Reforms and Private Participation in the Power Sector of Selected Latin American and Caribbean and Industrialized Countries

Volume I

Discussion of Issues

by

Alvaro J. Covarrubias and Suzanne B. Maia

Advisory Group

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**Units and Measures**

\[
\begin{array}{lll}
\text{kW} & = & \text{kilowatt} & = 10^3 \text{ watts} \\
\text{MW} & = & \text{megawatt} & = 10^6 \text{ watts} \\
\text{GW} & = & \text{gigawatt} & = 10^9 \text{ watts} \\
\text{TW} & = & \text{terawatt} & = 10^{12} \text{ watts} \\
\text{kWh} & = & \text{kilowatthour} & = 10^3 \text{ watts} \\
\text{MWh} & = & \text{megawatthour} & = 10^6 \text{ watts} \\
\text{GWh} & = & \text{gigawatthour} & = 10^9 \text{ watts} \\
\text{TWh} & = & \text{terawatthour} & = 10^{12} \text{ watts} \\
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# REFORMS AND PRIVATE PARTICIPATION IN THE POWER SECTOR OF SELECTED LATIN AMERICAN AND CARIBBEAN AND INDUSTRIALIZED COUNTRIES

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ACRONYMS

ARSEP - Autoridad Reguladora de los Servicios Públicos--Costa Rica
BOO - Build-Own-Operate
CAMMESA - Compañía Administradora del Mercado Mayorista Eléctrico Sociedad Anónima--Argentina
CFEE - Consejo Federal de Energía Eléctrica--Argentina
CNE - Comisión Nacional de Energía--Chile
COPRI - Comisión de Privatización--Peru
CTE - Comisión de Tarifas Eléctricas--Peru
CVC - Corporación Autónoma del Valle de Cauca--Colombia
DGE - Dirección General de Electricidad--Peru
DISCO - Distribution Company--Jamaica
DPSL - Domiciliary Public Services Law--Colombia
EIA - Environmental Impact Assessment
ENDESA - Empresa Nacional de Electricidad, Sociedad Anónima--Chile
ERC - Energy Regulatory Commission--Colombia
FERC - Federal Energy Regulatory Commission--US
GENCO - Generating Company--Jamaica
GDP - Gross Domestic Product
HIDRONOR - Hidroeléctrica Norpatagónica Sociedad Anónima--Argentina
ICE - Instituto Costarricense de Electricidad
IDB - Inter-American Development Bank
IOU - Investor-Owned Utility
IPP - Independent Power Producer
ISA - Interconexión Eléctrica Sociedad Anónima--Colombia
JNT - Junta Nacional de Tarifas--Colombia
JPSCO - Jamaica Public Service Company
LAC - Latin American and Caribbean
MEM - Mercado Eléctrico Mayorista
MME - Ministry of Energy and Mines, or Ministry of Mining and Energy
MEyOSP - Ministerio de Economía y Obras y Servicios Públicos/Ministry of Economy and Public Works and Services--Argentina
NGC - National Grid Company--UK
NRC - National Regulatory Commission--Argentina
NUG - Non-Utility Generator
NVE - Norwegian Water Resources and Energy Administration--Norway
OFFER - Office of Electricity Regulation--UK
OLADE - Organización de Latinoamericana de Energía/Latin American Energy Organization
OUR - Office of Utility Regulation--Jamaica
PPA - Power Purchase Agreement
PUHCA - Public Utility Holding Company Act of 1935--US
PURPA - Public Utility Regulatory Policies Act--US
REC - Regional Electricity Company--UK
RPI - Retail Price Index--UK
SE - Secretaría de Energía/Secretariat of Energy--Argentina
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<td>Servicios Eléctricos del Gran Buenos Aires--Argentina</td>
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<tr>
<td>SIC</td>
<td>Sistema Interconectado Nacional/National Interconnected (transmission) System</td>
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<td>SNE</td>
<td>Servicio Nacional de Electricidad--Costa Rica</td>
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<td>SRMC</td>
<td>Short-Run Marginal Cost</td>
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PREFACE

This report reviews power sector reforms in selected Latin American and Caribbean (LAC) and industrialized countries. It is expected to be a contribution to the dissemination of knowledge on the recent experiences of countries which have reformed the power sector or are in the process of doing so. It is presented in two volumes. Volume I contains the Executive Summary and a discussion of reform issues. Volume II contains descriptive country case studies, which provide the details upon which the issues discussed in Volume I are based.

The six LAC countries of Argentina, Chile, Colombia, Costa Rica, Jamaica and Peru, and the three industrialized nations of Norway, the United Kingdom and the United States, were selected to illustrate reform options being used to introduce competition to improve sector efficiency, and private participation to decrease the State’s commercial involvement, while reinforcing its policy-making and regulatory roles in the sector. A synopsis of the status of ongoing power sector reforms in other LAC countries is also provided in the Annex.

The report shows that although the reform options used to restructure the sector are varied—ranging from keeping the sector fully vertically integrated to totally disaggregating or unbundling the generation, transmission, distribution, and commercialization functions—there is a common denominator: the provision of legal and regulatory frameworks establishing equitable, permanent and transparent rules of the game for all participants in the sector, and an autonomous and independent regulatory authority to oversee the functioning of the sector. The report also indicates that the outcome of the reforms tend to decrease vertical integration and increase private participation in the power sector.

The experience of the countries in implementing the reforms and—in the cases of Argentina, Chile and the UK—in transferring the ownership of state-owned power utilities to private investors is illustrated in detail in Appendices A through I, contained in Volume II.

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1. Commercialization is the administration of retail supply service, generally including: connection, metering, billing, customer service and information functions. Distribution comprises lines, transformers and other equipment necessary for the transmission of power over the network as a service provided to end-users at low-voltage levels or to other suppliers desiring power transfers across the network.
Executive Summary

General Overview

1. Most Latin American and Caribbean (LAC) countries have legislated reforms primarily to improve the power sector's operating performance, reduce its financial dependence on public resources and enable private participation.\(^1\) The six LAC countries reviewed in this study—Argentina, Chile, Colombia, Costa Rica, Jamaica and Peru—provide a representative sample of the different reform paths being followed in the region.

2. Norway, the United Kingdom (UK) and the United States (US) provide illustrative examples of sectoral reform in industrialized nations. In contrast to the LAC countries, the reforms in Norway and the US primarily sought to cap rising electricity rates through competitive market-based pricing and improved efficiency in energy production and utilization. The reforms in the UK were driven by problems comparable to those in LAC countries, with the Government seeking to promote private participation in the sector and to reduce the sector’s claim on public resources. The UK reforms also sought to improve efficiency in energy production, utilization and investment through competitive market-based pricing and cap-price regulation.

3. In the UK, Chile, Argentina and Peru, power sector reforms occurred within the context of macro-economic reforms in the fiscal, monetary and trade areas. At the same time, the restructuring of other sectors of the economy was opening opportunities for increasing private investments in a free market environment. Macro-economic reforms of this nature facilitated the successful implementation of the power sector privatization programs of Chile and Argentina, and are expected to do so in Peru. The national reforms improved the overall investment climate, while privatization programs undertaken in other sectors gave additional reassurance to potential investors in the power sector.

4. The study shows that in all of the countries power sector reforms enabled or enhanced private sector ownership of electric enterprises, with the legal and regulatory frameworks modified accordingly to provide equitable and transparent operating and pricing rules for all participants. In addition, they all have initiated (or intend to do so) pricing schemes using competitive, market-based pricing at the bulk power level, retaining regulated tariffs mainly for monopolistic transmission and distribution functions. Meanwhile, all of the LAC countries and the UK have enacted or are now undertaking initiatives to strengthen the authority of the regulatory entity over the sector.

5. The countries differ, however, in the degree and in the means selected to open the sector to greater private participation: the reforms in the UK, Chile, Argentina and Peru and those proposed in Colombia create competition in power generation, by separating it from monopolistic transmission and distribution functions. New power producers are thus allowed to compete for markets with existing generators.\(^2\) In the US, Jamaica and Costa Rica, the reforms emphasize private participation through independent power producers (IPPs). The IPPs sell power to the grid, sometimes in competition with existing utilities, but not necessarily requiring the restructuring of those utilities. In Norway, the national utility was broken up into separate generating and transmission companies. Municipal utilities, however, were not forced to disaggregate their functions, although they must keep separate financial and book-keeping accounts for different operating functions.

6. Although neither a primary cause or a result of the reforms, stricter and/or more comprehensive environmental regulations have often been (are being) promoted in parallel with the restructuring and/or privatization reforms. Most of the study countries have recently made efforts to strengthen the environmental regulatory agencies. Concurrently, all of the countries are emphasizing energy conservation, demand-side management, resource management, and the use of cleaner, more
efficient technologies. The environmental costs and risks are generally being shifted from the governments to privately-owned power enterprises.

7. The success of the respective reforms in each of these countries will be measured by the degree of overall efficiency, competition and private sector ownership. Another measure of success will be the efficacy of the regulatory entity in using the legally-defined basis for the sector and its own mandate to: enforce compliance with operating and technical requirements; set and maintain cost-based, regulated tariff systems; oversee deregulated functions and the propriety of free market transactions as needed; redefine terms and conditions that raise conflicting interpretations; and quickly resolve sector disputes.

8. Reforms target rate stabilization for consumers and the ability of revenues to cover both operating expenses and necessary investments for the sector as objectives. However, in light of the subsidies prevailing prior to reform, consumer prices (regulated and non-regulated) are not necessarily expected to decline in the aftermath of reforms. Sector reforms are expected to promote improvements in the quality of service—i.e., reliability of supply, electric service coverage, responsive customer service, and a greater variety of service options. Furthermore, new investments by the private sector, relying on market signals, are expected to respond to demand in a timely, cost-effective manner.

9. Although still refining the new system, the process of reform in Norway, the UK, US, Chile, Argentina and Costa Rica appears to be more-or-less successful. Reforms in Peru have yet to be implemented, while those in Colombia and Jamaica are still being formulated. In time, quantitative measures (e.g., rates, costs of new supply, investment returns) will more fully reveal the impact of the reforms on the sector and country.

Country Reviews

10. Different approaches to reform divide the countries into two groups, albeit important differences in structure and regulatory framework exist within each. Norway, the UK, Argentina, Peru, Chile, and apparently Colombia—the first group—have opted for a sector with mostly separate generation, transmission and distribution functions, allowing private ownership of these functions. Dispatch functions are under the supervision of committee organizations—consisting of large generators, transmission owners,Sometimes distribution entities and even large consumers in some of the countries. Dispatch is focused on maximizing efficient least-cost power transfers over the system, as well as undertaking the fulfillment of contractual/legal obligations, administrative and billing functions.

11. Countries in the first group seek to establish a highly competitive generating sub-sector, using contracts between generators on the one hand, and consumers or distributors on the other, to establish market prices for electricity at the bulk level. Most countries in this group reserve price regulation for open access transmission and distribution grids, and for retail tariffs applied to most residential and other "captive" end-consumers. In addition, in Norway, and prospectively in the UK, electricity sales at all levels are (to be) deregulated. In these countries, the market and investment risks are mainly assumed by the generators.

12. In contrast, the countries in the second group—the United States, Jamaica and Costa Rica—have so far opted for only limited competition in the generation. This group allows IPPs to supply bulk power through a competitive bidding or negotiated contract process to the monopoly grid owner, with the purchaser assuming the market risk. These countries are following an evolutionary process of reform, but they have the potential to ultimately achieve a fully competitive generating wholesale market.

13. The following summarizes the reforms in the first group of countries on a country-by-country basis.

Norway

14. Norway's 1990 power sector reform law opened the sector to competition among all the
sector entities—public and private—at the generating and commercialization levels. Vertically-integrated companies must keep separate accounts for each business function. Non-discriminatory open access to transmission and distribution networks is ensured in the new system.

15. Prices in Norway are deregulated at the wholesale and retail levels. Regulated transmission and distribution tariffs reflect the cost of providing service, including the cost of capital for investment and a rate-of-return on investment. The competitive system has halted the price increases that previously characterized retail sales, and has enabled large consumers to achieve price savings by renegotiating contracts or switching suppliers. Captive end-users have not yet been able to utilize the new market system to their advantage, but innovative metering and information technologies are being applied to provide better information and access to various supply options.

16. The Norwegian reform did not require the divestiture of government-owned electric enterprises nor the break-up of integrated municipally-owned enterprises. The transmission assets and functions of Statkraft, the large, state-owned generating enterprise (with 30% of the country’s generating capacity), were spun-off to a new state-owned enterprise, Statnett. Statnett is responsible for the transmission grid’s operating and maintenance and dispatch functions, and the coordination of spot and export market transactions. There are no barriers to privatizations of any type of publicly-owned enterprise within the framework of the reformed power sector.

United Kingdom (UK)

17. The UK enacted a new Electricity Law in 1989, and the sector underwent an intensive restructuring in 1990 and 1991 to separate generating, transmission, distribution (i.e., “wires”) and commercialization functions; privatize state-owned assets except its nuclear power stations—which proved unattractive to private investors—introduce competition in generation and commercialization areas; and liberate the electricity markets and pricing mechanisms. Fine-tuning of the new system is still underway, and grid transactions and retail markets remain somewhat disorderly. Completely open access to transmission and distribution systems is provided on a non-discriminatory basis.

18. There is a non-regulated power market and a spot market for bulk power sales. Mid-sized and smaller customers will be allowed to purchase electricity on a competitive basis starting in 1994 and 1998, respectively. In the interim, secondary suppliers are allowed to sell electricity to “captive” customers in another supplier’s service area. Price cap regulation is used to reflect the cost of providing service at each regulated level, including factors for maintenance, capacity investments, efficiency improvements and a fair return on investment for transmission and distribution entities.

19. The National Grid Company (NGC) owns and operates the main transmission system, providing dispatch services under the guidance of an Operating Committee composed of its 12 Regional Electricity Company (REC) shareholders, who are in turn responsible for distribution (wires) and commercialization services. Any entity may supply non-regulated customers in any REC service area, with the proper Secondary Supplier license. All sector participants need a permit or license from the national regulatory authority, in which particular requirements made by the regulator are included.

20. There was a major restructuring of the regulatory authority for the sector, in which a strong, politically autonomous oversight and enforcement authority, the Office of Electricity Regulation (OFFER), was established by law. It defines operating standards and rates through the licenses it issues and modifies.

Argentina

21. Argentina enacted reform laws in 1991 and 1992 which incorporated lessons learned from the Chilean and UK reforms. Thus far, Argentina has established the most competitive and deregulated wholesale power market in the LAC region. The sector functions were divided into separate generating, transmission, dispatch and distribution
areas. Open access to interconnected transmission and distribution networks enhances competition between generators for distribution and large consumer bulk power markets.

22. In early 1994, the Government expects to conclude the privatization of about 12,400 megawatts (MW)—i.e., almost all—of its generating capacity. Most of the generation facilities, high-voltage transmission system, four regional transmission systems, and distribution systems owned by the Government were privatized in 1992 and 1993. A 95-year concession for Transener, the new corporate entity owning the national high-voltage transmission system, was awarded to an international consortium in 1993. Two provincial utilities (San Luis and Córdoba) have privatized at least part of their facilities, and—with the restructuring of federal-provincial relationships and responsibilities through legislative initiatives—other provincial utilities in Argentina are expected to follow suit. Public utilities are forced by the new system to be competitive in order to retain major customers who have access to the competitive bulk power market.

23. Argentina's open bulk power market, the Mercado Eléctrico Mayorista (MEM), started operating in 1992, with spot market prices set basically according to the short-run marginal costs of the system. Individual firm power contracts were negotiated between sellers and distribution companies and deregulated large users. Transmission and distribution tariffs are set by a new federal regulatory entity (also in place), using cost-based energy and capacity charges set at the various nodes of the system, plus the added-value of the service. Distribution retail tariffs included the value-added of the distribution service, plus the cost of the power purchased, and factor in investment costs and a fair return on investment.

