	-139.7	1.125
1,997	129	57.6		55	242	10,246	10,061	185	19.92	32.46	206.4	-35.3	-32.9	1.072
1,998	143	48.8		55	247	11,734	11,617	116	19.55	30.98	230.7	-16.6	-15.8	1.052
1,999	72	57.3		43	173	11,880	11,834	46	21.91	30.38	260.7	88.1	86.1	1.024
2,000	77	53.4		43	173	11,890	11,860	30	24.21	30.96	288.1	114.8	114.8	1.000
2,001	101	54.0		43	198	11,692	11,634	58	26.10	31.75	305.5	107.5	107.5	1.000
2,002	202	54.0		43	299	12,064	12,004	60	25.10	31.75	303.2	4.2	4.2	1.000
2,003	252	52.7		43	348	12,281	12,220	61	19.60	31.75	241.4	-106.3	-106.3	1.000
2,004	252	54.2		43	349	13,666	13,598	68	22.90	31.75	313.6	-35.6	-35.6	1.000
2,005	203	55.9		50	309	15,192	15,116	76	26.20	31.75	398.5	89.6	89.6	1.000
2,006		51.1		50	101	19,405	19,308	97	25.20	31.75	489.6	388.5	388.5	1.000
2,007		30.9		50	81	19,405	19,308	97	24.20	31.75	470.3	389.4	389.4	1.000
2,008		30.5		50	81	19,405	19,308	97	23.20	31.75	451.0	370.5	370.5	1.000
2,009		24.7		50	75	19,405	19,308	97	22.20	31.75	431.7	357.0	357.0	1.000
2,010		8.1		50	58	19,405	19,308	97	21.20	31.75	412.4	354.3	354.3	1.000
2,011		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000
2,012		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000
2,013		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000
2,014		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000
2,015		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000
2,016		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000
2,017		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000
2,018		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000
2,019		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000
2,020		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000
2,021		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000
2,022		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000
2,023		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000
2,024		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000
2,025		9.1		50	59	19,405	19,308	97	23.59	31.75	458.6	399.5	399.5	1.000
Total	6,438	823		1,455	8,716	509,221	506,574	2,646			11,936.8	3,220.5	2,530.2	
	2,302	327		368	2,468	112,878	112,246	764			2,620.1	-1,841.2	-2,364.5	NPV
											1.9%	1.3%	ERR	

## Annex 4. Bank Inputs

(a) Missions:

Stage of Project Cycle	No. of Persons and Specialty (e.g. 2 Economists, 1 FMS, etc.)		Performance Rating	
	Count	Specialty	Implementation Progress	Development Objective
<b>Identification/Preparation</b> n/a	n/a	n/a		
<b>Appraisal/Negotiation</b> April 1992	1	Task Manager		
	1	Financial Analyst		
	1	Power Engineer		
	1	Anthropologist		
	1	Biodiversity/Environment		
<b>Supervision</b>				
SPN 1 December 1992	1	Financial Analyst	S	S
SPN 2 August 1993	1	Task Manager	U	S
	1	Financial Analyst		
	1	Sanitation Engineer		
	1	Anthropologist		
	1	Biodiversity/environment.		
SPN 3 August 1994	1	Task Manager	HS	HS
	1	Sanitation Engineer		
	1	Resettlement Consultant		
	1	Anthropologist		
	1	Biodiversity/Environment		
SPN 4 July 1995	1	Task Manager	S	S
	1	Sanitation Engineer		
	1	Resettlement consultant		
	1	Anthropologist		
	1	Biodiversity/Environment.		
SPN 5 December 1995	1	Task Manager	S	S
	1	Power Engineer		
	1	Sanitation Engineer		
	1	Resettlement		
	1	Anthropologist		
	1	Biodiversity/Environment.		
SPN 6 March 1996	1	Financial Analyst	U	S
SPN 7 June 1996	1	Task Manager	U	S
	1	Financial Analyst		
	1	Power Engineer		

