Business Focus Series

Private Power Business Opportunities: South America

Prepared by:

U.S. Agency for International Development

Office of Energy & Infrastructure

in Cooperation with:

Bureau for Latin America and the Caribbean

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This is one of three reports on private power business opportunities in Latin America. The other two reports examine these opportunities in Central America and the Caribbean. These reports are part of the U.S. Agency for International Development's (USAID) Business Focus Series, and were prepared by RCG/Hagler, Bailly, Inc., and JRH Associates. The opinions expressed here are those of the authors and not necessarily those of USAID.

The Business Focus Series includes reports on promising energy and environmental markets and business opportunities in developing countries. The reports are of varying length and content, and may be regional, country-specific, or focused on a particular market segment.

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Printed on recycled paper

June 1992

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Regional Overview

Government-owned utilities have dominated South America's electricity sector for the last thirty years. Yet today, except in Chile, financial and operational problems plague even the most efficient of the state-run utilities.

Drought-induced water shortages and enormous cost overruns at the region's hydroelectric plants, which supply the majority of South America's generating capacity, have made reliable electricity service only a fond memory. Argentina, Chile, Colombia, Peru, Ecuador and other countries have rationed power or suffered serious unplanned outages. Adding to this burden, most South American utilities borrowed heavily during the 1970s and 1980s to construct showpiece hydroelectric projects. Their cost overruns, some on the order of 200 percent, have drained resources away from thermal generation, transmission and distribution, as well as the non-power sectors of the economy. Last, the low tariff rates generally imposed by central governments mean that public utilities no longer have the capital to keep pace with electricity demand through the 1990s. Indeed, the utilities say that generation capacity needs alone will account for nearly $62 billion of their capital investment requirements through the end of the century.

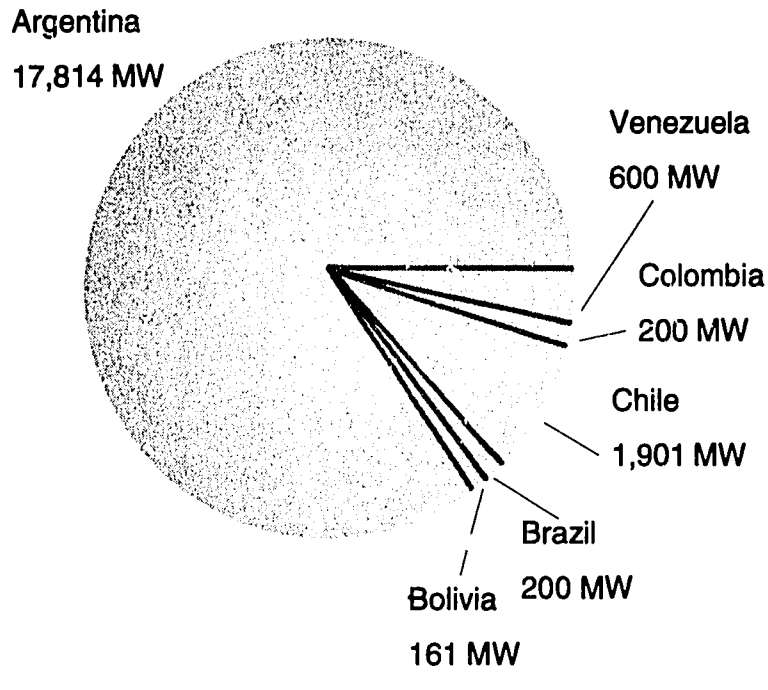
As a result, several of the region's governments are actively investigating or soliciting private sector participation in their electricity sectors. Such participation can take the form of "private power" (discrete generating units owned, financed, constructed, and operated by private companies that sell power to the government utility or directly to consumers) or "privatization" (the sale of all or part of a government-owned utility to the private sector).

By 1999, the nations of South America hope to add some 53,571 MW of generation capacity (a 6.2 percent annual increase over a ten-year period) if their governments' plans to increase economic development are successful. Unfortunately, inadequate tariff rates have reduced returns on sector investments to well below the cost of capital, and the public utilities' rates of return on assets dropped to an average of below 1 percent in 1989. Furthermore, the high inflation and currency devaluations of the 1980s have driven up the cost of repaying loans to foreign lenders. These conditions have in turn caused an overall cutback in plant maintenance, leading to reduced plant availability, and in some cases, the mothballing of generating units. As these conditions continue to worsen, the opportunities for private power will multiply.

Generation Capacity and Potential Private Power Market

	Current Capacity (MW)	Expansion (1989-1999) (MW)	Total Investment Required ($ million)	Estimated Private Power (MW)	Estimated Private Power Investment Required ($ million)
Argentina	15,251	7,026	10,336	17,814	20,000
Boliva	460	417	365	161	140
Brazil	55,237	28,511	36,337	200	250
Chile	3,110	1,901	1,754	1,901	1,754
Colombia	8,829	3,026	4,186	200	275
Ecuador	1,766	675	1,203	0	0
Paraguay	4,471	n/a	n/a	0	0
Peru	2,704	1,341	2,183	0	0
Suriname	60	20.5	n/a	0	0
Uruguay	1,566	720	200	0	0
Venezuela	16,861	9,934	5,026	600	450
TOTAL	**110,315**	**57,571**	**61,590**	**20,867**	**22,869**

Estimated Private Power Capacity 1989-1999



Source: RCG/Hagler, Bailly, Inc.

The private power market in South America is estimated at 20,876 MW through 1999, representing an investment of nearly $23 billion. Chile and Argentina possess 94 percent of this market. Chile has sold off 85 percent of its public electric power system assets, and Argentina is currently selling its major thermal plants and largest distribution companies. Both of these countries will look to new private utilities to provide the bulk of their future generation expansion. Although Bolivia's private power generation potential is substantially smaller at 161 MW, this capacity will likely be provided by its well run private utility serving La Paz.

Brazil, Colombia, Peru and Venezuela are now experiencing operational and financial problems, but nevertheless continue to view large hydroelectric projects as the key to their future capacity needs. These projects can only be funded by multilateral development banks and bilateral donors; if lenders fail to provide the needed capital, then these four countries may be forced to rethink their commitment to public power and reach out to the private sector for help. Brazil plans to expand its capacity by 28,511 MW by 1999, Colombia by 3,026 MW, Peru by 1,341 MW, and Venezuela by 8,934 MW.

Ecuador (which is politically opposed to private power) and Paraguay, Suriname, and Uruguay (which have adequate hydroelectric or hydrocarbon resources) do not appear to be seriously interested in private power. Unless government policies change drastically, the market for private power in these countries will be limited to cogeneration opportunities with isolated industries in the region.

The large potential for private power in South America carries with it some cautionary notes. Thirty years of public control of the region's utilities have left them somewhat unprepared for the workings of the marketplace. Accustomed to government-subsidized tariff rates and capital improvements, South American societies in general have little appreciation of the real cost of electricity.

Many government officials in the region will try to insist on shifting all commercial and financial risks for investments to the private sector, while offering to pay unrealistically low power purchase prices. Despite years of forced debt restructuring on a national level, they will think nothing of offering credit histories of underperforming public utilities as the sole backing for a power purchase contract. Similar inconsistencies are likely to arise with project solicitations, proposal evaluations, and contract negotiations.

Thus, companies interested in South American private power markets will have to focus on long-term results, and they must have a thorough understanding of local political and economic conditions. Furthermore, they must be willing to educate their counterparts in the region's public utilities on how the private power industry operates and on the mutual risk-sharing of power purchase contracts. With hard work, they can overcome public utility management's innate distrust of the private sector.

Despite the problems facing private power developers in South America, many of these nations are beginning to embrace the concept of private power, much in the same way that the United States dealt with the issue after the Public Utility Regulatory Policies Act was passed. While this is a new and often difficult experience for both utilities and government officials, sustained economic growth in the region will only be achieved if there is adequate investment in new electric power capacity. Much of this investment can only come from the private sector.

Argentina

When inflation reached almost 5,000 percent in 1989, Argentina's President Menem introduced a bold package of economic reforms that included opening the economy to greater trade and competition, reducing the government's role in the economy, encouraging foreign investment, and reforming the tax system. The economy began to rebound in 1990, with inflation dropping dramatically to 20 percent and the country's trade surplus ballooning by 52 percent. The strong performance of the agricultural sector somewhat offset a decline in industrial production. Positive GDP growth rates of over 6 percent occurred in fiscal 1991 and 1992.

Another of Menem's reforms is the privatization of 25 state enterprises, including the telephone company and two television stations. The government has begun the privatization of the national airline and national highway system, and is discussing privatizing customs inspection and state purchasing functions. In addition, the government has begun the privatization of its electric utilities by selling the generating assets of Servicios Electricos del Gran Buenos Aires to Chilean investors.

Argentina has adequate supplies of energy. Its potential for additional hydroelectric power is estimated at 44,500 MW, and its fossil reserves include 2,168 million barrels of oil, 744 billion m^3 of natural gas, and 478 million tons of coal. Its combined oil and gas reserves are second only to Venezuela's in the region.

The Electric Power Sector

Four national utilities, one binational agency, 19 provincial utilities, and several cooperatives supply electricity in Argentina.

National utilities. Agua y Energia Electrica (AyE) is responsible for generation and transmission nationwide, and the distribution of electricity in four provinces. It also operates a national dispatch center, which is in charge of coordinating the operations of the country's larger electricity producers to ensure the economic use of generation facilities. Servicios Electricos del Gran Buenos Aires (SEGBA S.A.) generates, distributes, and transmits electricity to the Greater Buenos Aires area. Hidroelectrica Norpatagonica Sociedad Anonima

ARGENTINA - COUNTRY STATISTICS

ECONOMIC PROFILE - 1992

POPULATION	33,100,000
growth rate	1.3 %
GDP	$153 B
growth rate	6.5 %
GDP/CAPITA	$2,217
INFLATION	20 %
EXCHANGE RATE	US $1.00 = 1,930 A

TRADE FIGURES - 1992

EXPORTS = $12.9 B

meat, wheat, corn, oilseed, hides, wool

IMPORTS = $11.0 B

Major Trading Partners → US, USSR, ITALY, BRAZIL, JAPAN, NETHERLANDS, FRG, BOLIVIA

GENERATION CAPACITY AND POTENTIAL PRIVATE POWER MARKET

	1989 (MW)	1999 (MW)	PRIVATE POWER MARKET 1992-1999 (MW)
HYDRO	6,620	12,735	10,035
NUCLEAR	1,018	1,763	
OIL	5,070	5,419	5,419
steam	(4,337)	(4,692)	
diesel	(733)	(727)	
GAS	2,138	1,955	1,955
steam	NA	NA	
combustion turbine	(2,138)	(1,815)	
combined cycle	NA	(140)	
COAL/LIGNITE/OTHER	405	405	405
TOTAL	15,251	22,277	17,814

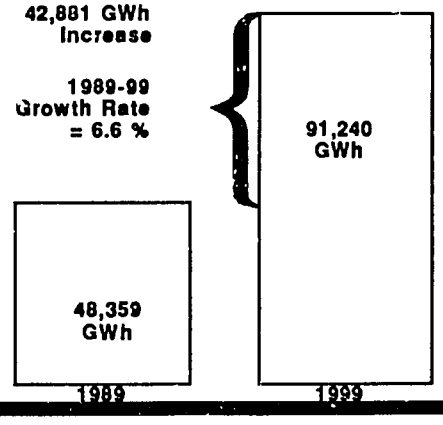
ELECTRIC POWER SYSTEM - 1989

GROSS GENERATION	48,359 GWh
ELECTRICITY SALES	37,061 GWh
industry share	47 %
PER CAPITA CONSUMPTION	1,162 kWh
RATE OF RETURN	-10.8 %
SYSTEM FREQUENCY	50 c/s
VOLTAGE	
transmission	550/220/132 kV
distribution	13.2 kV

ENERGY RESOURCES - 1990

FOSSIL FUEL PRICES	US $
steam coal	59.00/ton
diesel oil	50.27/bbl
fuel oil	22.00/bbl
natural gas to utilities	3.04/MCF
HYDROELECTRIC POTENTIAL	44,500 MW
GEOTHERMAL POTENTIAL	n/a
OIL RESERVES	2168 million bbls
NATURAL GAS RESERVES	743.9 billion m3
COAL RESERVES	478 million tons

PUBLIC ELECTRICITY SUPPLY



ELECTRICITY PRICES - 1991

	US CENTS/kWh
TOTAL REVENUE/ TOTAL SALES	3.20/kWh
AVERAGE INCREMENTAL COST	6.60/kWh
TARIFF BY CONSUMER CLASSIFICATION	
Industrial	6.31/kWh
Commercial	10.62/kWh
Residential	9.34/kWh

(HIDRONOR S.A.) is responsible for developing the hydro resources of the North Patagonia region, and for generating and transmitting energy distributors in La Pampa and Comahue. The Comision Nacional de Energia Atomica (CNEA) develops, builds, and operates nuclear power plants.

Binational agency. Comision Tecnica Mixta del Salto Grande (CTMSG) runs the binational (Argentine/Uruguay) Salto Grande hydro project.

Provincial utilities. These utilities provide electricity services to all but four provinces (these provinces are served by AyE or cooperatives). Cooperatives provide partial services to 16 provinces, and account for 10 percent of total electricity consumption in the country. Some of the provincial utilities are integrated into the national interconnected system.

National utilities, with the exception of CNEA, report to the Ministry of Economics, Public Works and Services through the Under Secretary of Electric Energy (SSE). SSE has overall responsibility for planning and operations at the national level, and for the collection and distribution of electricity funds. CNEA falls under the authority of the Executive Branch, while CTMSG reports to the Ministry of Foreign Affairs. The provincial utilities are under the jurisdiction of the Ministries of Economics, Finance, or Public Works of each province.

With the addition of 3,000 MW of hydro capacity and 1,500 MW of thermal capacity in the 1980s, Argentina's installed capacity in the public utility sector reached 15,251 MW in 1989: 6,620 MW of hydro, 1,018 MW of nuclear, and 7,613 MW of thermal power. In 1989, an unusually severe drought caused the output of Argentina's hydroelectric plants to drop to 29 percent of total generation (hydro normally supplies well over 40 percent). The shortfall was covered by thermal generation, which reached 58 percent of total generation in 1989. However, less than half of the country's thermal capacity was in working condition in 1991.

After growing by 3.4 percent per year between 1980 and 1989, Argentina's net electricity generation reached 48,598 GWh in 1989. The country's sales in that year were 37,061 GWh: 47 percent to industrial customers, 30 percent to residential customers, and 11 percent to commercial customers.

