

PUBLIC

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

REGIONAL

**YACYRETA HYDROELECTRIC PROJECT
ADDITIONAL FINANCING**

(RG0043)

LOAN PROPOSAL

DECEMBER 1989

REGIONAL

YACYRETA HYDROELECTRIC PROJECT
ADDITIONAL FINANCING

(RG-0043)

LOAN PROPOSAL

This document was prepared by the Project Committee consisting of: Vivianne Blanlot (PEN/EAN); Jacques Cook (LEG); Isaias Lesmes (PEN/FAN); Sergio Mancilla (PEN/ELE); Jairo Salgado (FAR); and Juan J. Luna-Kelser (OP2/OD7), Coordinator

C O N T E N T S

	<u>Page</u>
Basic Socioeconomic Data	i
Summary of the Loan and the Project	viii
Map - Project Site and Service Area	
Loan Proposal	
I. INTRODUCTION	1
A. Background	1
B. IDB participation in the Argentine energy sector	2
C. Priority and missions	3
II. FRAME OF REFERENCE	4
A. Recent macroeconomic developments in Argentina	4
B. The Argentine energy sector	11
C. Current situation of the Argentine electrical power system, and outlook	13
D. Importance of the Yacyretá project for Argentina's electric power subsector	15
E. Annual review of the Argentine electric energy subsector	15
F. Fulfillment of contractual requirements	23
III. THE PROJECT, COST, FINANCING AND EXECUTION	24
A. Purposes	24
B. Description	25
C. Cost and financing	25
D. Project execution	30
E. Ex post evaluation	32
F. Operation and maintenance	32
G. External auditing	33
H. Inspection and supervision	33
I. Resettlement and relocation program	33
J. Environmental impact	37
K. Associated transmission facilities	38
IV. JUSTIFICATION OF THE PROJECT	39
A. Justification	39
B. Technical evaluation	39
C. Economic evaluation	40
D. Institutional and financial evaluation of the project	43
E. Environmental impact	49
F. Resettlement and relocation program	49
V. RECOMMENDATIONS	50

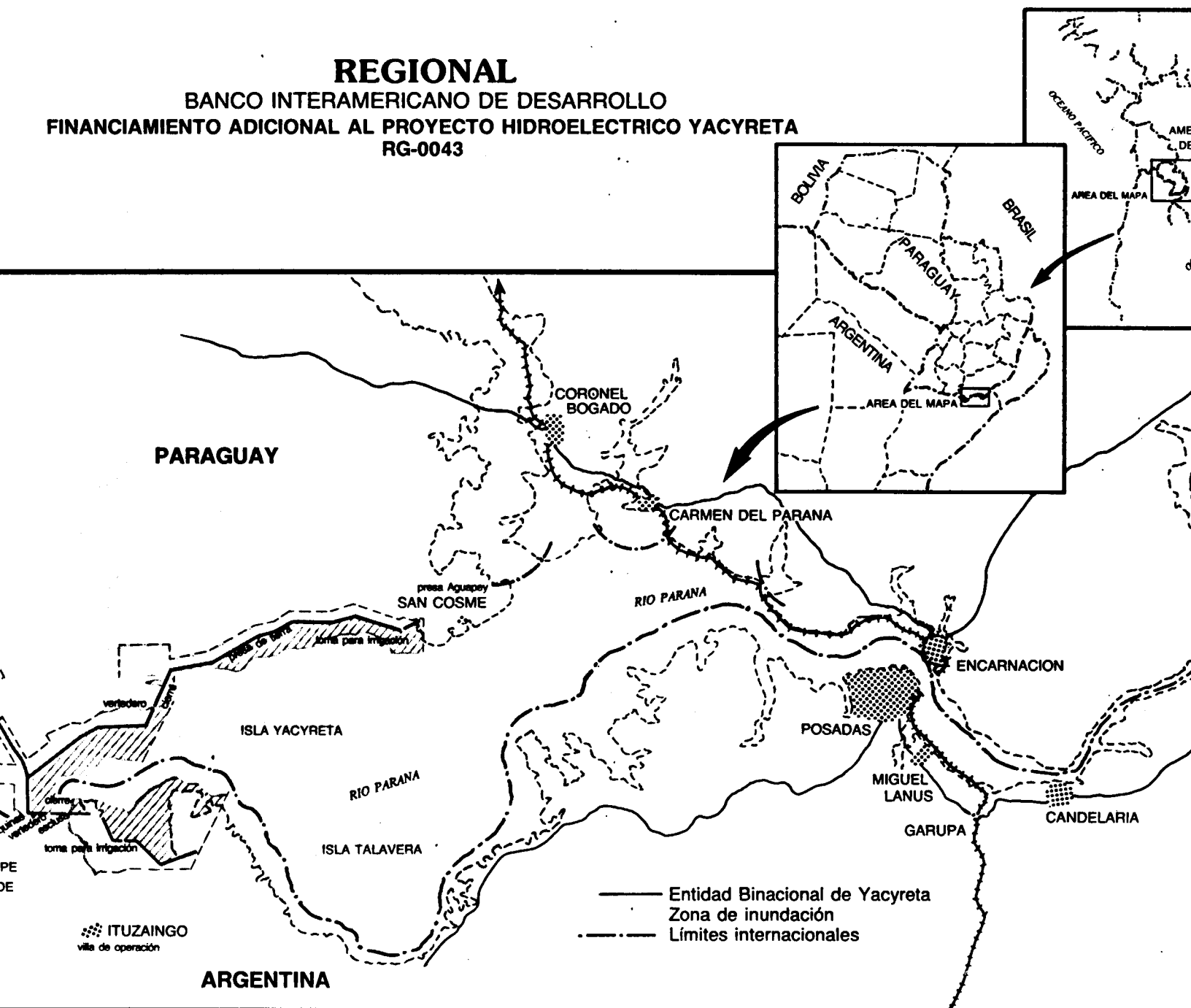
ANNEXES

- 1. Proyecciones financieras de EBY**
- 2. Execution Agreement between Argentina, Paraguay, and the IDB**

APPENDICES:

- 1. Proposed Resolution**
- 2. Recommendations**
- 3. Description of the Project (Annex A to the Loan Contract)**
- 4. Subsector Eléctrico Argentino: Indicadores y Definiciones
(Anexo A al Contrato de Garantía)**

REGIONAL
BANCO INTERAMERICANO DE DESARROLLO
FINANCIAMIENTO ADICIONAL AL PROYECTO HIDROELECTRICO YACYRETA
RG-0043



Basic Socioeconomic Data of Argentina

1. General

Total Population (Millions of Inhabitants, 1988)	32.0
Rural Population (Percentage) (1988)	14.3
Land Area (Thousands of Km2)	2,776.7
Population per Km2	11.5
Birth Rate per 1,000 Inhabitants (1985-90)	23.2
Population Growth Rate (1980-88) (Percentage, average)	1.4
Death Rate per 1,000 Inhabitants (1985-90)	8.6
Infant Mortality Rate per 1,000 Live Birth (1985-90)	32.2
GDP per Capita (1988) Dollars	2,862.0
Life Expectancy at Birth (1985-90)	71.0
Literacy (1982) (Percentage)	94.2
Official Exchange Rate (Australas/Dollars)	0.80
December 1985	0.801
December 1986	1.259
December 1987	3.760
December 1988	13.130
July 1989	567.667
Energy Consumption per Inhabitant, 1988 (Kwh)	1,541.7
Low Income Level per Inhabitant (in Australas)	
December 1986	1,423
December 1987	2,415
December 1988	12,230
June 1989	141,789

Economically Active Population by Sectors (1986):

	<u>Thousands</u>	<u>Percentage</u>
<u>Total:</u>	<u>9,989</u>	<u>100.0</u>
Agriculture and Fishing	1,289	12.9
Mining	50	0.5
Manufacture	2,138	21.4
Construction	1,079	10.8
Commerce	1,828	18.3
Transportation	499	5.0
Electricity, Gas and Water	109	1.1
Financial Services and Others	2,997	30.0

Unemployment and Underemployment Rate (Urban Sector, All Country)

	<u>Unemployment</u>	<u>Underemployment</u>
October 1983	3.9	5.9
October 1984	4.5	5.9
October 1985	5.9	7.4
October 1986	5.2	7.3
October 1987	5.7	8.1
October 1988	6.1	7.9
April 1989*	7.7*	8.3*

* Only Gran Buenos Aires.

	C o m p o s i t i o n (Percentage)					Real Annual Growth Rate (Percentage)			
	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
<u>Gross Domestic Product a/</u> (At Market Prices)									
<u>Expenditure of GDP</u>									
GDP	100.0	100.0	100.0	100.0	100.0	2.6	-4.5	5.5	1.9
Gross Domestic Investment	12.0	10.3	11.4	13.2	12.5	-10.6	-20.0	16.6	17.6
Consumption	82.9	82.1	84.0	83.1	80.6	6.0	-6.4	8.0	0.8
Exports	14.0	16.8	14.8	14.4	16.6	-0.7	12.5	-7.0	-1.0
Imports	8.9	9.2	10.3	10.7	9.7	6.1	-14.5	17.5	6.1
<u>By Origin b/</u>	100.0	100.0	100.0	100.0	100.0	-	-4.5	5.5	1.9
Agriculture	15.4	15.9	14.6	14.7	15.2	3.6	-1.7	-3.2	3.0
Mining	2.7	2.7	2.5	2.4	2.7	-0.6	-2.6	-3.8	0.2
Manufacturing	24.8	22.6	24.2	23.6	22.6	4.0	-10.3	12.9	-0.6
Construction	3.6	3.2	3.3	3.7	3.3	-20.0	-6.7	9.7	14.7
Transportation	11.6	11.7	11.5	11.8	11.4	4.4	-3.8	5.1	2.7
Commerce	13.1	14.1	14.5	14.4	14.0	4.6	-8.3	8.7	1.4
Electricity, Water and Gas	4.4	4.7	4.8	4.9	5.4	6.5	1.3	7.4	6.1
Financial Services	7.7	7.8	7.9	8.0	8.2	1.3	-1.2	7.0	2.8
Other Services (Includes Government)	16.7	17.4	16.7	16.5	17.2	2.1	1.1	0.8	0.8

a/ At 1970 constant prices.

b/ At factor cost.

Source: Central Bank and Ministry of Economy.

Millions of Dollars					
3. <u>External Trade</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
<u>Exports of Goods (FOB)</u>	<u>8,107</u>	<u>8,396</u>	<u>6,852</u>	<u>8,360</u>	<u>8,944</u>
Beef	182	160	226	274	309
Other Meat	75	64	60	63	68
Fresh Fruit	95	123	138	153	165
Corn	744	766	651	298	377
Wheat	923	1,133	393	351	241
Sorghum	451	296	152	67	122
Oil Seeds	948	731	647	326	626
Vegetable Oil	945	970	645	532	873
Leather Goods	331	317	381	419	443
Wool	112	130	122	127	180
Other Agricultural Products	539	481	511	512	600
Industrial Foods Products	1,141	855	1,168	1,337	1,947
Other Manufacture Goods*	1,284	1,712	1,574	1,778	2,814
Mineral Products	365	657	184	125	178
 <u>Imports of Goods (CIF)</u>	 <u>4,584</u>	 <u>3,814</u>	 <u>4,724</u>	 <u>5,820</u>	 <u>5,330</u>
Consumption Goods	249	198	286	318	235
Intermediate Goods	3,224	2,514	3,409	3,874	3,640
Capital Goods	643	648	614	973	1,066
Fuel	468	454	415	653	389

* Includes textiles other than wool.

Source: Central Bank.

Millions of Dollars					
	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
4. <u>Balance of Payments</u>					
Current Account Balance	-2,542.0	-960.5	-2,856.7	-4,230.9	-1,812.0
Merchandise Balance	3,941.2	4,897.0	2,460.1	975.0	3,995.0
Exports of Goods (FOB)	8,072.0	8,419.2	6,851.3	6,359.3	8,943.0
Imports of Goods (FOB)	4,131.8	3,522.0	4,391.2	5,384.3	4,948.0
Net Services	-6,484.2	-5,859.5	-5,318.0	-5,274.4	-5,807.0
Transfers	2.1	0.0	1.2	-8.0	-
Capital Account (Net)	2,594.3	2,254.1	1,681.2	1,850.0	550.0
Change in Net Reserves (- = Increase)	-143.5	-977.8	874.0	2,209.0	1,262.0

a/ Preliminary.

Source: International Monetary Fund and Central Bank.

Percentage of GDP					
	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
5. <u>Non-Financial Public Sector</u>					
Current Revenues	22.9	27.5	25.9	24.4	21.0
Current Expenditures	25.2	25.4	23.2	-24.4	21.0
Current Savings	-2.3	2.1	2.7	0.0	-0.0
Capital Expenditures	6.1	5.6	5.4	6.3	5.0
Deficit (-) Surplus (+)	-8.4	-3.5	-2.7	-6.3	-5.0

a/ Preliminary.

Source: Ministry of Economy.

		Annual Growth Rate			
6.	<u>Monetary Survey</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
	Domestic Credit <u>a/</u>	538.5	313.7	93.1	220.7
	Central Government (Net)	520.3	223.5	113.8	268.0
	Private	553.6	372.2	83.7	196.0
	Monetary Supply (M1)	501.3	571.8	84.8	124.6

a/ Not included credit to "Other Financial Institutions".

* Growth rate from June 1987 through June 1988.

Source: International Monetary Fund.

7.	<u>P r i c e s</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
	(Annual Growth Rate)									
	GDP Deflator	150.2	100.7	105.6	248.2	349.4	653.9	685.0	77.9	128.6
	Consumer Prices (Annual Average)	159.5	100.8	104.5	164.8	343.8	626.7	672.2	90.1	131.3
	(December to December)	139.7	87.6	131.3	109.7	433.7	688.0	385.4	81.9	174.8
	Wholesale Prices (Annual Average)	149.3	75.5	109.6	256.2	360.9	575.1	662.9	63.9	122.9

Source: Central Bank.

8. <u>External Debt</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
<u>Total</u>					
(000 Millions of Dollars)	<u>45.07</u>	<u>46.17</u>	<u>49.33</u>	<u>51.42</u>	<u>58.32</u>
<u>Debtors</u>					
Public Sector	31.71	35.53	40.87	44.72	n.a.
Private Sector	13.36	10.64	8.46	6.70	n.a.
<u>Creditors</u>					
Paris Club 1982-85	-	-	2.06	4.54	5.30
Multilateral Institutions	1.72	1.68	2.28	2.89	4.50
IMF	1.17	1.14	2.29	2.72	3.83
Banks	31.87	32.74	33.78	33.70	36.85
Other Creditors**	10.36	10.61	8.92	7.58	7.85
<u>Debt Services</u>					
Total Services					
(000 Millions of Dollars)	8.56	6.26	8.26	6.18	6.41
Services/Exports of Goods and					
Non-Factorial Services (Percentage)	91.9	86.0	80.7	70.9	75.7

* Preliminary.

** Includes bonds and bilateral debts.

n.a. Not available.

Source: Central Bank.

9. <u>IDB Loans</u>	<u>Millions of Dollars</u>	<u>Percentage of Total</u>
(Approved through December 31, 1988)		
<u>T o t a l</u>	<u>4,304.1</u>	<u>100.0</u>
Ordinary Capital	3,735.5	86.8
Fund for Special Operations	519.4	12.1
SPTB	45.9	1.1
Other Funds	3.1	0.1
 <u>B Y S e c t o r</u>	 <u>4,264.5</u>	 <u>100.0</u>
Agriculture and Fishing	531.1	12.3
Industry and Mining	610.8	14.2
Transportation and Communications	399.4	9.3
Energy	1,737.4	40.4
Education, Science and Technology	280.8	6.5
Housing and Urban Welfare	163.6	3.8
Health	468.1	10.9
Preinvestment	3.3	0.1
Export Financing	109.0	2.5

REGIONAL

Yacyretá Hydroelectric Project
Additional Financing (RG-0043)

Summary of the Loan and the Project

Borrower and
executing agency:

Entidad Binacional de Yacyretá (EBY). The capital stock of EBY is owned, in equal shares, by the companies Agua y Energía Eléctrica (AyEE), of Argentina, and Administración Nacional de Electricidad (ANDE), of Paraguay. Given the binational nature of the project works, a further Execution Agreement will need to be signed by the sovereign Parties to the Yacyretá Treaty (Argentina and Paraguay) wherein those parties will formalize their commitment to the IDB to facilitate completion of the activities for the project.

Guarantor:

The Argentine Nation.

Amount:

The equivalent of US\$250 million.

Terms and
conditions:

Funding is to be provided from the ordinary capital. The repayment term will be 20 years, including five years' grace, and the disbursement term will be two years. A credit fee of 0.75 percent will be charged on undisbursed balances, and an inspection and supervision fee of 1 percent of the loan amount will apply. The interest rate will be variable, set each year and subject to half-yearly review for each disbursement.

Objectives of the
project:

The object of the project is to construct a hydroelectric plant with an installed rated capacity of 2,700 MW and about 20,000 GWh of energy production per year, which will help satisfy projected Argentine and Paraguayan electric energy requirements. As well, the project will help improve navigation, flood control, overland links between Argentina and Paraguay, and the development of irrigation, fish farming and tourism.

Description of
the project:

The project is located on the Paraná River, about 90 km downstream of the cities of Posadas, in Argentina, and Encarnación, in Paraguay. The earthfill dams will be about 70 km long, allowing for a reservoir with a volume of approximately 21,000 Hm³ and a surface area of about 1,700 km². The reservoir complex will include a navigation lock, two spillways, irrigation structures and works to protect the Aguapey basin. The Yacyretá

hydroelectric power plant will have 20, 135-MW units and a step-up substation, from which 230-kV lines will leave for Paraguay and 500-kV lines to Argentina. The project also calls for the construction of housing groupings for the resettlement of about 35,000 people, and the relocation of infrastructure works affected by the reservoir on both sides of the Paraná River. For environmental protection purposes, the body of the plant will contain facilities for the upstream passage of fish, reserves for wildlife displaced in the flooded area, and reservoir cleaning facilities.

Total cost of the project:

The estimated total cost of the project as of December 31, 1988, is US\$5,986,200,000, of which US\$3,183,700,000 has already been spent. The balance of US\$2,802,500,000 is the amount expected to be spent between 1989 and completion of the project in 1996.

Financing plan:

		(US\$million)
<u>Investments</u>		
Engineering and administration		980.9
Direct construction costs		3,382.1
Finance charges		1,390.2
Unallocated expenses		<u>233.0</u>
Total		<u>5,986.2</u>

<u>Financing sources</u>		
IDB loan 346/OC-RG		210.0
IBRD loan 1761-AR		210.0
IDB loan 555/OC-RG		250.0
IBRD loan 2998-AR		250.0
Proposed IDB loan		250.0
Prospective credit		200.0 <u>1/</u>
Export credits		800.0
Local counterpart		<u>3,816.2</u> <u>2/</u>
Total		<u>5,986.2</u>

1/ Possible additional IBRD loan.

2/ Includes Argentine contributions from the Energy Funds and the federal budget. A total of US\$2,437,200,000 of these contributions has been spent.

REGIONAL

Yacyretá Hydroelectric Project Additional financing

(RG-0043)

LOAN PROPOSAL

I. INTRODUCTION

A. Background

- 1.01 The additional financing proposed in this document would supplement the funds made available under loans 346/OC-RG and 555/OC-RG, for US\$210 million and US\$250 million respectively, to ensure that construction work could proceed on the Yacyretá hydroelectric project, a joint undertaking of Argentina and Paraguay. The objectives of this project were outlined in the loan documents for the aforementioned two operations (document PR-906 of November 21, 1978, and document PR-1641, of October 25, 1988), and these objectives still stand. With the completion of this project Argentina will be able to satisfy a substantial portion of its energy demand toward the end of the 1990s, by purchasing power generated by the Yacyretá Binational Agency [Entidad Binacional Yacyretá] (EBY). In addition, the navigation works, irrigation structures, infrastructure facilities and relocation, and environmental protection measures called for in the project will be very beneficial for the service area of the project in Argentina and Paraguay.
- 1.02 The main civil engineering works for the project were started in 1985. As of September 30, 1989, outlays equivalent to 60 percent of the total estimated project cost of US\$5,986,200,000 had been made. The work is adhering rigorously to the completion timetable in effect since 1985; indeed, civil engineering work is ahead of schedule on the Aña-Cuá channel (spillway) and the dams. The principal milestones reached to date are as follows: (i) completion of the concrete structures for the main spillway (18 openings) on the main channel of the Paraná River; (ii) completion of concrete structures for the navigation lock, for which gates and associated equipment now are being built or assembled; and (iii) diversion of the main channel of the Paraná River, in June 1989, which allowed construction to begin on the main dam section. Work is proceeding on all faces of the powerhouse, and contracts have been let for the main items of equipment, including the 20 turbines and the first 10 generators, which now are being manufactured. Contracts for the second 10 generators and main transformers will be awarded and signed by late 1989, marking completion of the procurement of all of the main equipment.