24. A new corporate entity, the Compañía Administradora del Mercado Mayorista Eléctrico Sociedad Anónima (CAMMESA), is responsible for setting the dispatch guidelines and performing dispatch functions for the MEM. Its shareholders represent generators, transmission and distribution companies, large consumers and, for now, the Secretary of Energy. Fees are collected from system users to cover the costs of the dispatch services. The MEM uses a system of penalties and fines applicable to power generators or to power purchasers in the case where there is insufficient supply, due to unavailability of generation or due to under-estimated demand, respectively.

25. The new National Regulatory Commission (NRC) has considerable political and fiscal independence, and is already functioning. Its key duties are to set rates for the regulated transmission and retail distribution markets; set technical, operating and quality of service standards; oversee the functions and activities of regulated areas and players; and protect consumer interests. The Secretary of Energy, under the Ministry of the Economy, is responsible for policy-making for the power and other energy sectors.

Peru

26. Peru enacted a reform law in 1992 and, following closely in Argentina and Chile's footsteps, is planning to fully open its power sector to market competition and private investment. The sector was divided into separate operating functions. Non-discriminatory open transmission and distribution access are provided for in the new system. Most sector entities require a concession to establish generating, transmission or distribution enterprises.

27. Deregulated pricing is to be applied at the wholesale generating level, and large consumers will have access to this market. Regulated transmission tariffs will be based on the cost-of-service, using capacity charges for access to the system, and entry and exit nodes on the system to determine tolls for use of the system. Benchmark regulation for transmission and distribution tariffs will use an efficient enterprise model. Investment factors and a fair return on capital investments will be included in the pricing formula, which will be reviewed every four years.

28. The dispatch function for each regional transmission system will be overseen by a committee consisting of the major generators and
transmission owner(s), in accordance with national guidelines set by the regulatory authority.

29. A new Electricity Tariff Commission (CTE) has been established by law to set rate-making, technical, operating and service standards, and oversee regulated rates and sector entities. This entity is expected to be relatively independent, with its budget outlays recovered through a fee mechanism applied to regulated entities. However, the independence of the CTE in its tariff-setting function has been undermined by interference from the Government’s privatization agency, the Comisión de Privatización (COPRI). The full autonomy of the CTE is expected to be restored in the near future. A previously existing directorate under the Ministry of Energy and Mining has the authority to issue concessions.

30. The Government intends to deconcentrate the sector by function and geographical area as much as possible, in order to maximize the number of competing entities. Electrolima’s operations have been restructured into two distribution companies and one generating entity, and are the first assets scheduled for privatization. The divestiture of all of the government-owned utilities is scheduled to be initiated in 1994.

Chile

31. Chile’s extensive power sector reforms were initiated through laws enacted in 1978 and 1982. The Chilean reforms are often cited as an example of the world-wide reform movement and provided a model for subsequent power sector reforms in Argentina, Peru, Colombia and other countries. The reforms separated generating, transmission and distribution functions, established a competitive framework for the sector at the generating level, and opened the sector to private participation in existing and new projects and concessions. The Government may, however, undertake direct investments if required.

32. Consumers with requirements of 2 MW or more can negotiate supply terms with individual generators. Transfers between generators are priced according to the short-term marginal cost of energy plus a capacity charge and the cost of transmission losses to the delivery point. Bulk power prices to distribution entities are regulated at the nodes of the transmission system, and include the system’s 48-month, long-run marginal cost of generation, plus a peaking capacity charge and the transmission costs. Transmission tolls and tariffs include an access charge, and entry and exit fees for the transfer of power between specific nodes of the system. Retail rates are established on the basis of the price of power and energy taken at the node by the distribution entity, plus the value-added of the distribution service as provided by an efficient distribution enterprise model with similar features.

33. The Empresa Nacional de Electricidad S.A. (Endesa), the largest generator in Chile and the owner of the central interconnected transmission system, performs the dispatch functions for this system. Dispatch guidelines are provided by the Comisión Nacional de Energía (CNE) and an Operating Committee consisting of the largest generators on the system.

34. The establishment of the CNE in 1978 was a watershed in the reform movement for the power sector reform, as it planned and implemented the restructuring of the sector and its privatization with full political support. However, the political independence and authority, and fiscal autonomy of CNE and of the primary oversight agency, the SEC (Superintendencia de Electricidad y Combustibles), are currently seen as inadequate, especially vis-à-vis the strong political power wielded by some of the enterprises it regulates. A lack of coordination between CNE and SEC further undermines their political autonomy.

35. The Chilean reforms targeted and successfully transferred almost all generating and distribution, and all transmission, operations to the private sector during the course of the 1980s. The few remaining state-owned assets may undergo privatization in the future. However, one of the operating entities, Endesa, is seen as too large and powerful, owning both a major share of the generating capacity and the interconnected transmission system, and performing dispatch functions. Resulting disputes over monopolistic and
unfair practices by Endesa may indicate that sector reforms did not go far enough to ensure fully competitive conditions. Nonetheless, Chile’s reforms are seen as successful over the course of their implementation, and in the initial results vis-à-vis operations, service quality and rate impacts.  

36. The issue of concentration of ownership influenced reforms in Argentina and Peru, and as proposed in Colombia. These later reforms separate the ownership of transmission and generating enterprises. In addition, the issue moved Argentina and Peru to maximize competition by dividing large generators into smaller, comparably sized entities.

Colombia

37. Colombia’s reform, under legislative consideration since 1992, is on the same path as that of Peru, Chile and Argentina, albeit at a slower pace due to greater political constraints. These stem, in part, from resistance by the influential municipal utilities which are a significant force in the sector. The reform legislation proposes to restructure national utilities into separate generating, transmission and distribution entities; promote competition at the generating and distribution levels; and utilize market-based pricing for wholesale power sales. Recently, the Government reorganized and corporatized utilities under its control, using performance contracts with each of these to achieve better financial and operating conditions. Currently, utilities are required to separate their accounts for each service area.

38. Under the proposed scheme, consumers with requirements of 2 MW or more can buy power directly from generators at negotiated prices. Distribution and commercialization entities will buy power at negotiated prices, following basic guidelines set by the new Energy Regulatory Commission (ERC), and will be required to negotiate multi-year supply contracts with generating entities. The ERC will set cost-based transmission tolls and tariffs and retail distribution rates. It has already set up new rate-setting, subsidy program and cost-calculating methodologies for use by various system enterprises as the basis for regulated rates and fees.

39. The dispatch function is carried out by Interconexión Eléctrica Sociedad Anónima (ISA), a national generating and transmission company which is being separated into ISA Generation and ISA Transmission in 1994. ISA owns and operates the national high-voltage transmission system and is responsible for the grid’s central dispatch center. Dispatch is based on economic efficiency principles. A committee of generating, transmission (national and regional) and distribution entities will set up dispatch criteria and procedures, and oversee the dispatch functions.

40. The Government established the ERC in 1993, which assumed the responsibilities formerly assigned to the old tariff commission (Junta Nacional de Tarifas). A new government agency under the Ministry of Mines and Energy, the Unidad de Planeación Minero-Energética (UPE), was charged with creating an indicative sector expansion plan that emphasized the proposed project’s ability to adapt to changing economic circumstances. Under the pending Domiciliary Public Services Law (DPSL), a new Superintendent of Public Services will oversee the financial and operating performance and the quality of service of all public service entities. If found lacking, this agency will be able to intervene in the management of, or restructure or transfer, these services.

41. There have been various delays in the privatization and restructuring plans for some of the state-owned enterprises, including the separation of ISA into a distinct generating company and a transmission company and the separation of one of the main, state-owned regional utilities into distinct generating and distribution entities. Both of these restructuring efforts are expected to proceed in 1994. The initial schedule for the sale of the Betania hydro-power plant has been delayed. Ultimately, the Government intends to sell its enterprises, via public share transactions and a competitive bidding process for assets.

42. In the interim, presidential decrees issued in 1992 provide for access to the transmission grid and
negotiated power contracts for IPP electricity sales to third parties as well as to the interconnected system. Under these provisions, private investors are enabled to develop IPPs, as well as bid on various generating projects offered under Build-Own-Operate (BOO) schemes.6

43. The following summarizes the reforms in the second group of countries on a country-by-country basis.

The United States (US)

44. In the US, the evolutionary nature of power sector reforms contrasts with the more radical reforms undertaken in Norway, the UK, Argentina and Chile. Unlike those countries, the US Government has had only a minor role in commercial power sector activities. Most of the operating assets are in the hands of integrated investor-owned utilities. A large number of cooperatives and municipal utilities and a handful of federal agencies own most of the remaining assets.

45. Initially, in 1978 the US provided an opportunity for small non-utility generators (NUGs)—further restricted by fuel, efficiency, and cogeneration requirements—to sell power to utility systems at the utility’s avoided cost under the Public Utility Regulatory Policies Act (PURPA). Over the ensuing decade, NUGs grew in number, size and type, with state, and sometimes federal, regulators defining the parameters and pricing under which NUGs supplied public utility systems on a state-by-state or case-by-case basis.

46. Over time, regulators and some utilities viewed NUGs as a low-cost, reliable sources of power for utilities. State regulators increasingly required utilities to seek power increments on the basis of all-source competitive solicitations in which the utility would compare NUG proposals to its own proposal. Power purchase agreements (PPA) with NUGs—which were increasingly standardized and yet flexible to meet changing demand scenarios—normally allocated market risks to the utility and its consumers. Retail utility pricing continues to be based on cost-plus principles, but increasingly the bulk power supply markets are being driven by market pricing.

47. After years of debate, pressure from regulators, large consumer and ratepayer groups, including cooperatives—all seeking to maximize least-cost power options—and IPPs (of which many were utility subsidiaries), helped to pass the 1992 Energy Policy Act. The 1992 Act broadens PURPA’s initial aperture for competitive generation options by promoting the concept of competition at the bulk power market level, and authorizes the Federal Energy Regulatory Commission (FERC) to order mandatory open access to the transmission system as necessary in order to promote competitive bulk power sales.

48. Dispatch functions continue to be under the authority of the local utility or designated—as mutually agreed by participating utilities—power pool dispatch control unit. No major changes were required by either PURPA or the 1992 reform regarding the regulatory regime for the power sector.

49. Neither PURPA nor the 1992 Energy Policy Act required significant modifications of the electric power industry structure. Some observers predict that FERC’s enforcement of open access will eventually pressure many utilities to separate their generating, transmission and distribution activities in order to effectively compete at the generating level and to separate the increasingly deregulated generating function from the regulated transmission/distribution services.

Jamaica

50. In Jamaica, a 1992-1993 study financed by the World Bank concluded that the country’s power market was too small, and suitable sites for new generating plants too few, to enable full competition as in the UK and Chilean models. The study instead proposed that the Government restructure the monopoly utility serving Jamaica, the Jamaica Public Service Company (JPSCO), into a generating entity and an integrated transmission and distribution (T&D) company, with the T&D unit responsible for purchasing power from IPPs to meet
its demand requirements. The market risks would be borne by the T&D company. Jamaica’s reform and privatization plan for JPSCo are still evolving, but it is not expected that the sector’s reorganization will produce a large number of competing generators.

51. The tariff policy in Jamaica is being restructured to align retail tariffs and transmission fees and tolls on cost-of-service criteria. Increasingly, new generating capacity is expected to be added under competitive solicitations which will offer power from BOO or IPP-type schemes at competitively bid market prices to the T&D entity.

52. A new, politically independent Office of Utility Regulator (OUR) is in the process of being established since 1993, to set standards and oversee the quality of service, define technical and financial criteria, set cost-based tariffs for transmission and distribution services, and provide for equitable operating conditions for both regulated (T&D) and self-regulating (generating) entities. Expected pricing reforms will promote private participation in new generating projects.

53. Pending its formal restructuring, JPSCo has internally reorganized itself into distinct generating and T&D divisions. Although its generating assets are expected to be spun-off to a separate company and divested, JPSCo is currently promoting BOO schemes in order to stimulate private sector investment in new generating capacity for Jamaica. This effort has resulted in various opportunities for and new project proposals by the private sector.

Costa Rica

54. Costa Rica introduced limited reforms in its power sector without ownership transfers, initially through decrees issued in 1988 and 1989, and by law in 1991. The reforms opened opportunities to private investors in particular areas (cogeneration, coal, small- and mini-hydro projects), legally limiting each project to an installed capacity of no more than 20 or 30 MW, depending on the type, and the aggregate private generating capacity to no more than 15% of the public system’s installed capacity. Private generators can only sell to the Instituto Costaricense de Electricidad (ICE), the integrated utility which owns the interconnected grid and performs the dispatch functions.

55. The IPPs selling to the grid are offered a purchase price by ICE—including a basic price for energy and a capacity payment reflecting various technical and operating cost criteria for the entire system and based on the point on the system, voltage level, etc. at which the power is taken—which is derived from formulae established by the Servicio Nacional de Electricidad (SNE) regulatory entity. SNE issues final approval of the PPAs. A proposed new regulatory entity, "Autoridad Reguladora de Servicios Eléctricos Públicos" (ARSEP), is expected to reformulate the tariff basis for retail customers, to more closely reflect the cost-of-service provided. Subsidy programs are under review.

56. Regulatory reforms, pending in Congress since 1992, would establish a regulatory entity with greater authority over the sector. They would also codify existing practices and prior government decrees which have enabled private sector ownership and operation of generating facilities, on a competitive basis, within the indicated parameters.

57. The monopolistic ICE, an integrated, government-owned utility, continues to own the central grid and perform dispatch functions. Its structure was not altered by the reforms, nor are divestitures of ICE or other publicly-owned utility enterprises currently contemplated.

Conclusions

58. The review of reforms carried out or being implemented in countries covered in this study reveals that there is no unique recipe to improve the structural, financial and operating basis of the sector in order to promote financially self-sustaining, commercial power enterprises with a high quality of operating performance and the ability to attract private investors. Variations in the approaches to reform seem most closely linked to historical evolution and tradition, combined with the degree of crisis prevailing in the sector prior to reform, and the sector’s linkage to the political,
59. Nevertheless, the reforms demonstrate several common objectives: improvement of sector operating performance and reduction of the sector's dependence on public resources for current and/or future expansion needs.

60. Although the reforms have generally enhanced private participation in the sector, not all of them have prioritized this as an objective.

61. The study reveals some common factors and trends regarding the sector's structure and the reform mechanisms employed in several of the countries, as follows:

   a. The generation function is being distinguished from the transmission and distribution functions of the sector, either by breaking up sector enterprises into multiple companies with distinct functions; by opening only the generating area to private investors; or by using separate accounts for each function in the case of integrated companies;

   b. The recovery of costs of electric service is being emphasized, through the elimination of pricing distortions and subsidies, or by making the latter transparent when social/income equity policy objectives depend on subsidy programs, thereby shifting the focus to how the subsidies are to be financed;

   c. Electricity pricing at various levels is increasingly based on market principles, by: opening the market to competition, particularly in generation; allowing negotiated pricing for bulk power sales to large consumers and retail entities; regulating prices for transmission and distribution services, where monopoly conditions exist, based on benchmark regulation;

   d. Promoting efficiency and commercial viability in the sector via the creation of legal and regulatory frameworks which establish a stable, transparent set of rules under which sector enterprises can operate and regulators will be able to effectively oversee the sector and implement regulations to carry out reform objectives; and

   e. A suitable macro-economic environment moving in the direction of an open market economy—with sound corporate, investment and tax laws, monetary policies, and the growing presence of domestic capital markets—is seen as necessary to attract private investors to sector projects.

62. The review reveals that the implementation of the power sector reforms is a complex operation which requires ample participation by the majority of involved participants: i.e., political and economic agents of the Government; electric enterprise management, staff and related unions; and the general public whose benefits of reform are expected to be improved quality and reliability of service at reasonable cost.

63. Power sector reforms such as those pioneered in the LAC region are indeed providing useful examples and "lessons-learned" to other developing countries and economies in transition, and even to industrialized countries contemplating reform for the purpose of improving sector financial and operating performance and providing a suitable framework for increasing private participation and competition in the sector.
REFORMS AND PRIVATE PARTICIPATION IN THE POWER SECTOR OF SELECTED LATIN AMERICAN AND CARIBBEAN AND INDUSTRIALIZED COUNTRIES

I. Introduction

1.1 Reform of the power sector is being carried out or considered in most countries in the LAC region. The objective of reform is to attain reliable and cost-effective power supply to underpin development efforts. The introduction of competition and increased private sector participation are most often chosen as the means to achieve this objective.