To meet a projected 6.5 percent sales growth by 1999, Argentina plans to add 7,026 MW of capacity at a cost of $10.3 billion. Its plan calls for 6,115 MW of hydro in 12 medium to large-sized projects (40 to 850 MW each) and the binational Argentina-Paraguay Yacyreta project. The 2,700 MW Yacyreta project is scheduled to have its first unit in operation by 1993, but is plagued by cost overruns. After the year 2000, major hydro projects on the Alto Uruguay (jointly with Brazil) and Parana Rivers are envisioned to add 4,600 MW. The plan also calls for the addition of the 745 MW Atucha II nuclear plant by 1995 and a 355 MW steam unit.

Despite this ambitious expansion plan, the financial situation of Argentina's electric power sector is critical: the negative return on assets it has experienced for most of the past twenty years is not expected to change before 1996. This situation is thought to be the result of anti-inflation policies, which resulted in lags between tariff increases and generation costs. The price of electricity dropped from 3.8 cents/kWh in 1980 to an average of 3.4 cents/kWh in 1989, while costs increased from 3.7 cents to 4.7 cents/kWh. In 1991, the average revenue for each kWh sold was 3.20 cents/kWh, while the estimated incremental cost was 6.60 cents/kWh. Argentina's retail tariffs in 1991 were 6.31 cents/kWh to industry, 9.34 cents/kWh to residential customers, and 10.62 cents/kWh to commercial customers.

Several other factors have contributed to the sector's poor financial health, including insufficient operating income, financial difficulties due to the 1988-1989 drought, the poor condition of the country's thermal plants, and electricity losses of around 20 percent.

Given the electricity sector's poor credit worthiness, there is some doubt that investment in the sector will reach the anticipated $900 million/year between 1990 and 1995 (about 40 percent was expected to be in foreign currency). The World Bank estimates that the financing gap for this period could reach $11.5 billion if tariffs remain at their 1988 levels. This gap is more than twice the value of Argentina's investment program. Under this scenario, the sector's debt-equity ratio is forecast to deteriorate from 40/60 in 1989 to 70/30 in 1995.

Private Power Opportunities

The government is in the process of converting its public electric utilities to private companies. Law 24065 of December 1991 provides a new legal

framework for the electricity sector, defining the structure of regulation, privatization, and pricing. In 1990, Law No. 2074 laid the groundwork for privatizing SEGBA's distribution operations. Law No. 634 of 1991 mandated that SEGBA and AyE develop a program to transfer their thermal and hydro generation operations to private companies.

SEGBA serves about 4 million customers in the greater Buenos Aires region, with a demand of about 13,000 GWh. Its 2,600 MW of gas-fired thermal generation capacity make it the second-largest utility in the country after AyE. In the hopes of raising about $3.5 billion, the government plans to sell off SEGBA's two distribution franchises. It also plans to sell SEGBA's individual power stations during 1992. The government has sold the 900 MW Puerto Nuevo plant and is now requesting offers on the 1,300 MW Costanera plant. Offers are expected by AyE in June for a package consisting of the Alto Valle Steam and gas turbine plant (47 MW) plus 50 MW to be moved from another AyE plant.

If the Argentine privatization plan is successful, and if the bi-national Yacyreta project and the country's nuclear plants remain under public ownership, a total of 17,814 MW, or 80 percent of the nation's generating capacity, would be transferred to private hands. This would include all of the country's current and future thermal capacity and nearly 80 percent of its hydroelectric capacity.

A regulatory framework for the privatized electric power sector was presented to the Argentine Congress, but has been withdrawn. An alternative plan under consideration is to speed up the process by issuing a presidential decree establishing the regulatory structure to oversee the new private utilities. The new regulations will include a provision enabling large users to buy power directly from private sector power stations. SEGBA's new owners (the franchise holders) will be required to allow private generators to transmit power through SEGBA lines, provided there is available capacity and that users pay a fee for this service.

Under a plan being considered by the government, concession holders would be encouraged to purchase electricity from producers under the most favorable terms. This would be promoted via two mechanisms: a spot market for bulk trades and individual contracts for long-term supply arrangements to secure availability and fix costs. These regulations are expected to promote the construction of new private sector plants, which would be owned

by entities separate from distribution concessionaires. Distribution companies, however, will not be barred from owning interests in generation entities as well.

In addition to these government plans, individual commercial and agricultural interests have installed 1,842 MW of self-generation capacity in Argentina (1,070 MW of steam units, 538 MW of diesel, 210 MW of gas turbines, and 24 MW of hydro). Given the availability of increasing amounts of hydroelectric power from public utilities, the total amount of self-generation capacity has remained constant for the last 10 years.

Business Practices

Argentina is basically open to foreign investors, permitting them all of the rights of domestic investors. In 1989, all advance approvals on foreign investments were abolished, and foreign investors are only required to register with the government to obtain remittance rights should they become an issue again in the future. At present, capital is repatriated freely through foreign exchange markets. A fixed exchange rate mechanism pegged to the U.S. dollar was adopted in 1989, with Central Bank intervention to maintain parity with the dollar.

Argentina's favorable climate for foreign investments is tied to the planned privatization of state-owned enterprises. The "national treatment" of foreign investors only has limitations in the purchases of branch offices of local banks, in the percentage of an insurance policy that can be re-insured with a foreign insurance company, and possibly others. Joint ventures are not required, but are permitted and often encouraged.

Except during emergency situations, the national utilities have generally used competitive bidding to procure needed goods and services.

Argentina may have domestic sources of financing for private power projects. Funds are available from local financing institutions, commercial banks, and the Argentine stock market, which has recently experienced tremendous growth. Also, debt/equity swaps may be applicable on a case-by-case basis.

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Bolivia

Since 1985 when its inflation rate reached 25,000 percent, Bolivia has achieved moderate real growth by following open market practices. GDP grew at 2.6 percent in 1990 and inflation fell to 15.5 percent. To attract foreign investment, the government passed three important pieces of legislation in 1990: an investment code that guarantees the free treatment of investments, measures providing for the free conversion of currency and international arbitration, and the hydrocarbon code and mining code, which provide incentives and permit joint ventures to attract investment to these sectors.

The government's recently announced privatization program could involve the transfer of up to 157 state-owned firms to the private sector. Government officials are currently working to establish a legal framework that would authorize the government to sell these public corporations. The government is moving slowly, however, and if privatization laws are not passed this year, the issue may lay dormant until after the 1993 elections.

Bolivia has ample energy resources. Its hydro potential has been estimated at 18,000 MW and geothermal at 350 MW. In 1989, its oil reserves stood at 125.2 million barrels and natural gas at 118 billion m^3. Bolivia exports natural gas to Argentina, and has conducted feasibility studies for an export pipeline to Brazil. Bolivia has no known significant coal deposits.

The Electric Power Sector

Empresa Nacional de Electricidad (ENDE) was founded as a state-owned utility in 1962. It is responsible for the generation and transmission of electricity to all but two cities (La Paz and Oruro), while regional power companies are responsible for distribution. ENDE is also responsible for the National Interconnected System, which sells energy to other utilities for redistribution (and directly to large mines and industries). The national grid serves about 80 percent of total national demand, with the remaining 20 percent consisting of isolated mining and agricultural concerns plus remote towns and villages.

The second-largest electric company in the country is Compania Boliviana de Energia Electrica (COBEE). This private company, which is owned by Loucadia, Inc. of Utah, is responsible for generation and distribution to La Paz and the mining center of Oruro. COBEE supplements its own generation

BOLIVIA - COUNTRY STATISTICS

ECONOMIC PROFILE - 1990

POPULATION	7,277,000
growth rate	2.6 %
GDP	$4.6 B
growth rate	2.8 %
GDP/CAPITA	$660
INFLATION	15.5 %
EXCHANGE RATE	US $1.00 = 2.69 B

TRADE FIGURES - 1990

EXPORTS = $634 M

metals, natural gas, coffee, soybeans, sugar, cotton, timber

IMPORTS = $786 M

Major Trading Partners → US, ARGENTINA

GENERATION CAPACITY AND POTENTIAL PRIVATE POWER MARKET

	1989 (MW)	1999 (MW)	PRIVATE POWER MARKET 1992-1999 (MW)
HYDRO	269	358	61
OIL	12	33	
combustion turbine	0	(22)	
diesel	(12)	(11)	
GAS	179	483	100
combustion turbine	(179)	(354)	
combined cycle	0	(132)	
TOTAL	460	877	161

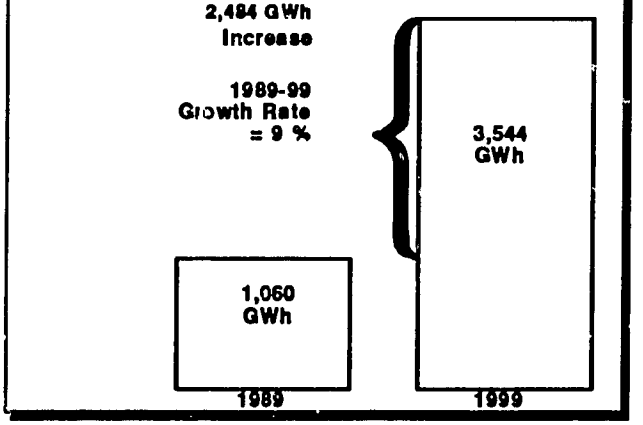
ELECTRIC POWER SYSTEM - 1989

GROSS GENERATION	1,060 GWh
ELECTRICITY SALES	1,058 GWh
industry share	24 %
PER CAPITA CONSUMPTION	149 kWh
RATE OF RETURN	2 %
SYSTEM FREQUENCY	50 c/s
VOLTAGE	
transmission	220/115/69 kV
distribution	44/25/13.2 kV

ENERGY RESOURCES - 1990

	US $
FOSSIL FUEL PRICES	
steam coal	n/a
diesel oil	41.91/bbl
fuel oil	38.78/bbl
natural gas to utilities	1.74/MCF
HYDROELECTRIC POTENTIAL	18,000 MW
GEOTHERMAL POTENTIAL	350 MW
OIL RESERVES	125.2 million bbls
NATURAL GAS RESERVES	117.9 billion m3
COAL RESERVES	n/a

PUBLIC ELECTRICITY SUPPLY



ELECTRICITY PRICES - 1991

	US CENTS/kWh
TOTAL REVENUE/ TOTAL SALES	5.00/kWh
AVERAGE INCREMENTAL COST	5.70/kWh
TARIFF BY CONSUMER CLASSIFICATION	
Industrial	5.81/kWh
Commercial	10.40/kWh
Residential	5.46/kWh

with electricity from the national grid. Together, COBEE and ENDE account for 78 percent of Bolivia's installed capacity and 87 percent of its available capacity.

The country's other large distribution companies include Empresa de Luz y Fuerza Electrica Cochabamba S.A.M. (ELFEC), Servicios Electricos de Potosi S.A. (SEPSA), and Cooperative Electrica Sucre. ENDE owns 68 percent, 2 percent, and 18 percent of their stock, respectively. A fourth company, Cooperativa Rural de Electrificacion Rural Ltd (CRE) of Santa Cruz, is owned completely by the end users and was connected to the grid in 1989.

The electricity sector in Bolivia is under the jurisdiction of the Ministry of Energy and Hydrocarbons (MEH). The National Electricity Code of 1968 established MEH and gave it authority over the installation of power plants, the regulation and operation of electricity companies, and for approving tariffs. The Code also regulates contracts for bulk purchases of electricity.

Electricity generation in Bolivia reached 1,060 GWh in 1989. Although hydroelectric plants normally supply over 70 percent of the country's electricity, they generated only 44 percent of supply in 1989, due to a severe drought. Most of the remainder was supplied by natural gas-fired combustion turbines. By 1999 these turbines are expected to supply over half of the country's generation. Bolivia's 1989 sales of electricity were 1,058 GWh: 24 percent to industry, 42 percent to residential customers, and 26 percent to commercial customers.

The installed capacity of public utilities in 1989 was 460 MW: 269 MW of hydroelectric capacity and 179 MW in gas-fired turbines. In addition, self-generators have an installed capacity of 24 MW of hydro and 67 MW of steam, which generally serve remote mining and industrial agricultural sites. To meet growing demand, Bolivia plans to add 417 MW of capacity by 1999: 89 MW of hydro, 21 MW of oil capacity, 175 MW of simple-cycle gas turbines, and 132 MW of combined-cycle gas turbines. The hydropower sites the government has studied are the 400 MW Rio Grande-Rositas complex, and the Icla-Villamontes-Sachaper, Sakhwaya, and Misicuni sites, which have a total potential of over 100 MW.

Bolivia's electricity sector enjoys a satisfactory financial performance, and has had to rely very little on government contributions. ENDE's rate of return on assets has generally remained positive but low at 4.0 percent, and is expected to remain at this level throughout the 1990s. The sector's future performance depends on its ability to raise tariffs to meet cost increases.

The average revenue produced in Bolivia was 5.0 cents/kWh in 1991, while average incremental costs were 5.7 cents/kWh. Tariffs to the industrial class are 5.81 cents/kWh, residential rates are 5.36 cents/kWh, and commercial rates are 10.40 cents/kWh.

Private Power Opportunities

All of Bolivia's utilities--state owned, municipal, cooperative, and private--operate under the regulations of its Electricity Code. The participation of private investors in the expansion of electricity services can be implemented under the framework of this Code without the need for sector restructuring. For instance, COBEE, a private utility, recently renewed its concession through the year 2030.

Given the relative financial health of the country's public utilities, the availability of abundant supplies of natural gas, and the country's low tariffs, it is unlikely that Bolivia holds any significant market for private power generation, except for COBEE. This utility is planning a 61 MW hydroelectric station at an estimated cost of $108 million.

The government and World Bank are now studying proposals to generate up to 500 MW along the Bolivian-Brazilian border for the export of power to Brazil. These plants would be fired by Bolivian natural gas. Lacking the funds for the project, the government is considering possible joint venture arrangements with private investors as minority partners in the plants and/or in the associated gas pipeline. The economic viability of this project has yet to be proven. However, given Bolivia's planned emphasis on natural gas and its history of private participation in electric power, there may be a market for 100 MW of capacity supplied by private companies.

Business Practices

Bolivia is anxious to attract foreign investment and is planning to draft a new investment law to replace its 1981 law. As of January 1990, Bolivia lowered its tariffs on imported goods to 5 percent and expanded the list of goods considered to be capital goods. Non-capital goods now have a tariff of 10 percent. The government has also established equal treatment for foreign and domestic investors, allows unlimited foreign ownership, has lifted restrictions on capital movements or remittances abroad, permits the free mobilization of resources, and has authorized partnership in joint ventures. Foreign exchange is available

freely at daily auctions. Current law sets no limits on repatriation, and the government has affirmed its commitment to this policy.