- 1.03 The initial reservoir filling is scheduled for November 1992, and the start-up of commercial generation for February 1993 when the first unit begins operating. The other units will be placed in service gradually (new ones every two months thereafter), until the final unit begins commercial operation in November 1996. When this hydroelectric plant is completed, all of the energy generated by Yacyretá will be purchased by Argentina, for the following reasons: (i) while Paraguay owns half of the energy produced, it will not need any of it for a long time. Fair compensation to Paraguay for allowing Argentina to use all of the energy is written into the rate for the sale of the energy; and (ii) the energy is essential for Argentina to supply its electric power subsector; its 20,000 GWh of firm power would supply 27 percent of the requirements of the National Interconnected System (SIN) in the late 1990s. For these reasons, this proposal will examine only Argentina's electricity subsector. The Paraguayan power subsector was examined before a US\$20 million loan was approved for ANDE in 1988 for a rural electrification expansion program. ^{1/}

B. IDB participation in the Argentine energy sector

- 1.04 In light of the magnitude of external financing required in recent years by Argentina's electric energy subsector, and the need for better coordination on the part of international financing agencies in this area, the IDB and IBRD have provided additional financing assistance to supplement local resources for electric energy investment projects. The two organizations' most recent loans to the subsector, approved in 1988, reflect this new approach. The World Bank, for its part, approved loan 2998-AR to the Argentine Republic, the first sector loan containing financial and institutional conditions entailing a reform process in which annual progress reviews would be conducted. The proceeds of this loan, which is not a quick-disbursing operation, are to be used specifically to defray the cost of the main civil works and engineering contracts for the Yacyretá project.
- 1.05 Loan 555/OC-RG of the IDB also contains sectoral measures, which are substantially similar to those of the IBRD's loan. It should be noted that the proceeds of that financing were to continue to be allocated specifically to the same contracts that had been covered with previous loans (pari passu with the World Bank). As well, the IDB continued to lend funds for the Yacyretá Binational Agency and sign a guarantee contract with the Argentine Republic. The IDB's and IBRD's approaches to the Argentine electricity subsector are reflected in the guarantee contract for the IDB's loan to Yacyretá and in amendments to the contracts for current loans to AyEE and HIDRONOR. The approaches taken and contractual requirements established by the two financing agencies thus embody more of a sectoral

^{1/} See document PR-1593 of November 10, 1987.

strategy, seeking the instillment of principles of operating and financial efficiency that will be needed for a more rational institutional structure for the sector and for improving and expanding its services.

- 1.06 The additional IDB financing for the Yacyretá project being proposed in this document would help ensure the continuity of work for the project, inasmuch as it would address a critical area from the financing standpoint, which is the main civil works and engineering contracts. The status of compliance with covenants in the current contracts with the IDB and IBRD was reviewed in preparing this new operation. The scope and nature of decisions aimed at resolving the problems that have been identified was determined, and progress was made on the preparatory stage for sector financing by the IDB and IBRD to Argentina to be processed in 1990.
- 1.07 The relationship established between the IDB and the Binational Agency, as borrower, and the approach taken by the Bank to the project's financing, have made it possible to devise a scheme that will allow for periodic monitoring of the performance of the Argentine electric power subsector when the scheduled reviews are conducted. The analysis stage of the IDB operation being envisaged for 1990, which would be considered in a sectoral investment framework, would include recommendations needed to ensure that the financial and operational targets would be achieved, in a gradual process of improving the electric power companies from an institutional and operations standpoint.
- 1.08 The World Bank's next financing operation for Yacyretá would be included in the second sectoral investment loan to the Argentine Republic. The IDB and IBRD have worked together on the preparatory stage of this operation, and the two organizations are expected to submit loan proposals to their respective boards of directors in the second half of 1990.
- 1.09 The additional external financing resources available have been concentrated on equipment for the power plant. Since the contracts for the main works and the project engineering were awarded following procedures acceptable to the IDB and the IBRD, it is being recommended that the two organizations continue to help defray the cost of these contracts with their financing. In that event the new IDB funding being proposed in this operation would be needed starting in the third quarter of 1990. Because of this timetable and the shortage of counterpart funding in Argentina, the Bank would be the only source of financing available to Yacyretá in the aforementioned areas.

C. Priority and missions

- 1.10 As a follow-on to negotiations initiated by EBY with the IDB, the Argentine Ministry of Economic Affairs, as guarantor, informed the

Bank on May 2, 1989, that the government was assigning high priority to securing additional financing for the Yacyretá hydroelectric project. On August 25, 1989, the Bank has received confirmation of this priority status from the present Argentine Government, by way of the country's Secretary for Economic Coordination. In addition, through the EBY, the governments of Paraguay and Argentina, on October 25, 1989, once again confirmed to the Bank the high priority they attached to the additional financing.

- 1.11 On the basis of the aforesaid confirmation notice, the Bank sent a mission to Argentina to review the project costs, follow up on technical and economic matters having to do with execution of the project, and come up with a financing table that would ensure that the works could be completed as currently scheduled. Together with an IBRD mission the IDB's mission reviewed the performance of the country's electric energy subsector over the previous 12 months, to assess Argentina's compliance with the commitments it had assumed vis-à-vis the two organizations (see paragraphs 2.73 to 2.78). The findings of this analysis and the conclusions and recommendations arrived at have been included in this document.

II. FRAME OF REFERENCE

- 2.01 Because Argentina is to provide the financing for the Yacyretá project, and Argentina will be using all of the energy to be generated by the project, this chapter will provide information on Argentina only. However, it should be borne in mind that the project is at present an important source of jobs and foreign exchange for Paraguay.

A. Recent macroeconomic developments in Argentina

1. Background

- 2.02 In mid-1988 inflation was on the rise in Argentina, and the spread between the official dollar and the dollar on the parallel exchange market was widening steadily. On August 4, 1988, the country instituted the "Primavera Plan", which designated exchange-rate policy as the basic stabilizing instrument. As well, agreements were reached with business associations to freeze prices and selling mark-ups. The government, for its part, agreed not to increase public-sector wages, to leave rates and fuel costs unchanged, and to lower the V.A.T. rate. This price pact remained in effect for the life of the Plan, i.e., until February 1989.
- 2.03 The slowing of inflation from August 1988 onward was attributable in large measure to the stability of the exchange rate, which in turn hinged upon the continuation of very positive interest rates, achieved at high cost to the Central Bank through the money absorption it practiced by instituting high reserve requirements.

2.04 When the "Primavera Plan" collapsed, hyperinflation was unleashed in the country. The following economic indicators illustrate the severity of the crisis:

- (a) The cost of credit to the private sector in May 1989 reached 32.5 percent per month.
- (b) Tax receipts in June 1989 were only about 50 percent (in real terms) of June 1988 tax revenues.
- (c) In the second quarter of 1989 the gross industrial product dropped by an estimated 13 percent, and wages lost 30 percent of their purchasing power in that period.
- (d) Between February and July 1989, consumer prices climbed 1,877 percent, and the free-market exchange rate 3,723 percent.

2.05 When the new government took office on July 8, 1989, the economy was in a state of turmoil, the culmination of a protracted period of weak economic growth and high inflation caused by deficiencies in the country's basic structures and by the macroeconomic policies that had been set in place. The monthly rate of inflation, in the hyperinflationary climate prevailing in July 1989, was 200 percent; monthly interest rates briefly topped 300 percent, and the parallel exchange rate was 40 times higher than in January 1989. The nation's international reserves were all but depleted, even though it had accumulated substantial external debt arrears. As was noted previously, a fundamental reason for these difficulties was the weakening of public finances in the wake of excessive increases in spending and a falling-off in government revenues. The lower revenues were in turn the result of widespread tax evasion and the erosion of the real value of tax receipts because of inflation. The situation of public-sector enterprises also was precarious, their prices being about 65 percent lower, in real terms, than the 1988 average.

2. The new government's program

(a) General features

2.06 To tackle the situation described above, the government immediately brought in a plan of rigorous stabilization measures and structural reforms, largely in response to the recent hyperinflation experience that had led to the consensus that ways had to be found urgently to stabilize the economy. The measures adopted reflect the conviction that this endemic inflationary pattern could not be reversed by a gradual return to normalcy: immediate, drastic decisions were needed. The experience of the past two decades has shown that there will be no investment of savings in the country unless inflation is held permanently in check.

- 2.07 The five stabilization programs implemented in the period from 1984 to 1989 apparently failed because the necessary adjustments were not made in the structure of the public sector. For this reason, the government's present strategy is to increase private-sector participation in many activities that previously were the preserve of the government. The goal is to gradually reduce the size of the public sector by passing certain key public enterprises over to the private sector, and to improve efficiency in those areas in which the State will continue to operate. The government has indicated that it intends to create an economic climate in which markets will operate freely, by eliminating State and private monopolies and paring back government regulations, including those that restrict foreign competition.

(b) Recent legislation

- 2.08 The principles outlined above have been put into practice in two basic laws that entered into force in September 1989. The first, the State Reform Act, permits the privatization, liquidation, or revamping of public enterprises and the sale of other State-owned assets. The second, the Economic Emergency Act, was to be in force for 180 days, with an option to extend it for a further 180 days. This law specifies measures that are to be taken to improve the fiscal situation in the short term, and promotes a number of structural reforms. The short-term fiscal recovery measures include suspension of subsidies, waiver of foreign investment approval requirements, and suspension of the "Buy-at-Home" Act and the industrial and mining promotion schemes. Special measures also have been adopted with respect to a number of internal taxes, and 50 percent of monthly receipts of earmarked funds (Energy Funds) is to go to general revenues.
- 2.09 The package of structural reforms provided for in the Economic Emergency Act includes the amendment of the Central Bank's Charter to give it functional autonomy, the establishment of a deposit insurance scheme, the setting up of a more efficient banking superintendency system, the founding of an agency to sell off the assets of financial institutions being dissolved and liquidated, weekly publication of the Central Bank's balance sheet, and the provision that the Central Bank will not provide direct or indirect financing for the national government or for the provinces in excess of the limits set out in its Charter.

3. Stabilization efforts

(a) Control of inflation

- 2.10 Stabilization is the focal point of the government's short-term strategy, because it is convinced that its long-range objectives - revitalization of production sectors and structural reforms - can only be realized in a stable economic climate.

- 2.11 With this in mind, the basic short-range objective of the economic program is to reduce the monthly rate of inflation to under 2 percent by December 1989, and bring the country's inflation rates into line with world levels by late 1990. In September 1989 inflation stood at 9.6 percent and in October at 5.9 percent. Inflation control is a prerequisite for any lasting recovery of savings and investment, and hence for sustained economic growth. It is hoped that the combination of falling inflation rates and structural reforms will stimulate activity in the private sector and take economic growth rates to a level at which real per capita income can rise substantially in the medium and long term. Forecasts call for at least a 5 percent gain in gross domestic product by 1990.

(b) Incomes policy

- 2.12 Incomes policy is an essential complement to financial policy in this period of transition toward price stability. As part of the price pact concluded in July with leading industrial companies, it was decided that wage increases above a certain limit would not be reflected in higher prices. For the most part, wage agreements worked out in the third quarter adhered to these guidelines. The government intends to avoid a new inflationary spiral in costs, and the wage policy it has instituted for the six-month period beginning in October 1989 is based on the inflation rate forecast for that period.

(c) Fiscal discipline

- 2.13 Another central objective of the government's economic policy is to quickly restore fiscal discipline. This is absolutely essential for the success of stabilization efforts and a return to price stability. With this goal in mind, the measures instituted by the government are designed to cut the aggregate deficit of the nonfinancial public sector from 16 percent of GDP in 1987 to 1.25 percent of GDP in 1990, bringing operating results nearly into balance. If this is achieved, there would be no need for net domestic public-sector borrowing in 1990. The government has tackled the massive deficit in the first half of 1989 with measures designed to improve the fiscal situation in the second half and in 1990, through increases in revenue and cuts in spending. These measures are described in the following paragraphs.

(1) Increase in government revenues

- 2.14 To achieve its fiscal policy objectives, on July 10 the government raised the rates and prices charged by government enterprises by an average of 690 percent, considerably improving their overall operations situation. It also announced that the general 20 percent tax on exports of industrial products and the 30 percent export duty on agricultural products would remain in effect for a time, but in the long run would be gradually lowered in order to encourage

exports. The Emergency Act also contains a number of provisions that would improve the fiscal situation, such as the temporary suspension of subsidies and a substantial portion of the tax exemptions allowed under the industrial and mining promotion schemes, and the temporary amendment of the revenue-sharing agreements for the oil tax, which will give the Treasury a higher share and leave the special funds with less. The government's finances also have benefited from higher tax receipts in August and September than the low figures reported in previous months. This can be attributed to the drop in inflation and the program instituted by the government to monitor major taxpayers more closely.

- 2.15 Argentina's complex tax system leads to distortions. According to the authorities, high marginal tax rates coupled with a wide array of exemptions undermine the equity and efficiency of the tax system. To tailor the system to the country's needs but still ensure that the government will have enough funds to meet the financial needs of the restructured public sector, a tax reform bill has been drafted and sent to Congress.
- 2.16 The object of the tax reform bill is to revise the rate structure. A core element is the broadening of the value-added tax base to include all goods and services at a flat rate of 15 percent, and cut out all current exemptions. These measures would be phased in over a period of six months, to ease the initial impact on prices. A number of taxes would be abolished to streamline the tax system. The new law is expected to enter into force early in 1990.
- 2.17 The capabilities of Argentina's tax administration system have been deteriorating steadily in recent years, and tax evasion is clearly on the rise. The government is determined to reverse this trend, to ensure that its tax reform objectives are realized. The World Bank is assisting in these efforts with a technical assistance loan to improve the tax collection process by setting up a data bank on major taxpayers. The Tax Reform Act also increases penalties for tax evasion, including imprisonment in the most serious cases.

(ii) Cutbacks in public spending

- 2.18 The authorities have affirmed that fiscal imbalances in the public sector can only be redressed if a significant effort is made to cut spending. This objective is consistent with the goal of paring back the public sector's role in the economy. In the short run, the government's efforts in the area of spending will focus on strict budget execution, a job freeze in the public sector, a prudent public-sector wage policy, and the limitation of interest payments on the domestic debt. In addition, beginning in October 1989, the Treasury will stop its transfers to government enterprises to make up their operating deficits - except for the payroll costs of Empresa de Ferrocarriles [Argentine Railways] - and its transfers to the provinces.

(iii) Finances of government enterprises

- 2.19 To a large extent, the success of the fiscal program will hinge upon the success of efforts to improve control of the finances of government enterprises. In this connection, the government is establishing a Special Commission made up of representatives of the ministries of Economic Affairs, Public Works and Services, and Labor and Social Action, to oversee the operation of the 14 largest public-sector companies. The Commission's tasks will be, *inter alia*, to determine price and wage policies for the companies, establish procurement guidelines for the acquisition of goods and services, and monitor the execution of the companies' operating and capital budgets. To improve the management of funds in public enterprises and other government agencies, there are plans to offset overdue payment obligations among all of them, and also with the provinces. To avoid the accumulation of further arrears in the public sector in the future, a system of automatic monthly offsets would be devised to cancel out balances outstanding.

4. Privatization

- 2.20 The government is giving top priority to its program to transfer public enterprises to the private sector. The State Reform Act mentioned previously gives the Executive Branch wide-reaching powers in this respect. Specifically, the Executive Branch is authorized (barring objection by Congress, which has 90 days to respond) to partition existing public enterprises and transfer them in whole or in part to the private sector, either by sale or through concessions for some or all of their operations. Decrees already have been issued to establish the basic rules for privatizing the Empresa Nacional de Telecomunicaciones and part of the Empresa de Ferrocarriles; the call for bids for the telephone company is scheduled for late January 1990. Provision is also being made for the national airline, merchant marine, several radio and television stations, and the maintenance services for several sections of the nation's highway system to be transferred to the private sector in the near future.
- 2.21 Another of the government's short-range plans is to contract out to private companies the metering, billing, and collection operations of power companies, Obras Sanitarias de la Nación, and Gas del Estado, with a view to raising the revenues of those companies. The government also has stated that it intends to redouble efforts to attract private companies to drill in oil fields controlled by the State company Yacimientos Petrolíferos Fiscales (YPF). Specifically, it intends to sell about 250 minor fields to private companies by the end of 1990, and attract major international petroleum companies through joint ventures to explore and work major areas reserved until now for YPF. It is hoped that these measures will make it possible to cut YPF's capital spending in 1990 substantially, without jeopardizing the goal of expanding oil production. The net gain for the Treasury from asset sales envisaged in the above-mentioned programs is expected to be equal to about 1.5 percent of GDP in 1990.

5. The financial system

- 2.22 If the country could achieve a fiscal situation in which there were no net financing from the nation's banking system, it could more readily implement a comprehensive credit policy that would be in keeping with the objectives of restabilizing prices and strengthening the balance of payments. Given the great importance of these objectives, the Central Bank's monetary program for the final quarter of 1989 and for 1990 is based on a conservative estimate of the demand for money including remonetization.
- 2.23 As a result of years of huge fiscal deficits, the process of demonetization, and selective credit measures, the Central Bank has become the intermediary for most of the financing resources channeled through the banking system. The government intends to return to the commercial banking system the function of credit allocation in accordance with market criteria. Its long-range goal is to reduce the cash reserve and investment levels required of the commercial banks. It also is looking at substantial reforms of government banks, against a backdrop of monetary restraint in which the Central Bank would closely supervise government banking institutions.

6. Foreign trade

- 2.24 The authorities have announced that they plan to ease controls on Argentina's foreign trade and payments system, as an important step in efforts to make more efficient use of resources. The government firmly intends to open the economy to foreign trade, keep the exchange rate competitive, cut out the anti-export bias of the industrial promotion programs, and institute measures to attract foreign investment and encourage the repatriation of capital now outside the country. In August and September 1989, largely because of the measures adopted by the government in July, there was a marked improvement in the country's external balance. It is hoped that these gains will be consolidated as stabilization efforts take hold and long-term measures are implemented to restore balance within the country and restructure its economy.

7. Foreign investment

- 2.25 Restrictions on payments for current transactions have been eased substantially, and further incentives are being devised to attract new direct foreign investment. The success of the privatization program will depend on the quantity of external resources that can be channeled to the country, in the form of return of capital or foreign investors' support for Argentine capital investment needs.

8. Agreement with the International Monetary Fund

- 2.26 On October 12, 1989, Argentina submitted a letter of intent to seek a stand-by arrangement with the International Monetary Fund. The letter outlined the measures called for in the structural reform and

macroeconomic policy program the new government wishes to implement, which have been summarized in the foregoing paragraphs of this proposal. The arrangement, in the amount of US\$1.4 billion, marks the first formal stage in Argentina's restoration of normal relations with its foreign creditors. The Executive Board of the IMF approved the agreement with Argentina on November 10, 1989.

9. External debt

- 2.27 Negotiations are expected to begin shortly with creditors on the settlement of payment arrears and on future financing. At the close of 1988, Argentina's debt, including obligations to the IMF, stood at about US\$60 billion, equivalent to over three quarters of GDP. Interest on the external debt in 1989 is expected to equal about 8.5 percent of GDP. The authorities have stated that the debt must be reduced and the debt-service burden eased if the country is to achieve satisfactory economic growth in the intermediate and long term.

B. The Argentine energy sector

1. Introduction

- 2.28 Argentina has a wealth of energy resources, in the form of oil, gas, hydroelectric energy, coal, and uranium. In the past, these resources have been exploited in accordance with government policies designed chiefly to ensure self-sufficiency, particularly with respect to oil and gas supplies. For the most part, energy resources have been developed by the public sector, and this has created price distortions which have impaired the efficiency of agencies in the energy sector, placed a very heavy financial burden on the public sector, reduced or eliminated private-sector participation, and made it more difficult to build up reserves.
- 2.29 The most noteworthy changes in the structure of demand in the energy sector over the past two decades are the steady increase in gas consumption, from 3 percent of the total in 1960 to 27 percent in 1985, and the increase in demand for electric energy, which went from 5 percent to 11 percent of the total in those same years. In 1985, oil consumption accounted for 50 percent of total final consumption, and other fuels for 12 percent.
- 2.30 Total energy consumption in 1986 stood at about 31 million tons of oil equivalent, giving a per capita consumption of 1.2 tons of oil equivalent, which is slightly over the Latin American average. Between 1970 and 1986 demand rose by 1.95 percent per year, on average, while the GDP increased by 1.22 percent per annum over that same period. The resulting elasticity of 1.55 is considered to be very high by international standards. No major changes have been detected in consumption patterns in the transportation and agriculture sectors.

- 2.31 According to a recent analysis of energy prices and income elasticity, adjusting prices to international levels in the case of oil- and gas-based fuels, and to marginal costs in the case of electricity, has a moderate effect on demand and a very significant impact on income. The measures adopted by the new government on July 10, 1989, are a clear illustration of its desire to rectify current price distortions.
- 2.32 In order to overcome the problems created by inadequate regulatory policies and a complex, fragmented institutional structure, the government has decided to implement a package of reforms in public companies, to help mobilize technical and financial resources to restore growth in the sector, rationalize consumption through a sound pricing policy, and give the private sector a greater role. When it implements these measures, Argentina also will be able to honor its obligations to the IDB and IBRD under current loan agreements.

2. Current situation and prospects

- 2.33 The first part of this chapter summarizes the macroeconomic program of the new government which took office on July 8, 1989, which has decided to bring about substantial changes in the administrative structure of the State, which will affect the institutional structure of the energy sector. It is noted in that summary that the government plans to institute a number of key measures to realize its objective of removing the State from operations and public services that can be run by the private sector.
- 2.34 The new State Reform Act calls for a reorganization of the institutional structure of oil and gas services, which would see Yacimientos Petrolíferos Fiscales (YPF), Gas del Estado (GdE), and Yacimientos Carboníferos Fiscales (YCF) combined in a new National Fuel Company [Empresa Nacional de Combustible]. In the electric power subsector, a Federal Electric Power Company [Empresa Federal de Energía Eléctrica] would be set up to take in AyEE, HIDRONOR, and other generating companies. This law empowered the Executive Branch to proceed with whatever reforms it deems necessary.
- 2.35 The major thrust of the institutional restructuring of the sector, and the legal framework for the changes, have been defined, but studies are still under way on the different forms that the proposed holding companies for the oil and gas and the electric power subsectors could take. The loan agreements of both the World Bank and the IDB contain clauses aimed at seeing institutional measures adopted in the sector. Such clauses are being recommended for the operation proposed herein as well.
- 2.36 The general policy of the present government with respect to oil and gas supplies is to help revive investment in exploration and production, with the goal of surpassing the levels of the last 10 years, by facilitating active, direct private-sector participation.

To that end, the government is proposing to gradually replace State intervention in the setting of prices, margins, allowances, and quotas with market allocation mechanisms and the free interplay of supply and demand. This would be part of a gradual, comprehensive plan to deregulate oil and gas activity and allow for effective free competition reflecting international prices.