1.2 The main body of this report presents an overview of the reform process and experiences of six LAC countries. As a reference, power sector reforms in three industrialized countries are also presented in this report. The nine countries which are the main subject of this report are: Argentina, Chile, Colombia, Costa Rica, Jamaica, Peru, Norway, the United Kingdom (UK) and United States (US). The annex provides a summary of the reforms underway in 13 other countries in the LAC region.

1.3 Argentina, Chile, Norway and the UK have legislated far-reaching reforms of the power sector, essentially to restructure the sector and establish a competitive system in generation and commercialization areas. Peru’s reforms are ongoing, and follow the same approach. Colombia is in the process of legislating a similar type of reform. Costa Rica, Jamaica and the US have undertaken less revolutionary, but nonetheless progressive reforms, the former two to allow new sources for investment in generating capacity, and the latter, to enhance competition at the bulk power level.

1.4 Argentina, Chile, Peru and the UK have undertaken complete or significant privatization of power sector functions—i.e., generation, transmission, distribution, etc.—through divestitures and the opening of new projects to private investment. Norway has not required the divestiture of publicly-owned utilities at any level but allows unrestricted private participation in all aspects of the sector. Costa Rica has opened the generating sub-sector to private sector ownership and operation of new generating projects, with some restrictions. Colombia and Jamaica are contemplating initiatives to privatize at least part of the sector through divesture and private ownership of new projects or enterprises. The power sector in the US has historically been mostly in the hands of investor-owned utilities (IOU), although a significant portion of the sector is owned by federal, state and municipal governments and consumer cooperatives. No major changes in ownership are envisaged in the near future.

1.5 Various background factors were examined on a country-by-country basis to assess their relevance to problems in the power sector or the overall economy. Often these problems provoked the reform and, in some cases, the privatization of the power sector to be undertaken. The background factors included the: type of political regime, economic and financial situation, market orientation of the economy, size—in terms of area, Gross Domestic Product (GDP) per capita—electric system features and operating characteristics, and the financial condition of the electric utilities. Of these factors, it was determined that the power sector's contribution to the economic and financial situation of the country was a primary factor in initiating the reform process, but the other features were less significant in this regard. (See Attachments One and Two).

1.6 A snapshot overview of selected power sector features for all of the countries as well as the general economic and political situation—including public perspectives on sector issues—are presented in Chapter II. Chapter III looks at the predominant driving forces and goals of reform, including assessments of government motivation and objectives of, and commitment to, reform. Chapter IV examines the means by which the reform objectives were carried out, covering the restructuring and reorganization of the sector aimed at promoting competition; and the legal, regulatory and pricing changes undertaken to support the new system. Chapter V reviews various privatization issues and how transfers in ownership were achieved. Chapter VI discusses how the privatization process dealt with environmental issues. Insofar as possible, Chapter VII reviews post-reform impacts on the sector and country, and Chapter VIII presents the conclusions of the study.
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II. Background Features of Reform

Power Sector Characteristics and Structure

2.1 Almost all of the countries studied had initially developed their respective power sectors through private enterprises, but by the 1970s, except in the US, the power sector had gradually come to be dominated by vertically-integrated, publicly-owned utilities providing bundled services for the supply, transmission, distribution and commercialization of electricity. Some government-owned generating plants (US, UK, Norway, Argentina, Peru, Colombia) functioned as bulk power suppliers, without distribution or commercialization functions.

<table>
<thead>
<tr>
<th>Country</th>
<th>Installed Capacity (MW)</th>
<th>1992 Generation (GWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Hydro</td>
</tr>
<tr>
<td>Argentina</td>
<td>17,801</td>
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</tr>
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<td>Chile</td>
<td>5,149</td>
<td>3,099</td>
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<td>Colombia</td>
<td>9,599</td>
<td>6,707</td>
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<tr>
<td>Costa Rica</td>
<td>1,009</td>
<td>754</td>
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<tr>
<td>Jamaica</td>
<td>796</td>
<td>24</td>
</tr>
<tr>
<td>Peru</td>
<td>4,101</td>
<td>2,395</td>
</tr>
<tr>
<td>Norway</td>
<td>27,261</td>
<td>26,988</td>
</tr>
<tr>
<td>UK</td>
<td>72,030</td>
<td>6,800</td>
</tr>
<tr>
<td>US</td>
<td>751,815</td>
<td>93,034</td>
</tr>
</tbody>
</table>


2.2 As seen in Table One, which presents some general features of each country's power sector, hydropower provides a large domestic energy source for Norway and all of the LAC study countries except Jamaica. When foreign credit became tighter and hydrocarbon-based fuels more expensive in the 1970s, these countries faced difficult choices between financing hydroelectric or less capital-intensive thermal-fired projects. The thermal projects were anticipated to have lower investment, but higher operating, costs and generally shorter lead-times. The LAC country governments generally gave preference to hydroelectric plant investments, even to the extent that many of the thermal power units did not get sufficient attention for proper maintenance and development as back-up and peaking power units. The failure to maintain thermal generating plants contributed to power supply shortages in Argentina, Colombia, Peru and Jamaica in the late 1980s and
early 1990s\textsuperscript{16} and subsequent widespread blackouts on a prolonged and daily basis.\textsuperscript{17}

\textbf{Related Economic and Political Issues}

2.3 All of the countries in this study experienced economic declines in the 1980s, due to inflationary pressures, rising interest rates, currency devaluations, or weakening industrial sectors and export markets in the aftermath of the 1970s' oil crises. For the developing countries in particular, however, the domestic impact of a worsening global economy made the planned upgrading and expansion of the electric sector difficult to sustain particularly as, even during periods of economic decline, demand growth for electricity generally exceeded the growth rate of the economy in several of the countries.\textsuperscript{18}

2.4 As a general practice, LAC governments used electricity rate subsidies aimed at residential and sometimes industrial consumers, and arbitrary rate-setting mechanisms, to reap political support. This practice—coupled with inadequate bill collection practices, high levels of technical and non-technical electricity losses, and the deteriorating physical condition of the power system—effectively reduced the self-financing ability of the utilities to cover the investment and operating and maintenance costs of the power system. With consumers beset by rising inflation and interest rates, and declining economic activity and jobs, most state-owned electric utilities lacked the political support to increase electric rates sufficiently to recover their costs of service and improve their financial health.

2.5 Industrialized countries tended to include subsidies for residential customers in the rates applied to industrial customers, although in recent years there has been an attempt in the US to phase out this practice.

2.6 The power sector's drain on public finances and foreign exchange, the increasing cost and share of public debt service to cover the sector's past foreign borrowings, and the prospect of new investment needs for the sector in the context of tighter international credit conditions led the country Governments to consider power sector reforms and privatization measures.

2.7 The public acceptance of the need for power sector reform and/or privatization in Argentina, Peru, Colombia and Jamaica has generally been facilitated by the prospect of resolving the problems affecting the sector, i.e., lack of service, limited service options, lack of reliability, blackouts, and so forth. For Chile, Costa Rica, Peru and the U.K., the transfer of the sector's future investment obligations to the private sector offered the prospect of greater public funds for the development of health, education, housing and other social services and, as a further incentive, popular capitalism. In the US, UK and Norway, rising electricity and/or fuel prices during conditions of excess supply escalated public pressure for policy reforms that embraced market competition, conservation, and clean fuel strategies for power generation.

\textbf{III. Driving Forces and Goals}

\textbf{Motivation}

3.1 In LAC countries, the primary motivating factors were the need to reduce the financial dependence of the power sector on fiscal resources and the need to improve the operating performance of the system. The industrialized countries—which had sufficient capacity to meet their requirements—were more focussed on finding the least-cost investment choices in the sector, with considerable emphasis placed on market-based pricing and more efficient utilization of energy for economic and environmental reasons.

3.2 Governments have been motivated to initiate power sector reforms by one or more of the following:

\begin{enumerate}
\item \textbf{a. Ineffective operation of the existing electric system, with subsequent power shortages and high costs associated with back-up power sources causing overall productivity losses to the economy, actual or potential constriction of economic growth, and inadequate levels of public service coverage (Argentina, Peru, Colombia, Jamaica).}
\item \textbf{b. Overwhelming debt burdens for the public sector associated with the power sector's previous development and/or future expansion requirements (Argentina, Peru, Colombia, Costa Rica, Jamaica);}
\end{enumerate}
Reforms and Private Participation, p. 4

c. General government strategy of privatizing public sector enterprises to reduce its involvement in commercial activities (Chile, Argentina, Peru, Colombia, UK);

d. Supply-side preferences and under-utilized energy conservation practices which contributed to sub-optimal investment options, over-consumption of energy, excessive price increases or environmental impacts (US, Norway).

3.3 In LAC countries and in UK, the power sector reforms occurred in the context of national reforms and restructuring of other sectors of the economy. Preceding reforms in other sectors generally helped to identify, and thus avoid, some of the experienced problems and mistakes when implementing power sector reform programs.

3.4 Although some of the LAC countries initially acted to implement reform on an interim basis through executive decrees, all of them—along with the industrialized countries—eventually opted for legislation which defined the scope of the reforms, the direction for implementation, and the authorities responsible for interpreting and implementing the reform laws.

Objectives of Reform and Privatization

3.5 The principal objectives of power sector reform and privatization have been to:

a. Reduce the commercial role of the Government in a fashion consistent with overall macro-economic policies, to free human and financial resources for other public sector development projects and programs which cannot attract private investment (all LAC countries, UK);

b. Remove the political agenda from entrepreneurial operations in order to: let commercial interest drive improvements in operating performance, efficiency, and profit levels; enable the stabilization of tariffs based on economic criteria; and increase the accountability of the operators of the system's enterprises (all countries except Costa Rica and the US);

c. Improve financial and debt conditions in the power sector to enhance the country's creditworthiness (all LAC countries, UK), by:

(i) Reducing the number of public enterprises to decrease associated public debt and debt service obligations, and reduce public enterprise operating deficits as consistent with overall macro-economic objectives (Chile, Argentina, Peru, Colombia);

(ii) Gaining immediate cash payments for privatized enterprises or assets to be used to reduce the sector's or public (especially foreign) debt (Argentina, Peru, Colombia);

(iii) Obtaining private sources for current and/or future project financing needs, and existing facility maintenance, operation and expansion needs (all LAC countries, UK);

d. Attract new sources of financing in light of the global competition for the limited resources available through multilateral development agencies (Jamaica, Argentina, Colombia, Peru, Costa Rica) and the tighter loan terms from commercial lenders.

e. Promote market-based pricing and competition to exert downward pressure on operating costs and tariffs, while maximizing quality of service or expanding the range of services provided (all countries).

Government Commitment to Reform and Privatization

3.6 In general, the more serious the problems of the power sector, and the more directly they affect the daily living conditions and economic output of the country, the stronger the political support for reforms is. Substantial deterioration of service, the inability to finance current or future projects, and the prospect of a significant impact on economic productivity are sufficiently serious factors which serve to consolidate the support of key government decision-makers for reform of the sector (Argentina, Peru, Colombia, and Jamaica).

3.7 The perceived level of commitment to enact and subsequently support reforms of the power sector is a critical factor for investors evaluating prospects in the sector. The most ambitious program—the transfer of virtually all government-owned commercial enterprises and functions to the private sector—is widely perceived as a major
accommodation of the Government to private investors and market forces, even though it is usually undertaken to transfer its financial and debt obligations related to the sector (Chile, Argentina, Peru, UK). The divestiture of Government assets usually helps (intentionally or not) to establish a more competitive foundation for new sector entities. Norway—although it did not divest public utilities—nonetheless created competition and private participation by completely opening the sector to private transactions, operation and investment.

3.8 Prior privatization experience in other sectors—especially those related to public service areas—as part of an overall macro-economic policy direction was seen by private investors as a more tangible commitment by the Government to substantive reforms of the power sector (the UK, Chile, Argentina, Peru, and prospectively, Jamaica and Colombia). That is, the precedents generally reassured private investors about the Government’s determination to provide private participants with a sound, transparent policy, legal and regulatory basis establishing an equitable, competitive commercial foundation. Such experiences also prepared the public for enterprise ownership changes, and provided the Government with a base of experience and knowledge to facilitate the transfer of ownership or transfer of functions from state-owned enterprises (SOE) to private entities.

3.9 The level of commitment at the top executive and ministerial level depends on how strong, consolidated and durable the political base of the Government is. In some cases, the Government’s will to implement substantive changes in the power sector—often perceived as a sacrosanct area of the economy—appears to depend primarily on the personality of a particularly strong Executive (the UK’s Thatcher, Chile’s Pinochet, Argentina’s Menem, Peru’s Fujimori) and the widespread political support for the Government’s agenda by unions, the industrial/manufacturing sector, local politicians and the general public.

3.10 Argentina and Peru—beset by economic and sector crises—and the UK, with strong executive leadership, pushed through legislation for structural and regulatory reforms in the power sector and promptly implemented them. Chile carried out its program of reform and privatization over the course of a decade. Reflecting its strong regional politics, Colombia is struggling in its legislative endeavors. It may de facto achieve reform targets via presidential decrees already in effect. Jamaica’s legislative efforts are evolving.

IV. Means of Achieving Goals

4.1 The various methods utilized in moving toward specific objectives include:

a. cultivating the support of potential opponents to reduce resistance to the effort;

b. corporatization of SOEs (UK, Chile, Jamaica) to make them function according to the needs of a competitive commercial enterprise;

c. breaking up vertically integrated enterprises by restructuring the power sector into separate generating, transmission, distribution (commercialization) functions;

d. deconcentrating and separating the sector utilities into distinct operating enterprises covering smaller geographical areas (Chile, Argentina, Peru);

e. providing open transmission access to third parties (Norway, UK, US, Argentina, Chile, Colombia and Peru);

f. reconstituting the pricing system to allocate economic costs of supply to the user (UK, Norway, Chile, Argentina, Peru);

g. revising or proposing revision of the regulatory system and oversight authority for the sector (all countries except the US and Norway);

h. taking actions to allow private sector ownership and operation of generating, transmission, dispatch, distribution and/or commercialization functions (all countries except the US); and

i. privatizing or proposing to privatize SOEs (all except the US, Norway and Costa Rica).

Reducing Resistance to Reforms

4.2 Cultivating the support of those individuals and organizations most affected by the proposed
changes was a major consideration in implementing power sector reform policies. Thus, various public relations efforts and incentive packages were formulated to co-opt the support of utility management, staff and unions.

4.3 In most of the countries which have undergone the privatization of SOEs, (UK, Chile, Argentina and, prospectively, Peru), the support of the utility management and staff was sought through various inducements—i.e., employee stock options, improved career and salary tracks based on worker performance, (re-)training, retirement and compensation programs. The prospects of greater management flexibility and responsibility in the new electric enterprises, with better professional and salary opportunities, also served to gain the support of the utility management to the reform program in Chile, Argentina and the UK. Peru, Colombia and Jamaica—now initiating or contemplating privatization—plan to use similar incentives to gain utility management and staff support.

4.4 In the UK and the LAC countries, influential unions initially opposed privatization on ideological grounds in general, since their influence would diminish under private ownership.

4.5 Union resistance in Chile delayed privatization efforts until protracted negotiations were concluded. In Argentina, the unions were strong supporters of President Menem, and considerable benefits, compensation packages and stock options for utility employees served to further reduce their opposition to the proposed reforms. In Peru, the economic and power crisis left little choice for the Government, despite union opposition, but to proceed with the privatization of its electric operating assets. Similarly, in Colombia and Jamaica, serious problems in power supply leave the Governments little recourse but to allow private sector participation in the electric sector. Divestiture of existing utility operations in these two countries has not been widely publicized, however, and union opposition has remained dormant. In Costa Rica, divestiture has not been considered in opening the sector to private participation, and thus the relevant unions have not had cause to raise or protest the issue.

Corporatization

4.6 Corporatization of utility functions, defined as the process of making an enterprise operate according to a profit-oriented, competitive commercial framework, is seen as an effective means—short of privatization—to remove political considerations from the decision-making arena. Removing the political agenda from SOEs enables management to use normal business practices and guidelines to streamline operations, reduce costs, and improve the enterprise's operating performance. Through corporatization, the Government aims to let management direct the company on a commercially-oriented basis, focus on the needs of customers served by the enterprise, and have the authority to internally reorganize, right-size, and redirect operations in order to be viable under competitive market conditions.