Taxes, tariffs, and price controls apply equally to foreign and domestic investors. Virtually all price controls were abolished in 1985 with the exception of public sector services, petroleum products, and sugar.

Except for emergency situations, ENDE has generally used competitive bidding to procure needed goods and services.

There are no significant domestic sources of financing for private power projects in Bolivia. The funds that are available from local financing institutions and commercial banks could, however, provide a source of short-term working capital in local currency.

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Brazil

Although Brazil is rich in resources, its economic performance has lagged behind its potential. In the last half of the 1980s, the economy began to stagnate, with GDP growth dropping to 2.9 percent in 1987 and then rising slightly to 3 percent in 1990. While the agricultural sector's production fell by 8 percent in 1989, the industrial sector remained a key contributor to the economy, accounting for 35 percent of GDP.

Almost immediately upon assuming office in 1990, President Collor announced a sweeping economic stabilization program that favors competitive trade and investment measures to decrease inflation and open up the economy. The most striking element of his plan was an unexpected move to trim liquidity by blocking investor access to savings accounts, demand deposits, and overnight money market accounts. As a result, prices for some products fell in 1990 (an unprecedented event in the country's recent history) and inflation, which had been 900 percent in 1988, increased to almost 1,800 percent in 1990. Also in that year, Collor announced his intention to privatize billions of dollars' worth of state firms. If these reforms continue to succeed, many new opportunities should develop for both foreign and domestic investors.

Brazil's large hydroelectric potential of 213,000 MW is not matched by its known potential for fossil resources. In 1989, its oil reserves stood at 2,760 million barrels, second only to Venezuela's. At 116 billion m^3, its natural gas reserves are about equal to those of Colombia, Bolivia, and Chile, but are significantly smaller than Argentina's. Its coal reserves are estimated at 2.3 billion tons of sub-bituminous and 1.9 million tons of bituminous deposits.

The Electric Power Sector

Over the past 50 years, the Brazilian power sector has been progressively nationalized and centralized, resulting in the consolidation of a few large and hundreds of small utilities into a relatively compact structure of state- and federally-owned utilities. The power sector is now under the jurisdiction of the Ministry of Infrastructure. Also, the government has strengthened the Departamento Nacional de Aguas e Energia Eletrica (DNAEE), within the Ministry of Mines and Energy, as a regulatory agency. It grants licenses for generating plants, assigns concessions, approves expansion, and sets tariffs,

BRAZIL - COUNTRY STATISTICS

ECONOMIC PROFILE - 1990

POPULATION	150,368,000
growth rate	1.9 %
GDP	$377 B
growth rate	3 %
GDP/CAPITA	$2,500
INFLATION	1,765 %
EXCHANGE RATE	US $1.00 = 2.83 NCr

TRADE FIGURES - 1990

EXPORTS = $34.2 B

coffee, metallurgical products, chemical products, foodstuffs, iron ore, automobiles & parts

IMPORTS = $18.0 B

Major Trading Partners → US, EC, LATIN AMERICA, JAPAN, MIDDLE EAST AND AFRICA

GENERATION CAPACITY AND POTENTIAL PRIVATE POWER MARKET

	1989 (MW)	1999 (MW)	PRIVATE POWER MARKET 1992-1999 (MW)
HYDRO	50,413	75,346	
NUCLEAR	657	1,902	
OIL	3,167	3,700	
steam	(2,225)	(2,225)	
combustion turbine	(642)	(975)	
diesel	(300)	(500)	
COAL/LIGNITE/OTHER	1,000	2,800	
BIOMASS COGEN	0	0	200
TOTAL	55,237	83,748	200

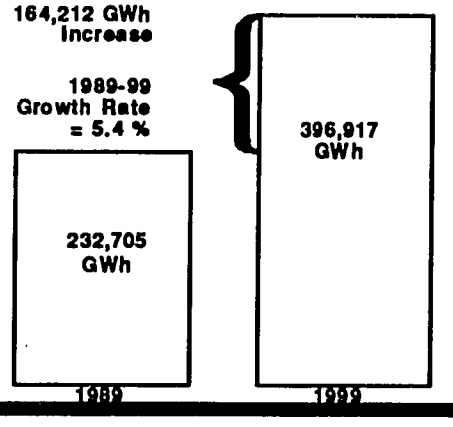
ELECTRIC POWER SYSTEM - 1989

GROSS GENERATION	232,705 GWh
ELECTRICITY SALES	202,516 GWh
Industry share	53 %
PER CAPITA CONSUMPTION	1,375 kWh
RATE OF RETURN	-2.5 %
SYSTEM FREQUENCY	50 c/s
VOLTAGE	
transmission	500/440/345 kV
distribution	138/69/34.5 kV

ENERGY RESOURCES - 1990

FOSSIL FUEL PRICES	US $/bbl
steam coal	42.83/bbl
diesel oil	36.14/bbl
fuel oil	22.16/bbl
HYDROELECTRIC POTENTIAL	213,000 MW
GEOTHERMAL POTENTIAL	n/a
OIL RESERVES	2760 million bbls
NATURAL GAS RESERVES	116 billion m3
COAL RESERVES	4260 million tons

PUBLIC ELECTRICITY SUPPLY



ELECTRICITY PRICES - 1991

	US CENTS/kWh
TOTAL REVENUE/ TOTAL SALES	6.30/kWh
AVERAGE INCREMENTAL COST	8.30/kWh
AVERAGE RATE CONTRIBUTION TO INCREMENTAL COST	76%
TARIFF BY CONSUMER CLASSIFICATION	
Industrial	2.92/kWh
Commercial	5.71/kWh
Residential	5.13/kWh

after approval by the Ministry of Planning, under the principle of serve-at-cost plus an adequate return on capital.

Since 1967, the government's policy has been to consolidate public electricity service in the individual states into single state-owned utilities, primarily for distribution activities. As a result, many municipal and privately-owned utilities have been absorbed by the major state-owned companies and the national utility's ownership in distribution facilities has gradually been transferred to the state-owned utilities. Privately-owned utilities constitute only a small fraction of the sector's installed capacity.

Centrais Eletricas Brazileiras S.A. (ELETROBRAS) was established in 1962 as the national utility. It also serves as a holding company and as a sector development bank. Its four subsidiaries--FURNAS, CHESF, ELETROSUL, and ELETRONORTE--are responsible primarily for regional generation and high-voltage transmission systems. They act as bulk suppliers to state and municipal utility companies, which in general are responsible for sub-transmission and electricity distribution. ELETROBRAS also owns Espirito Santo Centrais Eletricas (ESCELSA), the power distributor for the State of Espirito Santo in the southeast, and LIGHT-Servicos de Eletricidade S.A., servicing the Rio de Janeiro metropolitan area. In addition, it holds the Brazilian government's 50 percent interest in the Itaipu Binacional, the bi-national agency set up in 1973 by Brazil and Paraguay to build the 12,600 MW Itaipu hydroelectric facility on the Parana River.

Brazil's electricity generation reached 232,705 GWh in 1989. Including 45,523 GWh that are considered to be "imported" from the Itaipu project jointly developed with Paraguay, electricity generation has grown at 6.9 percent annually for the past decade, and is expected to grow by 5.5 percent per year to 1999.

Electricity sales in 1989 were 202,516 GWh, of which 53 percent was sold to industrial customers, 22 percent to residential users, and 25 percent to commercial and other users. The industrial sector is projected to continue to take over 50 percent of total electricity sold.

Including power from Itaipu, hydroelectric capacity provided 95 percent of Brazil's electricity in 1989, while thermal generation contributed only 3.7 percent and nuclear generation 1.2 percent. By 1998, the contribution of nuclear power is anticipated to rise to 3 percent.

Brazil's installed capacity, excluding the Itaipu project, was 43,000 MW in 1989. When this project, which provides almost its entire output to Brazil, is included, capacity totals 55,237 MW. The nation's capacity is dominated by hydropower, which provided 50,413 MW in 1989 (the Tucurui hydro project alone supplies 8,000 MW). In addition, the country has an installed self-generating capacity of 3,438 MW (2,785 MW of steam and 653 MW of hydro).

To meet its growing demand for electricity, Brazil hopes to add 28,511 MW of capacity by 1999 at a cost of $36.4 billion (transmission and distribution costs would bring this total to $75.7 billion). Almost 90 percent of these additions, or 24,933 MW, will be in hydro capacity, with 1,800 MW of coal steam plants, 1,245 MW of nuclear, 333 MW of combustion turbines, and 200 MW of diesel units. In addition, the potential power generation capacity in the sugar sector totals 3,200 MW, a large fraction of which could be exported to the grid by private sugar mills.

Like the Brazilian economy in general, the financial position of the electricity sector is weak. Revenues from electricity sales reached 6.3 cents/kWh in 1991, lower than the 8.3 cents/kWh estimated average incremental cost. This sector has been burdened by a large investment program, particularly for massive hydroelectric plants, and tariffs that have been kept low as a means of fighting inflation (in 1991, the tariffs charged to industry were 2.92 cents/kWh, to residential customers 5.13 cents/kWh, and to commercial customers 5.71 cents/kWh; additional charges make the final payment per kWh significantly higher in some areas of the country). As a result, large government subsidies have been necessary. In the future, however, the government will no longer assume debts for this sector, and utilities will have to raise their tariffs in order to attain acceptable self-financing ratios. Without government subsidies to the power sector, the private sector may be needed to close the gap, but the current low returns make private sector investment unlikely.

Private Power Opportunities

At present, the opportunities for private power development in Brazil are limited, particularly because the government has given no indication that it intends to privatize the public electric utility sector or to purchase power from independent power producers other than existing sugar mills located near the grid.

Brazil's industrial and agricultural self-generation sector is large, and may, on a very selective basis, provide a potential market to some investors. The sugar sector is estimated to have a potential for 3,200 MW of bagasse-fired electricity, more than 90 percent of which would be available for sale to utilities. Only about 200 MW of the nearly 29,000 MW of Brazil's planned capacity additions by its public utilities are likely to be opened to private power by 1999. Most, if not all, of this market will be for self-generators, especially sugar mills.

Business Practices

Most of the foreign investment in Latin America is made in Brazil: over $30 billion at present. Foreign investors operate within an essentially free market economy that is nonetheless subject to a high level of government intervention in the form of regulation and public sector ownership of key industries. Brazil discourages foreign investments in petroleum production and refining, utilities, the media, and land and coastal shipping, all of which are reserved for nationals. It also bans foreign investments in computer manufacture. However, it has been speculated that because of the country's large infrastructure needs, certain restrictions on foreign investment may be eased, particularly in electricity generation and transmission. These might include foreign ownership of power plants, with buyback provisions set over a period of time.

Brazil has multiple rules, modified over decades, on foreign equity investment. Capital must be registered in order to qualify for the repatriation of capital and profits. The annual ceiling on repatriation is 12 percent of capital, with higher levels subject to special taxes. During 1989 and 1990, delays were imposed on repatriations. The government favors investments involving technology development and import substitution/export oriented activities. At one time, joint ventures (including three-way government and foreign/domestic private investment) were called for in such sectors as petrochemicals, but the Collor administration does not favor the government ownership of enterprises.

Regulation governs technology transfer between foreign parent companies and their Brazilian subsidiaries. Royalties are not permitted between a Brazilian subsidiary and its parent company abroad. In addition, Brazil does not offer patent protection for a lengthy list of goods. Import restrictions have been eased, but will continue until tariff policies are raised to compensate local industry for the lost protection.

Except during emergency situations, ELETROBRAS has generally used competitive bidding to procure needed goods and services. To date, however, it has been willing to consider proposals on a first come, first served basis without formal solicitation, demonstrating a potential willingness to accept unsolicited proposals.

Brazil has significant domestic sources of financing for private power projects. These funds may be available from the stock market, local investors, local financing institutions, and commercial banks.

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Chile

Chile's new government, led by President Aylwin, has largely been successful in continuing the country's integration into the world economy. Indeed, Chile's GDP growth rate soared to 9.9 percent in 1990, spurred by export-oriented economic policies, strong export earnings, and healthy investment levels. The economy attracted $1.1 billion in direct foreign investment and posted a trade surplus of $1.3 billion in 1990. Today, Chile exports almost a third of its GDP.

The Chilean government has moved the economy toward a more open market system and away from central planning and subsidized import substitution. By Latin American standards, its inflation is moderate: 21.4 percent in 1990. Both tax cuts and declining petroleum import prices played major roles in keeping inflation down, while changes in the Central Bank's exchange rate policy helped to dampen prices. The government continues to privatize state enterprises and has nearly completed the privatization of the utility system, the telecommunications system, and the national airline. It is now considering the sale of another 12 firms.

Chile's known energy resources are significant. Its hydroelectric potential of 26,046 MW is five times its projected exploitation by 1999. About 30 MW of geothermal power are under development, but the country's total potential is not yet known. It also has 4,500 million tons of coal, 287 million barrels of oil, and 119 billion m^3 of natural gas.

The Electric Power Sector

As a result of the government's decentralization and privatization policies, Chile's power sector now has three major privately owned generation companies: ENDESA, CHILECTRA-GENERACION, and PEHUENCHE S.A., and one government-owned utility: COLBUN S.A. These companies were privatized in the late-1980s, and are regulated by the Comision Nacional de Energia. Electricity is distributed by privately-owned companies that purchase power from the generation companies.

Even after privatization, when ENDESA was divided up and sold in parts, it is by far the largest utility in Chile; its 1988 installed capacity of 1,733 MW accounts for about 43 percent of the nation's total generation. All six of its subsidiaries have been sold to private companies.