- 2.37 The government is in the process of instituting a series of incentives involving concessions, joint ventures, and leases in exploration and production areas. Its objectives are (i) to raise wellhead prices for recently-found crude oil and natural gas, and any incremental production of those products, to world levels; (ii) to do away with obstacles so that exploration and production contracts under the Houston Plan can be given faster approval; (iii) to step up exploration in new areas, offering additional technical data; (iv) to implement the so-called "Petroplan", allowing the private sector to operate some reserved YPF areas; and (v) to seek wider private-sector participation in YPF production operations. In the natural gas industry, the government also is looking at private-sector involvement in three key areas: (i) exploration and production; (ii) transportation using main gas pipelines; and (iii) distribution, conveyance and sale to end-users.
- 2.38 The problems and imbalances of the electric power subsector were clearly set out for the loans approved in 1988 by the IDB and the IBRD. Because of those problems, the loan agreements of the two organizations contain a series of requirements designed to ensure that electric power operations will be conducted efficiently and economically, to wean this subsector from its financial dependence on the government. To achieve that goal, the Argentine Government now is examining possible forms for a new legal and institutional framework for the electric power subsector, so that corrective measures can be authorized to accomplish the following: (i) improve the organization of the subsector; (ii) ensure that a newly-expanded subsector would continue to adhere to principles of economy and efficiency; (iii) make the operation of existing facilities more efficient; (iv) promote energy conservation; (v) cut down on technical losses and stolen power; and (vi) restore the financial health of the electric power companies.

C. Current situation of the Argentine electrical power system, and outlook

- 2.39 In 1988, Argentina's electric power subsector began to feel the effects of an energy crisis, which became more pronounced in the final quarter of that year and the first quarter of 1989. The supply had to be sharply curtailed, leaving an unmet demand of 1,226.2 GWh in 1988 and 2,012.5 GWh ^{1/} in 1989.

^{1/} Preliminary estimates. Includes cuts in service and voltage.

- 2.40 This situation has made it necessary to reassess supply prospects for the intermediate term. The exercise has centered on factors considered to be critical for cost behavior and quality-of-service considerations in the coming years, namely: (i) expected pattern of demand; (ii) realistic expectations of what the country's thermal plants can supply; and (iii) realistic start-up dates and operating patterns for facilities now being built (Bahía Blanca, Atucha II, Piedra del Aguila and Yacyretá).
- 2.41 The principal finding of the above-mentioned reappraisal was that even in scenarios envisaging moderate growth in demand and the commissioning of plants now under construction by their currently-scheduled completion dates, ^{1/} the quality of service in the period between 1990 and 1995 would fall off sharply when measured against generally accepted standards. According to the estimates, the probability of outages would range from 23 percent to 43 percent from 1990 to 1993, and there would be an average energy shortage of between 40 GWh and 264 GWh. In 1994, when Yacyretá units came on stream, the probability of outages would fall to 6 percent and the average energy shortfall to 29 GWh. It is important to note that these same estimates show that delaying completion of Yacyretá by one year would mean prolonging the energy shortage problem, with outage probabilities in the order of 57 percent in 1993 and 1994 and average shortfalls of 1,030 GWh in both years. Some of the options considered for reducing or managing the expected shortfalls are reducing voltage and/or adding in thermal capacity not currently envisaged. Both of these solutions entail a high cost, the former in terms of efficiency of the system and the latter in terms of capital costs for capacity that would only be used to resolve a short-term problem.
- 2.42 The principal recommendations ensuing from the Department of Energy's analysis are the following: (i) projects now under construction must be finished without delay; (ii) efforts to recondition the country's thermal power plants must be stepped up and provision made for their maintenance in the future; such reconditioning efforts should be part of programs designed to minimize the expected cost of rationing for the system; (iii) if it is decided to add new capacity for the critical 1990-1995 period, consideration should be given to options that are not simply high-cost, short-term solutions but would be valid over the long term; and (iv) the expansion program for future years (1995 and thereafter) should be reviewed as soon as possible, to ensure that it pursues the objectives of minimizing costs and making the system reliable. Continued IDB financing for the Yacyretá project is considered to be critical, because any delay in the start-up of Yacyretá operations would severely impair the quality of the service and the financial situation of the electric energy subsector.

^{1/} Atucha II in 1994; Bahía Blanca six months behind schedule; Piedra del Aguila in 1991; Yacyretá in 1993.

D. Importance of the Yacyretá project for Argentina's electric power subsector

- 2.43 For the reasons outlined above, the prompt completion of the project and its commissioning on schedule in 1993 would be very important for the country's energy supply from that year onward. Not only would the project contribute an average of about 20,000 GWh per year of energy, which could replace thermal energy in the system, but it also would help make the electricity system more reliable, given the regular flow of the Paraná River and the way that river ties in with the other major river basins in the system. According to the estimates available, a one-year delay in the project (i.e., to 1994) would mean excess thermoelectric generating costs of from US\$120 million to US\$168 million 1/ in the period from 1993 to 1997. In addition, as was noted earlier, the average energy shortfall in 1993 and 1994 could reach 1,030 GWh, with the concomitant cost 2/ in terms of quality of service.
- 2.44 Failure to complete the project as scheduled would have other consequences from a financial standpoint. If the plant cannot go into production and no energy can be sold to the National Interconnected System, EBY will generate no funds of its own - funds that are to be used mainly to repay the debt incurred to execute the project. The government then would have to continue servicing this debt, which would require an annual outlay of some US\$300 million.

E. Annual review of the Argentine electric energy subsector

- 2.45 In light of the sectoral approach taken by the IDB in its financing for the Yacyretá project (loan 555/OC-RG) and by the World Bank in its loan for the electricity subsector (loan 2998-AR), it was considered necessary to stipulate in the contracts the content and timing of annual review meetings, at which the subsector's performance in the preceding 12 months, activity forecasts for the next 12 months, and proposed solutions to the subsector's short- and long-term problems would be examined. The meetings would ascertain particularly to what extent the requirements set out in the guarantee contract for the IDB's loan to the Yacyretá Binational Agency and in the contract for the World Bank's loan to the Argentine Republic had been fulfilled. The next sections of this proposal summarize the findings of the September 1989 review of the electric power subsector with respect to the honoring of contractual commitments.

1. Expansion plan for the electric energy subsector

- 2.46 The Department of Energy presented a general plan for expanding the country's electricity generating system, for consideration by the IDB and IBRD. Although this plan will need to be adjusted to justify, if

1/ Updated to 1989, and depending on the demand scenario used.

2/ Assuming a cost of US\$0.40/KWh: US\$412 million per year.

so decided, the addition of other works, the bases on which it has been drafted are considered to be sound, as is the Department of Energy's affirmation that it will not be necessary to start any other project until 1991. This means that there is time to fill out the work prepared to date. In any event, it was agreed not to begin construction of a new generating plant for the system without first consulting the IDB and IBRD, as provided for in the guarantee contract for loan 555/OC-RG (see Appendix 2, paragraph 10).

- 2.47 In addition, it was agreed to redo the demand study to look at a range of growth rates and come up with expansion scenarios that would be reviewed periodically as real demand figures become known. In the period from July 1988 to July 1989 there was no growth in demand, owing to the economic and energy crisis in which the country is immersed. The hypothesis that should be adopted for the future should be moderate but should envisage some recovery in the nation's economy and regular supply of the demand for electricity.

2. Study of thermoelectric power generation alternatives

- 2.48 This study has two components. The first assesses the operating conditions of thermal units of over 60 MW and the likelihood that they can be reconditioned, to extend their useful life and restore them to their original state in terms of power and efficiency. The second component examines the feasibility of adding mixed-cycle units to the generating options.
- 2.49 The only element still not completed for the first part of the study is an economic appraisal to decide which units warrant reconditioning. For the second part, a program of visits to manufacturers and power companies now operating mixed-cycle equipment will be drawn up with the IDB and IBRD, to determine how reliable that equipment is. The decision on whether or not to include such units in the expansion plans also will hinge upon the increases recorded in reserves of natural gas, which would be the fuel used to run this equipment.

3. Study of marginal-cost pricing

- 2.50 The first part of this study, an examination of block rates and rates to be charged for the supply of high-voltage energy, has been completed. Still to be prepared are the implementation program for those rates and the study and implementation plan for low-voltage rates.
- 2.51 The approach of the new authorities of the subsector would be to have average rates reflect the corresponding marginal cost, but they also would attempt to ensure that rates for each customer category were the same across the country. Adjustments needed to compensate for the different features of the markets would be made by varying the wholesale block rate for distribution companies, taking care not to distort resource allocation.

4. Study of the legal and institutional framework of the subsector

- 2.52 In March 1989 the IDB and IBRD received a preliminary version of the above study, which contains a compendium of existing legislation, an assessment of the subsector's problems, and a set of suggested measures, some for immediate implementation and others for the future, since current legislation would need to be revamped. Because of the change in authorities midway through 1989, the previous administration could not continue its work to address the items pointed out by the IDB and IBRD in their comments on the study.
- 2.53 With the State Reform Act, the present government has taken an important step toward the restructuring of the subsector. Plans call for a holding company to be established to control the existing national enterprises, whose areas of responsibility could be redefined. Also under study is the idea of setting up a generating and transmission company, leaving distribution to the provincial companies.
- 2.54 The Department of Energy has advised the IDB and IBRD that details of the institutional reform will be worked out by an ad hoc working group beginning in November 1989. It agreed to send the two organizations timetables for the completion of studies in this connection and for the implementation of the recommendations of the studies. Given the urgency of commissioning those studies, the IDB and IBRD agreed that funds from a current IBRD loan to SEGBA may be used to start this work.

5. Financial Recovery Plan (PRF)

(a) Background

- 2.55 In 1988, when the IDB provided financing for the Yacyretá project (loan 555/OC-RG), in order to restore the financial health of the national electric power companies that fall under the control of the Department of Energy, a plan known as the "Financial Recovery Plan" was drawn up with the Argentine authorities to achieve the following objectives: (i) sustained recovery of the finances of companies in the subsector; (ii) positive and steadily-improving operating margins, to enable the companies to cover their operating costs in the short term; (iii) continuing increases in the share of the companies' investment programs that is to be covered with internally-generated funds, such investment programs themselves being consistent with the least-cost expansion plan; and (iv) an increase in the self-financing capacity of companies in the electric power subsector, to cut down on government transfers to the companies, and to avoid excessive cash-flow surpluses or deficits through proper working-capital management. The implementation of this plan is to be assessed and monitored through annual reviews, which are required in the contracts, starting in 1989.

(b) Financial performance of the subsector in 1988

- 2.56 As was noted above in paragraph 2.39, the country's recent energy crisis led to a series of energy supply constraints which can be attributed to a combination of factors, some of them external to the subsector itself, such as the following: (i) weak hydraulic force in the Limay and Uruguay river basins, which reduced waterpower generation at the Chocón and Salto Grande power plants; (ii) the shut-down of operations at the Atucha I nuclear plant and the Luján de Cuyo thermoelectric plant; (iii) the emptying of the Chocón reservoir for repairs in October 1987; (iv) deficiencies in production by the country's thermal power plants, most of which are old and obsolete (43 percent of SEGBA's installed thermal capacity is over 25 years old, and 30 percent of AyEE's plants are in the same range); (v) budget constraints in the companies which made it impossible for them to maintain generating facilities; and (vi) the high level of energy lost at the distribution stage, which in SEGBA's case stood at 22 percent at the end of 1988.
- 2.57 In light of the above-mentioned restrictions in the supply of energy, a number of measures had to be implemented to alleviate the energy shortage. To start with, voltage was cut by 5 percent, and left at that level for nearly the entire year. There also were shut-downs in service, particularly in the latter half of December 1988 up to April 1989. These measures reduced the energy supply in the unified distribution system (DUC) by about 1,226 GWh in 1988.
- 2.58 In addition to the factors outlined above, the institution of the "Primavera Plan" in the final quarter of 1988 made it impossible for the electricity rates of the companies to regain, in real terms, the levels provided for in the Financial Recovery Plan. On the contrary, in that period the average rates of the three national companies in the subsector (AyEE, HIDRONOR and SEGBA) fell by 5.6 percent in real terms, ^{1/} leaving them below August 1988 levels. In that month of August 1988 SEGBA's average rates had been about 16.5 percent higher, in real terms, than in December 1987, while AyEE's had been 8.8 percent lower and HIDRONOR's 15 percent lower.
- 2.59 As a result of the factors outlined in the preceding paragraphs, the consolidated sales of the three companies in the subsector in 1988 (31.2 TWh) were slightly above the 1987 figure of 30.8 TWh but 7 percent lower than 1988 demand projections. Consolidated sales revenues were 14 percent below the original forecasts, a drop of an estimated US\$160 million for the subsector on a consolidated basis.
- 2.60 The energy crisis also led to changes in the structure of the companies' operating costs. To begin with, they were forced to make full use of the thermoelectric facilities available. Since these plants are old and inefficient, with very low heat yields, both fuel

^{1/} Deflated by the wholesale nonfarm price index.

consumption and generating costs were higher. In 1988 specifically, thermal energy generation in the unified distribution system was 41 percent higher than in 1987, while hydroelectric generation fell by 32 percent and nuclear generation by 11 percent. The cost of higher fuel consumption for the intensive use of thermal plants was, however, offset in part by the reduction in real terms in the price of fuel.

- 2.61 The major change in cost structure in the companies was in the area of personnel expenses, which rose mainly because of salary increases and more overtime, in part for the maintenance and repair of the generating plants and associated systems. On a consolidated basis, the number of employees rose by only 309 (for a total of 34,000). The increase in consolidated personnel costs for the subsector was the equivalent of US\$77 million compared with projections for 1988; the expectation that the levels recorded at the start of the year could be maintained thus was not borne out.
- 2.62 For the reasons outlined above, all three companies in the subsector recorded operating losses in 1988, totaling the equivalent of US\$361 million on a consolidated basis. They were therefore unable to achieve in 1988 the targets set out in the contracts for basic financial indicators having to do with operating margins and the percentage of their investment programs that was to be covered by internally-generated funds. The following table shows actual performance figures compared with provisions in the contracts.

	<u>AyEE</u> %	<u>HIDRONOR</u> %	<u>SEGBA</u> %
<u>Operating margin (%) a/</u>			
Actual - 1988	-16.7	9.0	-7.9
Specified in contracts	7.0	22.0	7.0
<u>Contribution to investment program (%) b/</u>			
Actual - 1988	-49.2	6.8	-18.5
Specified in contracts	0	10.0	10.0

a/ Defined as the difference between operating revenues and operating expenses, not counting depreciation, expressed as a percentage of operating revenues.

b/ Defined as (Internally-generated funds + contributions from the Electricity Funds - net debt service)/Construction program).

- 2.63 This table shows that the rate revenues received by AyEE and SEGBA did not cover their cash expenditures, while HIDRONOR was able to cover those expenses as well as part of its depreciation expense. Compliance with the requirement relating to the percentage of the investment program that was to be covered by internally-generated

funds was erratic, owing in part to the fact that the expected amounts from the Electricity Funds were about US\$55 million lower than the US\$185 million that had been projected. In addition, consolidated capital expenditures (US\$439 million) were the equivalent of US\$43 million lower than original estimates, because of the companies' financial constraints and the negative internal cash generation figures of AyEE and SEGBA. Calculations done to quantify the impact of the energy crisis on these indicators suggest that AyEE, HIDRONOR, and SEGBA could have achieved operating margins of -8.7, 36.0, and 4.6, respectively. While this does take the figures closer to the objectives set out in the contracts, AyEE and SEGBA still would not have had enough revenues to cover their cash expenditures, largely because rates did not reach originally-forecast levels owing to the rate freeze imposed under the "Primavera Plan" in the final quarter of 1988.

- 2.64 Financial and operating ratios having to do with improvements in the performance of the companies in the subsector were weaker than expected, particularly in the area of working-capital management. Because of cash constraints, AyEE and SEGBA have built up sizable accounts-payable balances, notably for amounts owed to generating companies (HIDRONOR, CTMSG and CNEA) and fuel suppliers (Gas del Estado, YPF, and YCF), since those companies, in turn, are having problems collecting amounts owed to them for energy sales by the provincial companies (the case of AyEE) and by national and state government agencies (the case of SEGBA). The average accounts receivable collection period at the close of 1988 was 333 days in the case of HIDRONOR, 337 days for AyEE, and 72 days for SEGBA. It is clear that this mechanism is being used to make up financing shortfalls with working capital.

(c) Outlook for 1989 and 1990

- 2.65 The financial situation of the companies in the electric energy subsector became even more serious in the first half of 1989 as a result of macroeconomic and political difficulties in those months. To begin with, the companies' average rates plummeted, in real terms, to levels 53 percent below 1988 year-end averages. As well, restrictions on energy supply continued, and to ease the shortfall the 5 percent reduction in voltage was maintained. There also were service cuts, which continued throughout the first four months of the year. It is estimated that all of these measures cut back the supply by about 750 GWh in the first half of 1989. Meanwhile, the companies' operating margins continued to deteriorate. June 1989 figures show AyEE with a margin worse than -100 percent, SEGBA with -158 percent, and HIDRONOR with -223 percent. In the second quarter of 1989 the consolidated operating margin fell to about -109 percent.
- 2.66 When the new government took office in July 1989, major changes were made in the rate structure after fuel prices in general were adjusted. The object of the rate adjustments was to try to ensure

that the companies' rate revenues would be high enough to cover their cash operating expenditures. To this end, average rates were raised by 733 percent, in nominal terms, in the case of SEGBA, by 808 percent for AyEE, and by 826 percent for HIDRONOR. With these increases, rates returned more or less to their August 1988 levels.

- 2.67 The Department of Energy and the power companies have come up with preliminary estimates of the operating performance of the companies for the second half of 1989. With the above-mentioned rates in effect, the consolidated operating margin of the firms is expected to be zero, or close to zero, in the final quarter of this year, meaning that they would be able to cover their cash operating expenditures. Despite this improvement, it is clear that they still would not achieve the operating margins called for this year (10 percent for AyEE, 47 percent for HIDRONOR and 17 percent for SEGBA). The Argentine authorities have advised the IDB and IBRD that with the economic stabilization and inflation control program in effect, further rate increases before the end of the year would not be feasible, because they would be incompatible with the government's macroeconomic policy. They also emphasized that the effort made with the rate adjustment of July 10, 1989, would be supplemented with measures designed to increase sales revenues by the gradual phasing out of subsidies and cutting of costs.
- 2.68 In the meantime, a number of steps have been taken and regulations drawn up in the framework of the government's economic policy and the recently-enacted Economic Emergency Act (in force for 180 days and renewable for a further 180 days) and State Reform Act, to gradually reduce the companies' operating costs and boost their operating revenues. Specific measures are as follows: (i) subsidies affecting government enterprises have been suspended for 180 days, and the Public Works Ministry is reviewing subsidies and special rates to decide whether they should be allowed, on an exceptional basis, or abolished; (ii) a 180-day freeze has been imposed on new hirings; and (iii) the "Buy-at-Home" system has been suspended. In addition, action plans are being brought in to reduce, in the intermediate term, the ratio of nontechnical losses, particularly in the case of SEGBA, and for the sale of assets of public utility companies that are not used in production. National and provincial companies have received instructions to pay their bills for fuel and energy purchases promptly. In this respect, the Energy Department is monitoring payments made by the companies; SEGBA, in particular, has honored its obligations for amounts due in August and September 1989. AyEE is still having problems collecting from the provincial companies, and plans are being made for a system to offset overdue balances against income from the share-out of federal tax revenues, a process for which political agreements would be needed.
- 2.69 The Argentine Government, through the Ministry of Economic Affairs and the Public Works Ministry, has set a 1990 objective of a consolidated operating margin of 8 percent, on average, for the

subsector. If necessary, it would start to raise rates, in real terms, beginning in April 1990. According to the financial information given to the IDB and IBRD for 1990, the margins of the national companies would be 4 percent for AyEE, 9 percent for SEGBA, and 11 percent for HIDRONOR, giving a consolidated figure of 8 percent.

- 2.70 It can be seen from the foregoing that in the electric energy subsector specifically, the government has, as part of its larger economic adjustment process, taken important steps to adjust rate levels. It also has begun to study, and in some cases to implement, a package of varied measures called for in the State Reform Act and the Economic Emergency Act. Once regulations have been issued under these laws and they are fully effective, it should be possible to establish a sound framework for improving the operating efficiency of the power companies. It should be noted that the agreement reached by the government with the IMF will allow it to undertake a new round of negotiations with the Paris Club and creditor banks on the external debt, a substantial portion of which involves the external liabilities of the electric power companies. In this context, it could be premature to prescribe at this time specific targets for each energy company's financial ratios in 1991 and 1992; instead, it might be more appropriate to examine the companies' financial condition in detail at the annual review meeting (provided for by contract) to be held in May 1990, and also during the analysis of the possible electricity sector loan now under study with the World Bank for that same year, by which time most of the measures which are now at the study and regulation stage would have been fully implemented.
- 2.71 For the reasons just outlined, and because financial projections for 1991 and beyond are not available, it is recommended that no specific financial indicators for each of those years be stipulated in the guarantee contract for the proposed loan. Instead, while these indicators are being reassessed at the annual review of the subsector scheduled for May 1990, it is considered that the target consolidated operating margin for the subsector in 1992 could be set at 20 percent. This percentage is consistent with the original figures agreed upon in the guarantee contract for loan 555/OC-RG for 1990. This proposal also is consistent with the two-year lag in financial performance indicators for the subsector taken as a whole. The achievement of this target would be monitored by the Bank during the above-mentioned annual review meetings, and agreements having to do with reaching the established levels would be worked out with the Argentine authorities. For the years 1990 and 1991, the above-mentioned yearly review meeting would establish the national power companies' operating margins and the percentage of their capital investment programs that is to be covered with internally-generated funds (see Appendix 4).