4.7 Corporatization is a logical step for preparing government-owned companies to compete in the marketplace (Chile, US, and now Jamaica), and to facilitate their transition to private ownership if the enterprise is targeted for divestiture. Moreover, corporatization before privatization will demonstrate the enterprise's competitiveness and thus allow a better basis for evaluating its sales value, for both sellers and prospective buyers.

Restructuring and Deconcentration of the Sector

4.8 In all of the study countries except Costa Rica and the US, the main thrust of restructuring the power sector was to break up the existing utility monopoly into separate generating, transmission and distribution entities. In some cases, however, one entity became responsible for more than one function (e.g., Chile, and proposed in Jamaica). In all of the countries which have already restructured, except for Chile, transmission activities are separate from generating and distribution activities, and generating and commercialization functions have to be operationally separate from each other.

4.9 In Norway and the UK, the distribution ("wires") function is further distinguished from the retail supply (i.e., commercialization) function. In Norway and as proposed in Colombia, owners which hold interests in more than one of the separate activities of the sector are required to have separate accounting books and legal records for
each of the activities. In Argentina, majority shareholders of generating or distribution enterprises can have minority holdings in the other sector function, but not in transmission. In Peru, only small isolated systems are allowed to have integrated functions: otherwise, the new Electricity Law separates generating, transmission and retail distribution functions.

<table>
<thead>
<tr>
<th>Country</th>
<th>G/T/D/CD</th>
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* Expected future structure: (G) Generation; (T) Transmission; (D) Distribution/Commercialization; (CD) Central Dispatch Function; (CDC) Central Dispatch Committee Organization; (B) Broker or Trader.
* ENDESA owned the central interconnected system until 1993, when it was spun-off to a new company, Transelco, which at the time it was created had the same shareholders as ENDESA (now named ENDESA Generation).

4.10 In Chile, the ownership and operating responsibilities of the central interconnected transmission system (SIC) were placed initially with the largest generating company, Endesa, although the rest of the sector’s entities were disaggregated. This arrangement, however, led to subsequent complaints by the other generators that Endesa had unfair marketing leverage and did not provide nondiscriminatory transmission access to its competitors in certain situations.30

4.11 Deconcentration of the sector, by functionally and geographically breaking up the integrated utility companies into a number of separate operating enterprises, is a means to ensure competition at the generating level, allocate costs for each level of service provided, and make each function more responsive to its customers’ requirements. Under the new sector framework in UK, Norway, Chile, Argentina and Peru, and as proposed in Colombia, all generators can compete on equal footing, regardless of ownership, to sell wholesale power to distribution entities and to large consumers. At the transmission level, mandatory open access guarantees the opportunity for market competition between the buyers and sellers of electricity. In the US, mandatory open access to the transmission system promotes competition at the bulk power level.

4.12 Although the sector in Costa Rica and Jamaica did not undergo the same type of restructuring, the opportunity for private sector participation in the generation was extended through provisions allowing IPPs to sell to the integrated monopoly.

4.13 The unbiased operation of the transmission system and of the central dispatch function are a critical component in assuring equitable access to the interconnected system for bulk power transfers. Generally, the dispatch entity in the study countries is responsible for maintaining the integrity of the interconnected transmission system and overseeing the dispatch of contracted power as well as economic power for the spot market. This entity determines the prospective and post-facto price of generated power in specified time blocks (usually 30 or 60-minute periods), and makes this pricing information available to power purchasers in...
advance. In power pools, the dispatch authority's non-partisan role and efficacy in coordinating the most economic power transactions in merit order to meet the needs of pool members and/or pool customers is the key to overall benefits derived from the pool configuration.

4.14 As the fulcrum upon which fair competition and economic dispatch is based, the load dispatch entity has been given a separate legal status in most of the reformed power sectors. In the UK, Argentina, Chile, Peru and Colombia, Operating Committees have been created to oversee or perform as the dispatch entity to ensure fair terms for all system participants. The Committee composition consists of, at minimum, the major generating entities on the interconnected system (e.g., Chile) or alternatively, the major retail supply companies (e.g., the UK). In some countries, the oversight committee includes representatives of generator, transmission, distribution and large consumer entities or groups (e.g., Argentina and Colombia).

4.15 In the UK, the National Grid Company (NGC) owns the transmission system, and its shares are held by the regional distribution entities. In Argentina, the high-voltage transmission system is owned by Transener, an independent corporation. In Chile, the largest generator, Endesa, also owns the central interconnected transmission system (although these assets were spun-off into a separate company, albeit with the same shareholder composition, in 1993). In Peru, the interconnected system will eventually be sold as a single, separate enterprise to a private operator. In Colombia, the Government is planning to separate the generation and transmission assets owned by ISA, but is likely to retain ownership of the interconnected grid for the time being.

4.16 In the US, the grids are owned by many utilities, cooperatives and federal agencies, each one responsible for their own portion of the system. As provided in the 1992 reform law, mandatory open access to the transmission system promotes competition at the bulk power level.

4.17 In the case of Costa Rica, power transactions over the interconnected grid remain under the control of the government-owned utility, ICE, to which publicly-owned and private generators alike sell power.

4.18 In Jamaica, the current restructuring plan places the government-owned JPSCO's generating functions into a generating company (GENCO), and its distribution, transmission and dispatch functions into a separate entity (DISCO). A new regulatory entity would oversee the dispatch functions performed by the DISCO entity, and any generating entity would be able to sell power to the DISCO through negotiated contracts which would specify transmission and dispatch operational requirements and pricing.

4.19 In Norway, the grid is 85% owned by Statnett, a state enterprise established in 1992 to take over the transmission ownership and dispatch functions previously held by Statkraft, a state-owned company which remains the largest generator in Norway.

4.20 Norway's Power Pool—consisting of only the largest generators in the pre-reform period, but expanded under the reforms to include all generators and suppliers—was formed originally to undertake spot market transactions. The Power Pool functions became part of Statnett's jurisdiction in 1993, but the generators in the pool are still involved in the oversight, coordination and management of power transfers over the interconnected system.31

4.21 In the UK, all power in the pool is channelled through a mechanism which has generators competitively bid to supply power to the grid at stated "pool input" prices, and suppliers (i.e., distributors) purchase power at specified pool output prices, detailed in a comprehensive Pooling and Settlement Arrangement agreed to by each participating party. The NGC sets prices for the pool on a 30-minute basis for 24 hours in advance, and publishes these daily to allow buyers/traders to plan their purchases. The prices include a capacity charge to cover the Loss-of-Load Probability and Value-of-Lost-Load factors.

4.22 In the US, although most utilities generally perform their own dispatch, the non-compulsory power pools each have a central dispatcher which controls, in part or wholly, the power generated from designated units serving the pool. Normally,
utility members are represented at the pool dispatch center. Most pool transfers are for economic dispatch of power over the combined area of its pool members on a regular basis, or used for transfers to meet peak load or back-up power requirements.

4.23 In Argentina, the MEM wholesale power spot market is based on the bid amount of power that generators can make available to the system, at proposed prices based on their short-run marginal cost (SRMC) of generating and transmitting to the system. The actual price paid is that of the last unit providing power on an economic merit order basis. The system dispatcher may also call for power to be bid in for stand-by or back-up purposes, for which a capacity payment is made, and an energy payment is also paid if power from the unit is actually taken. The purchasing entity pays for the transmission services from the system node of origin to the delivery node. Penalties and compensating mechanisms are activated whenever the system has a supply deficit.

4.24 On the retail side, Norway, the UK, Chile, Argentina and Peru have established a process for licensing new distribution concessionaires and/or power traders (UK and Norway).

Legal Framework

4.25 All of the countries determined that a new, transparent, commercially-oriented operational basis and reconstituted regulatory regime for the sector, codified in law, was necessary to attract private investors. Argentina, Chile and Peru have already put into place a new operating and regulatory regime for the sector, while Colombia and Costa Rica are now contemplating legislative proposals to carry out similar initiatives. In Jamaica, a legislative proposal for a new Electricity Law was being formulated during 1993, even while a new regulatory entity was concurrently being established.

4.26 The decrees or laws defining the organizational structure and jurisdiction of the regulatory regime for the sector (UK, Chile, Argentina, Peru), generally indicate the:

a. Authorities or agencies responsible for specific policy-making, rule-making, tariff-setting (including transmission tolls or transaction fees and retail electricity tariffs), quality control, planning and data collection functions;

b. Process and authorities governing the issuance of concessions; spot market (wholesale power) pricing; the general coordination and technical operating guidelines for the interconnected system and the economic dispatch of electricity;

c. Process by which individual regulators will be selected, the minimal requirements for the position of the regulators' appointment;

d. Fiscal support of the regulatory entity, through user fee systems and/or separate budget authority.

4.27 The electricity reform laws generally set up an outline for the establishment of a new structure for the sector, featuring separated operating functions, competition, and new marketing and pricing mechanisms. The reform laws defined the principles on which new regulations would be established by the designated regulatory authority, governing the issues of concessions or sector entry; operating and technical criteria under competitive and captive market conditions; pricing of services at all levels; and the rights and responsibilities of suppliers and consumers. The legal directives endeavored to establish an independent regulatory entity with sufficient resources (financial, technical and personnel) and authority to carry out its assigned tasks in a non-political, non-discriminatory, economically sound manner.

Regulatory Framework

4.28 In most cases, establishing a more independent regulatory authority was viewed as necessary in order to implement, oversee and enforce the reformed sector. Therefore, an important feature of the new regulatory framework was to give the regulatory authority functional independence—accomplished through the selection process for regulators, support by high-level professional staff, adequate compensation, autonomous budget authority, and competition in the hiring of consultants—to insulate it from political pressures exerted by the central government and by regulated companies, and thereby ensure rate-making functions followed pre-
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determined economic criteria. However, the results are far from certain as to the effectiveness and autonomy of the regulatory entity.

4.29 Chile has failed to achieve a strong, independent regulatory entity. The Ministry of Economy retains final authority over rates; the Comisión Nacional de Energía's (CNE) integrated political composition, which initially enabled it to undertake major sector reforms in the 1980s, has become a liability over time, lacking a core of unified support from its Council members. It currently lacks the ability to independently analyze issues and make non-partisan decisions concerning the sector. Likewise, the Superintendencia de Electricidad y Combustibles (SEC) has insufficient resources, depends on the Ministry of Economy for its budget, and is unable to effectively carry out its oversight and enforcement role, particularly vis-à-vis the influential major generating and distribution companies.

4.30 It is not yet apparent whether Argentina, Peru, and the UK—the only countries besides Chile to have enacted reform laws affecting the regulatory regime—have selected effective means of achieving regulatory independence. Some of the laws constrain staffing levels, budget increases, and so forth which, as is the case in Peru, may result in the over-reliance of the regulatory entity on external sources for analysis and recommendations. In some countries, the selection process for the regulators appears too closely associated with political sponsors to foster independent perspectives.

4.31 Thus far, Argentina may offer the most viable regulatory structure for the sector. Its regulatory selection process is relatively free of partisan politics. The regulatory entity is given considerable independence from other political agencies. It is partially funded by fees collected from generating, transmission and power purchasing entities, and it prepares and submits its own budget. Adequate professional staffing levels and competitive salary levels are provided to make the entity self-sufficient in carrying out its duties.

4.32 The proposed regulatory reform laws pending in Costa Rica would place the regulatory agency under the authority of the Legislative Assembly, which does not necessarily insulate it from political influences.

Electricity Pricing System

4.33 The study countries have introduced new pricing systems which aim to encourage efficiency in plant investment and operations by relying, to the extent possible, on competitive market forces for pricing electricity at the generation level, and on regulation for setting electricity transmission and distribution (i.e., network and captive end-consumer) prices. However, each country has utilized different modalities for both deregulated and regulated pricing schemes, related to the degree of vertical and horizontal disintegration of the power sector structure and to the price-setting tradition in each country.

Generation and Transmission Pricing

4.34 In Argentina, Norway and the UK, the prices of firm bulk electricity delivered by the generators at a given point of the high voltage grid are freely negotiated between the generators and the distribution companies. The price for the latter is the sum of the negotiated purchase price plus the regulated transmission toll to be paid to the transmission company for wheeling the electricity from the generator delivery point to the distribution receiving point. Prices of bulk power transfers among generators and between generators and a power pool are driven by the marginal costs of power and energy on a spot market basis. IPPs may sell to the grid or negotiate supply contracts with large consumers, commercialization entities and, in Norway and eventually in the UK, with retail customers.

4.35 In Chile, final consumers larger than 2 MW are permitted to negotiate prices with generators for the delivery of bulk electricity at a specified node of the transmission system; in Peru, the deregulated prices for power transactions apply for consumers that are not public service distribution companies or other generators, and that have competitive supply options. In both Chile and Peru, regulated node prices are used for the sale of firm bulk power by generators to distribution companies, with the generator paying a regulated charge for wheeling services to the transmission company. Prices for inter-generator bulk power transfers are driven by
the marginal costs of power and energy on a spot market basis. Node prices reflect the long-run marginal cost of energy (48 month) calculated on the basis of a least-cost generation investment program plus cost of gas turbine capacity to cover peak demand.\textsuperscript{35} IPPs can freely negotiate bulk power supply contracts with large consumers in both of these countries.

4.36 In the US, Costa Rica, Jamaica and as proposed in Colombia, different market situations exist. In the US, IPPs negotiate bulk power supply prices/contracts with vertically-integrated utilities, or provide bulk power supplies to utilities through a competitive solicitation process. IPPs or utilities also supply distant bulk power markets under negotiated prices, wheeling the power through the transmission system of other utilities (functioning as common carriers), and paying negotiated tolls—which have already been or are later formally approved—for the wheeling service.

4.37 In Costa Rica, ICE—the integrated power utility—proposes a purchase price to the IPPs based on formulae established by the regulatory entity, SNE. The contract price for power sales considers the cost of providing power to the delivery point plus a negotiated rate-of-return on investment costs and a risk factor.

4.38 In Jamaica, BOO-type generators now negotiate prices with the monopoly utility company, which—if the sector is restructured as currently proposed—will become a regulated transmission-distribution company.

4.39 In Colombia, existing decrees permit IPPs to sell bulk power to large consumers and vertically-integrated power utilities at negotiated prices; proposed legislation targets the introduction of deregulated bulk power prices between all generators and power purchasing distribution, commercialization and non-regulated (i.e., 2 MW or more) consumers.

Retail Distribution Prices

4.40 Except in Norway and in the UK after 1998, post-reform retail electricity distribution prices in the study countries are regulated to allow cost recovery—including profits—for the supplier and to protect the final consumers from monopolistic abuses. As a proxy for competition in Argentina, Chile and Peru (and as proposed in Colombia), the price to final consumers is the sum of the price paid for the electricity by the distribution company—including generation and transmission costs—plus the benchmark-based value-added of distribution for an efficient enterprise model. The value-added of distribution has three basic components: (1) system investment,\textsuperscript{36} operating and maintenance costs; (2) administrative, billing and other consumer-related costs; and (3) losses for model distribution system components, with the optimum size and operational efficiency in concession areas classified according to their consumer density (high, medium and low). The value-added of distribution is calculated every four years and, in the interim, distribution companies can automatically adjust tariffs using approved formulae with indices for materials, equipment, labor, etc.

4.41 In the UK, the retail tariffs are subject to cap regulation in which the prices are pegged to the "Retail Price Index (RPI) minus X" formula, where X is a factor intended to capture efficiency gains on the distribution side after considering demand growth and capital investment requirements of the electricity supplier. Costs beyond the control of the supplier (e.g., generating supply costs) are incorporated into a Y factor, which is simply passed on to ratepayers. In the future, the UK reform allows final consumers to obtain electricity and negotiate purchase prices directly with generators, through electricity brokers and traders who would also arrange the delivery of the electricity through the "wires" service companies.