CHILE - COUNTRY STATISTICS

ECONOMIC PROFILE - 1990

POPULATION	13,173,000
growth rate	1.7 %
GDP	$25.3 B
growth rate	9.9 %
GDP/CAPITA	$1,970
INFLATION	21.4 %
EXCHANGE RATE	US $1.00 = CH $296.68

TRADE FIGURES - 1990

EXPORTS = $7.0 B

copper, industrial products, molybdenum, iron ore, wood pulp, fishmeal, fruits

IMPORTS = $4.7 B

Major Trading Partners → EC, US, JAPAN, BRAZIL

GENERATION CAPACITY AND POTENTIAL PRIVATE POWER MARKET

	1989 (MW)	1999 (MW)	PRIVATE POWER MARKET 1992-1999 (MW)
HYDRO	2200	3664	1,467
OIL	76	76	
diesel	(76)	(76)	
GAS	151	161	10
combustion turbine	(151)	(161)	
OAL/LIGNITE/OTHER	683	1107	424
TOTAL	3,110	5,011	1,901

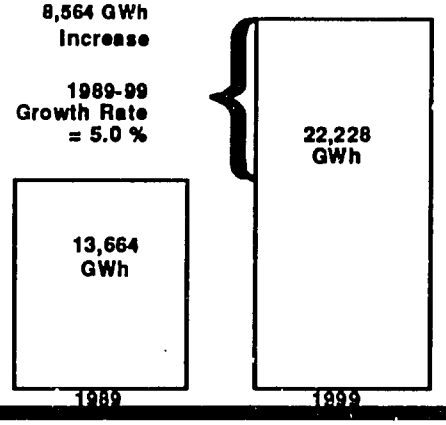
ELECTRIC POWER SYSTEM - 1989

GROSS GENERATION	13,664 GWh
ELECTRICITY SALES	11,910 GWh
Industry share	58.4 %
PER CAPITA CONSUMPTION	917.6 kWh
RATE OF RETURN	7.4 %
SYSTEM FREQUENCY	50 c/s
VOLTAGE	230/132/66
transmission	kV
distribution	33/11 kV

ENERGY RESOURCES - 1990

FOSSIL FUEL PRICES	US $
steam coal	91.77/bbl
diesel oil	53.77/bbl
fuel oil	26.14/bbl
town gas	0.33/MCF
HYDROELECTRIC POTENTIAL	26,046 MW
GEOTHERMAL POTENTIAL	30 MW
OIL RESERVES	287 million bbls
NATURAL GAS RESERVES	118.8 billion m3
COAL RESERVES	4500 million tons

PUBLIC ELECTRICITY SUPPLY



ELECTRICITY PRICES - 1991

	US CENTS/kWh
TOTAL REVENUE/ TOTAL SALES	9.50/kWh
AVERAGE INCREMENTAL COST	5.30/kWh
TARIFF BY CONSUMER CLASSIFICATION	
Industrial	6.32/kWh
Commercial	10.23/kWh
Residential	11.11/kWh

CHILECTRA-GENERACION is the generation company that resulted from the break-up of CHILECTRA, which was a private company through the late 1960s. Two distribution companies were also spun off from CHILECTRA: PEHUENCHE S.A. and COLBUN S.A., which were created in 1986 to operate the Pehuenche and Colbun Machicura hydroelectric projects, respectively. Several smaller distribution companies and self-generation companies constitute the rest of the Chilean electric power sector.

Electricity generation in Chile totaled 13,664 GWh in 1989. While hydro had supplied as much as 92 percent of generation in 1987, a severe drought lowered its contribution to 65 percent in 1989, with thermal generation (predominantly coal steam plants) rising to 35 percent to meet demand. During the 1990s, the hydro-thermal balance is expected to be 80-20 percent.

Chile's electricity sales in 1989 were 11,910 GWh. Industrial customers accounted for 58 percent of sales, residential customers 21 percent, and commercial/other customers 20 percent.

The country's total installed capacity in 1989 was 3,110 MW. Of this, hydro capacity was 2,200 MW, coal steam power 683 MW, oil-fired gas turbines 151 MW, and diesels 76 MW. In addition, self-generators had 672 MW of thermal capacity, largely at the copper mines, and 114 MW of hydroelectric capacity.

Chile's future generation expansion plans call for constructing 1,901 MW of additional plants by 1999, at a cost of nearly $1.8 billion. This will include 1,467 MW of hydroelectric projects and 424 MW of primarily coal-fired thermal power. Three hydroelectric projects totalling about 700 MW are now under construction: Alfalfal (160 MW), Canutillar (145 MW), and Pangue (400 MW). One additional 75 MW hydro site, Currillinque, is in the design stage, another 1,500 sites have been inventoried, and prefeasibility or feasibility studies have been conducted for sites with a potential of over 8,700 MW.

The financial position of Chile's electricity sector has evolved with its restructuring. The sector's debt/equity ratio was 60/40 prior to privatization in 1986; after this, the government assumed a significant portion of the sector's debt and the ratio fell back to 30/70.

The financial strength of the sector rests on a tariff structure that is ratcheted up and down to reflect generating costs. A key component in the tariff is the separation of generation costs from transmission and distribution costs (referred to as "node" and "value-added" costs, respectively). The prices paid by

consumers are regulated, but change whenever node prices change for the distribution companies or whenever the costs indices for distribution change. Deregulated prices are available to consumers with demands in excess of 2 MW. In 1991, retail tariffs averaged 6.32 cents/kWh to industry (including deregulated sales), 11.11 cents/kWh to residential customers, and 10.23 cents/kWh to commercial customers.

The average revenues of Chile's utilities reached 9.5 cents/kWh in 1991, exceeding their average incremental costs of 5.30 cents/kWh. The new private utilities--ENDESA, CHILECTRA-GENERACION (CHINELGER)--and the distribution company EDELAYSEN, S.A. recorded a 7.4 percent rate of return on assets in 1989.

Private Power Opportunities

The restructuring of Chile's electricity sector has created private investment opportunities in existing generation and distribution companies, and in existing and planned power plants. Over 85 percent of the assets of the existing public utilities, however, have already been broken up and sold to private investors and electric utility workers, including the two major public utilities, ENDESA and CHILECTRA.

Nevertheless, all 1,901 MW of new generating capacity planned through 1999 are expected to be undertaken by the private sector. Some of this capacity will be supplied by independent power companies selling to utilities. Setting the trend for future utility investments, ENDESA recently inaugurated the 145 MW Canutillar power plant south of Santiago. This plant cost $307 million to construct, $113.3 million of which was financed by the InterAmerican Development Bank.

Also, the Chilean-owned company Hidro-electricidad Agua Vieja S.A. is proposing to construct and operate a new 46 MW hydroelectric plant on the Aconcagua River. They have financial commitments from the International Finance Corporation. The first phase of 46 MW is to be completed by 1994, followed by a possible second phase of 26.6 MW.

In addition to these hydro projects, a 200 MW coal steam plant is being proposed for the CHINELGER system by a consortium led by a coal production company and various large industries in the region. In the northern section of Chile, private investors have expressed interest in building thermal power plants that would sell power to the grid. Private companies have also

proposed supplying power directly to copper mines that are not connected to the grid and hydroelectric power to a proposed aluminum smelter at Port Aysen in the south.

Business Practices

Chile adheres to free market economic policies and treats foreign investment on the same basis as domestic capital. Over $2.8 billion was invested in Chile between 1974 and 1988, and an additional $1 billion was invested through debt-equity swaps.

Minimal red tape exemplifies foreign investments in Chile. The country allows the annual repatriation of earnings, capital repatriation after three years, and taxes of 10 percent applied to all Chilean corporations plus 25 percent tax on remitted profits (credited against the regular 10 percent tax). No special incentives in the form of subsidies or concessions are employed to attract foreign capital.

Another aspect of Chile's stable investment climate is the foreign exchange rate, which uses a crawling peg that ties the rate set by the Central Bank with parallel market and inter-bank rates. The Bank intervenes by purchasing or selling dollars to keep rates within a 5 percent band from each other. With more than 30 percent of its GDP in exports, Chile has seen several appreciations of its currency, most recently in 1992.

The new electric utilities have limited experience with third-party private power generation. To date, they have been willing to accept and negotiate unsolicited proposals. ENDESA has even invited foreign companies to make proposals.

There are significant domestic sources of financing for private power projects in Chile. These funds are available from the stock market, local investors, local financing institutions and commercial banks.

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Colombia

After a period of poor economic performance in the first half of the 1980s, Colombia's GDP grew at an estimated 4.2 percent in 1990 and its trade surplus reached $2 billion. Notwithstanding these impressive levels of growth, inflation climbed over 29 percent in that year, which was unacceptably high by Colombian standards. The government has responded forcibly to this trend by increasing the reserve requirements for financial institutions and by tightening controls on the negotiation of exchange certificates, the primary instruments for converting foreign currency to domestic currency. As a result, inflation moderated in 1991.

Upon his election in 1990, President Gaviria accelerated the *apertura*, or economic opening program, which aims to internationalize the economy and modernize export policies by reducing import restrictions and duties. By the end of 1990, the Congress had approved a series of administration-sponsored bills to liberalize financial, investment, exchange, and tax regulations.

Colombia's prudent management of its economy has enabled it to overcome the disruptive effects of the debt crisis in Latin America. At home, however, this nation has had to contend with pervasive societal violence, both from leftist guerilla activity and from narcotics-related lawlessness.

Until recently, Colombia's substantial energy resources have remained largely untapped. Its hydroelectric potential is estimated at 93,000 MW, ten times its planned exploitation by the end of the century. Its coal reserves stand at 4.6 billion tons, while its oil reserves (1.9 billion barrels in 1990) have increased significantly with recent discoveries by British Petroleum subsidiaries. Colombia's natural gas reserves are over 120 billion m^3. Its geothermal potential is unknown.

Unusually light rains in 1991 have left Colombia's hydroelectric reserves at an historic low. The result has been 8 to 10 hour blackouts across the country, which are expected to last through June 1992. Industrial areas are not blacked out, but have been ordered to reduce their consumption by 15 percent or face being shut down. The cost to the economy from lost production is estimated at $35 million per week, and severe social discontent is making itself felt.

COLOMBIA - COUNTRY STATISTICS

ECONOMIC PROFILE - 1990

POPULATION	32,980,000
growth rate	4.2 %
GDP	$41.3 B
growth rate	4.2 %
WAGE RATE	$2.75/day
GDP/CAPITA	$1,254
INFLATION	29.2 %
EXCHANGE RATE	US $1.00 = Col $628

TRADE FIGURES - 1990

EXPORTS = $7.1 B

coffee, petroleum, coal, fresh cut flowers

IMPORTS = $5.1 B

Major Trading Partners → US, EC, JAPAN, NETHERLANDS, SWEDEN, BRAZIL, VENEZUELA, FRANCE, PANAMA, CHILE, MEXICO

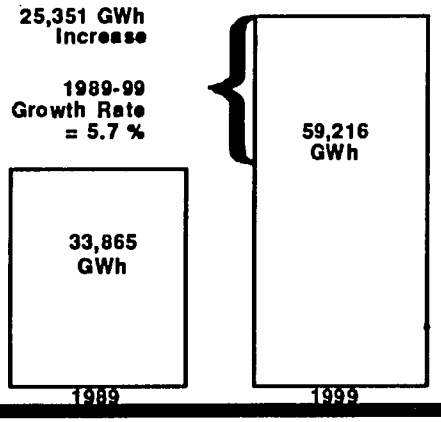
GENERATION CAPACITY AND POTENTIAL PRIVATE POWER MARKET

	1989 (MW)	1999 (MW)	PRIVATE POWER MARKET 1992-1999 (MW)
HYDRO	6656	9082	
OIL	567	567	
steam	(471)	(471)	
combustion turbine	(46)	(46)	
diesel	(50)	(50)	
GAS	880	880	
steam	(481)	(481)	
combustion turbine	(339)	(399)	200
COAL/LIGNITE/OTHE	726	1326	
TOTAL	8,829	11,855	200

ELECTRIC POWER SYSTEM - 1989

GROSS GENERATION	33,865 GWh
ELECTRICITY SALES	25,595 GWh
Industry share	26.3 %
PER CAPITA CONSUMPTION	791.6 kWh
RATE OF RETURN	4.7 %
SYSTEM FREQUENCY	50 c/s
VOLTAGE	230/115
transmission	kV
distribution	345/13/8/13.2/11.4 kV

PUBLIC ELECTRICITY SUPPLY



ENERGY RESOURCES - 1990

FOSSIL FUEL PRICES	US $
steam coal	7.93/bbl
diesel oil	23.17/bbl
fuel oil	13.02/bbl
natural gas	0.87/MCF
coal	26-33/ton
HYDROELECTRIC POTENTIAL	93,000 MW
GEOTHERMAL POTENTIAL	n/a
OIL RESERVES	1947 million bbls
NATURAL GAS RESERVES	119.5 billion m3
COAL RESERVES	4579 million tons

ELECTRICITY PRICES - 1990

	US CENTS/kWh
TOTAL REVENUE/ TOTAL SALES	4.10/kWh
AVERAGE INCREMENTAL COST	4.20/kWh
TARIFF BY CONSUMER CLASSIFICATION	
Industrial	5.69/kWh
Commercial	7.64/kWh
Residential	2.52/kWh

The Electric Power Sector

Although private companies installed Colombia's first generation plants in the 1890s, the government gradually acquired them and created municipal utilities in the main cities. Today, 31 companies make up the Colombian electric power sector. Three of these companies are national utilities: Instituto Colombiano de Energia Electrica (ICEL), which was established in the 1940s and is responsible for the creation of departmental electric utilities; the Corporacion Electrica de la Costa Atlantica (CORELCA), which was founded in 1968 to serve the northern region of the country; and Corporacion Autonoma del Valle de Cauca (CVC), which serves the central Pacific coast. The remainder of the sector is composed of four municipal utilities, 15 affiliates of ICEL, eight subsidiaries of CORELCA, and ISA, a company owned by the other utilities.

Since 1989 the Comision Nacional de Energia, together with the Ministry of Mines and Energy, has been responsible for approving generation and transmission projects and coordinating these programs in areas that are not interconnected. It also recommends standards to the Junta Nacional de Tarifas for setting service tariffs throughout the country. Investment and refinancing programs for the electricity sector are the sole responsibility of the Financiera Energetica Nacional S.A.

Colombia's electricity generation in 1989 totalled 33,865 GWh. Seventy-seven percent of its generation was supplied by hydroelectric plants; the contribution of hydroelectricity is expected to remain in this range in the future. The remainder was supplied by thermal generation, half of which came from coal-fired steam plants.

Sales in 1989 were 25,595 GWh. Industrial sales (including bulk sales) accounted for about 26 percent of these, while residential and commercial sales accounted for 47 percent and 17 percent, respectively. Bulk sales to other utilities accounted for 9 percent.

The country's installed capacity in 1989 was 8,829 MW. Of this, 75 percent was hydroelectric capacity, 11 percent natural gas- and fuel oil-fired steam units, 9 percent steam plants using coal, and 5 percent gas turbines. In addition, self-generators had an installed capacity of 300 MW thermal and 80 MW hydro in 1989.