- 2.72 For the same reasons outlined in the previous paragraph, parallel negotiations have been conducted with the Argentine authorities to stipulate that at least 30 percent of the companies' investment programs in 1992 must be covered with internally-generated funds (see Appendix 4).

F. Fulfillment of contractual requirements

1. Institutional requirements

- 2.73 It was determined in the assessment conducted of the Argentine electric power subsector's compliance with provisions set out in the guarantee contract for loan 555/OC-RG that the required studies on the expansion plan for the subsector, on the operation of thermo-electric generating plants rated at more than 60 MW, marginal-cost pricing, the subsector's legal and institutional framework, and the feasibility of the Yacryretá transmission system and the organization and planning of that system, all had been duly presented. There have been delays in preparing the additional information requested by the IDB and IBRD for several of the studies (expansion plan, rate study), and the new government still wishes to review the study on the legal and institutional framework of the subsector and the rate study.
- 2.74 The plans for implementing the recommendations ensuing from the studies carried out still have not been finished or presented to the IDB and IBRD; they now are about 12 to 15 months over the time limits set out in the contract for loan 555/OC-RG. This delay has come about chiefly because medium- and long-range decision-making came to a halt in the country, and in the subsector, in the early part of 1989, and because the new authorities indicated that they would need to review what the previous government had done in order to assume these commitments vis-à-vis the IDB and IBRD. The Management of the IDB conducted a thorough examination of each of the contract clauses, and exercising its authority in this respect, it approved the necessary extensions, which are reflected in the normative documents attached to this loan proposal as appendices.

2. Financial requirements

- 2.75 As was explained in detail in paragraphs 2.55 to 2.72 of this proposal, in the course of analyzing the previous loan operation for Yacryretá it was agreed with the guarantor that a plan for the financial recovery of the electric energy subsector would be instituted. The object of this plan was to bring about a steady improvement in the finances of the power companies controlled by the Department of Energy, strengthen their net operating income, increase the percentage of their investment programs that could be covered by internally-generated funds, and make them more financially self-sufficient, so that the transfers they receive from the government could be cut back. The results reported in 1988 and projected results for 1989 show that falling energy sales, coupled with other

factors relating to the energy crisis, are giving AyEE, HIDRONOR and SEGBA operating margins and percentages of internal funding of capital investment programs that are far lower than those programmed. The Management of the IDB has waived the 1988 and 1989 ratio requirements because results for those years cannot be changed.

- 2.76 With respect to obligations relating to the Yacyretá Binational Agency, most of the contractual requirements will enter into force when the project begins commercial operations, scheduled for February 1993. As for the program to resettle families who will have to be relocated when the project's reservoir is filled, excellent work has been accomplished to date, but the lack of timely funding has made it impossible to complete all of the work scheduled for 1989. The float time in the completion schedule thus has shrunk, and it will be essential to complete all of the work called for in the coming years by the time limits specified in the current schedule. The object of the recommendations made in this document is to improve the Binational Agency's capacity to adhere to the new completion schedule and facilitate better monitoring on the part of the Bank.
- 2.77 The reports submitted by EBY outlining the steps taken to comply with the environmental program are considered to be satisfactory and to address the recommendations that have come out of the many studies conducted. This area will continue to be closely monitored through the periodic progress reports that are to be prepared.
- 2.78 It is felt that attention should be centered in the future on the adoption of measures by the Argentine Government to improve the financial efficiency of the electric power subsector, as part of the general policy to wean this subsector from its dependence on Treasury contributions for payments of its financial obligations. More stress also should be placed on the need for evidence, to be submitted in the first four months of each year during project execution, that the EBY will have funds at its disposal to meet all of the financial obligations of the project (debt service and investment).

III. THE PROJECT, COST, FINANCING AND EXECUTION

A. Purposes

- 3.01 The purpose of the project is the construction of a hydroelectric generating station, with 2,700 MW of installed rated capacity and about 20,000 GWh annual average energy generation, that is part of the least-cost plan for expansion of generating capacity of the national interconnected system and will help to meet anticipated electric energy requirements in Argentina and Paraguay.

- 3.02 In addition, the project will help to improve navigation, flood control, and overland links between Argentina and Paraguay, as well as the development of irrigation, fish farming and tourism.

B. Description

- 3.03 The project is located along the Paraná River, 90 kilometers downstream of the cities of Posadas and Encarnación, and consists of the following facilities:
- (a) A generating station comprising 20 units, rated at 135 MW each, and a step-up substation whence the 230 kV lines to Paraguay and the 500 kV lines to Argentina start.
 - (b) Construction work on a reservoir with a volume of 21,000 Hm³ over an area of 1,700 km², consisting of earthfill dams about 70 km in length, a navigation lock, two spillways and irrigation structures.
 - (c) Housing units for resettlement along both sides of the Paraná River of about 35,000 persons who will be displaced by the filling of the reservoir, and infrastructure facilities.
 - (d) Facilities for protection of the basin of the Aguapey River through a dam and diversion canal, and protection of the town of Carmen de Paraná in the area of the Tacuary River.
 - (e) Environmental protection measures which provide within the power station facilities for upstream movement of fish, designation of refuges for wildlife displaced in the flood zone, and cleansing of the reservoir.

C. Cost and financing

1. Cost

- 3.04 The cost estimate shown in the following table amounts to US\$5,986,200,000, of which US\$3,183,700,000 represents investments made by December 31, 1988; the balance of US\$2,802,500,000 is the estimated amount to be invested between 1989 and 1996, the year of project completion.

Investment and financial plan
(in US\$ millions)

	<u>IDB</u>			<u>Local counterpart funding</u>		<u>Export Credit</u>	<u>AR Government</u>	<u>Total</u>
	<u>3/6/CC-RG</u>	<u>5/5/CC-RG</u>	<u>Proposed</u>	<u>IBRD</u>	<u>2998-AR</u>			
				<u>17/61-AR</u>				
1. ENGINEERING AND ADMINISTRATION	<u>51.5</u>	<u>29.0</u>	<u>10.3</u>	<u>40.5</u>	<u>29.2</u>	-	<u>820.4</u>	<u>980.9</u>
1.1 Engineering and management	51.5	29.0	10.3	40.5	29.2	-	342.0	502.5
1.2 Administration and overhead	-	-	-	-	-	-	478.4	478.4
2. DIRECT COST OF CONSTRUCTION	<u>141.5</u>	<u>152.3</u>	<u>186.0</u>	<u>169.5</u>	<u>177.2</u>	<u>743.6</u>	<u>1,812.0</u>	<u>3,382.1</u>
2.1 Preliminary works	-	-	-	-	-	-	337.3	337.3
2.2 Civil works	141.5	152.3	186.0	169.5	177.2	179.5	839.2	1,845.2
2.3 Generating equipment	-	-	-	-	-	391.7	62.5	454.2
2.4 Electromechanical equipment	-	-	-	-	-	172.4	97.0	269.4
2.5 Environmental protection	-	-	-	-	-	-	30.4	30.4
2.6 Indemnities	-	-	-	-	-	-	127.1	127.1
2.7 Resettlement and relocation	-	-	-	-	-	-	318.5	318.5
3. FINANCE CHARGES	<u>17.0</u>	<u>42.5</u>	<u>42.1</u>	-	<u>40.6</u>	-	<u>1,248.0</u>	<u>1,390.2</u>
3.1 IDB interest	14.9	40.0	39.6	-	-	-	111.0	205.5
3.2 IDB credit fee	-	-	-	-	-	-	16.3	16.3
3.3 Inspection and supervision	2.1	2.5	2.5	-	-	-	-	7.1
3.4 IBRD interest	-	-	-	-	40.6	-	164.4	205.0
3.5 Interest on other credit	-	-	-	-	-	-	956.3	956.3
4. UNALLOCATED	<u>-</u>	<u>26.2</u>	<u>11.6</u>	<u>-</u>	<u>3.0</u>	<u>56.4</u>	<u>135.8</u>	<u>233.0</u>
4.1 Contingencies	-	12.8	7.1	-	1.6	25.4	37.2	84.1
4.2 Allowance for escalation	-	13.4	4.5	-	1.4	31.0	98.6	148.9
GRAND TOTAL	<u>210.0</u>	<u>250.0</u>	<u>250.0</u>	<u>210.0</u>	<u>250.0</u>	<u>800.0</u> ^{a/}	<u>4,016.2</u>	<u>5,986.2</u> ^{b/}
PERCENTAGES	3.5	4.2	4.2	3.5	4.2	13.4	67.1	100.0

^{a/} Includes US\$226,800,000 invested as of December 31, 1988.

^{b/} Includes US\$3,183,700,000 invested as of December 31, 1988. Does not include US\$1,925,000,000 in interest accrued on loans from the Funds and the Treasury, since this is not a financial requirement during project execution.

3.05 Interest and fees payable during the construction period on all foreign loans and on local loans, through the entry into service of the first generating unit of the power plant, have been evaluated in the cost of the project. From that time until all generating units

are set in operation, which will take four years, finance charges allocable to the investment are in relation to interest on export credits and therefore will decline according to the number of generating units that become operational each year.

- 3.06 It should be noted that the finance charges included in the cost of the project do not include interest on Argentine Government loans, which consist of borrowings from the Energy Funds; even though they are part of the assets from a strict accounting standpoint, in actual fact, pursuant to government decrees, they are capitalized during the construction period and therefore do not constitute a cash requirement for EBY.
- 3.07 As soon as the power plant attains its annual average generation, EBY, drawing on internal cash generation, will meet its operating and maintenance expenses and provide for payment of debt service on other loans, and it will use the balance to pay part of the interest on loans from the Funds. The difference will continue to be capitalized and only in 1998 will the full amount of debt assumed with the government start to be amortized.

2. Financing

- 3.08 Financing of project-related investments is shown in the following table:

Investments and sources of financing
(in US\$ millions)

<u>Investments</u>	<u>Up to December 1988</u>	<u>1989-1996</u>	<u>Total</u>
Engineering and administration	768.9	212.0	980.9
Direct cost of construction	1,727.9	1,654.2	3,382.1
Finance charges	686.9	703.3	1,390.2
Unallocated expenses	<u>-</u>	<u>233.0</u>	<u>233.0</u>
TOTAL	3,183.7	2,802.5	5,986.2
 <u>Sources</u>			
IDB loan 346/OC-RG	210.0	-	210.0
IBRD loan 1761-AR	210.0	-	210.0
IBRD loan 2998-AR	99.7	150.3	250.0
IDB loan 555/OC-RG	-	250.0 <u>1/</u>	250.0
IDB loan proposed	-	250.0	250.0
Prospective credit	-	200.0 <u>2/</u>	200.0
Export credits	226.8	573.2	800.0
Local counterpart <u>3/</u>	<u>2,437.2</u>	<u>1,379.0</u>	<u>3,816.2</u>
TOTAL	3,183.7	2,802.5	5,986.2

1/ Disbursed in full by November 1989.

2/ Possible additional loan from the IBRD.

3/ Includes Argentine contributions from the Central Bank, commercial banks, Energy Funds, capital contributions, Treasury loans and internal cash generation.

3.09 Investments in direct costs of construction up to December 1988 represent preliminary facilities such as workers' housing, access roads, machine shops and the main civil works, construction advance whereof was 60 percent at that time. On June 8, 1989, the main channel of the river was diverted, the first important milestone in project execution. IDB and IBRD financing in that period was used for the main engineering contracts and civil construction work, contracts for which were awarded on the basis of international competitive bidding.

3.10 A consortium of foreign, Argentine and Paraguayan construction companies, co-managed by Impregilo of Italy and Dumez of France, are engaged in the civil engineering construction work. The engineering services that comprise construction drawings and supervision of construction work are being provided by a consortium headed by Harza Engineering of the United States, with the participation of Lahmeyer of Germany, and Argentine and Paraguayan companies.

- 3.11 Investments still to be made have been adjusted according to the updated budget for electromechanical equipment prepared in June 1989 on the basis of the cost of similar equipment obtained in recent international calls for bids held for the Piedra del Aguila project. The finance charges of the project, associated with the increased investments, mainly in equipment, also increased due to the adjustment in the actual financial terms of new loans obtained during the period from suppliers and institutions (generators, traveling cranes, fish passage facilities) and of the IDB and IBRD loans.
- 3.12 During analysis of the cost of the project, it was discovered that claims had been filed by the contractor for the main civil works amounting to over US\$200 million, which are initially being examined by the consulting consortium. Given the uncertainty as to the ultimate value of these claims the Bank must proceed with a case-by-case examination as each is presented, for which reason the amounts are not reflected in the cost considered in this document. Approximately 50 percent of the figure ultimately agreed upon would be paid towards the end of the construction period. An increase was also found to have arisen from the need to add pozzolana to the concrete of the plant. Negotiations are under way to determine the price of this item, which may vary between an estimated US\$10 million and US\$15 million. This amount would be covered under the contingency fund provided for.
- 3.13 The entire proceeds of IDB loan 555/OC-RG will be used in the final quarter of 1989. To cover financing of the main contract for civil and engineering works, about US\$450 million in additional funding is necessary, and would be provided with the loan herein proposed and the loan the World Bank is expected to approve in 1990. The financing table would be completed with export credit, lines of credit for equipment provided by the Central Bank of Argentina, the Energy Funds and internal cash generation by Yacyretá starting in 1993 when the plant begins operation.
- 3.14 Given these circumstances, funding of the main civil works and engineering contracts, which were being covered entirely by loans from the two Banks, would still be incomplete. Direct investments in these contracts during the period 1990-1991 amount to US\$400 million. Starting in 1991 they would decline substantially and could be absorbed by the local resources allocated to the project. To partially cover the requirements for 1990, which amount to about US\$260 million in direct costs, EBY and the Government of Argentina have requested short-term support for the project from the Bank, while the remaining financing, including payment of part of the interest on the loans from both Banks, would be obtained through a sector loan from the IBRD, expected to be formalized in 1990.
- 3.15 In addition to this main contract, there are others for which financing sources have not yet been assured: (a) credit from export agencies and suppliers of equipment for which bids have not yet been

invited, to cover the foreign exchange cost thereof; and (b) Argentine Central Bank credits in Argentine currency for that equipment. EBY must demonstrate, in the annual reviews to be conducted to monitor progress in the subsector, that it has been obtaining such funding.

3. Use of IDB loan proceeds

- 3.16 The proposed loan amount is US\$250 million, with a five-year grace period and a 20-year term for amortization. The proceeds of the loan to be allocated to financing the engineering and civil works construction of the project would be disbursed between 1990 and part of 1991, which is why a two-year term for disbursement is being proposed. The five-year grace period proposed is connected with internal cash generation by Yacyretá once it begins commercial operation, since during that period construction of the works would continue and in 1994 EBY would start to have the resources necessary to begin to amortize the loan recommended herein.
- 3.17 The loan would therefore be disbursed basically in 1990 and 1991, and the condition of its use for payment of engineering and main civil works contracts, which was the case in the previous operations, would be maintained, a portion being earmarked for partial payment of interest for this loan and the two previous loans during the proposed term for disbursement. Taking into account the fact that the eventual additional IBRD operation would not be parallel the way the previous ones were, the Bank's loan would initially cover all of the financial requirements of the engineering and civil works contracts. Once the new IBRD financing is approved, the pari passu share of each loan would be defined.

D. Project execution

1. Status of work advance

- 3.18 As of September 30, 1989, construction work under the main civil works contract showed the following advance: (a) construction of the principal structure of the lock has been completed and equipment assembly is under way; (b) on June 8, 1989 the main channel of the Paraná River was diverted and the riverbed is being prepared for construction of the main channel closure section; (c) construction of the dams shows a 50 percent advance, the two longest sections, the island section and the right bank section, showing advances of 65 percent and 40 percent, respectively; (d) 45 percent of the concrete has been laid and 75 percent of the excavations have been completed on the plant; and (e) the Aña-Cuá spillway shows an advance of 95 percent of the excavations and 85 percent of the foundation-laying. The works have been strictly following the current construction schedule in effect since the 1985 rescheduling, and construction is even ahead of schedule in the Aña-Cuá and channel closure works. Total weighted advance is an estimated 60 percent.

- 3.19 Regarding electromechanical equipment, which is not financed by the Banks, in addition to the contracts entered into in 1987 for turbines, the first 10 generators, gates and equipment for the lock, at the end of 1988 a contract was entered into with the COMETARSA (Argentina) - P&H (United States) consortium, in the amount of US\$5.4 million equivalent, for the traveling cranes for the powerhouse, and another contract was entered into with RIVA CALZONI (Italy), in the amount of US\$2.6 million equivalent, for the fish passage facilities. In the last quarter of 1989 contracts are expected to be awarded for the next 10 generators and the portal cranes for the powerhouse and main transformers, at which point the main equipment will have been procured. Secondary equipment and the substation installations will be procured in 1990 and 1991.

2. Project completion

- 3.20 The project execution schedule agreed upon at the end of 1985 after the reprogramming carried out to adapt it to the availability of financing and growth in demand has been maintained. The works pending would be executed during the period 1989-1996, according to the following schedule for investment and disbursement for the main sources of financing.

	(in US\$ millions)				
	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992/96</u>	<u>Total</u>
<u>Investment</u>	589.2	619.1	577.1	1,017.1	2,802.5
<u>Sources</u>	589.2	619.1	577.1	1,017.1	2,802.5
IDB loans <u>1/</u>	236.3	230.8	32.9	-	500.0
Other external financing	201.1	178.3	86.8	457.3	923.5
Local funds	151.8	210.0	457.4	559.8	1,379.0

1/ Loan 555/OC-RE for US\$250 million and the proposed loan.

3.21 The following milestone dates in actual project construction are still scheduled as follows:

- | | | |
|-------------------------------|-----------------|-----------------------|
| (a) Diversion of the river: | Main channel | June 1989 - completed |
| | Aña-Cuá channel | June 1990 |
| (b) Filling of the reservoir: | | November 1992 |
| (c) First unit operational: | | February 1993 |
| (d) All units operational: | | November 1996 |

3. Advance of funds

3.22 The project is now in its period of maximum investment in civil construction works, with monthly certifications of close to US\$20 million. In order to facilitate payment of contractors, it is recommended that an advance of funds be set up in the amount of the equivalent of 20 percent of the loan, covering expected expenses for four months, in accordance with Bank regulations.

E. Ex post evaluation

3.23 Under loan 555/OC-RG, an ex post evaluation report was required in order to evaluate the results of the project from the technical, economic and financial standpoint and with regard to environmental and relocation issues. Paragraph 6.01 of Annex A of the contract for that loan established the criteria for the evaluation, and it is recommended that the same be maintained for the proposed loan (see Recommendations).

3.24 In addition to the above, it was also established that EBY would submit, prior to April 30 and October 31 of each year, a report assessing the performance of the resettlement program and the environmental protection program, to be drawn up according to paragraph 7.01 of Annex A of the contract for loan 555/OC-RG. It is recommended that such reports also be required for the proposed loan (see Recommendations). EBY has fulfilled its obligation to submit the first two reports, which on the whole have satisfied the Bank's requirements, although observations have been transmitted regarding improving their quality, especially with respect to standardization of the data for the two sides of the river.

F. Operation and maintenance

3.25 EBY will be responsible for operating the power station; for that purpose it will create a suitable organization, since the current organization has only the necessary staff and structure for managing and supervising project execution. A provision was therefore set forth in the contract for the previous loan requiring the borrower to

submit, six months before the entry in service of the power station, a description of the organization it would have for operation and maintenance of the plant. It is recommended that this contractual obligation be maintained in the same terms (see Recommendations).

G. External auditing

- 3.26 The financial statements of the project, during its execution, and the financial statements of the borrower, during the life of the loan contract, are to be submitted to the Bank each year after being audited by a firm of independent public accountants, using procedures satisfactory to the Bank (see Recommendations). EBY has been performing this contractual provision satisfactorily, and the financial statements have been delivered on time after auditing by a consortium of Argentine-Paraguayan firms.

H. Inspection and supervision

- 3.27 The Bank's field office in Argentina has been responsible for inspection and supervision of the project by the IDB.

I. Resettlement and relocation program

- 3.28 The resettlement and relocation program consists of three main components: (i) resettlement of urban dwellers; (ii) resettlement of rural dwellers; and (iii) reconstruction of infrastructure and service works. The first two components are supplemented with a Social Action Program [Programa de Acción Social] (PAS), designed to assist the population concerned at every stage of the resettlement process, and an evaluation and monitoring system [Sistema de Evaluación y Seguimiento] (SISEME), designed to carry out the evaluation, monitoring, programming and adjustment of all the relocation activities, and studies to be conducted before, during and after the resettlement of the population and to obtain the baseline data for ex post evaluation of the program.
- 3.29 Urban resettlements will concern 5,101 families in Argentina and 1,909 families in Paraguay, for a total of 7,010 families. The total number of relocatable families is an estimated 4,338 (20,822 people) in Argentina and 1,714 families (8,400 people) in Paraguay, for a total of 6,052 families or 29,222 people. The remainder, 958 families, would receive compensation, by their own choice. Most of the population concerned is located in the cities of Posadas, Argentina, and Encarnación, Paraguay.
- 3.30 The rural population concerned is mostly located on the Paraguayan side: 1,418 families (6,950 people) in Paraguay, compared with only 381 families (1,230 people) in Argentina, of which 260 families would be resettled. On the Paraguayan side, there are 20 families from the MBA-PU tribe (see paragraph 3.34).