4.42 The US employs rate-of-return regulation for electric power utilities, with about 210 IOUs providing between 75-80\% of the generating capacity and end-customer service. Consumer advocacy and ability to intervene in rate hearings play a considerable role in setting electricity retail prices. Costa Rica basically follows the US rate-making approach, but considerable cross-subsidies have been applied. Pending legislation would introduce public rate hearings. Jamaica intends to compose retail prices by adding the costs of transmission and distribution services—including investment costs and a return on capital—to generation prices, which would include energy and capacity elements.
4.43 Retail prices for captive consumers in Norway are set through formulae, but technically all consumers can purchase electricity from any generator or supplier at negotiated prices. The information and metering systems needed to enable small end-users to take advantage of the deregulated supply market—normally through electricity brokers or traders—are now being provided through the local electricity suppliers, which are required to provide service to customers in their designated area who request it.37

Subsidies

4.44 Although the LAC study countries aspire to recover electricity service costs through economic-based pricing, subsidization of low-income consumers is still accepted as necessary for income distribution goals and socio-economic equity. Subsidies have generally been reduced to some extent. The breakdown of the vertically-integrated utility structure has removed most cross-subsidies. Remaining subsidies are now required to be directly transparent and measurable. This has brought into focus the issue of how to finance them.

V. Privatization Issues

The Aim of Privatization

5.1 Private sector participation in the power sector was seen as a means to redress inefficient operating and investment practices (UK, Argentina, Peru, Colombia, Jamaica), and tap into new sources of investment needed to expand or improve the system either immediately or for future needs (all countries).

5.2 Private sector decisions on utility investment and operating management issues are normally based on commercial criteria, rather than on political criteria, thus fostering more stringent financial and operating performance standards for the sector than previously had been applied.

Intended Scope of Privatization

5.3 Except in Costa Rica, the US and Norway, where divestiture of government assets was not an issue of power sector reforms, the transfer of government-owned utility assets to the private sector has entailed or will cover:

a. The operation, maintenance, and financial responsibility for all or most of the sector’s enterprises and functions—i.e., power generating, transmission, distribution and commercialization;34

b. The construction, financing, and operation of all or most new generating projects, and expansion or upgrading of transmission and distribution systems;39 and

c. Rehabilitation and environmental retrofitting of generating facilities (Argentina, Colombia, Peru, Jamaica, UK).

5.4 Colombia, Costa Rica and Jamaica have also undertaken initiatives that, without ownership transfers, allow private participation in the sector through BOO schemes in generation. This approach did not put private investors on an equal footing with SOEs, but nonetheless required changes in the existing legal and commercial basis to encourage private investment in such ventures.

5.5 In Argentina, Chile and the UK, where generation has mostly—but not completely—been privatized, and in Norway, where mostly public enterprises operate in generation, distribution and commercialization areas, transparent rules established equitable operating and pricing fundamentals for all entities, regardless of ownership.

Reorganization and Transfer of Government Assets

5.6 Prior to offering utility assets to the private sector, Governments reorganized the assets or the functions of state-owned electric enterprises to:

a. Reduce the size of the operating units or organize them by function or geographical region, thereby making them easier to sell (UK, Chile, Argentina, Peru) and maximizing the number of competitive participants in the post-reform sector (Argentina, Peru).

b. Improve operations and management to enhance the value of units to be sold, including the:
(i) reduction of overhead and operating expenses of the entity (Chile, Jamaica, and, to a minor extent, Argentina and Peru); and spin-offs of non-operating assets (Chile);

(ii) corporatization of the power utilities, with stocks initially held by the Government. A new Board of commercially-oriented Directors and a new set of corporate bylaws and goals offer fresh perspectives, motivation and opportunities for the entity to find a *modus operandi* under the new, competitive rules;

c. Sell units as a package—often coupling more attractive businesses with less attractive units—for maximizing overall value or reducing the number of individual divestitures (Argentina). In Argentina and Peru, these operating assets have been kept basically as they were, with only minor changes.

d. Separate the operating businesses that the Government wishes to retain under its control from those that it wishes to divest. For those enterprises to be divested, often new corporations were established to "hold" the ownership shares on an interim basis (Chile, Colombia, UK).

5.7 Transferring state-owned operating assets to the private sector was accomplished through:

a. Sales of shares in the stock market (Chile, Argentina);

b. Competitive bidding for existing assets or enterprises (UK, Chile, Argentina, expected in Peru in 1994 and in Jamaica in 1994 or 1995);

c. Open or closed bidding for new concessions (Chile, Argentina, Colombia);

d. Sales of shares to public or utility enterprise employees (UK, Chile, Argentina, and being prepared in Peru's privatization scheme);

e. Sales of shares to regional investors (Chile, contemplated in Argentina for particular cases).

5.8 Governments were concerned with establishing a positive country investment climate to ensure that the transfer of its utility assets or functions to the private sector proceeded smoothly. Investor interest, in turn, depended on various factors affecting their level of confidence in the Government, including:

a. The credibility of the Government's efforts to liberalize investment, corporate and currency laws and reduce tax burdens. In the UK and Chile, this credibility was well-established before national and regional electric enterprises were divested. In Argentina, extensive macro-economic restructuring, reform and privatization of major industries reassured investors of the commitment to change. In Peru, Colombia and Jamaica, privatization initiatives for the power sector may be hindered by the smaller market size and perception of political and/or economic instability.

b. A transparent, comprehensive legal and regulatory basis which sets equitable rules of the game for all sector participants. In Chile, Argentina and Peru, the terms for electric concessions and operations were, for the most part, clearly established prior to soliciting bids for particular business assets. Colombia and Jamaica have yet to settle many of these issues and enact their resolution in a legal or regulatory framework. Jamaica and Costa Rica have provided clear terms for the limited private participation that is already in place, for private sector development of power projects. Colombia has issued decrees that establish a basis for private power projects and authorize the relevant Government agencies to approve private power projects.

c. Electric power pricing levels, estimated profit margins and confidence in the fairness of competitive bidding processes. Private investors need an established, transparent basis for pricing electricity services, as well as clearly defined terms for bidding documents for SOEs. A private entrepreneur's willingness to invest in a power project may hinge on having a secure PPA with a creditworthy buyer—which in some countries may be mostly publicly-owned entities—whether the power sale is enabled via a service concession, open access to the transmission system, or sales contracts with specific consumers or utilities.

d. The agreement of the management and staff of the electric enterprises which are being
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...reorganized or privatized, and a widespread level of public support for the initiatives.

e. The existence of a domestic capital market seeking investment opportunities. In Chile and the UK, the financial institutions managing pension funds proved to be an important source of private capital available for long-term investments in the power sector.41

VI. Regard for Environmental Criteria

6.1 Previously existing environmental regulations for the power sector were largely ignored under government utility ownership (Argentina, Peru, Colombia, Jamaica). Moreover, developing countries were leery of the increasing costs invariably associated with stricter environmental regulation.

6.2 Although they were neither a primary cause nor a result of power sector reforms, heightened concern about environmental and project-related social issues led to an effort by the governments to enact stronger environmental regulations and/or enhance the jurisdiction and authority of environmental protection agencies. Such efforts have tended to coincide with sectoral reforms and macro-economic restructuring programs in the UK, Norway, Chile, Argentina, Peru, Colombia and prospectively in Jamaica.

6.3 In LAC, the study countries have implemented or are planning to implement new environmental policies, restructure environmental protection regulatory institutions and tighten pollution control standards. Environmental impact assessments (EIA) for new industrial facilities, as well as resettlement of populations displaced by such projects, are a key component of siting criteria; acceptable emissions level of various gases and effluents are generally becoming stricter, with new monitoring and reporting requirements; and enforcement activities are being emphasized and funded. In Norway and the US, environmental goals were not directly targeted as part of the power sector reforms.

6.4 Some of the countries (e.g., Argentina) have created new, high-level government agencies to promote, implement and enforce new standards, guidelines and regulations, generally for all industries and sectors, although some sector-specific tasks—e.g., initial review of EIAs—may be assigned to sector authorities. Others have initiated policies to strengthen the existing entity (e.g., Chile) by giving it more support on a political, budgetary and/or technical level. Both approaches require recruitment of technically-oriented staff, with major training programs to prepare the staff for their new expanded duties; and acquisition of the equipment and systems necessary to support them. Although these are positive initiatives in the environmental arena, many obstacles remain, and the caliber and political effectiveness of the environmental administrators are critical in carrying the momentum forward in the face of competing priorities and economic constraints.42

6.5 Most of the environmental concerns in the power sector centered on coal-fired generating plants, which are viewed as significant contributors to global climate change phenomena due largely to their significant level of ozone-depleting carbon dioxide emissions. Fossil-fired plants produce sulfur dioxide and nitrogen oxides, which, if the plants are not equipped with modern pollution control technologies, are seen as major causes of acid rain and local air quality problems. In the UK, stricter environmental standards promulgated by the European Commission imply significant new pollution control investment costs for the existing thermal-fired power stations, which are now under private ownership.43 Large hydro-electric projects are now critically appraised for their ecological damage and social/resettlement costs.44

6.6 The environmental initiatives have mainly impacted power sector reforms as environmental externalities become internalized as a cost of doing projects in the sector. These environmental investment costs, and risks, were de facto shifted to private investors under the power sector's reform and privatization programs in the UK and LAC countries, for both existing and future facilities. In turn, some private power developers, in contracts which define the risks assumed by the supplier of power (private developer) and the client (power purchaser), allocate environmental and labor risks to the customers.

6.7 Concurrently with the tighter environmental standards and beefed-up enforcement activities, all
of the countries have placed greater emphasis on energy conservation, demand-side management, more sophisticated resource management, and utilization of modern, efficient, "clean" technologies (Chile, Argentina, Peru, Colombia, Costa Rica, Jamaica, Norway and the UK) as the best means to preserve the environment and reduce the costs of meeting demand. In the US, the Energy Policy Act of 1992 included measures to promote the development of new, cleaner and more efficient technologies as well as conservation measures.

VII. Post-Reform and Privatization Evaluation

7.1 To evaluate the outcome of the reform effort, this report has focussed on competition, private sector participation, de-regulation, regulatory autonomy, anti-monopoly mechanisms, impact on electricity prices and quality of service, and projected new investment in the sector, all of these factors induced by the reforms. (See Attachment Three.)

Competition

7.2 In all of the countries, competition at the generating level is increasing, albeit at different speeds. Increasing competition has enabled them to achieve the potential for more economic supply options and/or improved overall reliability of supply. In the UK, Chile and Argentina, there has been a considerable deconcentration of the sector as the number of generators and distribution utilities significantly increased.\(^\text{45}\) The same outcome is envisioned for Peru and Colombia.

7.3 All of the countries in this study, except Norway, have increased or are expected to increase the number of entities participating in the electric sector. In Norway, mergers to achieve more competitive positions in the sector have reduced the overall number of participants.

7.4 In the US, the 1978 PURPA initiative led to a significant level of non-utility competition in the generating area, with more than one-half of the new capacity in the country provided by non-utility generators in the late 1980s. The 1992 Electricity Policy Act will further encourage competition between generators in the wholesale power market through its open access guarantees.

7.5 In Costa Rica, and prospectively in Jamaica, there has been a modest deconcentration of the generating sub-sector, which implies some competition in generation. Power (unless it is from a captive self-generating plant) is sold to a national power pool via the interconnected grid, which dispatches the load in economic merit order. As a result, the overall deconcentration of the sector is focussed solely on generation.

7.6 The most visible problem related to competition has arisen in Chile. Some cases related to anti-monopoly and anti-competitive issues have been brought before various arbitration and civil courts for resolution. Despite the dismissal of the allegations by the authorities, the target of the lawsuits, Endesa, voluntarily spun-off a separate company to hold its high voltage transmission assets in March 1993, in order to separate these areas of business and deal with criticism that, in its transmission role, it discriminated against generating competitors requesting wheeling services. However, the new company, Transelect, initially has the same shareholders as Endesa's (now Endesa Generation) holding company, and it will take time before the make-up of the shareholders of these two companies differ from each other significantly.

Private Sector Ownership

7.7 Private participation as a total of all generating, transmission and distribution functions involved in providing public electricity service has increased considerably in Chile, Argentina and the UK. Chile has privatized around 85% of its generating capacity, 95% of its transmission, and 100% of its distribution assets. Argentina has privatized about 40% of the state-owned generating capacity, 100% of its high-voltage transmission, and 100% of its distribution.\(^\text{46}\) The UK privatized all but about 16% of its generation, and all of its transmission, distribution and commercialization functions previously under the central and regional board authorities. As of mid-1993, 4% of Norway's commercialization functions are in private hands, reflecting the arrival of new independent traders in the marketplace.
7.8 For Peru, Colombia, and Jamaica, it remains premature to evaluate the degree of private sector ownership or involvement in the electric sector since these countries are still in the initial implementation or planning stage. Peru intends to privatize all of its state-owned assets—i.e., practically the entire sector. In Costa Rica, ICE purchased power from private generators with a total installed capacity of 8.8 MW in 1992, representing less than 1% of the interconnected system’s installed capacity. ICE has concluded or is negotiating additional PPAs with private generators that would bring about 73 MW of capacity online by 2001. Currently, 38 proposals for 254 MW have been submitted to ICE.47

Degree of Deregulation

7.9 In Chile, Argentina, Peru, the UK and Norway, the generating sub-sector is or will be largely self-regulating, with basic concessions and technical operating standards as the main requirements for the generators. Regulation in these countries is focussed on transmission and distribution operations—commonly considered to be natural monopolies. Regulation of the transmission and distribution functions is generally aimed at providing substitutes for market-based competition via use of efficiency models, pricing and access policies for power transport over the wires, and competition for the large consumer market. In the UK and Norway, the commercialization activities require a license, but pricing for the end-consumer will increasingly rely on market forces, not regulated rates, as the retail consumers are enabled to shop around and negotiate their own electricity purchase terms and pricing. In the other countries, retail distribution tariffs will remain regulated.

7.10 The trend of the overall outcome of the reforms could be qualitatively visualized in the figure below.

![Diagram: Power Sector Reforms Tend to Decrease Vertical Integration and Increase Private Participation]

The arrows indicate trend of outcome

1-Argentina 2-Chile 3-Colombia 4-Costa Rica 5-Jamaica 6-Peru 7-Norway 8-United Kingdom 9-United States
Autonomy of Regulatory Entity

7.11 In Chile, CNE and SEC were structurally set up as separate, independent agencies with their own areas of jurisdiction, but both are supported through Government budget authority, rely on ministerial support for policy proposals, and lack sufficient in-house technical and staffing capability to fulfill their respective mandates. There is also a lack of coordination between the two regulatory agencies. The Government is currently contemplating improvements in the regulatory regime, mainly to strengthen its authority and better shield it from political pressures and influence from regulated enterprises.

7.12 In Argentina, an effort was made in the regulatory reform law to make the regulatory authority (NRC) organizationally separate and to have a considerable degree of autonomy from the policy-making Secretariat of Energy. The regulatory agency was also given legally defined principles upon which regulations and pricing formulae were to be promulgated. Although there is a formal relationship between the NRC and the Secretariat, and both are under the Ministry of Economy and Public Works and Services (MEyOSP) it was not intended that this relationship would impair the NRC’s autonomy. The selection of three of the five Commissioners of the NRC is based on a public solicitation of applicants, who are then qualified as competent professionals and subsequently nominated for congressional approval by the Executive Office/MEyOSP. The remaining two Commissioners are selected and nominated to Congress by the Consejo Federal de Energía Eléctrica (CFEE), which mainly consists of representatives from provincial governments. The CFEE has thus far failed to reach a consensus on its two candidates. The Government has placed its three nominees on the NRC which, now having the required quorum of three members, is actively setting up its internal procedures. Time will show whether this system works well or not.

7.13 Peru’s new Electricity Concession Law lays down the principles for the operating structure of the sector, concession and pricing guidelines. The Comisión de Tarifas Eléctricas (CTE) is set up as an independent regulatory authority, but in the past it was often overruled by the Economics and Finance Ministry for political purposes. The Ministry of Energy and Mining’s (MME) Dirección General de Electricidad (DGE) reviews the CTE’s decisions. However, the Government’s Privatization Committee, COPRI, has not upheld CTE’s tariff increase program, and has generally made the state-owned utilities raise tariffs less than the maximum rate targeted by the CTE. In addition, rate increases were suspended by the Government during a state of emergency entailing both political and economic stability. However, the Government is expected to restore CTE’s full authority regarding tariffs. Otherwise, it remains to be seen whether “emergency” conditions will continue to impede, even temporarily, adjustments made on economic and technical bases by the CTE, or whether CTE will be able to distance itself from political and external circumstances.