To meet its growing demands for electricity, Colombia plans to install 3,026 MW by 1999. Except for 600 MW of coal-fired steam plants, all of this

capacity will be hydroelectric. The total cost for this expansion is estimated at almost $4.2 billion. Among the larger projects in its expansion plan are El Guavio (1,000 MW) and Urra (340 MW), and the expansion of the Miel (384 MW) and Porce (392 MW) projects. El Guavio is at least three years behind schedule. The projects to be completed beyond the year 2000 include the first stages of Nechi (591 MW) and Fonce (320 MW), and the second stage of Porce (760 MW).

The Colombian government's policy of liberally funding power plant investment during the 1980s led to an estimated over-capacity of 30 percent in 1990. At the same time, tariffs have been kept low (tariffs are currently 2.52 cents/kWh for residential customers, 5.69 cents/kWh for industrial customers, and 7.46 cents/kWh for commercial customers).

The inability of the power sector to pay its debts has resulted in an almost complete halt in new investments. Power sector investments represented about 12 percent of total national investment in the 1980s, dropping to 6.6 percent in the later years of the decade. In addition, Colombia's public utilities are burdened by shrinking government subsidies for capital investment. This has forced them to resort to international credit, which now constitutes a large portion of the country's debt. Obligations stemming from the sector's external debt yielded constant deficits in the 1980s, affecting Colombia's macroeconomic indicators, as this debt was part of the public sector. In April 1992 the Colombian cabinet agreed to assume $500 million of the sector's debt of over $1 billion.

With investment levels expected to remain significant through the turn of the century, the government has taken important and innovative steps to assist the sector in obtaining financing. The Financiera Energetica Nacional S.A. (FED) was created to finance both investments and other expenses (including debt service), and is able to tap public savings. Nevertheless, the size of the borrowings in foreign currency exceeds the resources of this and other mechanisms, and additional foreign borrowings will be needed.

The rate of return on assets for Colombia's utilities has been positive, but shrinking (4.7 percent in 1989). Unit prices remained higher than unit costs thanks to Colombia's tariff setting policy whereby rates must cover costs. By 1991, however, the average revenue was 4.1 cents/kWh and average incremental costs were 4.2 cents/kWh.

Private Power Opportunities

Because of a lack of financing for investments in transmission and distribution infrastructure, power shortages have become critical since 1990. The government recognized it would be necessary to undertake a structural reorganization of the power sector to resolve its debt, over-capacity, power shortage and other problems. It then appointed a panel to analyze the privatization issue.

With assistance from the World Bank, the Colombian government is examining options to restructure the electricity sector by reviewing systems in the United Kingdom, United States, France and Spain as possible models for restructuring. The full or partial privatization of portions of the country's public utilities is being considered. Despite this assistance, the issue remains unresolved. In late 1991, the president of FEN was quoted as saying "the solution is not privatization and what is needed is debt renegotiation and private investment in the power sector." This sentiment was echoed at a well-received conference on private participation in the electric power sector sponsored by Colombia and the World Bank in 1991.

Attitudes towards private participation in the power sector, however, are becoming more favorable as a result of the inability of Colombia's utilities to raise capital, the government's unwillingness to continue to assist them, and recent electric power shortages. In 1989, for example, Colombia held discussions with Westinghouse Electric to relocate, rehabilitate, and operate a group of 3 x 33 MW combustion turbines. Once the demand for electricity surpasses the country's overcapacity sometime in the late 1990s, a market for private investment in 200 MW of natural gas-fired combustion turbines could become available.

A limited market for private investors may also exist in areas outside the interconnected system. The tourist resort island of Santa Marta in the Caribbean has been identified as one market needing additional capacity to support its economic growth.

Business Practices

Colombia is liberalizing its rules on foreign investment in order to attract foreign capital. The government has eased capital and dividend remittances, clarified and simplified remittance regimes, liberalized local control requirements, and streamlined a cumbersome bureaucracy faced by foreign investors.

The principal criteria for the approval of foreign investments are: the participation of national investors, the effect on the balance of payments, the use of raw materials, and the economic impact of the project in its sector. Special authorization is also needed for investments to increase the capital of existing companies. Earnings repatriation is limited to 25 percent of legally registered capital per year. Remittances of royalties need prior approval for the foreign technology acquired.

Imports are regulated by tariff and foreign exchange controls. Government procurement and contracting discriminate against foreign bidders. Business is also restricted to favor local companies on multilateral development bank-assisted tenders.

Except during emergency situations, CORELCA has generally used competitive bidding to procure needed goods and services. However, it has been willing to consider proposals on a first come, first served basis without formal solicitation. This demonstrates a potential willingness to accept unsolicited proposals.

There are no significant domestic sources of financing for private power projects in Colombia. The funds that are available from local financing institutions and commercial banks could, however, provide a source of short-term working capital in local currency.

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ECUADOR - COUNTRY STATISTICS

ECONOMIC PROFILE - 1990

POPULATION	10,737,000
growth rate	2.5 %
GDP	$9.8 B
growth rate	0.5 %
WAGE RATE	n/a
GDP/CAPITA	$935
INFLATION	54 %
EXCHANGE RATE	US $1.00 = S/526.35

TRADE FIGURES - 1990

EXPORTS = $2.2 B

petroleum, coffee, bananas, cocoa products, shrimp, fish products

IMPORTS = $1.6 B

Major Trading Partners → US, LATIN AMERICA, CARIBBEAN, EC, JAPAN

GENERATION CAPACITY AND POTENTIAL PRIVATE POWER MARKET

	1989 (MW)	1999 (MW)	PRIVATE POWER MARKET 1992-1999 (MW)
HYDRO	909	1,621	
OIL	857	820	
steam	(63)	(288)	
combustion turbine	(109)	(249)	
diesel	(685)	(283)	
TOTAL	1,766	2441	0

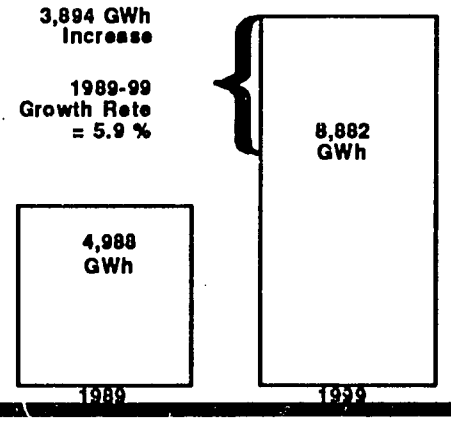
ELECTRIC POWER SYSTEM - 1989

GROSS GENERATION	4,988 GWh
ELECTRICITY SALES	4,419 GWh
industry share	32 %
PER CAPITA CONSUMPTION	427.8 kWh
RATE OF RETURN	1.5 %
SYSTEM FREQUENCY	50 c/s
VOLTAGE	
transmission	230/138/69 kV
distribution	13.8/6.6/4.4/2.2 kV

ENERGY RESOURCES - 1990

FOSSIL FUEL PRICES	US $
steam coal	n/a
diesel oil	16.79/bbl
fuel oil	5.59/bbl
natural gas to utilities	n/a
HYDROELECTRIC POTENTIAL	21,250 MW
GEOTHERMAL POTENTIAL	n/a
OIL RESERVES	1421.3 million bbls
NATURAL GAS RESERVES	10.9 billion m3
COAL RESERVES	28.0 million tons

PUBLIC ELECTRICITY SUPPLY



ELECTRICITY PRICES - 1991

	US CENTS/kWh
TOTAL REVENUE/ TOTAL SALES	2.40/kWh
AVERAGE INCREMENTAL COST	6.20/kWh
TARIFF BY CONSUMER CLASSIFICATION	
Industrial	3.69/kWh
Commercial	3.60/kWh
Residential	2.00/kWh

Ecuador

In Ecuador, the only OPEC member country in South America besides Venezuela, oil exports account for 65 percent of government revenues. Despite its rich resource endowment, Ecuador remains one of the poorest countries in Latin America. Its large foreign debt, debt service arrears, and stubborn inflation stand in contrast to its healthy trade surplus to account for the country's low economic growth of 0.5 percent in 1990. In 1989, Ecuador's large foreign debt was rescheduled and partial payments of interest due were resumed.

President Borja, elected in 1988, has fought many of the free-market economic policies pursued by his predecessor. Yet Borja's tenure has seen continued economic restructuring, tight controls on credit, and efforts to attract foreign capital. For example, by accepting the regulations of the Andean Pact in 1991, Ecuador's industries must now compete with their Andean neighbors. Tariff reform has also been enacted, with reduced rates of 5 to 35 percent, and import prohibitions have been lifted on some 600 items (several industries, however, still enjoy protection from imports). These changes have been hampered by continuing opposition to a free market economy on the part of labor, the more than 200 industries that are still owned by the government or military, and the lack of political consensus on how to undertake economic restructuring.

Ecuador's hydroelectric potential is estimated at 20,250 MW, more than ten times its projected installed capacity in 1999. Its oil reserves of 1,421 million barrels are the fourth-largest in South America after those of Venezuela, Brazil, and Argentina. Its natural gas (10.9 billion m^3) and coal (28 million tons) reserves are relatively unimportant.

The Electric Power Sector

The Instituto Ecuatoriano de Electrificacion (INECEL) is the national entity responsible for planning, coordination, generation, and transmission in Ecuador's electric power sector. Under the jurisdiction of the Ministry of Natural Resources and Energy, INECEL provides electricity services to 65 percent of the population. It also holds majority control of 16 of the 17 regional power companies, which are responsible for distribution and are partially owned by municipalities and individual private shareholders. INECEL's Board approves its electricity tariffs.

EMELEC is the largest of the regional companies. This U.S. privately owned utility serves the port city of Guayaquil. Recent events indicate that EMELEC may be restructured, although the form of this restructuring is not known.

Royalties from the oil industry, in the form of income tax paid by Texaco Petroleum Company, and revenues from the direct oil imports of Petrocomercalizacion (a subsidiary of Petroecuador) provide a major source of income for the power sector.

Ecuador's electricity generation was 4,988 GWh in 1989. Hydroelectric power provided 84 percent of generation; of this, 9 percent was provided by diesel and 7 percent by oil steam. In the future, hydroelectricity is expected to meet 92 percent of the country's electricity needs.

Electricity sales in 1989 were 4,419 GWh. Thirty-two percent of sales went to industry, 39 percent to residential customers, 15 percent to commercial customers, and 15 percent to bulk sales.

Ecuador's installed capacity was 1,766 MW in 1989: 909 MW of hydro, 685 MW of diesel, 109 MW of combustion turbines, and 63 MW of steam turbines. The self-generation sector in Ecuador is small, with an installed capacity of 15 MW of hydro and 136 MW of steam plants.

By 1999, the country plans to increase its generating capacity by 675 MW, at a cost of $1.2 billion, although Ecuador will reduce its present thermal capacity by 37 MW. It is estimated that 225 MW of steam units and 140 MW of combustion turbines will be added, while about 402 MW of diesel capacity will be retired by 1999. Roughly 712 MW of new hydro capacity will be built. A 500 MW addition to the Paute hydro complex is scheduled for 1991, and 200+ MW are scheduled for later in the decade. Among the additional hydro sites identified are Guallabamba at 340 MW, Coca at 500 MW, Toachi-Pichincha at 300 MW, Chimbo at 410 MW, and Jubones at 340 MW). The amount of thermal capacity to be added is rather uncertain.

Investments in Ecuador's electricity sector amounted to a substantial 9.2 percent of country investments in the 1980s, largely as a result of building hydroelectric plants and replacing numerous isolated diesel-dependent systems. Credit financing was used indiscriminately and the sector's debt reached 16 percent of national debt by 1988; similarly, sector debt service climbed to 22 percent of national debt service. By 1987-1988, investments in the sector fell because of difficulties in raising funds and the government's inability to

contribute at previous levels. Investments are expected to remain relatively low through the mid-1990s.

The electricity sector's performance is poor as a result of average revenues (2.4 cents/kWh) that are lower than average incremental costs (6.2 cents/kWh). Even though it receives contributions in the form of oil export royalties, the electricity sector must rely on credit for about 30 percent of its funds.

In the past few years, tariffs in Ecuador have been established based on political considerations, and are set at roughly half the level required for an adequate financial rate of return. At current tariff levels (3.69 cents/kWh for industrial customers, 2.00 cents/kWh for residential customers, and 3.60 cents/kWh for commercial customers), the sector's internal funding covers only its debt service, leaving no money for its $1.2 billion investment program.

Private Power Potential

Ecuador is now debating the future of its electric power sector. INECEL, dependent on loans from foreign creditors for half of its budget, is finding it difficult to obtain additional funds for expanding its capacity. Seeking private investment in the power sector has been discussed, but it appears unlikely to be approved by President Borja, who has gone on record against privatization.

The future of EMELEC, which serves Guayaquil, is also being fiercely debated. The government is anxious to terminate the current private ownership status of this utility. A wide range of proposals have been offered, ranging from government ownership, to a government-dominated joint venture, and to non-profit status.

Government opposition to privatization and the small size of Ecuador's self-generation sector mitigate against private power. However, if Ecuador succeeds in developing its oil and gas fields, there may be a small market for cogeneration. Otherwise, no viable market for private power is anticipated for this country during the 1990s. It is worth noting that the two major candidates in Ecuador's upcoming elections favor market-oriented reforms. Thus, the government's attitude towards privatization may change over the next year.

Business Practices

The Andean Pact rules on foreign investment, adopted by Ecuador in 1991, stipulate the same rights for foreign investors as for local investors, plus unrestricted remittance on profits after a 36 percent tax. Companies whose profits are not remitted pay a 25 percent tax, the normal corporate rate.

Ecuador's tariffs on imported goods, which are 5 to 35 percent, may be lowered soon. Import license requirements have been lifted for many items, and further liberalization is expected in 1992.

Among the investment barriers that are still in effect in Ecuador is a labor code that benefits unionized workers at the expense of employers. Job security rules also make it difficult to lay off workers. Price controls and subsidies (primarily on food and pharmaceuticals) still exist. Also, the state and military own more than 200 companies that are inefficient and distort the market for non-subsidized competitors.

Except during emergency situations, INECEL has generally used competitive bidding to procure needed goods and services.

Only limited financing resources for imports are available from local banks in Ecuador. While short-term loans for small amounts are available, long-term loans are not, largely because banks are unwilling to take the risk of devaluation.