- 3.31 With the filling of the reservoir, infrastructural works will be affected, such as roads, ports, railroads, public utilities, community services, and industrial and business facilities. The most important works are 150 km of railroads, 250 potteries, 500 businesses in Encarnación, the port facilities and water-intake facilities for the water supply for Posadas and Encarnación, 17 schools and the electrical power and telephone networks.
- 3.32 The preparatory activities for the urban resettlements began in 1980. At this writing, 782 dwellings (18 percent) have been completed in Posadas, and 1,018 additional dwellings (23.5 percent) are currently under construction while another 1,156 (26.6 percent) are in the bidding process. Five hundred and eighty-four families (13.5 percent) have been relocated and 231 have received compensation. On the Paraguayan side, 401 dwellings are under construction in Encarnación (23.3 percent), and 657 are at the bidding stage (38.8 percent). No families have been relocated. The pace of work on the program in 1989 has been slower than planned, due mainly to financial problems and the special situation in Argentina in the first half of the year. Later, in the third quarter, there was a temporary slowdown while the authorities of the new government took office. The float time available for program execution is currently minimal, considering that all of the activities must be completed by 1992 in order for the reservoir to be filled. In the 36 remaining months, 3,754 families must be relocated in Posadas, representing an average of 100 families per month in order to achieve the goals. For these reasons, it is recommended that the contract for the proposed loan contain a provision under which EBY must submit, by April 30, 1990 at the latest, evidence that it has implemented a plan for strengthening the resettlement and environmental protection units (see Recommendations). In Encarnación, although the project has advanced at a slower pace, the situation is less critical because of the smaller number of families involved in the relocation process.
- 3.33 In the rural area, construction has not advanced in 1989. On the Argentine side, there are 15 units (5.8 percent) occupied by resettled families. Forty units (3 percent) have been constructed, in Paraguay, of which 20 are occupied. In November 1988 the 20 families (102 people) of the MBA-PU Indian tribe of Paraguay were officially resettled. They were given an area of 339 hectares of arable land, which they can farm according to their custom under a community system without specific boundaries or divisions for each family. They have been given advisory and other assistance for the construction of their hut-type dwellings with local materials, and materials, seed and tools to grow corn, peanuts, beans and manioc. The rural program should be considerably reactivated in 1990.
- 3.34 Regarding reconstruction of the infrastructure, progress has been made in the call for prequalification for the railroad works on both banks, with the request for financing for both. These works represent 40 percent of the cost of the remaining relocation works; the

opening of envelope number one will take place in November 1989. The location and size of the ports in Encarnación and Posadas is being studied with the municipal authorities of those cities, and the matter should be resolved in December 1989. The works for water intake for Posadas are 90 percent complete, and relocation of the water intake and treatment plant of Encarnación is at the bidding stage. Given the diversity of the works planned, it is recommended that EBY submit, on April 30, 1990 at the latest, a detailed schedule of execution drawn up using the critical path method and including the works pending on both banks in urban and rural areas (see Recommendations).

- 3.35 Regarding the ceramic industry (potteries), the survey of the ones concerned is being updated and alternative locations are being analyzed according to the areas of appropriate soils available and based on the possibilities of community enterprises in areas with separate housing relocation. The respective studies are to be completed in December 1989. It is recommended that the Bank be informed of the decision for relocation of the ceramic industry on both banks when the semiannual report as of April 30, 1990 is submitted (see Appendix 3).
- 3.36 In loan 555/OC-RG, it was established that both the relocation program and the program of infrastructure reconstruction in Encarnación were to be carried out according to a master plan. EBY submitted the basic outline of the plan, which is being adjusted to take into account the decision adopted to recover part of the flood-prone area of the city and to include the construction and land-use plan for this area. The new authorities of EBY, both Paraguayan and Argentine, are also reviewing the scope and justification of the plan originally set out. Given the importance of the plan to expedite the relocation activities in an orderly manner, the final version must be available as soon as possible. As a result, it is recommended that EBY submit the final master plan for Encarnación, including the schedule for and cost of execution together with the technical and economic feasibility study for protection of the area to be recovered in the coastal zone of that city (see Appendix 3), in the semiannual report to be submitted by April 30, 1990. Similarly, a sanitation and sanitary plan is being completed in Posadas (not a contractual condition for the Bank, but a condition of the IBRD), which is to be used to draw up the master plan mainly for the city's water supply and sewerage and coastal protection works. The plan is expected to be completed in December 1989.
- 3.37 The PAS programs are being carried out on both sides of the river according to subprograms with plans for employment training, housing adaptation, public health, formalization of documents, interinstitutional coordination, community development and assistance for rural and semirural beneficiaries. EBY is carrying out these activities with its own staff and through agreements with the health, education, and welfare ministries and with area universities and municipalities.

The programs are being carried out in three stages; before, during and after resettlement. Although the activities have been carried out in a coordinated manner, especially on the Argentine side, participation of the population concerned could still be improved, both at the institutional level and with local governments. In this respect, community observations regarding the programs have been presented to the Bank, and transmitted to EBY to be taken into account in its plans of action. It should be noted, however, that this phenomenon is expected, and will grow as the date for the filling of the reservoir approaches and the population can visualize the advance in the main construction works. EBY is taking action to improve community participation by holding meetings, implementing programs for dissemination and entering into or expanding agreements with area institutions. Under the recommended plan for strengthening the relocation units mentioned in paragraph 3.32, additional suitable staff is to be hired to carry out the Social Action Programs.

- 3.38 The evaluation and monitoring system (SISEME) was implemented during the second half of 1988, together with the corresponding data base. In a first stage, two groups of 50 families were identified on the Argentine side, one of them a group of resettled families and one of not resettled families, to be studied throughout the relocation process. In 1990, other groups are to be included in the studies. Two reports on the findings have been prepared. On the Paraguayan side the survey data have been input and a trial done on a group of not resettled families. Since the evaluation and monitoring system must be implemented on the Paraguayan side as soon as possible, it is recommended that the semiannual report of April 30, 1990 show evidence that such implementation has been achieved (see Appendix 3).
- 3.39 Given the length of time that has elapsed since the beginning of the project, there have been changes in the population originally surveyed in 1979, due to new households, homes becoming uninhabited due to abandonment or death, and squatting. Regarding squatters, 1,236 families have been identified in Posadas, 1,055 families in Encarnación and 200 families in the rural area of Paraguay. Although a solution to the problem has not yet been agreed upon and is expected to be submitted to the Bank in the semiannual report of October 1991, the number of original dwellings on the Argentine side should not in principle be substantially different, since the number of squatters is practically equal to the decline in the 1979 survey figures due to elevation changes, deaths and abandonment. On the Paraguayan side, the problem seems to be more critical, and solutions are being examined analyzing the cases depending on whether they were new households, homes occupied before the beginning of the main civil works (December 1983), before the beginning of the housing works in Encarnación (January 1987) or since 1987. EBY, in association with the municipalities of Encarnación and Posadas, is implementing measures of control to keep the problem from growing. This matter is considered to require strict monitoring, and it is therefore recommended that EBY submit with the semiannual report of April 30, 1990

an update on the survey of this population. In addition, pursuant to the agreement under loan 555/OC-RG, EBY is to submit to the Bank alternative solutions to the problem on April 30, 1991, and a final solution on October 31, 1991. These deadlines are compatible with the date the reservoir is to be filled (see Appendix 3).

J. Environmental impact

- 3.40 The Yacyretá project is creating a lake measuring 1,700 square kilometers, of which 1,120 square kilometers are flooded and the rest is part of the river bed. A large part of the flooded area involves close to 300 islands located in that area of the river. Since 1977, studies have been conducted on the environmental impact of the project and plans of action have been drawn up, culminating in the formulation in 1987 of the Master Plan for Environmental Management. The plan was analyzed by the Bank and the IBRD and considered suitable for its purposes. EBY is now updating the plan, incorporating the findings and recommendations of the studies and the results of the activities carried out by experts in this respect, together with the recent regulations approved by the Department of Energy regarding the impact of hydroelectric projects on the environment. The plan consists of four programs of action called Guidelines, Sector Studies, Special Studies, and Training.
- 3.41 Taking into account only the activities discussed in the previous analyses by the Bank and IBRD, the most significant achievements of the plan are the following:
- (i) The basic studies on water quality have been completed, and are now at the stage of defining a monitoring plan which includes operating a monitoring network and conducting a specific analysis in the areas flooded by the closure of the main channel of the river.
 - (ii) The studies on deforestation of the lake area, including the model analysis, have been completed. Upon the closure of the main channel of the Paraná River, the first stage was carried out, with the deforestation of 400 hectares. For closure of the Aña-Cuá channel, which is scheduled for June 1990, a second stage of 1,020 hectares is to be carried out, for which a call for bids would be issued in November or December 1989.
 - (iii) The Ayolas (Paraguay) fish farming station is in operation, and in 1990, pools are to be constructed to replace the tanks currently in use. The construction of the facilities for the hydrobiological station at Ituzaingó (Argentina) is currently at the bidding stage. On the Argentine side, a fish farming station will also be built on the outskirts of Posadas, for which bidding will be held in 1990. These activities have been carried out with the assistance of an expert from the Japan International Cooperation Agency (JICA) and special technical assistance from an expert from the Great Lakes Research Consortium of the United States.

- (iv) On the Argentine side, an area of 10,000 hectares has been set aside as a wildlife refuge, which is the property of EBY and located in the vicinity of the works. The area is to be prepared starting in 1990. On the Paraguayan side, there is a wildlife refuge in Atinguy, and an area of some 8,000 hectares has been selected as a definite wildlife refuge located on Apipé Island. In 1990 preparation of this zone should also begin, as well as the transfer of fauna.
- (v) The studies on the environmental impact of the project in the area of the Aña-Cuá channel downstream from the dam have been completed. A technical solution is to be analyzed and designed by consultants and should be implemented during the period 1990-1991.

3.42 The activities and studies on health and sanitation, training, coastal treatment, regulations for lakeshore use and epidemiological monitoring are continuing. During the period 1990-1992, the Master Plan will enter the execution phase with regard to protection works, implementation of the monitoring plans and clean-up of the reservoir area, which require proper coordination and programming. As mentioned with respect to the resettlement and relocation program, it is considered necessary that EBY strengthen the programming and control elements and that it have a comprehensive execution program for the activities on both banks, that will allow progress to be monitored and the resources required to be better defined. It is recommended that this detailed, comprehensive program be submitted on April 30, 1990 at the latest (see Recommendations).

K. Associated transmission facilities

- 3.43 The transmission facilities of the Yacyretá hydroelectric plant were not included in the electric generation project examined in the year 1978, because the system configuration at that time had not yet been defined by AyEE, the company that was to be the executing agency and owner of these lines and substations on Argentine territory. In order to define that configuration, the Department of Energy organized an inter-company committee which, with advisory assistance from specialized foreign firms, developed the basic design of the Yacyretá transmission system at the beginning of 1987. The system consists of joining the national interconnected system (SIN), through 500-kV lines with the Northeast Argentine (NEA) and Northwest Argentine (NOA) systems at the Resistencia and Bracho power stations, and with the Litoral and Gran Buenos Aires system at the Salto Grande station.
- 3.44 The final designs and bidding documents for this transmission system are currently being prepared, financed by the Bank through loans 466/OC-AR and 746/SF-AR granted to AyEE. Advance on the designs is 54 percent, and completion is scheduled for September 1990. The preliminary works on the Rincón de Santa María transformer station,

located in the area of the project, have been undertaken, and the bidding documents for the Resistencia station have been prepared. Execution of the transmission system has a very tight schedule and requires proper organization by AyEE for its timely completion. The sectoral loan to be analyzed by the Bank and IBRD at the beginning of 1990 is expected to include financing for the first stage of the transmission system.

- 3.45 Loan 555/OC-RG included a requirement that AyEE organize a self-sufficient executing unit for the implementation of the Yacyretá transmission system. This condition was performed by AyEE with the approval of the Department of Energy. During the mission for the operation proposed herein, the Department of Energy confirmed the final arrangement worked out by the previous government maintaining the executing unit according to the original plan.

IV. JUSTIFICATION OF THE PROJECT

A. Justification

- 4.01 It is essential that Yacyretá begin commercial operation in early 1993 to maintain the minimal supply needed to satisfy estimated demand. Its 20,000-GWh production represents approximately 27 percent of the subsector's requirements. Possible delays in the initiation of generation by Yacyretá, given the precarious situation of the country's thermal energy plant and uncertainties as to the supply of the hydroelectric plants, would make the likelihood of rationing of electric power and the scope of such rationing much greater than normal on the national scale.
- 4.02 Furthermore, from the point of view of EBY's finances, the weight of servicing the debt would be maintained, falling on the Argentine Government, since EBY would not be able to generate funds if its output could not be available to the electric power market of the country when scheduled.

B. Technical evaluation

- 4.03 In general terms, the technical conception of the project has remained unchanged since the project was undertaken. During execution, some nonsubstantial changes have been made to optimize technical approaches and achieve savings without affecting the basic configuration. In April 1989, it was agreed to change the river protection component on the Paraguayan side, eliminating the pumping system and protection of the Tacuary, Caraguatá and San Martín rivers. By contrast, the Aguapey would be protected with an irrigation intake, a diversion canal is to be constructed from the river to the Aña-Cuá channel, downstream from the dam, and the town of Carmen de Paraná, located in the vicinity of the Tacuary River, would be protected by means of a dike. This solution, in addition to being more economical than the one originally planned, is technically safer and more efficient and does not imply any operating costs.

- 4.04 Given the advance on the project, the costs of the remaining works are reliable. With regard to equipment, the calls for bids pending concern the secondary electromechanical equipment and have been updated to reflect actual prices obtained from recent contracts on the Piedra del Aguila project, and from contracts for the main equipment under this project. These adjustments explain the difference between the current budget and the estimated budget in December 1987, which was used as the basis for approval of loan 555/OC-RG. There are still claims by the main contractor which could affect the cost of the civil works and are not reflected in current costs (see paragraph 3.12).
- 4.05 The schedule for execution of the main works of the project, agreed upon in late 1985, has been strictly followed and is expected to be followed in the future, given the effective way in which the works are being organized and monitored. Regarding the works for resettlement and relocation and the environment, it is considered necessary to improve the execution programming systems in order to define a program incorporating the outstanding works, that would allow for the critical path of execution of the works to be established, to optimize their monitoring and to better define resource requirements.

C. Economic evaluation

1. Introduction

- 4.06 The Yacyretá project was last economically evaluated in 1988, at which time it was concluded that: (a) completion of the project was part of the least-cost option of expansion of the system, and the station should begin operation gradually between 1993 and 1997; and (b) completion of the project was economically profitable, with an economic internal rate of return (EIRR) of 19.5 percent and a net present value (NPV) of US\$1,394,000,000. ^{1/}
- 4.07 The findings of the 1988 evaluation are considered to be still valid, since the key variables have basically not changed, and those that have changed have done so in a way that does not affect the decision to be made. The main changes have been: (a) a decline in the reliability of the thermal generation system, stemming from the crisis experienced in late 1988 and early 1989; (b) changes ^{2/} in the investments still needed for completion of the project; (c) greater uncertainty as to expected demand in the coming years due to the crisis experienced by the country, and the crisis of the electrical subsector; and (d) marginal changes in the generation program.

^{1/} Figures in January 1988 U.S. dollars, NPV at the beginning of 1988. See document PR-1641-A.

^{2/} Although with respect to the 1988 budget the cost of certain components has increased, the investments made during the period elapsed (1988-1989) are significant and form part of the "sunk" costs.

- 4.08 For the purpose of examining the expected results upon completion of the project, a review of the 1988 analysis was carried out in light of the above-mentioned factors. For this purpose, the analysis was carried out with: (a) updated investment figures; (b) a demand in 1993 approximately 6 percent lower ^{1/} than that considered in the previous analysis; and (c) a modified generation plan, including greater hydroelectric production in the Comahue region, where the Alicurá, Chocón and Piedra del Aguila plants are located.

2. Results

- 4.09 The findings of the review confirmed the conclusions of the 1988 analysis. For Argentina, completion of the project continues to be part of the optimal expansion program, representing a savings of US\$614.3 million with respect to the most economical thermal energy alternative. For the region as a whole, net savings are US\$1,034,900,000, since of the total cost for Argentina, US\$420.6 million consists of transfers to Paraguay as compensation for the area flooded and payment for energy.
- 4.10 The cost-benefit analysis shows that even with a substantially lower anticipated demand, the value of the additional energy provided by the project to the system, plus the cost of the thermal energy replaced, represents greater benefits than the avoidable costs of generation, transmission and distribution associated with the project. Thus, termination of the project represents for the two countries together an NPV (at a discount rate of 12 percent) of US\$888.01 million with an EIRR of 17.8 percent. For Argentina, due to the transfers to Paraguay, the NPV is US\$432.5 million and the EIRR an estimated 14.5 percent. For Paraguay, the estimated NPV is US\$455.6 million, with a 51.3 percent share in the net benefits of the project.
- 4.11 As was concluded in the 1988 analysis, if investments already made are taken into account, the project shows rates of return for both Argentina and the region of less than 12 percent. This is due to a great extent to the long period of execution of the project and engineering and administration costs consequently higher than those initially budgeted, with the resulting high cost of capital involved, and, in part, to the conservative assumptions used to estimate the benefits.

^{1/} The updated projections proved 6 percent lower than the 1988 projection regarding 1993 figures, the year the project is to enter into operation.

3. Uncertainty in the economic evaluation of the project

- 4.12 The results obtained may be considered sound, since the uncertainty associated with the project is limited, and in those variables in which higher risk levels may exist conservative hypotheses have been adopted. In addition, the possible benefits of reliability have been omitted, although they actually could become significant in the first years of operation of the project.
- 4.13 With regard to costs, they have been relatively well estimated given the advanced stage of execution of the project. As for benefits, the risks are concentrated in possible changes in demand, in which respect an extremely conservative approach has been taken, assuming that the average growth rate for consumption is 4.7 percent between 1989 and 1993, and that a sudden recovery of demand will not be experienced in the coming years in response to the slow growth in 1988 and 1989.
- 4.14 However, a sensitivity analysis was conducted on the following variables: (a) a 10 percent increase in investment costs; (b) a decline in rates from US\$0.075/KWh to US\$0.065/KWh; (c) 20 percent lower fuel prices; and (d) postponement of the entry into operation of the project from 1993 to 1994, assuming that the portion of investment costs not yet contracted would be postponed for a year. In all cases, completion of the project proves economically profitable, with rates of return greater than 12 percent. Postponement of the project for one year proved not economically desirable, since due to the limited percentage of the costs that are actually postponable, the cost of capital for these is less than the benefits produced the first year. It was thus concluded that even with reduced demand, the optimal date for operation of the project is 1993.
- 4.15 It should be noted that postponement of the project for one year would represent, on the one hand, additional costs for thermal generation by the system estimated at between US\$120 million and US\$168 million, ^{1/} and, on the other hand, substantial additional costs stemming from penalties for delays in execution of the construction projects. The latter additional costs alone make postponement of execution economically unfeasible, except in the small percentage of construction works still not contracted, so that any savings arising from postponement of investments are very small.

4. Distributional effect

- 4.16 The distribution of benefits was analyzed from a regional standpoint, and reviewed according to benefits obtained by the public sector and the private sector, from savings in thermal energy, additional energy and payments to unskilled labor.

^{1/} Updated additional cost, depending on the demand scenario used.

- 4.17 The analysis showed that low-income sectors received close to 29 percent of the net benefits of the private sector. However, the bulk of the benefits are received by the public sector (66 percent). The distributional effect is therefore not reported for statistical purposes.

D. Institutional and financial evaluation of the project

1. Institutional feasibility

- 4.18 From the administrative and financial standpoints, the organization of EBY is considered to be adequate, and its systems and procedures for financial planning, auditing, internal control and record-keeping of its operations are acceptable. The company has been supervising and exercising control over execution of the project in a satisfactory manner, and it has an effective organization to proceed with the work it has been performing. The company also has an adequate system for short- and long-term financial planning which enables it to constantly bring up to date and exercise control over the total cost of the project as well as the sources of funding.
- 4.19 For the design and supervision of the construction works, the company is using the services of a consulting consortium consisting of Harza Engineering (United States) (which is in charge of technical direction of project engineering) and Lahmeyer International (West Germany), and a team of Argentine and Paraguayan firms associated under the names COADY and ETIC, respectively. EBY also has a panel of experts to advise it on specific technical problems that might arise during execution and general planning of the works. The areas of relocation and the environment need to be strengthened, as described in sections I and J of part III of this document.
- 4.20 EBY will have to shape its organization and personnel structure to suit the needs that will emerge as soon as the power station becomes operational, which is scheduled for the year 1993. It will also be necessary to define the scope and type of risks covered by its current insurance policies once the power station is operating. To those ends, under loan 555/OC-RG and for the loan proposed herein, contractual requirements have been established in order that before the power station becomes operational, the necessary measures will be taken to the satisfaction of the Bank in those respects.

2. Financial feasibility

Flow of funds

- 4.21 Attached as Annex 1 to this document are the financial projections for EBY. Below is a table summarizing the sources and application of funds for the period from 1989 until 1996, the year in which construction of the project is to be completed.

EBY

Financing plan 1989-1996
(in US\$ millions)

	<u>Period</u> <u>1989-1992</u>	<u>Period</u> <u>1993-1996</u>	<u>Total</u> <u>1989-1996</u>	<u>%</u>
<u>Source of funds</u>	<u>2,674.3</u>	<u>2,471.2</u>	<u>5,145.5</u>	<u>100.0</u>
- Internal cash generation	-	1,676.2	1,676.2	32.6
- Loans	<u>2,634.3</u>	<u>795.0</u>	<u>3,429.3</u>	<u>66.6</u>
Energy Funds	628.6	11.8	640.4	12.4
Treasury	818.0	374.0	1,192.0	23.1
IDB loan 555/OC-RG	250.0 a/	-	250.0	4.8
IDB loan, proposed	250.0	-	250.0	4.8
IBRD loans	350.3 b/	-	350.3	6.8
Export agencies	197.1	307.7	504.8	9.8
External suppliers	50.0	18.4	68.4	1.5
Local banks and suppliers	90.3	83.1	173.4	3.4
- Capital contributions	<u>40.0</u>	<u>-</u>	<u>40.4</u>	<u>0.8</u>
<u>Application of funds</u>	<u>2,674.3</u>	<u>2,471.2</u>	<u>5,145.5</u>	<u>100.0</u>
- Investments in the project	1,546.5	552.7	2,099.2	40.8
- Total finance charges	1,805.7	46.7	1,852.4 c/	36.0
- Debt servicing	972.7	1,758.3	2,731.0	53.1
- Variation in working capital	151.3	160.2	311.5	6.0
- Finance charges during construction, unfinanced	(652.7)	(46.7)	(699.4)	(13.6)
- Deferred interest	(1,149.1)	-	(1,149.1)	(22.3)

a/ Disbursed in full by November 1989.

b/ Includes US\$150.3 million from IBRD loan 2998-AR pending disbursement at the end of 1988, plus a proposed loan for US\$200 million. Disbursements on loan 2998-AR stood at US\$170 million on October 31, 1989.

c/ This amount consists of US\$1,149,100,000 in deferred interest-Energy Funds, plus US\$703.3 million in interest from other financings.