SPN 8 August 1996	1	Task Manager	U	S
SPN 9 December 1996	1	Task Manager	U	S
	1	Financial Analyst		
	1	Water Pollution		
	1	Resettlement		
	1	Ecologist		
SPN 10 June 1997	1	Task Manager	S	S
	1	Financial Analyst		
	1	Water Pollution		
	1	Resettlement		
	1	Ecologist		
SPN 11 October 1997	1	Task Manager	S	S
	1	Financial Analyst		
	1	Water Pollution		
	1	Resettlement		
SPN 12 March 1998	1	Task Manager	S	S
	1	Financial Analyst		
	1	Water Pollution		
	1	Resettlement		
	1	Environmentalist		
SPN 13 June 1998	1	Task Manager	S	S
	1	Financial Analyst		
	1	Power Engineer		
	1	Environmentalist		
	1	LAC Vice President		
	1	Country Director Argentina		
	1	Country Director Paraguay		
	1	Environment Director		
SPN 14 October 1998	1	Task Manager	U	HS
	1	Financial Analyst		
	1	Resettlement		
	1	Environmentalist		
	1	Water Pollution		
SPN 15 June 1999	1	Project Economist	U	U
SPN 16 October 2000	1	Task Manager	U	U
	1	Resettlement		
	1	Water Pollution		
	1	Environmentalist		
	1	Financial Analyst		



ICR	October 2000	1	Evaluation consultant		
		1	Financial Analyst		

(b) Staff:

Stage of Project Cycle	Actual/Latest Estimate	
	No. Staff weeks	US\$ ('000)
Identification/Preparation		
Appraisal/Negotiation		206.5
Supervision		1796.3
ICR		50.0
Total		2052.8

## Annex 5. Ratings for Achievement of Objectives/Outputs of Components

(H=High, SU=Substantial, M=Modest, N=Negligible, NA=Not Applicable)

	<i>Rating</i>				
<input checked="" type="checkbox"/> <i>Macro policies</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input checked="" type="checkbox"/> <i>Sector Policies</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input checked="" type="checkbox"/> <i>Physical</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input checked="" type="checkbox"/> <i>Financial</i>	<input type="radio"/> H	<input type="radio"/> SU	<input checked="" type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input checked="" type="checkbox"/> <i>Institutional Development</i>	<input type="radio"/> H	<input type="radio"/> SU	<input checked="" type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input checked="" type="checkbox"/> <i>Environmental</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<i>Social</i>					
<input checked="" type="checkbox"/> <i>Poverty Reduction</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input checked="" type="checkbox"/> <i>Gender</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input checked="" type="checkbox"/> <i>Other (Please specify)</i>	<input type="radio"/> H	<input type="radio"/> SU	<input checked="" type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<i>Resettlement</i>					
<input checked="" type="checkbox"/> <i>Private sector development</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input checked="" type="checkbox"/> <i>Public sector management</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input type="checkbox"/> <i>Other (Please specify)</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA

## Annex 6. Ratings of Bank and Borrower Performance

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HU=Highly Unsatisfactory)

### 6.1 Bank performance

#### Rating

Lending

HS  S  U  HU

Supervision

HS  S  U  HU

Overall

HS  S  U  HU

Lending: Marginally Satisfactory

### 6.2 Borrower performance

#### Rating

Preparation

HS  S  U  HU

Government implementation performance

HS  S  U  HU

Implementation agency performance

HS  S  U  HU

Overall

HS  S  U  HU

## **Annex 7. List of Supporting Documents**

**The following additional information and supporting documents are available in the project file:**

- Aide Memoire of the ICR Mission: (Annex 7 of SPN/ICR Mission, October 23, 2000)
- PCR on Argentina, Yacyretá Hydroelectric Project and Electric Power Sector Project, 1992
- PAR on Argentina, Yacyretá Hydroelectric Project and Electric Power Sector Project, 1993
- Maps IBRD Nrs. 14128R and 21188R
- Borrower and Implementation Agency Contribution (in project file): *"EBY - Informe Final sobre el Proyecto Hydroeléctrico Yacyretá II Financiado por el Préstamo IBRD 3520-AR - Febrero 1, 2001"*
- *Tratado de Yacyretá y Normas Complementarias* (Yacyretá Treaty)
- Inspection Panel Report
- Blue Ribbon Panel Report
- Progress Reports to the Board of Directors
- Staff Appraisal Report
- Memorandum of the President
- Loan Agreement
- Project Agreement
- Third Party Agreement
- Supervision Reports
- Project correspondence
- Comments from EBY and IDB (in Spanish)