7.14 Colombia has undertaken various initiatives to strengthen the regulatory entity, abolishing the National Energy Commission and the Tariff Commission and substituting two new entities, the ERC and the planning unit UPE. Currently, Colombia is undertaking an effort to strengthen the regulatory authority—through the Domiciliary Public Services Law (DPWSL), now being considered by Congress—but incorporates a team of ministers at the top level, which may threaten the political independence of the regulatory entity.

7.15 In Jamaica and Costa Rica, reforms to modernize and establish a stronger, more independent and politically insulated regulatory authority are in the formulation process (Jamaica) or approval stage (Costa Rica’s proposed “Ley de la Autoridad Reguladora de los Servicios Públicos”, or ARSEP Law). Unlike Costa Rica, where the sector’s oversight authority has largely remained unchanged, Jamaica has frequently revised the regulatory organization for the power sector, particularly over the past decade, shifting various jurisdictions between ministries. The latest change transferred the main concession and rate authority from the MME to the Ministry of Public Utilities, Transport and Energy, which, however, is considered to be too “cozy” with the utility it regulates, JPSCO.

Anti-trust Regime and Arbitration Mechanisms

7.16 In order to safeguard the new competitive basis for the power sector, the countries which have
already implemented the reforms to set up the new system (Chile, Argentina) use the regulatory entity to arbitrate disputes over price and service quality issues between sellers and buyers at all levels. For hearings on anti-competitive market behavior by electric enterprises, Chile relies on the previously established Anti-Monopoly Commission. Decisions by the Anti-Monopoly Commission can be appealed through the civil court system, all the way to the Supreme Court of Chile.

7.17 Endesa was the target of anti-trust suits brought before the Anti-Monopoly Commission, which ruled that there were sufficient regulatory checks, established pricing formulae and competition in place to assure that Endesa could not undertake any notable monopolistic practices. The Supreme Court endorsed the Commission's decisions.

7.18 The Argentine Congress is currently considering anti-trust law proposals, which would establish an entity equivalent to Chile’s Anti-Monopoly Commission to consider anti-trust cases. However, the judicial system in Argentina—as in many LAC countries—is considered time-consuming and arduous, and in the past, the laws themselves have lent themselves to arbitrary interpretations. In Colombia and Peru, there have been major corruption cases involving court appointees, and despite recent judicial reforms in these countries, doubts about the integrity of the judicial system persist, in addition to the lack of a modern anti-trust regime.

7.19 The industrialized countries generally have well-established anti-trust laws and oversight authorities to deal with anti-competitive and monopoly issues. However, modifications in the existing anti-trust laws or the extension of the existing legal basis to cover power sector issues were undertaken when regulated utility monopolies were subjected to reforms and competition in the US, UK and Norway. In the US, the Electricity Policy Act of 1992 modified the 1935 Public Utilities Holding Company Act (PUHCA) to exempt utility-affiliated entities which establish wholesale generating companies to compete in bulk power markets from PUHCA anti-trust restrictions. The Securities and Exchange Commission will continue to consider utility anti-trust cases and issues.

7.20 In the UK, the Director of the OFFER is designated as the main point through which anti-trust complaints in the electric sector should be channelled, although unless resolved at this level, they would be brought before a separate Monopolies & Mergers Commission that already existed to arbitrate such matters.

7.21 In Norway, the Norwegian Water Resources and Energy Administration (NVE), which regulates the power sector, was authorized under the new power sector scheme to arbitrate anti-trust and anti-competitive cases in the sector along with the Price Directorate. Their decisions may be appealed to the Ministry of Energy and Industry's Department of Energy and Industry.

Impact on Electricity Rates and Service Quality

7.22 Signals indicative of the impact on ratepayers from increasing private sector participation in the power sector of the study countries will become measurable as, after an initial adjustment period, trends in retail and wholesale tariffs and in service quality—i.e., reliability of the power supply system, service coverage, and availability of new services—are observable. Downward pressure on rates and/or rate stability is expected in all of the countries, and may be already apparent in Norway, the US and Chile.44

7.23 After a generally upward rate trend for industrial, commercial and residential rates from 1984 to 1989, Chile's electricity rates since 1990 have stabilized and even declined slightly across-the-board, with relatively little subsidization throughout the historical period (1978-1992).45 In Argentina, tariff levels were increased in 1992 prior to privatization in order to align rates to their economic costs, but industrial and commercial rate increases were high compared to residential rates. Rates in Argentina are expected to continue to rise initially after privatization as they are aligned with the economic costs-of-service, and then are expected to stabilize and possibly decline as competition from newer, more efficient units coming online pressures bulk power prices downward.50

7.24 In the post-reform period, Norway, the UK, and all LAC countries except Costa Rica anticipate enhanced service quality for consumers. In Chile,
analysts credit the privatization of the distribution sub-sector with the improvement of enterprises’ customer sensitivity and responsiveness when compared to the pre-privatization period. Electrification in Chile, already 91% in 1989, has continued under the reformed sector, but a longer track record of electric service qualitative variables is needed for assessment and trending purposes.

7.25 In Argentina, the privatization of Segba’s (Servicios Eléctricos del Gran Buenos Aires) generation has without question succeeded in immediately and significantly improving the reliability and performance level of the generating units, beyond the requirements specified in the solicitation documents. Quality of service evaluation will require more time to identify new trends.

7.26 In Peru, Colombia and Jamaica, increasing the level of electric service coverage is a major target of the opening of the sector to private investment, and thus will be one key indicator as to whether increased private participation in the sector can achieve such service goals, as well as goals related to the reliability, quality of customer service, and the sector’s financial condition.

7.27 The financial performance of distribution/commercialization enterprises will be measured by revenue streams, cash flows, investment funds and creditworthiness. The effect on public sector debt and finance is expected to show itself in the developing countries, the UK and Norway, after an adjustment period, in the level and percentage of the public national debt, debt servicing and expenditures attributable to power sector operations and funding requirements. In the US, the credit ratings of the investor-owned distribution companies are expected to reflect lower costs and investment risks obtained through the increased use of economic off-system power. In Costa Rica, the revised tariff basis and competitive generation promotion were expected to help improve the financial condition of the sector and promote new capacity additions on a more cost-efficient basis.

Projected New Investment

7.28 The issue of ensuring that some investor, public or private, will build new capacity as needed in order to cover growing demand of consumers in the study countries, is of major concern to governments that have taken or are taking measures to increase private participation in the power sector.

7.29 Due to concerns about the private sector’s capacity or market-based motivation to build the requisite capacity, or due to nationalistic orientations, some of the governments intend to remain involved in the planning and/or development of the sector (Chile, Costa Rica, and Colombia). These Governments want to ensure, through indicative or central planning, that projects are developed with priority given to those which are the least-cost option in meeting demand. Market forces are suspected of being inadequate to ensure this prioritization on a medium- or long-term basis, due to the perceived likelihood that long-term, least-cost options for the system as a whole will be neglected in favor of low-investment projects which meet the short-term demand, but are less economic when considered over the long-term. This may be particularly applicable in small systems where economies-of-scale are feasible and could be foregone. For this reason, the Governments of Chile and of Costa Rica have indicated that they are prepared in certain cases to undertake large capacity additions to the system.

7.30 Incentives for the most efficient generators to expand their capacity through market pricing policy mechanisms are expected to promote the efficient expansion of the system in Argentina and Peru, where the Governments have renounced any intention of financially sponsoring new projects beyond their current plan. However, Chile, Colombia, Costa Rica and, initially, Jamaica have reserved certain types of generation such as hydro and geothermal, and/or sizes of projects (i.e., larger ones) for public development, while allowing private sector projects in the remaining areas.

7.31 New entrants to the sector, even within the limited parameters set in Costa Rica and, for now, in Jamaica, are permitted to compete for any system expansion projects through bidding solicitations, which serve to ascertain the lowest possible cost for achieving these capacity additions. Private sector project proposals are also generally acceptable for direct negotiation with the host utility.
7.32 In the new sector scheme, rural electrification remains an elusive goal which may require direct government intervention. For Argentina, Chile and Costa Rica, which in 1989 already had a high electrification service coverage of 95%, 91% and 90% respectively, electrification is less of an issue than for other LAC countries. The responsibility for the remaining electrification service in Argentina lies with the provincial authorities/utilities; with the (privatized) distribution utilities in Chile, and remains with the ICE in Costa Rica. For the other LAC countries with lower electrification levels, such as Peru (38% in 1989), the responsibility for electrification issues remains with MME, which is searching for a viable solution to the problem within the context of the newly reformed sector. In Colombia, with a rapidly increasing level of electrification in the late 1980s, attaining 80% at the beginning of the 1990s, the responsibility remains with ICEL, which formerly executed electrification and sector development schemes through its subsidiary operating companies, with which is now no longer affiliated.

VIII. Conclusions

8.1 The review of the reforms carried out or being implemented in the LAC and industrialized countries covered in this study identify some common objectives, including:

a. all of the reforms in LAC countries seek to improve sector operating performance and to reduce the dependence of the sector on public resources for current and/or future expansion needs; and

b. although the reforms in all countries have enhanced private participation in the sector, not all of them have prioritized this as a primary objective of the reform.

8.2 The review also identified some common factors and trends regarding the sector’s structure and the reform mechanisms employed in several of the countries, as follows:

a. The generation function is being separated from the transmission and distribution functions, either by breaking up sector enterprises into multiple companies with distinct functions; by opening only the generating area to private investors; or by using a system of separate accounts for each function carried out by integrated utilities;

b. The recovery of the costs of electric service is being emphasized, through the elimination of pricing distortions and subsidies, or by making the latter transparent when social/income equity policy objectives depend on subsidy programs, thereby shifting the focus to how the subsidies are to be financed;

c. Electricity pricing at various levels is increasingly based on market principles, by: opening the market to competition, particularly in generation; allowing negotiated pricing for bulk power sales to large consumers and retail entities; regulating prices for monopolistic transmission and distribution services based on benchmark or some other form of regulation;

d. Efficiency and commercial viability is promoted in the sector via the creation of legal and regulatory frameworks which establish a stable, transparent set of rules under which sector enterprises can operate and regulators can effectively oversee the sector and implement regulations to carry out reform objectives; and

e. A suitable macro-economic environment moving in the direction of an open market economy—with sound corporate, investment and tax laws, monetary policies, and the growing presence of domestic capital markets—is seen as necessary to attract private investors to sector projects.

8.3 The review reveals that the implementation of the power sector reforms is a complex operation which requires ample participation by the majority of involved participants: i.e., political and economic agents of the Government; electric enterprise management, staff and related unions; and the general public whose benefits are expected to be improved quality and reliability of service at a reasonable cost.

8.4 The reforms carried out or being implemented in the study countries also reveal that there is no unique recipe for improving the structural, financial and operating basis of the sector or for fostering financially self-sustaining, commercially-oriented power enterprises with a
high quality of operating performance and the ability to attract private investors.

8.5 The variations in country approaches to reform seem most closely linked to historical evolution and tradition, combined with the degree of crisis prevailing in the power sector prior to reform, and the sector's linkage to the political, macroeconomic and social context of the country prior to reform.

8.6 Power sector reforms such as those pioneered in the LAC region are indeed providing useful examples and "lessons-learned" to other developing countries and economies in transition, and even to industrialized countries contemplating reform for the purpose of improving sector financial and operating performance and increasing private participation and competition in the sector. It should be noted, however, that the effectiveness and autonomy of the revised regulatory authority remain questionable, even in the aftermath of reform.
Endnotes

1. Other countries in the LAC region which are considering or undertaking power sector reforms are noted briefly in the Introduction, and synopses of the status of the reforms are presented in the Annex.

2. It is unlikely that the non-federal integrated utilities in Colombia, and particularly the three largest municipal utilities, will be required to disaggregate their currently integrated generating, transmission and distribution functions, although they already are required to keep separate accounts for each activity.

3. In Chile, Endesa, the largest generating entity, initially retained the ownership of the central interconnected system.

4. The privatization includes all generation except that belonging to the nuclear utility, Comisión Nacional de Energía Atómica (CNEA)—which is being studied for privatization—and three binational hydropower entities: Entidad Binacional de Yacyretá (EBY), Comisión Tratado de la Cuenca del Plata (COMIP), and Comisión Técnica Mixta de Salto Grande (CTMSG).


6. An independent power developer completed a 100% privately-owned, -operated and -financed 100-MW project in Mamonal, near Cartagena, to sell power to a group of industries (Proeléctrica), and excess power to the local utility, without sovereign guarantees. A 150-MW project was also brought online in 1993, in the Barranquilla area.

7. For the purposes of this study, "reforms" are basic changes made in the structure, ownership, or rules of operation (including pricing) of the electric power sector, through Government policy initiatives supported by legislation.

8. Private participation or "privatization"—as a sub-component of reform—is used to indicate an opening to private sector involvement in the investment, operation and/or management of the power sector, regardless of the degree of participation or the means (i.e., opening of new concessions or opportunities for independent generation, divestitures, management contracts, stock sales, etc.) by which the opening is achieved.

9. A synopsis of power sector reform efforts underway in Bolivia, Brazil, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Trinidad & Tobago, Uruguay and Venezuela are presented in the Annex.

10. In Costa Rica, legal modifications opened power generation to private investors who sell power to the national grid under negotiated contracts. The US law was modified to provide open access to the transmission grid, to promote competition in bulk power markets.

11. In terms of retail customers, IOUs generate 79% of all power consumed in the US, and serve 76% of the ultimate electric customers. In terms of generating capacity, the 10 largest IOUs (of a total around 210) in the US have an installed generating capacity of 185,000 MW. The largest of the federally-owned power entities, the Tennessee Valley Authority (TVA), owns 32,000 MW of capacity. There are also 2,572 state and municipally-owned utilities and 933 rural electric cooperatives. Edison Electric Institute, Statistical Yearbook of the Electric Utility Industry, 1992.

12. Attachments One and Two give an overview of the stability of the political regime and country size features, respectively.

13. Attachment Four presents industrial, commercial and residential electricity rate trends from 1978 to 1992 for all nine study countries.

14. In-depth overviews of the reforms and privatization measures undertaken in each of the study countries are presented in Appendices A through I, and in Attachments as indicated.
15. More than 96% of Norway’s installed capacity, and 99% of its generation, is hydroelectric. As is the case with most predominantly hydro systems, Norway emphasizes the firm energy production capability—which for Norway was about 103 terawatthours (TWh) at the end of 1991, including contracted import and exports—rather than the actual amount of installed capacity.

16. Similarly, a lack of investment in distribution systems contributed to supply problems in Argentina, Jamaica, Colombia and Peru.

17. Chile and Costa Rica did not face significant supply problems in this period.


19. Colombia has not yet completed the legislative process; Jamaica is still in the initial stage of drawing up legislative proposals for submittal to the parliament.

20. Out of the estimated US$ 100 billion annual investment requirement for the power sectors of developing countries between 1990 and 2000—excluding Central and East European countries and Newly Independent States—only about US$ 3 billion per year is expected to be provided by the World Bank, and a total of US$ 10 billion from all bi- and multi-lateral lending agencies. *Energy Efficiency and Conservation in the Developing World, The World Bank’s Role*, The World Bank, Washington, DC, January 1993, p. 26. Contrary to the lending practices of the multilaterals, loans from commercial sources generally have shorter grace and payback periods, as well as higher interest rates.

21. The UK was still emerging from economic recession in the 1970s and early 1980s.

22. Presidential decrees in Colombia have the authority to implement changes and regulations unless the congressional body actively intervenes to challenge the decrees.

23. Corporatization indicates the process of putting an enterprise on a commercial—i.e., profit-oriented—basis of operation, and establishing a Board of Directors and shareholders which are concerned with the enterprise’s profitability, rather than its achievement of socio-economic policy objectives. The World Bank, *A Review of Regulation of Power Sectors in the Developing Countries,* IEN Paper No. 22, February 1990.