4.22 The figures given in the above table show that the financial requirements of EBY during the period of project execution are substantially greater than the amounts necessary to finance execution of construction, mainly as a result of the servicing of the debt to be covered during that period. The cost of construction of the project would require resources in the amount of US\$2,099,000,000 equivalent, compared with a total expenditure of US\$5,145,000,000 during that same period. The financing plan shown above shows that the resources from the actual loans granted by the Energy Funds and the Treasury

and internal cash generation by EBY starting in 1993 would together be financing the equivalent of US\$3,509,000,000 equivalent, that is, approximately 68 percent of the resources necessary during the period of project completion.

- 4.23 Regarding the loans to be granted to EBY with resources from the Energy Funds in the amount of US\$640 million equivalent, analysis of the projected resources of the Energy Funds shows that the annual amounts set forth in the financing plan for the project would be available and allocated to EBY in a timely manner. It should be pointed out that the financial plan for the project has the loans from the Energy Fund as adjustment variables to cover possible cash deficits.
- 4.24 Given the importance of these resources in the financing of the project and in order to ensure timely availability of those resources, it is recommended that a contractual clause be included under which the borrower, based on information provided by the guarantor, will submit to the Bank during project execution, within the first one hundred and twenty (120) days of each fiscal year starting in 1990, a report containing: (i) the financial projections of EBY for the next five years, including the detailed description of the assumptions used to calculate them; (ii) the updated investment plan for the project; (iii) detailed information on the expected sources of financing and the status of negotiations therefor; (iv) measures to be taken to obtain such financing; and (v) evidence that resources from the Energy Funds have been allocated to EBY according to the plan of investment for that respective fiscal year. This report must also contain comparative data and comments on execution of the financing plan for the previous year (see Recommendations).
- 4.25 The loans to be granted by the Treasury will be for servicing EBY's debt during the period 1989-1994. The Treasury has been covering the debt service due to the fact that EBY will only start to generate enough cash to cover the entire servicing of the debt starting in 1995. Prior to that time, financial support from the Treasury would be in the amount of US\$1,192,000,000 equivalent, of which an average of US\$150 million equivalent would be necessary annually in 1989 and 1990, once the capitalized amounts of the IDB and IBRD loans are deducted for the payment of interest in the amount of US\$145 million equivalent during those two years. During the following three-year period 1991-1993, the resources necessary to cover the rest of the financing plan of EBY for these expenses would be an average of US\$264 million equivalent annually, of which US\$102 million, on average, would be for financial obligations with the IDB and IBRD. Timely availability of these resources and their source of financing are the only significant uncertainty that can be found in the financial plan for EBY, in light of possible limitations in transfers of resources from the Treasury to State or semipublic agencies under programs for reduction of public spending and agreements recently reached with the IMF, described in chapter II of this document. For

the above reasons, it is recommended that an additional obligation be included in the report referred to in paragraph 4.24, with the deadlines indicated, under which the guarantor, through the borrower, must present the plans and measures necessary for timely performance of all the financial obligations of the borrower, including the full servicing of its debt (see Recommendations).

4.26 In addition to the above, the project financing plan includes:

- (i) The resources of IDB loan 555/OC-RG in the amount of US\$250 million in the process of disbursement, as well as the undisbursed balance of the IBRD loan (2998-AR), in the amount of US\$150 million. The IDB loan has been disbursed in full; the undisbursed balance of the IBRD loan for Yacyretá loan as of October 31, 1989 was US\$80.1 million.
- (ii) Loan to be granted by the IDB in the amount of US\$250 million. The resources of the proposed IDB loan to be granted under the operation considered herein would be necessary in 1990-1991; the US\$200 million IBRD loan that would be processed under the sectoral lending system in 1990 would be necessary in 1990 and 1991.
- (iii) Credit from export agencies and suppliers in the amount of US\$573 million for goods and services of foreign origin for equipment for which bidding has already been held or is still to be held; in the latter case, the bidding procedures include as a requirement for prequalification the financing of 100 percent of the goods to be procured. The main credits obtained under this system are detailed below.

EBY

Main credits from export agencies and suppliers
(in US\$ millions)

<u>Lender</u>	<u>Amount Committed</u>	<u>Disbursements</u>		<u>Total</u>
		<u>Made 1988</u>	<u>Planned 1989-1996</u>	
- <u>Export agencies:</u>	<u>599.2</u>	<u>81.7</u>	<u>466.2</u>	<u>547.9</u>
EXIMBANK (USA)	<u>400</u>	<u>81.7</u>	<u>289.6</u>	<u>371.3</u>
Construction equipment		81.7	5.4	87.1
Turbines		-	157.7	157.7
Other equipment		-	126.5 a/	126.5
EDC (Canada)	<u>73.8</u>	<u>-</u>	<u>52.6</u>	<u>52.6</u>
Turbines				
EXIMBANK - Japan	90.0	-	89.2	89.2
Generators				
IMI (Italy)	33.0	-	33.0	33.0
Gates and locks				
Italian Government	2.4	-	1.8	1.8
- <u>Suppliers</u>	<u>15.3</u>	<u>6.7</u>	<u>8.6</u>	<u>15.3</u>
Mitsubishi				
Generators	14.0	6.7	7.3	14.0
Suppliers (United States)				
Construction equipment	1.0	-	1.0	1.0
P & H - Cranes	<u>0.3</u>	<u>-</u>	<u>0.3</u>	<u>0.3</u>
 Total	 <u>614.5</u>	 <u>88.4</u>	 <u>474.8</u>	 <u>563.2</u>

a/ Estimated amount for equipment for which contracts have not yet been awarded that could be financed with this line of credit.

(iv) Disbursements from loans granted by EXIMBANK (USA) and EDC (Canada), financing the manufacture of the turbines and equipment, have been suspended because of nonperformance of the commitments made by the Argentine Republic, and would be conditional on the agreements sought in the recent negotiations with the IMF. Meanwhile, EBY has advanced US\$16 million from its own sources to suppliers so that they can continue to make the turbines. This advance will cover needs until approximately February 1990.

(v) Credits from local banks and suppliers in the amount of US\$173.4 million, financing 85 percent of the value of the equipment of Argentine origin, through discount lines with the Central Bank.

- 4.27 The investments planned under the project during the period 1989-1996, when added to those accumulated at the close of 1988, would amount to total fixed assets in service of US\$7,817,000,000 equivalent. The difference between that amount and the cost shown in part III of this report is due mainly to capitalization of the finance charges during the period of construction and their adjustment, both for the loans granted by the Energy Funds (Unified Fund) and by the Treasury, as well as the value of the compensation for ANDE and AyEE for advance use of the capital contributions and adjustments thereof. Starting in 1993, when EBY is expected to enter into commercial operation, the finance charges under these items have been treated as operating expenses.
- 4.28 The analyses conducted showed that the resources to be loaned to EBY from the Energy Funds (Unified Fund) would be available in the amounts and at the time scheduled in the project financial plan. In turn, servicing of EBY's refinanced foreign debt would be covered by the Treasury through loans to EBY. Timely availability of these resources, both from the Energy Funds and the Treasury, are the main significant uncertainties in the project financing plan. However, the importance of the project is such that the Argentine Government is expected to take the necessary steps to make available or to obtain those resources, given the priority it has assigned to the project and the importance of completing the project on schedule. For this purpose, the necessary contractual requirements have been included in order to ensure timely availability of the funds.
- 4.29 It is estimated that EBY will also be in a position to obtain the other financial resources set forth in the project financing plan, which would include: (i) credits in the amount of US\$200 million from the IBRD, which resources would be needed between 1990 and 1991; (ii) credits from export agencies and suppliers for 100 percent of the goods to be procured, with an estimated US\$217 million in loans still not arranged; of that figure an estimated US\$126.5 million is available from EXIMBANK and could be used to finance equipment not yet contracted; and (iii) credits from local banks not yet arranged in the amount of US\$148 million, for which the Central Bank has set up the corresponding discount lines.
- 4.30 There is uncertainty as to the timely availability of the resources from EXIMBANK (United States) and EDC (Canada), which are financing construction of the turbines and other equipment. Regarding the undisbursed balance of IBRD loan 2998-AR, it is expected to be used in the first quarter of 1990. It is important to note that continued disbursement beyond the US\$170 million was conditional upon fulfillment of several contractual conditions, which was to have been verified during the annual review scheduled to be conducted by the two Banks in May 1989. However, the events occurring in the country during the first half of this year made it necessary to postpone the review, which was just carried out in October 1989, and the conclusions of which have not yet been finalized.

- 4.31 It should be stressed that timely availability of the remaining resources of IBRD loan 2998-AR, together with the amount the IBRD would allocate to the Yacyretá project under a possible second sectoral loan planned for 1990, are fundamental to round out the financing plan projected for EBY and to see the project completed on schedule. Consequently, it is considered necessary, as a condition precedent to the first disbursement of the proposed financing, that the Argentine Republic, as guarantor, agree to demonstrate that it has reviewed the performance of the electrical subsector in a satisfactory manner so that disbursements of IBRD loan 2998-AR can be continued beyond US\$170 million (see Proposed Resolution).

E. Environmental impact

- 4.32 The Master Plan for Environmental Management of the project is satisfactory. Taking into account the experience acquired during the project's execution, the recommendations of the panel of expert advisors and the fact that the Department of Energy of Argentina approved the manual of environmental control regulations for hydro-electric projects, it is recommended that the plan be reviewed and updated to incorporate the aforesaid concepts. It is also recommended that the execution program be upgraded so as to obtain a detailed schedule of the remaining studies and protection works. The above information must be submitted on April 30, 1990 at the latest.

F. Resettlement and relocation program

- 4.33 Generally speaking, the resettlement and relocation program is well structured, and has established and maintains communication and coordination adequately with the corresponding regional authorities and supporting institutions in both Argentina and Paraguay. However, on different missions, the IDB and IBRD have identified the need to strengthen the teams in charge of the program inasmuch as the pace of execution will be accelerating compared with previous stages. In addition, certain elements remain to be resolved on both sides: in Argentina and in Paraguay decisions on the treatment of squatter homes in the areas affected and final solutions for the ceramic industry remain pending. Furthermore, the Master Plan for Encarnación still needs to be supplemented and the survey of the population affected on the right bank in both urban and rural areas must be updated. On the whole, the programming system for the remaining works needs to be upgraded through a detailed plan that includes both urban and rural areas and defines the critical path of execution, and establishes milestone dates for completion of the main works consistent with the date the reservoir is to be filled. In parallel with this program, the relocation units of EBY will have to be strengthened.

- 4.34 For loan 555/OC-RG, a monitoring mechanism for the resettlement process was set up through semiannual progress reports. In Annex A, paragraph 7.01 of the contract for that loan, the content of the reports is set out, including certain specific requirements. Taking into account the progress achieved and the difficulties observed in 1989, items (b), (c) and (d) of paragraph 7.01 of Appendix 3 of document PR-1641 of October 25, 1988, would be replaced with those shown in Appendix 3 of this loan proposal. These modifications include the requirements that have been identified as necessary to allow for better follow-up by the Bank.

V. RECOMMENDATIONS

- 5.01 For the reasons set forth above, the project is considered to be feasible from the technical, environmental, institutional, financial, economic and legal points of view. Therefore, approval of the loan is recommended, for which purpose the following normative documents are being submitted to the Board of Executive Directors for consideration:
- Proposed Resolution (OC)
 - Recommendations
 - Description of the Project (Annex A of the loan contract)
 - Argentine Electric Energy Subsector: Indicators and Definitions (Annex A of the guarantee contract)

E.B. YACYRETA PROYECCION-ESTADO DE RESULTADOS (MILLONES US\$)												
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	TOTAL
	REAL	----	----	----	----	----	----	----	----	----	----	----
DATOS DE OPERACION												
GENER.PROPIA HIDRO GWH	0.0	0.0	0.0	0.0	0.0	2990.0	8740.0	14930.0	17930.0	19000.0	19000.0	82590.0
TOT.GENERACION GWH	0.0	0.0	0.0	0.0	0.0	2990.0	8740.0	14930.0	17930.0	19000.0	19000.0	82590.0
VENTAS												
GWH VENDIDOS	0.0	0.0	0.0	0.0	0.0	2990.0	8740.0	14930.0	17930.0	19000.0	19000.0	82590.0
TOTAL UNIDADES VENDIDAS	0.0	0.0	0.0	0.0	0.0	2990.0	8740.0	14930.0	17930.0	19000.0	19000.0	82590.0
INGRESO MEDIO KWH	0.000	0.000	0.000	0.000	0.000	0.045	0.045	0.046	0.047	0.048	0.050	
TOTAL VENTAS	0.0	0.0	0.0	0.0	0.0	135.3	390.2	682.3	842.3	918.4	946.8	3915.4
GASTOS DE EXPLOTACION												
OPERACION Y MANTENIMIENTO	0.0	0.0	0.0	0.0	0.0	3.0	8.0	14.0	16.9	17.8	18.3	78.0
DEPREC.ACT.FIJ.EN SERV.	0.0	0.0	0.0	0.0	0.0	72.2	146.7	150.7	153.6	155.5	156.4	835.1
GENERAL Y ADMINISTRACION	0.0	0.0	0.0	0.0	0.0	5.9	6.1	6.4	6.7	6.9	8.0	39.9
TOTAL GASTOS EXPLOTACION	0.0	0.0	0.0	0.0	0.0	81.1	160.7	171.2	177.1	180.2	182.7	953.0
INGRESOS NETO EXPLOTACION	0.0	0.0	0.0	0.0	0.0	54.2	229.5	511.1	665.2	738.2	764.2	2962.4
EGRES. AJENOS EXPLOTACION												
COMPENSACION SOBRE CAP.	0.0	0.0	0.0	0.0	0.0	3.0	9.1	16.0	19.8	21.6	22.3	91.9
RESARCIMIENTO	0.0	0.0	0.0	0.0	0.0	0.8	2.5	4.4	5.4	5.9	6.1	25.0
COMPENS.TERRITORIO INUND.	0.0	0.0	0.0	0.0	0.0	8.5	25.7	45.2	56.0	61.2	63.0	259.6
COMPENSAC.ENERGIA CEDIDA	0.0	0.0	0.0	0.0	0.0	9.0	22.4	39.4	48.8	53.2	54.8	227.6
TOT.EGRESOS AJENOS EXP.	0.0	0.0	0.0	0.0	0.0	12.4	59.7	105.0	130.0	141.9	146.2	595.2
UTILIDAD ANTE GTOS.FINANC	0.0	0.0	0.0	0.0	0.0	41.8	169.8	406.1	535.2	596.3	618.0	2367.2
GASTOS FINANCIEROS												
GTOS.FINANCIEROS LGO.PLZO	0.0	0.0	0.0	0.0	0.0	618.8	679.2	731.3	767.2	783.5	788.7	4368.7
TOTAL GTOS.FINANCIEROS	0.0	0.0	0.0	0.0	0.0	618.8	679.2	731.3	767.2	783.5	788.7	4368.7
UTILIDAD(PERDIDA)NETA	0.0	0.0	0.0	0.0	0.0	-576.9	-509.4	-325.2	-231.9	-187.2	-170.7	-2001.4

E.B. YACYRETA												
PROYECCION-ORIGEN Y APLICACION DE FONDOS												
(MILLONES US\$)												
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	TOTAL
FUENTES	REAL	----	----	----	----	----	----	----	----	----	----	----
FUENTES INTERNAS												
INGRESO NETO EXPLOTACION	0.0	0.0	0.0	0.0	0.0	54.2	229.5	511.1	665.2	738.2	764.2	2962.4
OTROS EGRESOS AJENOS EXP.	0.0	0.0	0.0	0.0	0.0	-12.4	-59.7	-105.0	-130.0	-141.9	-146.2	-595.2
DEPRECIACION ACTIVO FIJO	0.0	0.0	0.0	0.0	0.0	72.2	146.7	150.8	153.6	155.5	156.4	835.1
TOTAL FUENTES INTERNAS	0.0	0.0	0.0	0.0	0.0	114.0	316.5	556.9	688.8	751.8	774.4	3202.3
FUENTES EXTERNAS												
APORTES DE CAPITAL	0.0	0.0	0.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0
PRESTAMO BIRF 2998-AR	99.7	136.7	13.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	150.3
PRESTAMO BID 555/OC	0.0	236.3	13.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	250.0
PTMO(S).BID PROPUESTO(S)	0.0	0.0	217.1	32.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	250.0
PTMO(S).BIRF PROPUESTO(S)	0.0	0.0	119.3	80.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	200.0
OTROS PRESTAMOS	141.0	78.0	71.3	68.4	119.7	135.8	112.0	85.9	75.5	0.0	0.0	746.6
INTERES DEV.TESORO NAL.	0.0	45.4	62.3	84.7	121.4	157.8	189.5	211.4	230.8	243.6	251.3	1598.1
INTERES DEV. FDS.ENERG.	0.0	143.2	164.7	194.0	242.9	274.8	300.6	328.2	345.4	357.9	371.4	2723.2
PROV 6% PARA COMPENSACION	0.0	18.2	19.7	23.9	28.6	15.8	16.6	17.4	18.3	19.3	20.3	198.0
PTMO. FONDOS.ENERGETICOS.	96.0	82.3	129.1	219.3	197.9	11.8	0.0	0.0	0.0	0.0	0.0	640.4
PTMO. TESORO NACIONAL	49.9	150.1	149.1	243.8	275.0	274.6	99.4	0.0	0.0	0.0	0.0	1192.0
TOTAL FUENTES EXTERNAS	386.6	890.2	959.9	987.7	985.6	870.6	718.0	642.9	670.1	620.8	642.9	7988.7
TOTAL FUENTES	386.6	890.2	959.9	987.7	985.6	984.6	1034.5	1199.8	1358.9	1372.6	1417.3	11191.0
APLICACIONES												
SERVICIO DEUDAS												
GASTOS.FINAN.PTMO.S.BID	0.0	0.0	0.0	0.0	0.0	40.5	40.2	38.5	35.8	33.1	30.4	218.4
OTROS GASTOS FINANC.	0.0	0.0	0.0	0.0	0.0	129.9	132.4	135.8	136.8	129.6	115.4	780.0
GASTOS.FIN.CONST.NO FINANC.	83.3	127.7	155.3	183.0	186.7	19.2	17.0	8.1	2.4	0.0	0.0	699.5
AMORT.NUEVOS PTMO.S BID	0.0	0.0	0.0	0.0	0.0	0.0	16.7	33.3	33.3	33.3	33.3	150.0
AMORT. OTROS PRESTAMOS	0.0	74.1	69.1	83.0	93.8	101.4	117.5	136.4	142.1	170.3	179.6	1167.2
TOTAL SERVICIO DEUDA	83.3	201.8	224.4	266.0	280.5	291.0	323.7	352.1	350.4	366.3	358.7	3015.0
COSTOS CONSTRUCCION												
PROYECTO COSTOS DIR.	306.4	396.4	469.7	372.8	307.6	213.1	156.4	101.5	81.7	0.0	0.0	2099.2
OTROS GASTOS FINANC.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GASTOS.FIN.TOTALES	0.0	128.4	156.7	184.5	188.2	19.2	17.0	8.1	2.4	0.0	0.0	704.5
GASTOS FIN.FONDOS.SEC.HAC	0.0	206.8	246.7	302.6	393.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	1149.0
TOT.COSTO CONSTRUCCION	306.4	731.6	873.2	859.9	888.7	232.3	173.4	109.6	84.1	0.0	0.0	3952.7
OTRAS APLICACIONES												
INCREM(DISMIN)CAP.TRAB.	-17.4	84.3	15.8	42.2	0.4	30.3	46.2	52.8	28.5	19.4	4.5	324.5
INTERES OPERAC.DIFERIDOS	14.3	0.0	0.0	0.0	0.0	448.4	506.6	557.0	594.6	620.8	642.9	3370.3
INT.TESORO NAL.PAGADOS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.4	160.4	170.5	422.3
INT.FONDOS ENERG.PAGADOS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	140.1	209.5	211.0	238.2	798.8
GASTOS.FIN.CONST.NO FINANC.	0.0	-127.7	-155.3	-183.0	-186.7	-19.2	-17.0	-8.1	-2.4	0.0	0.0	-699.5
TOT.OTRAS APLICACIONES	-3.1	-43.4	-139.4	-140.8	-186.3	459.5	535.8	741.9	921.6	1011.6	1056.2	4216.5
TOTAL APLICACIONES	386.6	890.0	958.1	985.1	982.9	982.8	1032.9	1203.6	1356.1	1377.9	1414.9	11184.3
SUPERAVIT(DEFICIT)ANUAL	0.0	0.2	1.9	2.5	2.6	1.8	1.6	-3.8	2.8	-5.3	2.4	
SUPERAVIT(DEFICIT)ACUM.	0.0	0.2	2.1	4.6	7.3	9.1	10.6	6.8	9.6	4.3	6.7	