Possible Contacts

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PARAGUAY - COUNTRY STATISTICS

ECONOMIC PROFILE - 1990

POPULATION	4,277,000
growth rate	2.8 %
GDP	$8.9 B
growth rate	5.2 %
GDP/CAPITA	$1,970
INFLATION	30 %
EXCHANGE RATE	US $1.00 = G 1,200.20

TRADE FIGURES - 1990

EXPORTS = $1,020 M

cotton, soybeans, timber, vegetable oils, coffee, tung oil, meat products

IMPORTS = $1,010 M

Major Trading Partners → EC, BRAZIL, ARGENTINA, CHILE, US, JAPAN

GENERATION CAPACITY AND POTENTIAL PRIVATE POWER MARKET

	1988 (MW)	1999 (MW)	PRIVATE POWER MARKET 1992-1999 (MW)
HYDRO	4,390	N/A	
OIL	81	N/A	
steam	(34)	(n/a)	
combustion turbine	(42)	(n/a)	
diesel	(5)	(n/a)	
TOTAL	4,471	N/A	0

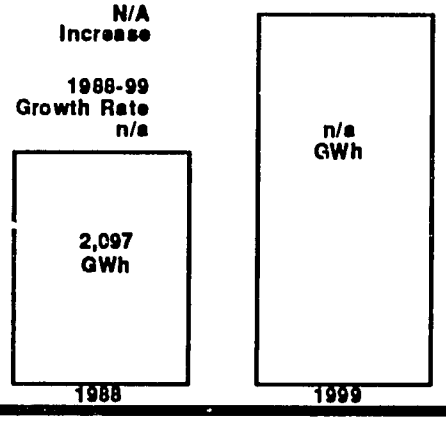
ELECTRIC POWER SYSTEM - 1989

GROSS GENERATION	2,097 GWh
ELECTRICITY SALES	1,510 GWh
industry share	26 %
PER CAPITA CONSUMPTION	374 kWh
RATE OF RETURN	4.6 %
SYSTEM FREQUENCY	50 c/s
VOLTAGE	220/66
transmission	kV
distribution	23 kV

ENERGY RESOURCES - 1990

FOSSIL FUEL PRICES	US $
steam coal	128.94/ton
diesel oil	48.01/bbl
fuel oil	25.54/bbl
natural gas to utilities	n/a
HYDROELECTRIC POTENTIAL	25,000 MW
GEOTHERMAL POTENTIAL	n/a
OIL RESERVES	n/a
NATURAL GAS RESERVES	n/a
COAL RESERVES	n/a

PUBLIC ELECTRICITY SUPPLY



ELECTRICITY PRICES - 1991

	US CENTS/kWh
TOTAL REVENUE/ TOTAL SALES	3.4/kWh
AVERAGE INCREMENTAL COST	n/a
TARIFF BY CONSUMER CLASSIFICATION	
Industrial	4.47/kWh
Commercial	6.48/kWh
Residential	4.81/kWh

Paraguay

Paraguay's economic growth has been relatively low but stable, and it experienced 5.2 percent GDP growth in 1990. Partly as a result of falling currency, Paraguay's annual inflation rate has hovered around 30 percent.

President Rodriguez and his highly centralized government have maintained political stability in Paraguay. He has implemented democracy and fostered a respect for human rights, allowing the participation of new political parties and freedom of the press.

With the completion of the Itaipu project with Brazil and the construction of the Yacyreta project with Argentina, Paraguay will become the world's largest exporter of electric power. These two hydroelectric projects on the Parana River will provide 12,600 MW and 3,100 MW of electric power, respectively, when they reach full capacity. The availability of electricity has spurned an ambitious investment program in transmission lines linking all major towns in the eastern part of the country.

Paraguay's hydro potential is estimated at 25,000 MW, a large part of which is currently being exploited. It has no known fossil energy reserves.

The Electric Power Sector

The electric power sector in Paraguay is run exclusively by the Administracion Nacional de Electricidad (ANDE), which supplies electricity to 46 percent of the population. This autonomous public utility holds the government's 50 percent interest in Itaipu Binacional, the bi-national agency set up in 1973 by the governments of Brazil and Paraguay to build the Itaipu facility. ANDE establishes its tariffs and submits them to its Administrative Council and then to the National Council on Economic Coordination for approval.

Virtually all of Paraguay's electricity is generated from hydroelectric projects. Hydro sources wholly controlled by ANDE generated 667 GWh in 1988, while supplies obtained from the Itaipu project totalled 1,417 GWh. Diesel units provided 3 GWh.

The country's sales to the internal market were 1,510 GWh in 1989. Its sales were 26 percent to industry, 38 percent to residential customers, and 47 percent to commercial and other consumers.

Paraguay's total installed capacity in 1988 was 4,471 MW, with 98 percent of its capacity in hydroelectric units (including its share of the Itaipu

project) and the remainder in thermal plants. In addition, self-generators have an installed capacity of 30 MW, all of which is in steam units.

With a coincident demand of less than 400 MW and a reserve margin estimated at 4,000 percent, Paraguay is not likely to require additional capacity for 30 or 40 years. Given the prospects of abundant energy from the Itaipu and Yacyreta projects (its share of Itaipu alone greatly exceeds Paraguay's domestic needs), ANDE's expansion program is limited to transmission and distribution.

The utility sector's operating margins have long been positive, but declined from 3.6 cents/kWh in 1980 to 1 cent/kWh in 1988. In 1991, average revenues were 3.4 cents/kWh sold. While there are no data available on average incremental costs, they are believed to be below average revenues. The positive financial position of the sector is expected to remain stable.

Paraguay's current tariffs are 4.47 cents/kWh for industrial customers, 4.81 cents/kWh for residential customers, and 6.48 cents/kWh for commercial customers. In the future, these tariffs must be brought into line with the price of Itaipu's electricity to avoid financial problems for the sector.

Investments in Paraguay's electricity sector grew to about $70 million per year in 1986-1988, largely as a result of the nation's rural electrification program. Still, self-financing ranged from 35 percent to 75 percent during the 1980s, and the debt service coverage was significantly greater than 1. Borrowings remain at less than half of the funds needed for investments and operations.

Private Power Potential

Given its high level of electric power reserves, there appears to be no market for private power in Paraguay. The small (30 MW) self-generation sector is not a promising market either.

Business Practices

The government of Paraguay promotes foreign investment linked to the economic development of certain regions and the exploitation of local resources. Law 550 grants special benefits to qualified projects without distinguishing between foreign and domestic capital. Paraguay does not require local participation in investments. For firms that do not register their capital investment with the government, there are no limits or controls on currency.

Paraguay is currently negotiating a bilateral investment insurance treaty with OPIC.

The repatriation of investment is allowed, subject to taxes and royalties, after the third year of production, in quotas not to exceed 20 percent of capital per year. Taxes on foreign investments equal those on local entities. Exemptions on taxes, customs and foreign surcharges are given to "necessary" investments in economic development, raw materials processing, and exports. Similar exemptions apply to "advantageous" investments aimed at import substitution.

Except during emergency situations, ANDE has generally used competitive bidding to procure needed goods and services.

Paraguay has no significant domestic sources of financing for private power projects. The funds that are available from local financial institutions and commercial banks could, however, provide a source of short-term working capital in local currency.

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Peru

The 1980s saw the economy of Peru unravel as the result of a series of events. Among these are the misguided economic policies of military-led governments dating to the 1960s; a suspension of all foreign debt servicing during the administration of President Garcia, which ended in 1990 when GDP growth was -12.2 percent; an erosion in terms of trade; natural disasters; and a general breakdown of the social fabric caused by guerilla action and narcotics traffickers. The booming tourist industry dropped by one-third, and hyper-inflation peaked in 1991 at 100 percent per month.

Peru's president Fujimori is attempting to stabilize the economy through a series of measures including the lifting of price controls. His other priorities are restoring investor confidence and cutbacks in government subsidies. The government has also succeeded in pricing electricity at international levels. However, the political turmoil caused by Fujimori's dissolving the Congress in April 1992 has made the future direction of Peru's economy an uncertain one.

Abundant hydro resources (74,000 MW) have been identified in Peru. Recent discoveries of natural gas in the jungle region have pushed the country's gas reserves to third place in Latin America after Venezuela and Argentina. At present, Peru's natural gas reserves are estimated at 200.6 billion m^3, and its oil reserves are 405.9 million barrels. Its geothermal potential is unknown, but its coal reserves are estimated at nearly 30 million tons.

The Electric Power Sector

Electroperu, the national utility, was created in 1972 with the abolishment of the then-existing system of private concessionaires. This state-owned enterprise is responsible for electricity generation throughout the country. It also acts as a holding company responsible for national power system planning, the execution of large generation and transmission projects, and the operation of inter-regional transmission systems. Electroperu now owns about half of the nation's installed hydro capacity. Ten regional utilities handle distribution and some generation; the largest of these is Electrolima, which services half of the nation's customers. Peru provides electricity to only 38 percent of its population, which is one of the lowest electrification rates in the region.

PERU - COUNTRY STATISTICS

ECONOMIC PROFILE - 1990

POPULATION	21,906,000
growth rate	2.4 %
GDP	$18.9 B
growth rate	-12.2 %
GDP/CAPITA	$880
INFLATION	100%/month
EXCHANGE RATE	US $1.00 = I/5,261.40

TRADE FIGURES - 1990

EXPORTS = $3.55 B

fishmeal, cotton, sugar, coffee, copper, iron ore, refined silver, lead, zinc, crude petroleum & byproducts

IMPORTS = $2.50 B

Major Trading Partners → EC, US, JAPAN, LATIN AMERICA, USSR, SWITZERLAND

GENERATION CAPACITY AND POTENTIAL PRIVATE POWER MARKET

	1989 (MW)	1999 (MW)	PRIVATE POWER MARKET 1992-1999 (MW)
HYDRO	2,058	2,585	
OIL	646	1,010	
steam	(61)	(161)	
combustion turbine	(259)	(515)	
combined cycle	(16)	(16)	
diesel	(310)	(318)	
GAS	(0)	450	
combustion turbine	(0)	(450)	
TOTAL	2,704	4,045	0

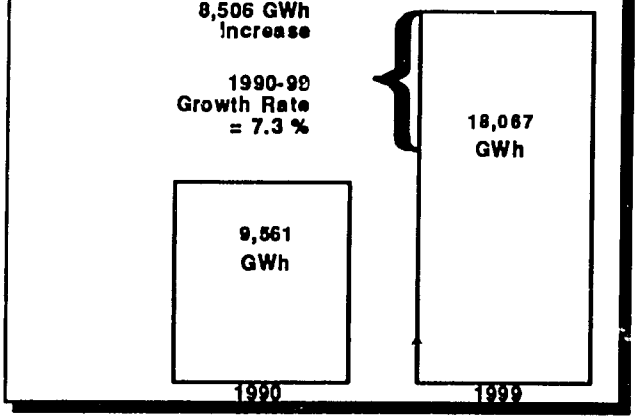
ELECTRIC POWER SYSTEM - 1989

GROSS GENERATION	9,469 GWh
ELECTRICITY SALES	7,583 GWh
Industry share	47 %
PER CAPITA CONSUMPTION	359 kWh
RATE OF RETURN	-7.4 %
SYSTEM FREQUENCY	60 c/s
VOLTAGE	220/138/60
transmission	kV
distribution	13/10/5 kV

ENERGY RESOURCES - 1990

FOSSIL FUEL PRICES	US $
steam coal	n/a
diesel oil	31.54/bbl
fuel oil	21.01/bbl
natural gas to utilities	n/a
HYDROELECTRIC POTENTIAL	74,000 MW
GEOTHERMAL POTENTIAL	n/a
OIL RESERVES	405.9 million bbls
NATURAL GAS RESERVES	200.6 billion m3
COAL RESERVES	29.6 million tons

PUBLIC ELECTRICITY SUPPLY



ELECTRICITY PRICES - 1991

	US CENTS/kWh
TOTAL REVENUE/ TOTAL SALES	2.90/kWh
AVERAGE INCREMENTAL COST	14.50/kWh
TARIFF BY CONSUMER CLASSIFICATION	
Industrial	2.36/kWh
Commercial	4.71/kWh
Residential	4.74/kWh

The Ministry of Energy and Mines is responsible for policy formulation and the supervision of state-owned enterprises in the electric power sector. In the last two decades, the sector has been under strong state control and is regulated by two laws: The Normative Law for the Electricity Subsector of 1972, which nationalized all electricity services and created Electroperu as a state-owned enterprise, and the General Law for Electricity of 1982, which established a new decentralized structure for this sector while maintaining basic public management of the power subsector. The Electric Tariffs Commission regulates electricity tariffs for the sector.

In 1989, Peru's electricity generation of 9,469 GWh was 5 percent less than the previous year. Generation has remained nearly flat since 1986, dragged down by a 15 percent drop in sales to industry from 1987 levels. Hydroelectricity provided 92 percent of generation in 1989, with thermal providing the remainder. With energy production expected to double by 1999, the share of hydroelectricity in generation will decrease to 84 percent and thermal generation will grow by 14 percent per year to meet projected demand.

Peru's 1989 sales of electricity were 7,583 GWh, about 7-8 percent lower than the previous two years. Industry accounted for about 47 percent of sales, residential consumers 33 percent, and commercial/other about 20 percent.

Installed capacity was 2,704 MW in 1990, of which 2,058 MW were hydroelectric and the remainder thermal generation. A relatively large share (310 MW) of thermal capacity is in diesel units. The country has 1,295 MW of installed self-generating capacity: 1,018 MW of steam units and 277 MW of hydro.

Peru's expansion plans call for an additional 527 MW of hydroelectric capacity by 1999, plus 450 MW of gas-fired combustion turbines, 256 MW of oil-fired combustion turbines, and 100 MW of steam turbines. This 1,341 MW of capacity additions is expected to cost nearly $2.2 billion. The hydro sites identified include Carhuaquero (75 MW are completed) and the expansion of Canon del Pato, Mayush (88 MW), Platanal (140 MW), and Jicamara (103 MW). The national grid (Centro-Norte) expects to have its first 200 MW of gas-fired units in place by 1995. A 2 x 50 MW gas-fired plant is scheduled for the southern grid by 1996-1997. These projects are dependent on the construction of a natural gas pipeline from Casimea to the coast. A large program of

retirement and rehabilitation/expansion for the remainder of the oil-fired steam and combustion turbines plants is also scheduled.

Obtaining the funds for expansion will prove difficult. The electricity sector's critical financial situation reflects the deterioration of the Peruvian economy. Its public utilities' rate of return on assets was -7.4 percent in 1990. Their average 1991 revenue of 2.90 cents/kWh was far lower than their average incremental costs of 14.5 cents/kWh. In addition, Peru's electricity sales have been affected by terrorist activities aimed at power installations, which has necessitated the provision of expensive protection and the erection of barriers. The sector has also suffered from inadequate tariffs (about 2.36 cents/kWh for industrial customers and 1.7 cents/kWh for other customers) and inefficient operations, resulting in strong reliance on outside financing, principally government contributions and borrowings. Significant obligations to foreign borrowers accumulated and as a consequence, resources were redirected to service the debt.