24. Open access in the US is limited to wholesale transactions.

25. There are questions as to the effectiveness of the open access in Chile as the shareholders of the largest generator, Endesa, also own Transelec, the transmission company and central dispatch entity.

26. Although Peru intends to continue subsidies for low-income residential users, which is also proposed in Colombia and Jamaica.

27. Colombia’s intentions regarding the divestiture of utility SOEs remains somewhat uncertain at this time.

28. Unions had caused problems in the Jamaican electric sector in the late 1970s, and ultimately received substantial gains after protracted negotiations.

29. Even in the US, the federal Tennessee Valley Authority was "corporatized" in the late 1980s, after becoming nearly bankrupt, discredited, and having all of its nuclear projects simultaneously offline. A renown CEO in the private sector became Chairman, and—like many progressive IOUs in the US—the agency was reorganized to be more competitive.

30. Based on various problems with the Chilean model in this respect—i.e., the owner and operator of the interconnected transmission system also holds significant generating interests—Argentina, Peru and evidently Colombia have deliberately chosen other options. In March 1993, Endesa spun-off its transmission assets to a separate company, Transelec, which, however, initially has the same shareholder composition as Endesa.
Reforms and Private Participation, p. 24

31. The Power Pool now includes both spot and mid-term contracts and will be extended to long-term and futures contracts as well.

32. Colombia issued presidential decrees to set forth new operating and investment bases for the sector prior to proposing the new Electricity and Domiciliary Public Service Laws now pending in Congress.

33. Peru's new Tariff Commission (CTE) tariff plan to cover economic costs has been overruled by the Technical Commission of the Government's Privatization Committee, COPRI, which ordered the Government-owned utilities to apply less-than-maximum rates. Thus the achievement of targeted tariff levels has been retarded.

34. The provincial governments are responsible for selecting two of the five national regulatory commissioners, but their candidate selection was prolonged until well after the federal government's approved candidates had taken up their positions.

35. Node prices are calculated by the CNE in Chile and the CDEC in Peru. Node prices are updated twice a year and modified through indexation formulae to account for seasonal and local factors—e.g., reservoir water levels is a key factor in Chile—and variations of cost components such as fuel and equipment.

36. Generally including the opportunity cost of invested capital.

37. All countries continue to require retail electricity supply service by the local commercialization entity in the primary area of service.

38. In Colombia, the proposed reform laws do not deal with the privatization of municipal utilities, which own about 35% of the total generation, and provide about 50% of the distribution service.

39. The Government of Chile will invest in generating plants greater than 200 MW or so if it is considered necessary to meet projected demand and the private sector lacks the financial capability or interest to undertake such projects. The Government of Costa Rica has reserved large hydro projects for public sector development.

40. The Mamonal project, a 100-MW gas-fired, combined-cycle plant that sells electricity primarily to Pro-Eléctrica, a group of industrial consumers which also own part of the project, was the first private power project to be approved under the decree process.

41. In developing countries, domestic capital markets are often expanded by divestitures of government assets, in which some of the shares are reserved for employee purchase.

42. Argentina's environmental agency is reported to be having trouble interacting effectively with other main government ministries, which may threaten the overall progress on environmental initiatives.

43. The UK Department of the Environment will establish the limits on sulfur dioxide and nitrogen oxide emissions necessary to comply with the EC Directive, and the Government's Inspectorate of Pollution will oversee and enforce these regulations.

44. In addition, the general public and various Governments were concerned about health and ecological effects caused by radioactive waste and radiation exposure from nuclear facilities, and electro- and magnetic radiation fields around transmission and distribution facilities.

45. See Comparison Table in Attachment Three.

46. As of September, 1993. More generating capacity is yet to be privatized. Provincial utilities provide about 40% of the country's total distribution services. Aspectos Relevantes en la Reestructuración, Regulación y Privatización del Sector Eléctrico en Latinoamérica. SYNEX, Report to the World Bank, July 1993, p. 80.

48. See Attachment Four for 1978-1992 rate trends for each of the study countries.

49. See Attachment Four.

50. Historically, Argentina’s electricity prices have been distorted, with the residential customers consistently paying lower rates than commercial and sometimes even industrial customers. See Attachment Four.

51. SYNEX Ingenieros Consultores Ltda. of Santiago, Chile.

ANNEX

SYNOPSIS OF ONGOING POWER SECTOR REFORMS
IN OTHER LAC COUNTRIES

Bolivia, Brazil, Dominican Republic, Ecuador, El Salvador,
Guatemala, Honduras, Mexico, Nicaragua, Panama,
Trinidad & Tobago, Uruguay and Venezuela
# ACRONYMS

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<th>Acronym</th>
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<tr>
<td>CDE</td>
<td>Corporación Dominicana de Electricidad</td>
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<td>CEL</td>
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SYNOPSES OF ONGOING POWER SECTOR REFORMS IN OTHER LAC COUNTRIES

Bolivia, Brazil, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Trinidad & Tobago, Uruguay and Venezuela

Introduction

Most of the LAC countries are in the process of reforming their respective power sectors to improve their efficiency and quality of service. These reforms include: changed sector structure, upgraded legal and regulatory frameworks, enhanced concerns for environmental protection and increased private participation. This Annex presents synopses of the status and basic elements of ongoing power sector reforms in LAC countries other than those in Argentina, Chile, Colombia, Costa Rica, Jamaica and Peru, the main subject of this study.

BOLIVIA

Power Sector Background

1. The state-owned Empresa Nacional de Electricidad Sociedad Anónima, ENDE, and the private companies Corporación Boliviana de Energía Eléctrica, COBEE, and the Cooperativa Rural de Electrificación, CRE, have co-existed in the Bolivian power sector over the past 30 years. ENDE and COBEE are vertically-integrated power companies; CRE has only distribution assets. These utilities provide electric service to the major cities and isolated areas: COBEE in La Paz and Oruro, CRE in Santa Cruz, and ENDE and several smaller companies in the rest of the country.

2. ENDE owns and operates the high voltage interconnected transmission system, to which COBEE and 13 distribution companies and cooperatives are linked. The system serves a demand of about 600 MW.

3. Although ENDE, COBEE and CRE have been effective in providing a relatively good level of electric service, the perception exists that inefficiencies, lack of coordination and a weak regulatory framework are impeding full recovery of costs and the future expansion of the sector. The Government, in line with its overall macroeconomic policy, perceives that this situation will hinder the economic development of the country because the expansion of the power sector requires considerable funding which the State cannot provide without affecting the funding priorities of needed social programs.

Reform Objectives

4. The World Bank is assisting the Government to prepare a reform and capitalization program for restructuring the electric power sector. The reform program will define an institutional structure based on competition and private sector participation capable of being implemented in Bolivia.

1. Volume II, Appendices A through I contain detailed descriptions of the power sector reforms in Argentina, Chile, Colombia, Costa Rica, Jamaica, Peru, Norway, United Kingdom and United States.
Description and Status of Tasks

5. The reform program is being carried out in two phases. The first phase (March 1993 to June 1994)—which is largely supported through Energy Sector Management Assistance Programme (ESMAP) funds—will: a) recommend the optimal sector structure based on an evaluation of the power supply system, market size and institutional options in Bolivia; b) examine the attainable level of competition in generation; c) examine alternative tariff schemes and pricing options in distribution; d) examine and recommend ways to deal with marginal groups while ensuring long-term efficiency; e) examine and recommend ways to deal with isolated systems in the proposed new industry model; f) propose changes in the role and structure of the new regulatory agency; g) examine the corporate structure of existing utilities and prescribe the required actions and changes to streamline them to respond to the challenges posed by the new sector model envisaged in the Electricity Law; h) propose a draft Electricity Law and regulatory regime; and i) prepare an outline of the second phase of the Work Program which in principle should start as soon as Phase One is concluded.

6. There is consensus that a new legal and regulatory framework is required to support the long-term efficiency of the sector through the introduction of competition in generation and marketing of electricity; unbundling of distribution, generation and transmission; and creation of an autonomous regulatory agency. The Ministry of Energy and Hydrocarbons (MEH) and ENDE, jointly with the World Bank, prepared a draft policy letter with the guiding principles of the proposed power sector reform. During May 1993, a Technical Group was formed with representatives of the major actors in the sector to carry out the reform program. During the same month, an ESMAP-sponsored kick-off seminar was held in Santa Cruz to formally start the activities of the program. The principles embodied in the policy letter served as the basis for preparing in August 1993, a draft Electricity Law. In September 1993 a new Government took over and endorsed the Policy Letter and the reform work program. The Government plans to present to the draft Electricity Law to Congress by mid-1994.

BRAZIL

Power Sector Background

7. The Brazilian power sector is large and complex, reflecting a high degree of integration and includes numerous federal, state and private utilities and electric cooperatives. Centrais Elétricas Brasileiras SA (ELETROBRAS), a federal holding company and sector financing agency, coordinates sector expansion planning and operation of the power system. ELETROBRAS has several regional subsidiaries (CHESF, ELETROSUL, ELETRONORTE and FURNAS) which generate and transmit bulk energy for distribution by state government-owned and other utilities. ELETROBRAS also holds the Government’s majority interest in the Itaipú Binational Hydro–electric Plant and in two distribution companies—LIGHT (in Rio de Janeiro) and ESCELSA (in the state of Espírito Santo)—and a minority interest in other distribution utilities. Some distribution utilities also own and operate generating plants.

8. In 1992, the public sector’s installed generating capacity amounted to 52,000 MW (91% hydro); its generation and imports totalled 254,000 GWh (97% hydro); sales equalled 219,000 GWh to customers of around 34 million; and national electrification coverage reached a level of 87%. In the same year, per capita consumption was 1,470 kWh/inhabitant, about 25% higher than the LAC country average.

9. The Departamento Nacional de Agua e Energia Elétrica (DNAEE), the federal regulatory agency, assigns concessions and approves expansion plans and tariffs.
Reform Objectives

10. In recent years, the power sector institutional framework has been inappropriate for maintaining an adequate level of tariffs and financial performance. The system of national uniform electricity tariffs and the revenue-sharing mechanism which transferred revenues from the high-cost to the low-cost companies discouraged productivity, prudent investment, good financial practices, and efficient energy use and conservation. As a consequence, the utilities lost their capacity to service their debts, pay suppliers and complete power plants under construction: 19 power projects under construction, with a total capacity of about 12,000 MW, are now paralyzed or progressing slowly. In addition, the participation of cogenerators and independent power producers in public supply systems was discouraged or impeded.

11. To address this situation, the Government and the sector authorities initiated reforms aimed to improve sector finances, increase private participation, encourage competition and productivity, and promote efficient energy use and conservation.

Reform Description and Status

12. Law 8631 of March 4, 1993 eliminated the uniform tariff system; required contracts for bulk power transactions between generators and distributors including reinforced payment guarantee clauses; eliminated the guaranteed rate-of-return system; and partially decentralized the decision-making process of setting distribution tariffs. The Law allows each distribution company to submit its proposed tariff level, based on its cost-of-service, for ratification or rejection by DNAEE. The tariff structure is now directly set by each utility.

13. Decree 915 of September 6, 1993, authorized the formation of consortia of auto-producers for building power plants, allowing the sale of surplus electricity to concessionaires and consortia of concessionaires and autoproducers.

14. Decree 1009 of December 22, 1993, created SINTREL, a transmission entity controlled by ELETROBRAS, to take charge of the transmission systems of ELETROBRAS subsidiaries and permit open access to all electricity concessionaires (generators and distributors) and self-producers.

15. These measures would permit private sector participation in some of the above-mentioned suspended generating projects in order to complete the plants, and as suppliers in the bulk energy market to stimulate competition. A new concessions law proposal under consideration by the Congress would allow enhanced competition in the generation and distribution of electricity and increased private participation as concessionaires. Another proposal now being considered by the Congress would eliminate the existing legal limit (40%) of foreign ownership of the voting capital of privatized companies, included distribution concessionaires. Some state governments are considering privatizing their utilities, following the example of the distribution utility of the State of Tocantins, which became private in 1989. The granting of concessions for hydroelectric projects remains constitutionally restricted to Brazilian companies.

16. The current privatization program extends to the two distribution subsidiaries of ELETROBRAS (LIGHT and ESCELSA) and contemplates the sale of ELETROBRAS and FURNAS shares to the public, albeit without relinquishing federal control.

17. Future sector developments will depend on forthcoming Government decisions about the privatization program, the financial results of the new tariff system after it has been implemented, the introduction of increased competition based on recent legislation, the implementation of new energy efficiency and conservation programs, and the enhancement of the regulatory system. Reaching consensus about these matters among the power sector entities, Government and other economic sectors is crucial to solve the
existing problems and maintain quality service. The current constitutional review and the next elections (at
the end of 1994) are likely to affect the privatization debate and the future organization of the sector.

DOMINICAN REPUBLIC

Power Sector Background

18. The power sector in the Dominican Republic is dominated by the Corporación Dominicana de
Electricidad (CDE), an autonomous vertically-integrated utility owned by the Government. Until 1989, all
power generation, transmission and distribution operations were run by CDE as an exclusive government
monopoly. Then the private sector was allowed to install generating units for internal use, with the
Government having the authority to purchase available power produced by private generating facilities to fill
gaps in the public electric service coverage. CDE currently controls about 60% (about 1500 MW) of the
installed generation capacity, and private generation accounts for 40% (near 1000 MW).

19. After completing an ongoing rehabilitation program of its power plants, annual available generation
is expected to amount to about 5500 GWh from CDE’s generating facilities and about 1500 GWh from
private generators, for a total of about 7000 GWh. This figure includes energy to be generated by Smith
Cogeneration, an IPP with which CDE recently signed a PPA. Additional generating facilities with a joint
capacity of about 250 MW are expected to be needed in the 1995-2000 period to meet the demand, which
has an expected growth of 5.5% per year.

20. At present, CDE is in charge of the regulatory and price setting functions, and has a monopoly in
the transmission and distribution of electricity.

Reform Description and Status

21. The Government has prepared a draft Electricity Law and submitted it to Congress. The Law
promotes private sector participation in generation and distribution, and establishes a regulatory framework
and a basis for sector restructuring. The Law: a) defines the policy and regulatory role of the Government;
b) permits free competition in power supply; c) permits open access to the transmission system; and
d) contains the provision for power sector restructuring by fixing a term for splitting CDE in several utilities:
one or more generating utilities, one transmission company and one or more distribution utilities.

22. Definition of energy policies and indicative sector planning will be under a National Energy
Commission (NEC), while power sector regulatory functions will be exercised by an independent body named
the Superintendencia. The Government has already created the NEC by decree along the lines proposed in
the draft Electricity Law, with the intention that this Commission direct the sector reforms required for the
implementation of the proposed sector strategy.

23. CDE’s distribution, which is the key element for revenue collection, is expected to be privatized first.
Separate utilities would be created to operate the present CDE’s generating plants pending their sale to private
investors. All new generating installation would be privately-sponsored. PPAs will be negotiated directly
between power producers and distribution utilities, under competitive processes.

24. To facilitate the initial participation of private investors, CDE plans to invite to private sponsors to
bid for the installation and operation of generating units totalling about 250 MW, under a BOO modality.
Under this plan, CDE would sign a PPA with the private sponsor selected to build the BOO project, and later
transfer this agreement to the distribution utilities to be derived from CDE.


ECUADOR

Power Sector Background

25. Ecuador's power sector consists of one national electricity generation and transmission utility, the Instituto Ecuatoriano de Electrificación (INECEL), created in 1961, which sells bulk power to 19 regional distribution utilities and two independent companies. INECEL also directly operates one small power distribution system in the Galapagos Islands.

26. INECEL is responsible for planning, coordinating and supervising the power sector. Additionally, it performs the role of a regulatory agency, with the authority to set electricity prices. INECEL is under the jurisdiction of the Ministry of Energy and Mines. As a state institution, INECEL is subject to all the administrative proceedings characteristic of public agencies. Its annual budget is approved by the Congress, which imposes ceilings on its investments and expenditures. Procurement activities are controlled by the General Procurement Office and the Comptroller General, which is also responsible for ensuring that INECEL complies with budget legislation. Staffing and recruiting policies are subject to civil service codes.