E.B.YACYRETA											
PROYECCION-ESTADOS DE SITUACION											
(MILLONES US\$)											
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
	REAL	----	----	----	----	----	----	----	----	----	----
ACTIVO											
ACTIVO FIJO											
ACTIVO FIJO EN SERV.BRUTO	0.0	0.0	0.0	0.0	0.0	7218.5	7450.8	7624.2	7733.8	7817.9	7817.9
MENOS:DEPREC.SERV.ACUM.	0.0	0.0	0.0	0.0	0.0	72.2	218.9	369.6	523.2	678.7	835.1
ACTIVO FIJO EN SERV.NETO	0.0	0.0	0.0	0.0	0.0	7146.3	7231.9	7254.6	7210.6	7139.2	6982.8
ACTIVO FIJO EN CONSTRUC.	3865.2	4596.8	5469.9	6329.8	7218.5	232.3	173.4	109.6	84.1	0.0	0.0
ACTIVO FIJO TOTAL NETO	3865.2	4596.8	5469.9	6329.8	7218.5	7378.6	7405.3	7364.2	7294.7	7139.2	6982.8
ACTIVO CORRIENTE											
BANCOS -INV.FACIL REALIZ.	67.6	20.0	15.0	10.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
CUENTAS A COBRAR CONSUM.	0.0	0.0	0.0	0.0	0.0	22.5	65.0	113.7	140.3	153.0	157.7
INVENTARIOS	0.0	0.0	0.0	0.0	0.0	0.7	1.5	2.3	3.1	3.2	3.3
TOTAL ACTIVO CORRIENTE	67.6	20.0	15.0	10.0	5.0	28.3	71.5	121.0	148.5	161.2	166.1
OTROS ACTIVOS											
OTRAS DISPONIBILIDADES		0.2	2.1	4.7	7.3	9.1	10.7	6.9	9.7	4.4	6.8
TOTAL OTROS ACTIVOS	0.0	0.2	2.1	4.7	7.3	9.1	10.7	6.9	9.7	4.4	6.8
TOTAL ACTIVO	3932.8	4617.0	5487.0	6344.4	7230.8	7415.9	7487.5	7492.0	7452.8	7304.8	7155.6
PATRIMONIO Y PASIVO											
PATRIMONIO											
CAPITAL	56.7	56.7	56.7	96.7	96.7	96.7	96.7	96.7	96.7	96.7	96.7
DIF.POR CONVERSION	111.8	111.8	111.8	111.8	111.8	111.8	111.8	111.8	111.8	111.8	111.8
UTILIDAD(PERDIDA)RETENIDA	0.0	0.0	0.0	0.0	0.0	-576.9	-1086.3	-1411.5	-1643.4	-1830.7	-2001.4
TOTAL PATRIMONIO	168.5	168.5	168.5	208.5	208.5	-368.4	-877.8	-1203.0	-1434.9	-1622.2	-1792.9
PASIVO LARGO PLAZO											
DEUDA L/P-NUOVO PTMO BID	0.0	236.3	467.1	500.0	500.0	483.3	450.0	416.7	383.3	350.0	316.7
DEUDA LARGO PLAZO - OTRAS	1219.4	1438.2	1559.4	1614.7	1633.0	1651.3	1626.9	1570.7	1475.9	1296.4	1111.8
TOTAL PASIVO LARGO PLZO.	1219.4	1674.5	2026.5	2114.7	2133.0	2134.6	2076.9	1987.4	1859.3	1646.4	1428.5
PASIVO CORRIENTE											
PORCION CTE.LARGO PLAZO	147.3	69.1	83.0	93.8	101.4	134.2	169.7	175.4	203.6	212.9	217.9
CxP.CONTRATISTAS/PROVEED.	231.0	99.1	78.3	31.1	25.6	18.6	15.6	12.2	11.3	4.7	4.9
TOTAL PASIVO CORRIENTE	378.3	168.2	161.3	124.9	127.0	152.7	185.4	187.7	214.9	217.6	222.8
OTROS PASIVOS											
PROV. PARA COMPENSACIONES	107.0	125.2	144.9	168.8	197.4	213.2	229.7	247.2	265.5	284.7	305.0
BOB.ARGENT.-FONDOS ENERG.	1614.3	1839.8	2133.6	2547.0	2987.8	3274.4	3575.0	3763.0	3899.0	4045.9	4179.1
BOB.ARGENT.TESORO NAL.	445.3	640.8	852.2	1180.6	1577.1	2009.5	2298.3	2509.7	2649.1	2732.4	2813.1
TOTAL OTROS PASIVOS	2166.6	2605.8	3130.7	3896.4	4762.2	5497.0	6103.0	6519.9	6813.6	7063.0	7297.2
TOTAL PASIVO	3764.3	4448.5	5318.5	6135.9	7022.3	7784.4	8365.3	8695.0	8887.8	8926.9	8948.6
TOTAL PATRIMONIO Y PASIVO	3932.8	4617.0	5487.0	6344.4	7230.8	7415.9	7487.5	7492.0	7452.8	7304.8	7155.6

	YACYRETA											
	RELACIONES FINANCIERAS-PROYECCIONES											
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
	REAL	----	----	----	----	----	----	----	----	----	----	
CAPITAL TRABAJO NETO	-163.4	-79.1	-63.3	-21.1	-20.6	9.7	55.9	108.7	137.2	156.6	161.1	
PROMEDIO ACTIVO CORRIENTE	67.6	43.8	17.5	12.5	7.5	16.6	49.9	96.2	134.7	154.9	163.7	
PROMEDIO ACT.FIJO SERV.	0.6	0.0	0.0	0.0	0.0	3573.1	7189.1	7243.2	7232.6	7174.9	7061.0	
TOT.INVERSION INMOVILIZ.	67.6	43.8	17.5	12.5	7.5	3589.8	7239.0	7339.5	7367.3	7329.7	7224.6	
INDICES DE SOLVENCIA:												

RELACION CORRIENTE	0.18	0.12	0.09	0.08	0.04	0.18	0.39	0.64	0.69	0.74	0.75	
RELACION ACIDA	0.18	0.12	0.09	0.08	0.04	0.18	0.38	0.63	0.68	0.73	0.73	
INDICE ENDEUDAMIENTO	7.24	9.94	12.03	10.14	10.23	0.00	-2.37	-1.65	-1.30	-1.01	-0.80	
% ING.NET.TOTAL/TOT.INGR.	0.00%	0.00%	0.00%	0.00%	0.00%	40.07%	58.81%	74.91%	78.97%	80.38%	80.71%	
COBERT.GTOS.FINANC.VECES	0.00	0.00	0.00	0.00	0.00	0.08	0.33	0.69	0.86	0.94	0.97	
COBERT.SERV.DEUDA VECES	0.00	0.00	0.00	0.00	0.00	0.39	0.98	1.58	1.97	2.05	2.16	
% UTIL.NETA/TOT.INGRESOS	0.00%	0.00%	0.00%	0.00%	0.00%	-426.52%	-130.54%	-47.66%	-27.53%	-20.38%	-18.03%	
% RELACION DE OPERACIONES	0.00%	0.00%	0.00%	0.00%	0.00%	59.93%	41.19%	25.09%	21.03%	19.62%	19.29%	
% UT.NET/ACT.FIJ.SERV.NET	0.00%	0.00%	0.00%	0.00%	0.00%	-16.15%	-7.09%	-4.49%	-3.21%	-2.61%	-2.42%	
PDO.PROMEDIO COBRO(DIAS)	0.00	0.00	0.00	0.00	0.00	60.81	60.81	60.81	60.81	60.81	60.81	
RENTABILIDAD FINANCIERA												

RENT.S/INV.INNOV CAP.TRAB	0.00%	0.00%	0.00%	0.00%	0.00%	1.51%	3.17%	6.96%	9.03%	10.07%	10.58%	
RENT RESARC.DIV.TERRIT.I	0.00%	0.00%	0.00%	0.00%	0.00%	1.17%	2.35%	5.53%	7.26%	8.14%	8.55%	
% AUMENTO (DISMINUCION)												

PRECIO:SOBRE ANO ANTERIOR		0.00%	0.00%	0.00%	0.00%	0.00%	-1.31%	2.36%	2.80%	2.89%	3.09%	
UNIDAD:SOBRE ANO ANTERIOR		0.00%	0.00%	0.00%	0.00%	0.00%	192.31%	70.82%	20.09%	5.97%	0.00%	
CONTRIBUCION A CONSTRUC.												

GEN.INTERNA NETA	-83	-202	-224	-266	-281	-177	-7	205	338	385	416	
% GEN.INT./CONSTRUCCION	-27.19%	-27.59%	-25.69%	-30.94%	-31.56%	-76.19%	-4.18%	186.81%	402.37%	0.00%	0.00%	

Loan /OC-RG
Resolution DE- /89

EXECUTION AGREEMENT

between

the ARGENTINE REPUBLIC, the REPUBLIC OF PARAGUAY,

and the

INTER-AMERICAN DEVELOPMENT BANK

Loan to the Binational Yacyretá Agency (EBY)

(Additional Financing for the
Yacyretá Hydroelectric Project)

, 1989

EXECUTION AGREEMENT

EXECUTION AGREEMENT between the ARGENTINE REPUBLIC (hereinafter called "Argentina"), the REPUBLIC OF PARAGUAY (hereinafter called "Paraguay"), and the INTER-AMERICAN DEVELOPMENT BANK (hereinafter called the "Bank"). This EXECUTION AGREEMENT has been signed concurrently with the signing of Loan Contract /OC-RG (hereinafter called the "Loan Contract") entered into on this same date by and between the Bank and the Binational Yacyretá Agency.

WHEREAS:

1. On December 3, 1973, Paraguay and Argentina signed the Treaty of Yacyretá (hereinafter called the "Treaty") and Side Letters for the purpose of joint utilization of the water resources of the Paraná River at the point where the Island of Yacyretá is situated, and to improve the navigability of that river;
2. To that end, Argentina and Paraguay established the "Binational Yacyretá Agency" (hereinafter called "Yacyretá") formed by the "Agua y Energía Eléctrica" company of Argentina and the "Administración Nacional de Electricidad" company of Paraguay, with equal amounts of capital stock;
3. Yacyretá has been entrusted with execution of the Yacyretá hydroelectric project (hereinafter called the "Project"), described in Annex A to the Loan Contract;
4. Pursuant to the Treaty, the power resulting from utilization of these hydroelectric facilities shall be divided equally between the two countries, and each shall be given the preferential right to acquire power not utilized by the other country for domestic consumption;
5. Pursuant to the Treaty, Paraguay and Argentina have agreed to acquire jointly or individually the total amount of the plant's installed capacity, the method for doing so having been agreed to in Side Letter No. 22 of December 3, 1973;
6. With the backing of both governments, Yacyretá has requested that the Bank participate in additional financing for the Project, the first financing for the Project having been made available under loan 346/OC-RG and the second under loan 555/OC-RG;
7. In the Loan Contract, of whose provisions Argentina and Paraguay declare that they are aware, the Bank has agreed to allocate resources amounting to the equivalent of US\$250,000,000 for execution of the Project; and
8. The signing of this Execution Agreement together with the Loan Contract was one of the basic conditions for the Inter-American Development Bank to approve the third loan to Yacyretá, pursuant to the provisions in Section of the Loan Contract.

The undersigned parties to this Execution Agreement undertake the following:

CHAPTER I

Purpose

Article 1. The purpose of the present Execution Agreement is to establish the measures that will be adopted by Argentina and Paraguay, pursuant to the Treaty, for complete execution of the Project.

CHAPTER II

Project Execution

Article 2. Paraguay and Argentina agree to adopt such measures as may be necessary to expedite timely execution of the Project. To this end, the decisions described hereinafter shall be adopted on the dates indicated.

Article 3. Argentina and Paraguay agree to adopt such measures as the parties deem necessary to expedite execution of the plan for relocation of facilities and resettlement of the population referred to in the Contract.

Article 4. Paraguay and Argentina shall adopt such measures as may be necessary under Article VI of the Treaty to ensure demarcation of the international boundary of the Project Zone six (6) months prior to the date scheduled for implementing the action altering the natural course of the Paraná River.

Article 5. Argentina and Paraguay shall duly adopt the regulations mentioned in Article VII of the Treaty, the approved text of which shall be submitted to the Bank by Yacyretá six (6) months prior to the date envisaged for the navigation lock to be put into service.

Article 6. In the procurement of goods and services to be financed with resources provided for in the Loan Contract, Yacyretá shall use the international public bidding procedures, and procedures for the hiring of consultants, agreed upon with the Bank in the Loan Contract.

Article 7. Argentina and Paraguay undertake to adopt the measures deemed necessary by the parties for implementation of the ecological programs to be carried out by Yacyretá in connection with the Project. In the event that continuation of such programs requires the participation of national institutions in both countries or in either of them, any measures adopted in this respect shall be communicated to the Bank.

Article 8. Paraguay and Argentina undertake to adopt all measures necessary to expedite satisfactory organization of Yacyretá during the Project execution stage and its adaptation to the phase of commercial operation.

Article 9. Argentina and Paraguay shall adopt timely measures to declare the areas necessary for installation of the hydroelectric facilities and auxiliary works and the exploitation thereof to be areas of public utility, and to carry out within the purview of their respective sovereignties all administrative and legal acts for the expropriation of real property and improvements thereon, or to obtain easements thereupon, pursuant to the provisions of Article XVII of the Treaty.

Article 10. Paraguay and Argentina shall duly adopt such measures as may be necessary to ensure that Yacyretá is able to submit to the Bank, six (6) months prior to the date scheduled for start-up of the Project plant, the program for establishing the cost of service provided for in Annex C, paragraph III, of the Treaty, which shall address the points set forth in Section 6.05 of the Loan Contract.

Article 11. Argentina and Paraguay shall cooperate with the Bank to facilitate the Project inspection provided for in the Loan Contract.

Article 12. If Paraguay and Argentina should decide to entrust Yacyretá with the Project and the construction and operation of any other project, as set forth in Article XXIII of the Treaty, they shall take such measures as may be necessary, which measures must be acceptable to the Bank, to avoid any adverse effect on the execution of the Project.

CHAPTER III

Miscellaneous Provisions

Article 13. This Execution Agreement shall enter into effect on the date of its signature.

Article 14. This Execution Agreement and the obligations of Argentina and Paraguay set out therein shall terminate on the same date as the Loan Contract.

Article 15. The rights and obligations set forth in this Execution Agreement are valid and applicable pursuant to the terms contained therein.

Article 16. Unless the parties agree otherwise in writing, all announcements, applications, communications or notifications issued pursuant to this Execution Agreement shall be made in writing and shall be considered to have been made as of the time the corresponding document is delivered to the addressee at the respective addresses listed hereinafter:

For Paraguay:

Ministerio de Hacienda
[Ministry of Finance]
Asunción
Republic of Paraguay

For Argentina:

Ministerio de Economía
[Ministry of Economic Affairs]
Calle Hipólito Yrigoyen, 250
Buenos Aires
Argentine Republic

For the Bank:

Postal address:
Inter-American Development Bank
1300 New York Avenue, N.W.
Washington, D.C. 20577
U.S.A.

Cable address:
INTAMBANC
WASHINGTON DC

IN WITNESS WHEREOF,

The Argentine Republic, the Republic of Paraguay, and the Bank, each acting through an authorized representative, have signed this Execution Agreement in four (4) counterparts of equal tenor, in the city of Washington, District of Columbia, United States of America, this day of of 1989.

REPUBLIC OF PARAGUAY

ARGENTINE REPUBLIC

INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION 1/

REGIONAL. LOAN /OC-RG TO THE ENTIDAD BINACIONAL YACYRETA (EBY)
(Supplementary Financing for the Yacyretá
Hydroelectric Project)

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the Entidad Binacional Yacyretá (EBY), as borrower, and the República Argentina, as guarantor, for the purpose of granting the former a loan to cooperate in the execution of the Yacyretá Hydroelectric Project. This financing shall be subject substantially to the following conditions:

1. Amount and Currencies: Up to US\$250,000,000, or the equivalent in other currencies (except those of Paraguay and of Argentina) which are part of the ordinary capital resources of the Bank, to pay for goods and services acquired through international competition in the member countries of the Bank and for such other purposes as may be specified in the loan contract. Payments of amortization and interest shall be made in the currency or currencies specified by the Bank, in a quantity equivalent to the corresponding amount owed, calculated in units of account in terms of dollars of the United States of America, in accordance with provisions to be included in the loan contract.
2. Source of Funds: The ordinary capital resources of the Bank.
3. Guarantee: Joint and several guarantee of the República Argentina.

1/ The provision set forth in this Appendix 1 and in Appendices 2, 3 and 4 shall only become final when the Board of Executive Directors has approved the loan proposal.

4. Credit Fee: 0,75% per annum on the undisbursed portion of the financing, commencing to accrue 60 days after the date of the contract and payable in dollars of the United States of America on the same dates as the interest.
5. Amortization: The borrower shall amortize the loan in a period of 20 years from the date of the contract by means of semiannual, consecutive and, insofar as possible, equal installments. The first installment shall be paid 42 months after the date scheduled for the last disbursement of the financing. The Bank may credit the amortization installments proportionally to the outstanding balance of each of the portions of the loan which accrue different rates of interest.
6. Interest: The borrower shall pay interest semiannually on the outstanding balance of the loan. The first payment shall be made six months after the date of the loan contract. During the disbursement period, the Bank: (a) shall determine the rate of interest to be applied as of the first day of each January and for the life of the loan to any amount disbursed during the ensuing year; and (b) may modify the interest rate, in accordance with the policy of the Bank, to be applied to disbursements of the loan made during the second half of the year. At the request of the borrower, the resources of the financing may be used to pay interest of this loan, and interest of loans 346/OC-RG and 555/OC-RG incurred after the date of this resolution, during the disbursement period of this financing.
7. Disbursement: The term for disbursement of the financing shall expire two years after the effective date of the contract.
8. Special Conditions:
 - (a) The resources of the loan shall be utilized in their entirety by the borrower. If modifications in the legal provisions or the basic regulations concerning the borrower, or in the Yacyretá Treaty or in any of its side letters, are approved which, in the opinion of the Bank, may substantially affect the Project, the Bank shall have the right to require the borrower and the guarantor to provide explanatory and detailed information in order to determine whether such modification or modifications may have an adverse impact on the execution of the Project. Only after hearing the borrower and guarantor and assessing their information and clarifications, may the Bank take such measures as it deems appropriate in accordance with provisions to be set forth in the loan and the guarantee contracts.
 - (b) The resources of the loan, together with the resources of Loans 346/OC-RG and 555/OC-RG, shall be used to participate in the execution of a project estimated at the equivalent of US\$5,986,200,000. Consequently, the loan and the guarantee contracts shall contain such provisions as the Bank deems appropriate to ensure that such national resources as may be

necessary, in addition to the three Bank loans, for the complete execution of the Project shall be duly provided, in an amount estimated at the equivalent of US\$5,276,200,000, in accordance with a schedule of investments satisfactory to the Bank which may include loans from other sources.

- (c) Prior to the first disbursement of the financing, the guarantor must prove that the review of the financial and institutional information on the performance of the electric subsector has been satisfactorily completed with the IBRD and the Bank, to permit continuation of disbursements beyond US\$170.000.000 under Loan 2998-AR with the IBRD.
- (d) Six months before the scheduled date for the placing in service of the Project's power house, the borrower shall submit, to the satisfaction of the Bank, the program for establishing the cost of the service provided for in Annex C, Chapter III, of the Yacyretá Treaty, covering the following aspects:
 - (i) the amount necessary for payment to the parties that make up Yacyretá of a dividend of 12% per annum on their participation in the paid-in capital;
 - (ii) the amount necessary for servicing the debt;
 - (iii) the amount required to pay Agua y Energía Eléctrica ("AyEE"), of Argentina, and the Administración Nacional de Electricidad ("ANDE"), of Paraguay, in equal sums, as restitution for their total expenditures relating to Yacyretá;
 - (iv) the amount necessary for payment of full compensation on account of flooded land;
 - (v) the amount necessary for payment of the compensation called for in the Yacyretá Treaty which shall be charged to the national companies that are receiving energy which otherwise would be destined for the other country;
 - (vi) the amount necessary to cover operating costs; and
 - (vii) the amount of the balance, either positive or negative, of the operating statement for the prior fiscal year.
- (e) In the acquisition of machinery, equipment and other materials for the Project, and in the awarding of construction contracts financed either in whole or in part:
 - (i) with resources of the loan, the system of international public bidding shall be followed in each case in which the value of such acquisitions or contracts exceeds the equivalent of US\$200,000. Bidding for such contracts

shall be subject to procedures to be set forth as an annex to the loan contract;

- (ii) with local counterpart funds, procedures acceptable to the Bank shall be followed; and
 - (iii) with funds from suppliers' credit, purchasers' credit and any external resources other than funds from the Bank and the IBRD loans, the borrower shall, at the request of the Bank, demonstrate that the purchase price agreed upon or paid for the goods as well as the financial conditions established for the credits, are reasonable, and that the quality of the goods is consistent with the technical requirements of the Project.
- (f) If during the period of the Project's execution, resources provided from the Fondo Chocón-Cerros Colorados and the Fondo Nacional de Grandes Obras Eléctricas are insufficient, in respect of the amounts set forth in the financing plan, the guarantor shall commit itself to grant or facilitate the granting of the necessary additional credits on such terms and conditions as are compatible with that plan.
- (g) The Bank shall establish such inspection procedures as it deems necessary to assure the satisfactory execution of the Project, and the borrower, the guarantor and the Republic of Paraguay shall extend all cooperation which is required for the most effective accomplishment of this purpose. From the amount of the financing the sum of US\$2,500,000 shall be allocated for credit to the general accounts of the Bank to meet expenses of general inspection and supervision.