Debt service on the electric sector represented 92 percent of the total debt serviced in 1988. The sector was expected to reach virtually 100 percent debt by 1990, despite a recent assumption of its debt by the government, which resulted in the debt/equity ratio temporarily dropping to 45/55 percent.

Private Power Potential

The potential for private power in Peru remains uncertain. Its expansion plan is ambitious and the sector, especially Electroperu, will find it difficult to obtain financing. While the government is discussing the issue of private participation, there has been no decision to encourage it. Given the lack of policy commitment and the country's economic and political instability, no significant private power market is anticipated for Peru's public sector in the 1990s.

A market may exist within the large (1,018 MW) self-generation sector, about one-half of which is composed of hundreds of small diesel sets. The largest self-generator in Peru is the 183 MW hydro plant of Centromin-Peru, which is connected to the grid. Other large plants are owned by Southern Peru Copper (185 MW), HierroPeru steel mill (67 MW), several isolated mines (5-10 MW each), and PetroPeru refineries and oil production facilities, plus eight agroindustrial estates, largely sugar (10-25 MW each). Hydroelectric plants outside the public utility sector total 277 MW, mostly in the mining sector.

However, civil unrest, especially in remote areas, makes it unlikely that a market will develop among self-generators before the end of the decade.

Business Practices

As a member of the Andean Pact, Peru issued regulations implementing the Pact's decisions liberalizing the climate for foreign investments. These reforms make it easier to register investors, use credit, repatriate profits, transfer technology, and license trademarks. To receive customs benefits available through the Pact, foreign investors must gradually and progressively convert the firms to Peruvian or Andean ownership (51 percent by the 13th year).

Foreign investments must be registered and authorized by the government. Preference is given to investments outside Lima, and a prohibition exists on foreign investments in financial and public services, internal transport, and mass communications.

Peru retains a number of disincentives. A 1990 decree banned the repatriation of profits, dividends, royalties, depreciation of technical fees, and the repatriation of capital upon liquidation of the investment.

Except during emergency situations, Electroperu has generally used competitive bidding to procure needed goods and services.

There are no significant domestic sources of financing for private power projects in Peru. The funds that are available from local financial institutions and commercial banks could, however, provide a source of short-term working capital in local currency.

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Suriname

Suriname faces formidable economic problems. The country's military regimes, which were in power during the 1980s, depleted its foreign exchange reserves, leaving a foreign exchange deficit running at an estimated $12 million per month. Their policies also triggered inflation, which reached 50 percent in 1988.

The recent election of President Venetiaan has prompted the resumption of Dutch development assistance. Dutch aid was suspended because of the country's human rights violations, but is now slated at $100 million per year through 1996. The European Community has also agreed to provide Suriname with technical assistance for a structural adjustment study leading to the eventual implementation of an economic adjustment and development program. The government is committed to eventual membership in the Caribbean Basin Initiative, which would entail a significant liberalization of Suriname's domestic policies. The strong recovery of Suriname's key bauxite industry resulted in real GDP growth of nearly 2 percent in 1989. If alumina prices remain high, faster growth is predicted.

Suriname has a largely untapped hydroelectric potential of 3,420 MW. Its oil reserves amount to 321 million barrels; about 1 million barrels of oil are produced each year.

The Electric Power Sector

The state-owned Energie Bedrijven Suriname (E.B.S.), which falls under the jurisdiction of the Ministry of Natural Resources, is responsible for supplying electricity in the Paramaribo and coastal areas of the country. It obtains part of its supplies from SURALCO, a bauxite mine self-generator that owns the 189 MW Atokkaba hydroelectric plant. An agreement between the government and SURALCO calls for the government to purchase between 80 and 175 GWh annually from SURALCO and to sell this electricity to E.B.S.

In 1989, E.B.S. generated 115 GWh from its deteriorating diesel units and purchased 230 GWh from SURALCO, which provided a record amount of electricity in that year to compensate for E.B.S.'s poor performance.

E.B.S.'s sales in 1989 were 286 GWh, 30 percent to industrial users, 26 percent to commercial/other users, and 44 percent to residential users. Its sales grew by 3 percent annually during the 1980s, accounted for exclusively by the residential sector.

SURINAME - COUNTRY STATISTICS

ECONOMIC PROFILE - 1990

POPULATION	401,000
growth rate	1.6 %
GDP	$1.4 B
growth rate	2 %
GDP/CAPITA	$3,501
INFLATION	50 %
EXCHANGE RATE	US $1.00 = sf 1.785

TRADE FIGURES - 1990

EXPORTS = $549.18 M

bauxite, alumina, aluminum, rice, shrimp, wood & wood products, fish & bananas

IMPORTS = $331.3 M

Major Trading Partners → NETHERLANDS, NORWAY, US, JAPAN, WEST GERMANY, UK, SWEDEN, CANADA, FRANCE, BRAZIL, TRINIDAD & TOBAGO, DOMINICAN REPUBLIC, VENEZUELA, NETHERLANDS ANTILLES

GENERATION CAPACITY AND POTENTIAL PRIVATE POWER MARKET

	1989 (MW)	1999 (MW)	PRIVATE POWER MARKET 1992-1999 (MW)
HYDRO	0	20.5	
OIL	60	60	
DIESEL	60	(60)	
TOTAL	60	85.5	0

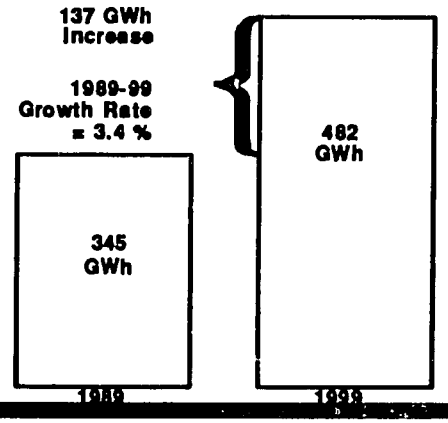
ELECTRIC POWER SYSTEM - 1989

GROSS GENERATION	345 GWh
ELECTRICITY SALES	286 GWh
industry share	30 %
PER CAPITA CONSUMPTION	656 kWh
RATE OF RETURN	5.7 %
SYSTEM FREQUENCY	60 c/s
VOLTAGE	
transmission	n/a
distribution	n/a

ENERGY RESOURCES - 1990

FOSSIL FUEL PRICES	US $
steam oil	62.02/bbl
diesel oil	10.65/bbl
HYDROELECTRIC POTENTIAL	2,420 MW
GEOTHERMAL POTENTIAL	n/a
OIL RESERVES	321 million bbls
NATURAL GAS RESERVES	0
COAL RESERVES	0

PUBLIC ELECTRICITY SUPPLY



ELECTRICITY PRICES - 1991

	US CENTS/kWh
TOTAL REVENUE/ TOTAL SALES	14.9/kWh
AVERAGE INCREMENTAL COST	n/a
TARIFF BY CONSUMER CLASSIFICATION	
Industrial	13.13/kWh
Commercial	17.30/kWh
Residential	17.0/kWh

At present, E.B.S. has an installed capacity of 60 MW, all of which is in oil-fired diesel generators. SURALCO, the self-generator, has 189 MW of installed hydro capacity plus 47 MW in gas turbines. By 1999, E.B.S. plans to add 20.5 MW of hydro capacity at one of two sites (Jai Kreek and Phedra, with a combined potential output of 180 MW) on the Surir.ame River. However, since SURALCO's sites are also located on this river and their output could be affected by new E.B.S. plants, an agreement must be reached with SURALCO before any new project is implemented.

The financial position of Suriname's electricity sector is satisfactory. Its rate of return in 1989 was 5.7 percent and is expected to be 6 to 8 percent in the future. Its revenues from electricity averaged 14.9 cents/kWh in 1991. E.B.S.'s tariffs (13.13 cents/kWh to industrial customers, 17.0 cents/kWh to residential customers, and 17.3 cents/kWh to commercial customers) are adequate to meet it debt service obligations and to fund the sector's limited new investments. During the 1980s, no new investment loans were obtained, and E.B.S's equity constituted 100 percent of its capital. The context of this financial picture, however, is one in which E.B.S. did little or nothing to meet its customers' needs.

Private Power Opportunities

Given the political instability of Suriname and its dependence on SURALCO for two-thirds of its generation capacity needs, there does not appear to be any significant market for new private power in this country through 1999.

Business Practices

Although the government has an official foreign investment code, investment provisions must be negotiated. The incentives available include tax holidays, assistance with site location and low-cost factory buildings, and assistance in processing paperwork. Suriname is a member of the Lome Convention, which allows duty-free access to the European Community. The government is committed to eventual membership in the Caribbean Basin Initiative. It does, however, place restrictions on the expatriation of profits and on access to hard currency, which stand as substantial barriers to significant foreign investment.

Except during emergency situations, E.B.S. has generally tried to use competitive bidding to procure needed goods and services.

There are no significant domestic sources of financing for private power projects in Suriname. The funds that are available from local financial institutions and commercial banks, however, could provide a minimal source of short-term working capital in local currency.

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Uruguay

Uruguay enjoyed one of the highest standards of living in the region during the first half of this century, as well as a stable political system. However, its economy began to erode in the 1970s, primarily because Uruguay needed to import oil and faced strong competition in its agricultural markets. This nation suffered a deep recession in 1981-1984, followed by high economic growth rates in 1986 and 1987. Its economy did not grow at all in 1988, in part as a result of drought and strikes by organized labor, and grew by less than 1 percent in 1989. In 1990, the current account balance was $223 million; this positive balance was achieved despite 80 percent inflation. By 1991, however, the fiscal deficit had decreased dramatically to 2.5 percent of GDP and inflation hovered at over 70 percent.

When President Lucalle took office in 1990, he became Uruguay's first civilian president in 12 years. His administration has instituted a fiscal adjustment plan to reduce Uruguay's deficit; this plan includes increases in taxes, an end to tax incentives for exporters, and reductions in government spending. The government also announced a plan for the privatization of government-owned companies and general reform of the public sector.

Uruguay has a hydroelectric potential of 1,777 MW, most of which has already been tapped. It has no known reserves of fossil energy.

The Electric Power Sector

Administracion Nacional de Usinas y Transmisiones Electricas (UTE), a government institution, has been responsible for the generation, transmission, and distribution of electricity in Uruguay since 1912. Although UTE is an autonomous entity, the Ministry of Industry and Energy formulates, schedules, and directs national policy with regard to energy resources. The National Electricity Law put a formal end to UTE's monopoly over public electricity services; however, monopolistic practices still exist.

During the 1973 oil crisis, Uruguay began to develop its hydroelectric resources. At that time, it created Comision Mixta del Palmar to build the El Palmar hydroelectric plant. In 1983, this commission transferred the El Palmar plant and its liabilities to UTE. Uruguay and Argentina constructed the bi-national 1,890 MW Salto Grande hydro plant, which began operations in 1979-1982 and is operated by the binational agency, Comision Tecnica Mixta

URUGUAY - COUNTRY STATISTICS

ECONOMIC PROFILE - 1990

POPULATION	3,037,000
growth rate	.8 %
GDP	$8.8 B
growth rate	1 %
GDP/CAPITA	$2,950
INFLATION	80 %
EXCHANGE RATE	US $1.00 = N$Ur 832.62

TRADE FIGURES - 1990

EXPORTS = $1.5 B

hides, leather goods, beef, wool, fish, rice

IMPORTS = $1.1 B

Major Trading Partners → BRAZIL, US, FRG, ARGENTINA

GENERATION CAPACITY AND POTENTIAL PRIVATE POWER MARKET

	1989 (MW)	1999 (MW)	PRIVATE POWER MARKET 1992-1999 (MW)
HYDRO	1,196	1,511	
OIL	370	775	
steam	(313)	(410)	
combustion turbine	(55)	(363)	
diesel	(2)	(2)	
TOTAL	1,566	2,288	0

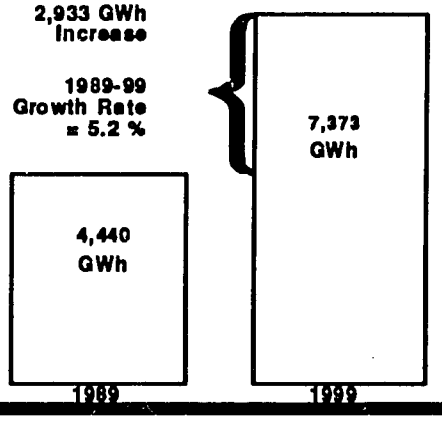
ELECTRIC POWER SYSTEM - 1989

GROSS GENERATION	4,440 GWh
ELECTRICITY SALES	3,483 GWh
Industry share	36 %
PER CAPITA CONSUMPTION	1,132 kWh
RATE OF RETURN	-0.7 %
SYSTEM FREQUENCY	50 c/s
VOLTAGE	
transmission	500/150/60 kV
distribution	30/15/6 kV

ENERGY RESOURCES - 1990

FOSSIL FUEL PRICES	US $
steam coal	n/a
diesel oil	65.72/bbl
fuel oil	32.73/bbl
HYDROELECTRIC POTENTIAL	1,777 MW

PUBLIC ELECTRICITY SUPPLY



ELECTRICITY PRICES - 1991

	US CENTS/kWh
TOTAL REVENUE/ TOTAL SALES	6.20/kWh
AVERAGE INCREMENTAL COST	10.90/kWh
TARIFF BY CONSUMER CLASSIFICATION	
Industrial	6.80/kWh
Commercial	8.05/kWh
Residential	7.05/kWh

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del Salto Grande (CTMSG). Salto Grande sells electricity to UTE and to AyE in Argentina.

Uruguay's hydro production is highly variable, which has forced it to have a large thermal back-up capacity. In 1989, the nation experienced unusually low hydro levels due to a drought. Generation in that year reached 4,440 GWh, of which only 422 GWh were obtained from hydro installations within its own borders and 2,260 GWh were provided by Salto Grande. The remaining 1,755 GWh, or 40 percent of Uruguay's total generation, were provided by oil-fired steam plants, many of which had not been used since 1982.

The country's generation, including its share of Salto Grande, is expected to grow by 5.2 percent annually, reaching 7,373 GWh in 1999. By that time, Salto Grande's contribution will have reached its maximum of 3,500 GWh. Domestic hydroelectric power is expected to contribute 2,500 GWh, which is about what the system can produce now under normal hydrological conditions. The contribution of thermal power should rise steadily to about 1,200 GWh, which can be provide(/ the country's existing thermal capacity. This capacity is aging and will need extensive modernization.

In 1989, Uruguay sold 3,483 GWh, 5.4 percent less than the year before, largely because of conservation measures taken in response to the drought. Industry purchased 36 percent of this electricity, residential customers 46 percent, and commercial customers 16 percent.

Uruguay's 1989 installed capacity has remained unchanged since 1982 at 1,566 GWh. Most of its capacity is hydro (1,196 MW), followed by oil-fired steam and combustion turbine generation. In addition, self-generators provide 40 MW of steam capacity and 4 MW of hydro capacity.

By 1999, Uruguay's generating capacity will grow by 720 MW, at a cost of $200 million. Its capacity share of the Salto Grande will increase by 315 MW (under its agreement with Argentina, Uruguay receives a growing share of the electricity from this project and exports the balance to Argentina, using these exports to pay for its share of construction costs). Its thermal expansion plans call for the completion of the new La Tablada diesel oil-fired 200 MW combustion turbine plant in 1991, followed by another 108 MW in 1994. The country also plans to add 97 MW of steam generators in 1998.

The electricity sector's financial position is naturally dependent on hydrological conditions and the expenses it incurred to purchase oil during the 1988-1989 drought. Its tariffs in those years were not able to cover the extra

generation costs (its 1991 tariffs are still fairly low, at 6.05 cents/kWh for industrial users, 7.05 cents/kWh for residential users, and 8.05 cents/kWh for commercial users). Because of its financial situation, the sector's other investments suffered, especially in distribution. Large inefficiencies resulted; these are expected to be addressed in the early 1990s with scheduled improvements in the distribution system.

UTE's rate of return was 2 to 3 percent for most of the 1980s, but dropped to -7 percent in 1989. The unit price of electricity has also exceeded unit costs, and in 1991, UTE's average tariff was 6.20 cents/kWh, against its average incremental cost of 10.90 cents/kWh.

The heavy investment in hydroelectric capacity that Uruguay made in the early 1980s has burdened its overall debt and debt service, causing the power sector to account for one-quarter of the national debt. Investments in generation capacity slowed considerably later in the decade when Salto Grande was completed.

Expectations for the power sector's financial position remain strong, despite its need to invest $200 million in new generation capacity in the 1990s. The sector is expected to generate 60 to 85 percent of its funding needs from internal funding and borrow the remaining funds without the need to resort to government contributions.

Private Power Opportunities

The government of Uruguay has not held serious discussions on privatization approaches. Also, Uruguay can meet its projected demand through 1999, primarily through its increasing share of the Salto Grande hydroelectric station. These factors mitigate against the privatization of electricity services in Uruguay, and no private capacity is envisioned through 1999.

Business Practices

The Industrial Promotion Law of 1974 provides numerous benefits to foreign investors if their projects promote Uruguay's social and economic development. Investors can obtain exemptions from all import taxes on equipment used, exemptions from the net worth tax on assets, and selective tax deductions on industrial and commercial income.

The Foreign Investment Law guarantees the convertability and remittance of profits and invested capital, subject to specified taxes. Foreign

investors, however, are required to obtain prior government consent for the use of external credit. Also, government approval is needed before any investments can be made in sectors of national interest, including electricity.

Except during emergency situations, UTE has generally used competitive bidding to procure needed goods and services.

There are no significant domestic sources of financing for private power projects in Uruguay. The funds that are available from local financial institutions and commercial banks, however, could provide a minimal source of short-term working capital in local currency.

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Venezuela

During 1990, Venezuela recovered from a 1989 recession, with its GDP growing by 4.4 percent. This growth was led by the expansion of the petroleum sector, which boosted its production and export prices during the Iraq-Kuwait conflict.

The International Monetary Fund has forced the administration of President Perez, which came to power in 1988, to implement a far reaching economic restructuring aimed at bringing prices in line with international levels, especially for gasoline and electricity. Reforms have been made, despite popular resistance that threatens the country's nearly 30 years of stable economic and political development. In February 1992, part of the armed forces attempted to overthrow the government. Although they were not successful, such moves may undermine the economic reform package (a month after the coup attempt, Perez rescinded gasoline and electricity price increases).

How these recent political events will affect the government's economic reform program is uncertain. Tax reform and an opening of foreign investment in the financial and energy sectors are part of this program. These efforts are aimed at lowering unemployment, which was 10.4 percent in 1990, and inflation (49.7 percent). Other measures include reducing barriers to imports and opening opportunities for the sale of industrial and raw materials. In addition, the government wants to privatize a long list of state-owned companies, including telecommunications, water resources, ports, airlines, and tourism enterprises.

Venezuela still has a large undeveloped hydro resource to tap. It totals 83,430 MW, four times what will be exploited by 1999. Its hydrocarbon resources are among the largest in the world, with proven oil reserves of 59,040 million barrels and gas reserves of 2,993 billion m^3. In addition, 514 million tons of coal reserves have been identified in Venezuela.

The Electric Power Sector

Venezuela now has seven private utilities and four government-controlled utilities. The four national utilities include the Electrificacion del Caroni C.A. (EDELCA), which was established in 1963 to construct and operate the 9,000+ MW Guri hydroelectric station. Through Fondo de Inversiones de Venezuela (FIV), the government acquired C.A. Energia Electrica de Venezuela (ENELVEN),

VENEZUELA - COUNTRY STATISTICS

ECONOMIC PROFILE - 1990

POPULATION	19,760,000
growth rate	2.5 %
GDP	$64.5 B
growth rate	4.4 %
GDP/CAPITA	$3,213
INFLATION	49.7 %
EXCHANGE RATE	US $1.00 = Bs 60.13

TRADE FIGURES - 1990

EXPORTS = $17.6 B

petroleum, aluminum, iron ore, steel, coal, gold, coffee, coca

IMPORTS = $6.8 B

Major Trading Partners → US, FRG, JAPAN, ITALY, BRAZIL, CUBA, NETHERLANDS, CANADA, COLOMBIA, UK, FRANCE, BELGIUM, SPAIN

GENERATION CAPACITY AND POTENTIAL PRIVATE POWER MARKET

	1989 (MW)	1999 (MW)	PRIVATE POWER MARKET 1992-1999 (MW)
HYDRO	10,581	20,515	
THERMAL	6,280	n/a	
steam	(3,954)	(0)	
combustion turbine	(2,228)	n/a	
diesel	(98)	n/a	
OFF-GRID COGENERATION (w/Petroleos de Venezuela)	(0)	(0)	600
TOTAL	16,861	n/a	600

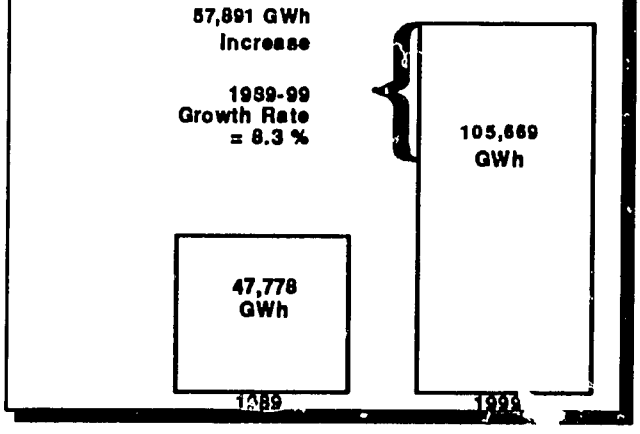
ELECTRIC POWER SYSTEM - 1989

GROSS GENERATION	47,778 GWh
ELECTRICITY SALES	39,123 GWh
industry share	60 %
PER CAPITA CONSUMPTION	2,033 kWh
RATE OF RETURN	4.4 %
SYSTEM FREQUENCY	50 c/s
VOLTAGE	
transmission	765/400/230/138/115/69 kV
distribution	69/34.5/13.8 kV

ENERGY RESOURCES - 1990

FOSSIL FUEL PRICES	US $
steam coal	n/a
diesel oil	4.06/bbl
fuel oil	3.67/bbl
natural gas	0.34/MCF
HYDROELECTRIC POTENTIAL	83,430 MW
GEOTHERMAL POTENTIAL	n/a
OIL RESERVES	59,040 million bbls
NATURAL GAS RESERVES	2993 billion m3
COAL RESERVES	514 million tons

PUBLIC ELECTRICITY SUPPLY



ELECTRICITY PRICES - 1991

	US CENTS/kWh
TOTAL REVENUE/ TOTAL SALES	2.00/kWh
AVERAGE INCREMENTAL COST	2.90/kWh
TARIFF BY CONSUMER CLASSIFICATION	
Industrial	4.74/kWh
Commercial	6.74/kWh
Residential	2.33/kWh

C.A. de Administracion y Fomento Electrico (CADAFE), and C.A. Energia Electrica de Barquisimeto (ENELBAR). FTV is now the main stockholder of the government-owned companies.

There are also seven private utilities in Venezuela. The most important of these is Electricidad de Caracas (EdC), which supplies electricity to the greater Caracas area.

In 1958, the government created the Corporacion Venezolana de Fomento as the controlling agency for the electricity sector. However, several other government institutions have authority over this sector, many of which have unclear, and at times conflicting, responsibilities. The Ministry of Mines and Energy (MEM) is theoretically in charge of defining energy policies, but it lacks the power to perform its role. MOF reviews and makes decisions on tariffs with little regard to supply cost analysis. Tariffs for inter-company sales of electricity, and from EDELCA to industrial customers in Guyana, are fixed through bilateral agreements. MOF consults MEM before approving changes in electricity tariffs. Finally, Congress participates in the sector's financial matters, and may also enact laws governing other matters affecting the sector such as tariff policies and administrative responsibilities.

The institutional framework has improved recently as a result of four factors. The first is the implementation of a new interconnection between CADAFE, EDELCA, EdC, and ENELVEN. The second is the more direct and close coordination of the national utilities and EdC for the preparation of the sector's expansion plan; the third is the issuance of a decree that provides basic rules for tariff setting and creates a tariff committee; and the fourth is actions to support this committee with the assistance of a technical advisory staff. The government is also taking actions to reorganize CADAFE.

Venezuela's generation reached 47,778 GWh in 1989. Although generation grew at about 5.6 percent per year between 1980 and 1988, it did not grow at all between 1988 and 1989, reflecting the economic crisis the country was experiencing.

Over 75 percent of the country's generation comes from hydroelectric sources, whose contribution grew from about 50 percent in the early 1980s. As a result, thermal generation has decreased by more than 30 percent from its levels in the middle of the decade. Electricity generation in Venezuela is expected to increase by 9.7 percent by 1999, primarily through a doubling of

hydro generation, which is expected to comprise 88 percent of total generation by 1999. Thermal generation will not grow during this period.

Sales in 1989 were 39,123 GWh, 6 percent lower than in the previous year. Industry consumed 60 percent of these sales (up from 53 percent 10 years earlier), residential customers 13 percent, commercial customers 8 percent, and other customers 19 percent.

Venezuela's installed capacity in 1989 was 16,861 MW, of which 10,581 MW were hydro. Its thermal capacity was 6,280 MW, of which 2,228 MW were gas turbines, 3,954 MW were steam, and 98 MW were diesel. The efficiency of Venezuela's thermal plants is low by world standards, at about 26 percent. This low efficiency reflects a lack of incentives because of low fuel prices. Venezuela has about 920 MW of self-generating capacity, all in steam units.

The country's expansion plan calls for the addition of 9,934 MW of hydro capacity by 1999. This will include the Guri project, which upon completion will have 10,000 MW, making it among South America's largest hydro projects. Other hydro projects slated include Uribante (730 MW), Bocono (80 MW), and Agua Viva (30 MW). The hydro sites being investigated include Tocoma (2,389 MW), Caruchi (2,380 MW), and Macagua (2,580 MW).

The financial position of Venezuela's electricity sector is fairly good when compared to other utilities in South America. The rate of return on assets of the major public and private utilities was 2 to 5 percent in the 1980s, but rose to 4.4 percent in 1989. The average revenue of the country's utilities was 2 cents/kWh in 1991. Tariff increases have been significant (4.74 cents/kWh for industrial customers, 6.47 cents/kWh for commercial customers, and 2.33 cents/kWh for residential customers in 1991), but the sector has still seen an erosion in its operating margins, from 2.6 cents/kWh in 1971 to 0.4 cents/kWh in 1988.

Expenditures in this sector represented 5.6 percent of GDP in the late 1980s, while investment amounted to about 22 percent of total investments in the country. Investments exceeded $3 billion/year in 1982, 1983, and 1986, but were below $1 billion in 1988 and 1989. The sector's contribution to the fiscal deficit was 1.9 percent in 1989.

The self-financing ratio and debt service coverage for the sector show sound financial results, and are projected to remain healthy in the 1990s. Internal funding stands at around 50 percent. The sector has not had to rely much on borrowing, and instead has depended on significant government

contributions to fulfill its funding requirements. As much of 40 percent of these requirements have been obtained from the government. For this reason, the sector has not been a burden on Venezuela's debt. Its debt/equity ratio has remained strong at 20/80, and is expected to continue at this level.

Private Power Opportunities

At present, there are limited private power generation opportunities in Venezuela. The private sector is already represented by seven utilities, including EdC, which serves the City of Caracas. In addition, the country has no distinct policy for independent private generation. Another mitigating factor is that almost all of Venezuela's generation expansion will be in large hydroelectric projects. Because of their size and environmental impact, these projects will not be attractive to private companies seeking to build and operate plants.

The petroleum sector, however, may provide a potential market for private power. Currently, 920 MW of self-generation capacity exist, predominantly near oil and gas production and refining facilities and other remote industrial sites. Selling power to this industry may present a market for 600 MW of power.

Nevertheless, the Fondo de Inversiones de Venezuela recently stated its desire to privatize ENELVEN and ENELBAR by selling the majority of shares in these companies.

Business Practices

The liberalization of the foreign investment code in January 1990 opened up most of the economy to foreign equity participation. Foreign companies can now also own up to 100 percent of enterprises, except in certain industries reserved for nationals. There are no more restrictions on the repatriation of invested capital or on the remittance of dividends after a flat 20 percent tax. Debt-to-equity conversions are permitted, and have been projected to reach $1 billion in 1992. A floating exchange rate on currency conversion has replaced attempts to impose fixed rates. Also, the significant presence of U.S. firms in Venezuela can benefit new investors in finding suitable local joint venture partners and identifying investment prospects.

Except during emergency situations, Venezuelan utilities have generally used competitive bidding to procure needed goods and services.

There are significant domestic sources of financing for private power projects in Venezuela. The funds may be available from the stock market, local investors, local financial institutions, and commercial banks.

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