RECOMMENDATIONS

- A. It is recommended that the following conditions, to be fulfilled to the satisfaction of the Bank, be included in the loan and/or guarantee contracts, as appropriate, in addition to the conditions set forth in the proposed resolution (Appendix 1):
1. Unless the Bank shall otherwise agree, before each public call for bids the borrower shall submit:
 - (a) the plans, specifications and other documents necessary for such call; and
 - (b) in the case of construction works, evidence that the lands required for the execution of the works are situated in areas demarcated in accordance with Article XVII of the Yacyretá Treaty. Prior to the awarding of the contracts, the borrower shall present evidence that it is in possession of the lands or is able to take such possession immediately.
 2. The guarantor shall take the appropriate measures to ensure that revenues from tariffs of the national electric energy companies Hidroeléctrica Norpatagónica Sociedad Anónima (HIDRONOR S.A.), Agua y Energía Eléctrica, Sociedad del Estado (AyEE) and Servicios Eléctricos del Gran Buenos Aires, S.A. (SEGBA) shall cover all operating expenses, not including depreciation, and generate a surplus to cover either all or part of the other expenses, which include depreciation and other financial obligations of the respective company. In addition, revenues from tariffs by the respective company, after providing for its operating expenses and the net service on its debt, shall internally generate sufficient cash so as to cover a reasonable proportion of the investment program. If such tariffs should fail to generate sufficient revenue to cover all financial obligations of the respective company, the company and the guarantor shall take such measures as may be necessary, which may include an increase in the rates, to meet such financial obligations.
 3. The guarantor agrees to: (a) complete and submit no later than October 31, 1990 the "Study of Levels and Structure of Tariffs at Marginal Cost: High Tension", (b) no later than January 31, 1991, submit a plan, along with a time schedule, with the appropriate actions that shall be executed to achieve the recommendations agreed upon by the parties, issuing from said study, (c) complete and submit no later than December 31, 1990, the "Study of Levels and Structure of Tariffs at Marginal Cost: Low Tension", and (d) submit, no later than January 31, 1991, a plan, along with a time schedule, to achieve the recommendations agreed upon by the parties, issuing from said study.

4. No later than December 31, 1990, the guarantor agrees to submit an appraisal of the "Study of the Legal and Institutional Framework of the Electric Subsector", the object whereof shall be to identify the main legal and institutional constraints on the normal operation of the electric subsector and to define a long-term policy for their solution. The study shall be drawn up in accordance with the terms of reference and a time schedule approved in advance by the Bank. Furthermore, the study shall: (a) examine the factors that by virtue of revenue shortfalls prevent the national companies from achieving their financial objectives; (b) establish a methodology, designed for periodic use, for asset revaluation of the companies; and (c) analyze the status of management and revenues of the Energy Funds.
5. No later than June 30, 1991, the guarantor agrees to submit a plan, along with a time schedule, with the appropriate actions that shall be executed to achieve the recommendations agreed upon by the parties, issuing from the study referred to in paragraph 4 above.
6. Before May 31 of each year, and during a period of 10 years after the effective date of the guarantee contract, the guarantor and/or each of the national electric energy companies, on the one hand, and the Bank, on the other hand, shall hold annual meetings intended to evaluate the financial and institutional evolution of the electric subsector and of the respective company, pursuant to paragraph I, Appendix 4. The guarantor and/or the respective company shall see to it that actions are carried out and the targets agreed to at the meetings are met. If the evaluation should determine that the agreements are not being carried out or the financial and operating indicators established for each company in paragraph II of Appendix 4 are not being attained, the guarantor and/or the respective company shall take such measures as may be necessary to achieve that purpose.
7. In order to accomplish the evaluation referred to in the foregoing paragraph, the guarantor shall submit annually:
 - (a) before April 30, a report for the preceding year containing the information referred to in paragraph 1.05 of Appendix 4; and
 - (b) before October 31, a report describing the progress made in that year in the implementation of the actions called for in the plans referred to in paragraph 3 and 5 herein.
8. Starting with the calendar year after the initiation of energy sales, the borrower agrees, during the life of the loan contract, to take appropriate actions to ensure that the balance of accounts receivable outstanding at the end of each semester does not exceed the equivalent of 60 days of the average sales over the 12 preceding months.
9. The guarantor agrees to adjust, during the life of the guarantee contract, the investment program of the electric energy subsector based on the least cost expansion plan, updated annually and drawn up on the basis of parameters previously agreed upon between the parties.

10. The guarantor agrees that during the life of the guarantee contract the national electric energy companies shall only agree to start major generating or transmission works that are in accordance with the least cost expansion plan and have appropriate financing. The parties may agree to modify the least cost expansion plan during the annual evaluation referred to in paragraph 6, or in any other opportunity that the parties agree upon.
11. The guarantor agrees to submit, no later than June 30, 1990 the results of the "Economic Study for the Rehabilitation of Thermo-Electric Plants" to be considered in the least cost expansion plan referred to in paragraph 9.
12. The guarantor agrees during the life of the guarantee contract:
 - (a) to take such measures as may be necessary to ensure that the rates charged on the sale of electric energy from the National Atomic Energy Commission (CNEA) do not exceed the greater value of the rates of the other supply sources of the National Interconnected System (SIN); and
 - (b) that resources of the Energy Funds shall only be allocated to the CNEA to finance its financial requirements, once all financial requirements of the other companies in the sector are being adequately covered.
13. The borrower shall submit to the Bank, six months before the scheduled date for generation start-up of the power-plant, its organization chart, organization manual, schedule for hiring personnel to fill required positions, and the insurance program for the operational stage.
14. The borrower agrees to submit, prior to April 30 and October 31 of each year, and until the ex post evaluation report on environmental and relocation issues referred to in paragraph 16 herein is submitted to the Bank, based on the guidelines specified in paragraph 7.01 of Appendix 3, reports assessing the performance of the relocation and environmental protection programs within the Project's area, agreeing to take such corrective measures as may be appropriate.
15. The borrower agrees:
 - (a) that the works, equipment and facilities included in the Project shall be managed and maintained according to generally accepted technical standards; and
 - (b) to submit to the Bank, for a period of five years from the start-up in operation of the first unit of the Project, and in the first three months of each calendar year: (i) an annual maintenance plan for each one of the works built under the Project; and (ii) a detailed report on maintenance operations in the previous year and on the reliability, operating efficiency and quality of service as well as on the state of maintenance of the system at the end of the previous year. For such purposes,

the borrower shall take such measures as may be necessary to include the necessary funds in its annual budgets.

16. In order to assess the results obtained from the execution of the Project, the borrower shall agree to submit to the Bank two ex-post evaluation reports which shall cover: (a) the technical, economic and financial issues, based on a methodology previously agreed upon with the Bank; and (b) the environmental and relocation issues, based on a methodology and guidelines agreed upon with the Bank and specified in Chapter VI of Appendix 3. For such purposes, the guarantor shall supply to the borrower any sectoral information that may be necessary.
17. Once the pertinent conditions set forth in the loan and guarantee contracts are complied with, the Bank may establish an advance of funds of up to 20% of the amount of the financing.
18. Financial statements of the Project, during its execution, and those of the borrower, during the life of the loan contract, shall be submitted each year to the Bank certified by a firm of independent public accountants, following procedures satisfactory to the Bank.
19. No later than April 30, 1990, the borrower shall present to the Bank evidence that: (a) it has implemented for the relocations and environmental aspects, a detailed execution program following the critical path system, which incorporates the remaining works in urban and rural areas on both banks of the Parana River; and (b) it has implemented the plan to strengthen the units for relocation and environmental control, and has contracted the additional personnel needed to carry out the programs of social action and environmental control.
20. The borrower, with data supplied by the guarantor, shall present to the Bank, during the period of project execution, and within 120 days of each fiscal year beginning in 1990, a report which contains:
 - (i) the financial projection of EBY for the next five years, including details and the assumptions used in their calculation;
 - (ii) the updated investment plan of the project;
 - (iii) detailed information on the anticipated sources of financing and a report on the status of these negotiations;
 - (iv) the steps to be taken to secure these financial commitments;
 - (v) proof that it has been allocated funds from the Energy Funds in accordance with the investment plan for the respective year; and

(vi) the plans and actions to be carried out for the timely compliance of the financial obligations of the borrower including the servicing of its loans. The aforementioned report shall include comparative data and commentary on the executing of the financial plan from the preceeding year.

21. In the same act during which the loan and guarantee contracts are entered into, the República Argentina, the República del Paraguay and the Bank shall sign a document similar to the Execution Agreements signed on November 6, 1979 in connection with Loan 346/OC-RG and on November 17, 1988 in connection with Loan 555/OC-RG.

B. Annexes substantially similar in content to Appendix 3 (The Project) and Appendix 4 (Annual Evaluation Meetings) of the loan proposal shall be included in the loan and guarantee contracts, as appropriate.

THE PROJECT
(Annex A of the Loan Contract)

I. Purposes

- 1.01 The purpose of the Project is the construction of a hydroelectric power plant with 2,700 MW of installed generating capacity and approximately 20,000 GWh of annual energy generation, that shall help in meeting electric energy requirements scheduled for the middle of the 1990's in Argentina and Paraguay.
- 1.02 In addition, the Project shall contribute to improve navigation, road systems between Argentina and Paraguay, and the development of irrigation, fish culture and tourism.

II. Description

- 2.01 The Project is located along the Paraná River, 90 kilometers downstream from the cities of Posadas and Encarnación, and consists of the following works:
- (a) a power house of 20 units rated at 135 MW each and a step-up substation from which the 220 kv lines to Paraguay and 500 kv lines to Argentina start;
 - (b) a reservoir with a volume of 21,000 cubic hectometers over an area of 1,700 square kilometers, consisting of earth-fill dams about 70 kilometers in length, a navigation lock, two spillways and irrigation structures;
 - (c) housing units for the resettlement of about 35,000 persons and relocation of infrastructure facilities affected by the filling of the reservoir along both sides of the Paraná River;
 - (d) facilities for the protection of the river basin at the Aguapey, through a dam and drainage canal and protection for the town of Carmen de Paraná at the level of the river Tacuary; and
 - (e) environmental protection measures which provide, within the power plant, facilities for upstream movement of fish, refuges for the existing fauna in the zone to be flooded, and cleansing of the reservoir.

III. Cost and Financing

- 3.01 The cost estimate, shown in the following table, amounts to US\$5,986,200,000, allocated to the following categories:

(In US\$ millions)								
	IDB			Local Counterpart			Gov't AR	Total
	346/OC-RG	555/OC-RG	/OC-RG	1761-AR	2998-AR	Credit Export		
1. <u>ENGINEERING AND ADMINISTRATION</u>	51,5	29,0	10,3	40,5	29,2	-	820,4	980,9
1.1 Engineering and Management	51,5	29,0	10,3	40,5	29,2	-	342,0	502,5
1.2 Admin. and Overhead Expenses	-	-	-	-	-	-	478,4	478,4
2. <u>DIRECT COSTS OF CONSTRUCTION</u>	141,5	152,3	186,0	169,5	177,2	743,6	1.812,0	3.382,1
2.1 Preliminary Works	-	-	-	-	-	-	337,3	337,3
2.2 Civil Works and Insurance	141,5	152,3	186,0	169,5	177,2	179,5	839,2	1.845,2
2.3 Generating Equipment	-	-	-	-	-	391,7	62,5	454,2
2.4 Electro Mechanical Equipment	-	-	-	-	-	172,4	97,0	269,4
2.5 Environmental Facilities	-	-	-	-	-	-	30,4	30,4
2.6 Indemnity	-	-	-	-	-	-	127,1	127,1
2.7 Resettlement and Relocation	-	-	-	-	-	-	318,5	318,5
3. <u>FINANCE CHARGES</u>	17,0	42,5	42,1	0,0	40,6	-	1.248,0	1.390,2
3.1 Interests Loan	14,9	40,0	39,6	-	-	-	111,0	205,5
3.2 Interests Loan 346/OC-RG	-	-	-	-	-	-	16,3	16,3
3.3 IDB Credit Fee	2,1	2,5	2,5	-	-	-	-	7,1
3.4 Inspection and Supervision	-	-	-	-	40,6	-	164,4	205,0
3.5 IBRD Interests	-	-	-	-	-	-	956,3	956,3
3.6 Interest on Other Credit	-	-	-	-	-	-	-	-
	0,0	26,2	11,6	0,0	3,0	56,4	135,8	233,0
4. <u>UNALLOCATED</u>	-	12,8	7,1	-	1,6	25,4	37,2	84,1
4.1 Contingencies	-	13,4	4,5	-	1,4	31,0	98,6	148,9
4.2 Allowance for Escalation	-	-	-	-	-	-	-	-
<u>Grand TOTAL</u>	210,0	250,0	250,0	210,0	250,0	800,0	4.016,2	5.986,2
<u>PERCENTAGES</u>	3.5	4.2	4.2	3.5	4.2	13.4	67.1	100.0

a/ Includes US\$226.8 million invested at December 31, 1988.

b/ Includes US\$3,183.7 million invested at December 31, 1988. This figure does not include US\$1,925 million of interest from loans from the funds and the Treasury as this does not contribute a financial requirement during the execution period of the Project.

IV. Procurement

- 4.01 When goods and services to be procured or contracted for are to be paid, either in whole or in part, with foreign exchange of the financing, the bidding procedures and specific bidding requirements or any other form of purchase or contracting shall allow unrestricted participation of goods and services, including those relating to any mode of transport, from member countries of the Bank. Consequently, no conditions such as would limit or restrict the offering of goods or the participation of such contractors may be set forth in those procedures and/or specific bidding requirements.

V. Consulting Services

- 5.01 In selecting and contracting for consulting services to be financed either in whole or in part out of the loan proceeds, no conditions or stipulations such as would limit or preclude the participation of consultants from the member countries of the Bank may be established.
- 5.02 In selecting and contracting for consulting services to be financed either in whole or in part out of local counterpart funding, the borrower shall submit to the Bank for approval, before proceeding with the contracting, the names of the firms or individual consultants selected, the terms of reference thereof, as well as the fees agreed to.

VI. Ex Post Evaluations

A. Project Ex Post Evaluation

- 6.01 Before 2 years have elapsed after the entry into service of the last unit, the borrower shall present to the Bank a Project ex post evaluation report, for which it shall compile the annual data specified below, until one year before the preparation of said report.
- 6.02 Annual data shall be compiled, as from the effective date of the loan contract, on the categories specified below, and they may be consolidated with the periodic reports of the borrower for as long as such reports are submitted:

1. Project Execution: Annual Data

- (a) Annual investment.
- (b) Modifications to the Project, according to cause.
- (c) Changes to the budget, according to cause.
- (d) Changes in the bidding and contracting schedule, and in the terms for construction and supply.
- (e) Changes to the financial scheme.

2. System Operation: Annual Data

- (a) The energy and demand balance of the interconnected system.
- (b) Data by type of generation: hydroelectric, nuclear and thermal. The types and quantities of fuel used, the economic cost of fuel, and the costs of maintenance.
- (c) Information on outages or rationing due to deficits in the interconnected system.
- (d) Costs of operation and maintenance of the Project.

B. Relocation Program: Annual Data and Ex Post Evaluation

- 6.03 Two years after the reservoir has been filled, the borrower shall submit to the Bank an ex post evaluation report on the relocation program. For this purpose, and as from the effective date of the loan contract, the borrower shall compile each year the following information which shall be submitted annually to the Bank before April 30 of each year:
- (a) The number of dwellings constructed in the period, and aggregate numbers.
 - (b) The number of families resettled in the period, and aggregate numbers.
 - (c) A qualitative description of the resettled population, before and after, based on a representative sample of families, including:
 - (i) occupation of the head of the household and its members;
 - (ii) family income level;
 - (iii) employment or underemployment rate in the group;
 - (iv) participation in training programs and occupational adaptation;
 - (v) public health status indicators;
 - (vi) attendance of children of school age at schools built for each community;
 - (vii) farm output of resettled farmers; and
 - (viii) permanence of families resettled in new dwellings.
 - (d) The number of families that have been paid indemnity in the period, and aggregate numbers, plus a qualitative description thereof.
 - (e) The number and description of industrial, commercial, public and community establishments either relocated or paid indemnity. The amount invested in indemnization.

- (f) A description of the progress achieved (in works and amount), aggregate and in the period, in relocation of public infrastructure facilities.
- (g) Personnel employed in social programs on each side of the river, by professional category.
- (h) Participation of government and non-government organizations in agreements relating to execution of the relocation program.

VII. Relocations and Environmental Programs

7.01 The semi-annual report referred to in paragraph 14, Appendix 2, shall cover the following items:

- (a) All semi-annual reports shall describe: (i) the progress attained in implementing relocation actions, as well as evidence that necessary measures have been taken to assure that the opinions of the population affected have been appropriately considered; (ii) an assessment of the professional and supporting staff requirements to enhance the Social Action Programs on both sides of the river, including a time schedule for hiring and training said staff; and (iii) the progress attained in implementing the approved Environmental Master Plan, showing the degree of compliance with the schedule for executing said plan.
- (b) The semi-annual report to be presented by April 30, 1990 shall include:
 - (i) the definitive Encarnación Master Plan, including the time schedule and the cost of its implementation, and a study of the technical and economical feasibility of protecting the recovery area in the coastal area of Encarnación, Paraguay;
 - (ii) the solution for the relocation of the ceramic industry on both banks of the river;
 - (iii) updated figures on the rural and urban population affected on the right side of the river;
 - (iv) updated figures on the families not include in the original census ("outsiders") on both banks and the measures to control the situation created by these families;
 - (v) evidence of the implementation of the Monitoring, Evaluation and Control System (SISEME) on the right bank;
 - (vi) the coordinated and uniform system for collecting data on both banks, for all the areas of the relocation program; and
 - (vii) the updated Environmental Master Plan.
- (c) The report to be presented by April 30, 1991 shall include for both banks the options tentatively considered for the solution of the

problem relating to the families not included in the original census.

- (d) The semiannual report to be presented by October 31, 1991, shall include for both banks the final solution adopted for the families not included in the original census.

7.02 The studies included in the Environmental Master Plan shall be completed in accordance with a schedule previously agreed upon with the Bank, and their results submitted for its consideration.

ANNUAL MEETINGS FOR EVALUATING THE ELECTRIC SUBSECTOR
(Annex A of the Guarantee Contract)

I. Annual Meetings

- 1.01 Pursuant to Appendix 2, paragraph 6, the guarantor, the national electric energy companies referred to in paragraph 2 of Appendix 2 ("companies"), and the Bank shall hold annual meetings, before May 31 of each year, for analyzing the financial and institutional evolution of the companies and the issues related to the subsector referred to in paragraphs 3, 4 and 9 of Appendix 2.
- 1.02 At such annual meetings, agreements shall be sought on actions to be taken and goals to be achieved regarding the financial and institutional evolution of the subsector and/or with the attainment of the financial and operative indicators established for each one of the companies in the respective loan and guarantee contracts. These actions may include, among others, tariff increases, cost reductions, transfers of funds, borrowings and institutional and normative issues. On the other hand, the goals may include, among others, liquidity test ratios, working capital ratios, operating efficiency ratios, financial structure indicators, and account collection indicators.
- 1.03 The objectives of the first annual meeting are to: (a) verify the compliance of the actions and goals previously agreed upon between the guarantor, the companies and the Bank; (b) agree, according to paragraph 1.02 herein, on actions to be taken in the next one-year period to achieve the goals agreed upon; and (c) review the long-term investment program resulting from the least cost expansion plan referred to in paragraph 9 of Appendix 2.
- 1.04 The objectives of the second annual meeting are to: (a) verify the advance of actions agreed upon between the guarantor and the Bank for the implementation of the studies on "Levels and Structure of Tariffs at Marginal Cost" and on the "Legal and Institutional Framework of the Electric Subsector" to which reference is made in paragraphs 3 and 4 of Appendix 2, respectively; (b) verify the compliance of the goals set at the previous annual meeting; (c) agree for the next one-year period, pursuant to paragraph 1.02 above, on actions to be taken on said period to achieve the goals agreed upon; (d) agree on the distribution to the companies of the Energy Funds; and (e) review the long-term investment program resulting from the least cost expansion plan referred to in paragraph 9 of Appendix 2.

- 1.05 Before April 30 of each year, the guarantor shall submit a report containing the following information for the previous year: (a) the financial statements of the companies for the year just ended; (b) the financial projections for the next five years, according to the format previously agreed upon with the Bank; (c) an analysis of the implementation of the actions agreed upon in the previous year's meeting; (d) the companies' investment program, with its respective financing plan based on an updated expansion plan; (e) the progress on the actions taken, issuing from the tariff study based on marginal cost, pursuant to the provisions of paragraph 3, Appendix 2; (f) the updated financing plan of the borrower; and (g) any other information that the Bank may reasonably request.

II. Indicators

- 2.01 The surplus referred to in paragraph 2, Appendix 2, shall not be less than the difference between operating revenues and cash expenses (these being defined as total operating expenses, less depreciation), expressed as a percentage of the cash expenses. For the consolidated sub-sector, and with positive indicators for each firm, the surplus must be no less than 8% in 1990.
- 2.02 The reasonable proportion referred to in paragraph 2, Appendix 2, shall be determined by relating net internal cash generation in one year with the investment program for the same year, including finance charges during the construction period. Said proportion on a consolidated basis shall be no less than 20% in 1990.
- 2.03 The financial indicators for each of the firms shall be defined in the meeting referred to in paragraph 1.01 of the Appendix scheduled for May 1990. These consolidated indicators shall permit the achievement of an operating margin for the subsector of no less than 20% and a contribution to the investment program with resources of net internal cash generation of no less than 30%.

III. Definitions

- 3.01 For purposes of the foregoing paragraph the meanings of the following items are understood as follows: (a) internal cash generation: the amount resulting from computing, for any given fiscal year, the operating revenues plus depreciation and provisions for that year, plus amounts transferred in allotments from the Electric Funds, less operating costs and administrative and selling expenses; (b) debt service: the sum of amortization of principal in the same fiscal year as in (a) above (including sinking fund payments), total interest and other charges on all debt for more than one year for which the company is liable; (c) net internal cash generation: the difference between the internal cash generation and the debt service; and (d) investment program: the amount that each company should have invested in the respective year, as agreed to in advance with the Bank in the annual meetings to which paragraph 6, Appendix 2, refers.