27. The 19 regional electricity distribution utilities are structured as corporations. Currently, there is only one privately-owned company: the Electric Company of Ecuador Inc. (EMELEC), which is owned by Ecuadorian investors. EMELEC serves the city of Guayaquil, the largest market of the country, under a municipal concession. However, its concession contract expired in 1985 and the Government has no plans to renew the concession. A decision on the future of EMELEC is expected to be taken by the Government when the proposed new Electricity law is approved. Meanwhile, EMELEC continues to generate and sell energy to its consumers under an interim contract, buying the bulk of its needs from INECEL, while its technical and financial operations are under INECEL's control. The other 18 power distribution companies are majority-owned by INECEL (varying from 51 to 95%), by local municipalities (not more than 30%), and by individual investors (not more than 2%). These utilities' Boards of Directors are appointed by regional organizations, unions and local governments. Municipalities operate 42 small local generating and distribution facilities, representing about 0.5% of the total sales. Since 1993, independent power producers have operated two small thermal power plants, one 75-MW plant in the Guayaquil area and a 33-MW plant in the Quito area.

28. Ecuador's total installed generating capacity is about 2280 MW. INECEL's installed capacity is 1692 MW, of which 1300 MW is hydro, and 392 MW is thermal-fired. There is an interconnected national grid of 230 kV lines, which connects the hydro-power plants with the major consumption centers of Quito and Guayaquil.

Power Sector Market and Facilities

29. Gross generation has increased 7.7% per year during the last decade, but energy sales have only increased 6.6% yearly, due to rapidly increasing levels of power losses. Total sector sales amounted to 4541 GWh, representing an annual electricity consumption of about 540 kWh per capita, which is lower than the average 1034 kWh for the region. Distribution companies have losses of 21%, on average, which result from inadequacies of aging installations, illegal consumption, inefficient mechanisms for metering, and inadequate commercial and customer-related procedures. The degree of electrification in Ecuador (75%) is slightly above the average of 70% for Latin American countries.
Institutional Issues

30. The sector is not well organized. The main problems the power sector are related to: a) a highly politicized approach to the electricity pricing policy; b) inadequate financial resources to support investment; c) the lack of separation in the State's functions as a regulator and as an operator; and d) the lack of autonomy and accountability of the power utilities.

31. During the last decade, the sector's finances deteriorated due to low electricity prices that only covered sector operating and maintenance expenses. Government intervention, political interference and financial constraints have reduced the efficiency and overall productivity of the sector. The current legal framework does not encourage private participation in the sector.

32. INECEL is fully subject to the bureaucratic controls and restrictions from the Secretariat of Development, the Office of the Comptroller General and the General Procurement Office. Although INECEL subsidiaries are structured as corporations, and thus are not subject to these same controls, INECEL's control over them carries little weight due to political conditions and lack of expertise of INECEL's representatives on the subsidiaries' boards.

Reform Description and Status

33. The national Electricity Law requires modification. A new electricity law has been drafted with the assistance of consultants financed by the World Bank. This new law would redefine the role of the State in the power sector, clearly separating its policy/regulatory role from its commercial role as a utility owner/operator. The Government plans to phase out its involvement in commercial activities in the sector and promote the participation of private investors in the electricity business.

34. The proposed new institutional framework would consist of the following:

a. National Electric Board (NEB). A NEB would be created to define electricity policy and supervise the regulatory functions of the regulatory agency. The managing team of this agency will be appointed by the President of the Republic and will have a seven year term assignment in a staggering basis.

b. INECEL’s Restructuring. INECEL would be split into several companies, separating generation, transmission and distribution activities. There would be several generating and distribution companies, and one transmission company.

c. Generation. Competition is introduced in the generation of electricity. No geographical concession area is defined for generating companies. All new generating concessions will be awarded on a competitive basis.

d. Power Market. Two markets will exist: (i) a long-term market, in which generators will freely negotiate power contracts with distributors and large customers; and (ii) a regulated short-term market, in which distributors will buy power or energy in a spot market, i.e. on an hourly or daily basis at a regulated prices defined by the short-run marginal cost of the system.

e. Transmission. The existing transmission system will be vested with a sole company serving the entire interconnected system. This company will be owned by investors who have no ownership rights in generating or distribution companies, in order to avoid hindering competition in the network. This company will charge a transmission tariff based on economic cost per unit of energy (kWh) transmitted through the system at a cost level defined by the regulatory body. It will allow
free access to the system for all users. It will be responsible for investments in the transmission system.

f. National Dispatch Center (NDC). The operation of generation and transmission facilities, and international interconnections, will be coordinated by a NDC. The NDC will define the economic dispatch of power generation aiming at minimizing the production cost and losses.

g. Distribution. The existing 19 distribution companies will be merged into four or five regional distribution companies, and will operate in a partial monopoly scheme, responsible for supplying electricity in their concession area. Large consumers will be allowed to contract power directly from producers using the distribution system, with due payment for the network service provided.

35. The proposed electricity law is expected to be submitted to Congress in March 1994. The regulatory body would be put into place within six months after the law is enacted. The separation of INECEL's activities into several companies is expected to be completed within twelve months, and the privatization of these companies within 30 months of the law's enactment.

EL SALVADOR

Power Sector Background

36. Almost all of the electric power for the public service in El Salvador is produced and transmitted by the Comisión Ejecutiva Hidroeléctrica del Río Lempa (CEL), the state-owned national utility responsible for these activities in accordance with the current law. Six regional power utilities (RPU) distribute electricity in San Salvador, El Salvador's capital city, and other smaller towns. The RPU were private before 1986, but at the end of their 50-year concessions, their shares were transferred to CEL.

37. Regulations for the power sector are contained in the law for the creation of CEL, which establishes CEL as the institution in charge of producing and distributing electricity for public service. CEL's Board of Directors proposes both the policy for the sector and electricity tariffs. Expansion plans are approved by the Ministry of Economy, but in practice, the President of El Salvador has the last word on these aspects.

Reform Description and Status

38. Supported by a technical assistance loan granted by the World Bank, a project was developed during 1992 and 1993 to study: the restructuring of the legal and institutional framework of the energy sector; power pricing for regulated activities; privatization of power generation and distribution; and training.

39. During the first semester of 1994, the Government intends to present to the Legislative Assembly new legislation which proposes to: regulate electricity and hydrocarbon activities; create a National Energy Council for the planning and coordination activities of the sector, and a National Energy Commission to regulate electricity and petroleum-related activities; reform CEL's structure, separating transmission from generation activities; and privatize the power distribution utilities.

40. The restructuring decided by the Government is based on: achieving a competitive market for power generation, where IPPs will be permitted to have PPAs with any large customer, distribution utility or other generators; an independent transmission company with regulated prices and mandatory open access to its network; and private power distribution companies, with regulated prices and mandatory open access to their grids.
41. During the initial phase of reform, prices for generation will be regulated by the National Regulatory Commission, which will anticipate node prices based on short-run marginal costs for a four-year period, with adjustments every six months. In the second phase, which will start when an acceptable level of competitiveness has been reached in generation, prices will be deregulated, based on short-run marginal costs derived from economic load dispatching.

42. The Government has decided that the expansion of power capacity to meet new requirements should be covered mostly by IPPs during the transition period, before the new legislation is implemented and the new institutions are operating. Subsequently, CEL issued the first competitive solicitation for 80 MW of power in October 1993. The corresponding PPA is currently being negotiated and is expected to be signed in March 1994. New solicitations for IPP participation in the capacity expansion area are planned for the next three years.

GUATEMALA

Power Sector Background

43. Before 1992, more than 90% of the power generation and transmission and most of the distribution facilities in Guatemala were state-owned. The Instituto Nacional de Electricidad (INDE), the national state-owned generation and transmission utility, produced and transported practically all of the electricity needed throughout the country. The Empresa Eléctrica de Guatemala (EEG), a corporation 95% owned by INDE, purchased power energy from INDE and distributed it in Guatemala City, the main load center, while local municipal utilities served the rest of the country.

44. Private participation in generation was initiated during 1992 and 1993, first under a 110-MW PPA signed between EEG and an IPP, and then under a PPA with a 12-MW hydro-power plant negotiated by INDE with a private investor. INDE and EEG intend to negotiate other contracts with IPPs in the near future.

Reform Description and Status

45. However, the current legal and institutional framework in Guatemala is not conducive to extend private participation and to induce competition in the power sector, as INDE’s Board of Directors is responsible for the formulation of planning and tariff policies, with the approval of the Government.

46. With technical assistance provided by the U.S. Agency for International Development, IDB and the World Bank, the Government is preparing draft laws to regulate the power and petroleum subsectors, and to restructure INDE and the power distribution market. An independent regulatory agency for energy, to be established under the proposed legislation, is expected to be created in the near future. In the meantime, the Government has decided that most of the new power generation capacity needs should be provided by IPPs.

HONDURAS

Power Sector Background

47. The publicly-owned Empresa Nacional de Energía Eléctrica (ENEE), created in 1957, gradually acquired most of the other utilities in Honduras, and provides the generating, transmission and distribution functions on a national basis. It has generally provided an adequate level of service. The total installed generating capacity in the country is around 560 MW.
48. All power projects and facilities owned by the Government are evaluated by ENEE for their management and operating efficiency. It establishes electric tariffs based on marginal costs. Problems in the sector mainly concern the financial difficulties caused by the high debt and debt service levels incurred during a major investment program in the early 1980s.

49. The Ministry of Communication, Public Works and Transportation is the government agency in charge of the sector.

Reform Description and Status

50. Although no reform legislation has yet been introduced, ENEE has contracted with an IPP for the installation of a 60-MW, diesel-fired powerplant that will enter operation in 1994.

MEXICO

Power Sector Background

51. For the last 50 years, the entire power business in Mexico, from generation to transmission and distribution functions, has been entrusted to the Comisión Federal de Electricidad (CFE). CFE owns 27,000 MW of installed generating capacity. The Compañía de Luz y Fuerza del Centro (CNFL), a subsidiary of CFE, is in charge of distribution in Mexico City and its metropolitan area.

Reform Description and Status

52. In 1992, Congress amended the Electricity Law to permit the participation of the private sector in power generation through IPP, cogeneration and imported electricity schemes. At the same time, the Government adopted a policy to promote the development of all new generating capacity—at a level of about 1,500 MW per year—would be developed by private investors, with the possible exception of nuclear power and specified hydro-electric projects.

53. Under the amended Electricity Law, CFE remains a publicly-owned utility. However, it has started to decentralize and regionalize its generation and distribution operations.

54. A new Energy Regulatory Commission (ERC) established under the reformed law is in charge of supervising the sector according to the Electricity Law provisions.

55. IPPs are concerned about the possible restrictions on their access to markets through the transmission system, in light of the fact that the transmission remains under the control and ownership of CFE, the main generating entity.

NICARAGUA

Power Sector Background

56. The Instituto Nicaraguense de Energía (INE) is the state-owned monopoly responsible for the generation, transmission and distribution of energy. Its additional functions include the formulation and implementation of sector policy and strategy. INE was created in 1979. Its charter, as amended in 1985, establishes it as an autonomous entity headed by a Director with ministerial rank appointed by the President.
Annex
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Reform Description and Status

57. The Government is in the initial stages of restructuring the energy sector, under a Public Enterprise Reform Loan being prepared with the Inter-American Development Bank. While no reforms have yet been agreed upon or implemented, the Government’s objectives are to: a) separate normative, regulatory and operational functions in the sector; b) separate generation, transmission and distribution functions and c) foster greater private sector participation in the energy sector.

PANAMA

Power Sector Background

58. Panama has a total public system installed generating capacity of 893 MW, with self-generators adding another 65 MW to the total. The Instituto de Recursos Hidráulicos y Electrificación (IRHE) is the sole entity responsible for the generation, transmission and distribution of electricity. Panama has an electrification level of 58%.

Reform Description and Status

59. IRHE has unsuccessfully attempted to attract private investors to develop thermal and hydro-electric projects in the past. More recently, IRHE has announced plans to develop the Esti project in a joint venture in which the private sector would hold 60% of the equity and be responsible for the management of the project.

TRINIDAD & TOBAGO

Power Sector Background

60. The generation, transmission and distribution of electricity is undertaken solely by the government owned Trinidad & Tobago Electricity Commission (T&TEC). In general, T&TEC provides a reliable, good level of quality service to more than 90% of the population. The demand of about 600 MW is mainly met by power generated by natural gas-fired turbines. The national per capita consumption of electricity is about 3200 kWh, which is the highest in the LAC region.

61. Continued rate lag and increasing productivity constraints has made T&TEC dependent on the Treasury for system expansion. This has resulted in growing pressure on national finances, and supply and demand-side inefficiencies of the sector have become a source of mounting Government concern.

Reform Description and Status

62. In recognition of these structural problems and as a result of the World Bank’s support through a Structural Adjustment Loan, a concurrent multi-sectoral technical assistance loan, and assistance in the formulation of an overall Medium-Term Policy Framework in July 1992, the Government is in the process of revising its current power sector legislation to allow:

a. unbundling of power generation from the transmission and distribution activities, which will be provided by a T&D entity derived from T&TEC;

b. divesting of a significant but minority ownership of the resulting generation company under competitive bidding to a strategic private partner;
c. competition and private participation in all future incremental generation; and

d. strengthening the regulatory and legal framework to allow more effective pricing, efficiency and environmental regulation;

63. In addition the Government intends to enhance sector productivity and finances, and promote efficiency through the implementation of adequately paced pricing and efficiency programs.

**URUGUAY**

**Power Sector Background**

64. Since 1912, the Administración Nacional de Usinas y Transmisiones Eléctricas (UTE) has been the sole entity responsible for generation, transmission and retail distribution of electricity in Uruguay. UTE’s board, which is appointed by the Government, approves major investment plans, borrowing proposals, corporate policies, and recommends power rate changes to the Government. The Comisión Técnica Mixta de Salto Grande operates a binational power plant (1890 MW), owned by the governments of Uruguay and Argentina. UTE reports to the Ministry of Industry and Energy.

65. Historically, UTE has operated and maintained its facilities adequately. The installed generating capacity (including the participation in Salto Grande) is 1823 MW, of which 1241 MW is hydro and 582 MW thermoelectric. UTE’s 500-kV transmission system is interconnected to Salto Grande, which has allowed UTE to sell electricity to the Argentine market.

66. Since October 1991, the participation of private investors in generation activities is feasible, after approval and recommendation by UTE.

**Power Sector Market**

67. During 1993, UTE sold 1215 GWh to Argentina amounting US$91.8 million. The domestic power market has an increasing growth trend of 6.7% per annum. Total sales in 1993 totalled 4527 GWh, of which 52.3% were sold in the Montevideo area. Losses have been high in the last few decades. High technical losses are concentrated in the Montevideo area due to the heavily loaded transmission system; aging distribution installations; inadequate low-voltage, ungrounded systems; and inadequate maintenance procedures. The degree of electrification in Uruguay is high (97%) compared to the average of 70% for Latin American countries. A complete renovation of the distribution system will be undertaken with the World Bank’s financial assistance.

**Institutional Issues**

68. There is a high degree of intervention from the Government in the sector. The sector lacks an independent body to establish power policies. On paper, MIE is responsible for power policies, sector planning, and formulation of prices. UTE’s budget is approved by the Planning and Budget office, and UTE’s procurement activities are controlled by the Tribunal de Cuentas (Auditing Agency), which is also responsible for ensuring that UTE complies with budget legislation. There are no clear, transparent rules to facilitate private sector participation.
Reform Description and Status

69. The Government intends to separate UTE's commercial role from its regulatory functions. It also plans to promote private sector participation in generation and in some regional distribution activities. The new proposed institutional framework would consist of the following:

a. National Energy Board (NEnB). A NEnB would be created to define energy policy and supervise regulatory functions to be carried out by a regulatory body. The NEnB would be composed by the Ministers of Industry and Energy, Economy and Finances, and the Director of the Planning and Budget Office.

b. UTE's Restructuring. UTE would continue as a government-owned power utility. UTE would split generation, transmission and distribution activities into separate business units. These units would not be privatized in the short term. UTE would be subject to the same regulatory rules in the three operating areas as new, private sector participants.

c. Generation. Competition is introduced in the generation of electricity. Independent power producers will construct and operate new power generation plants and would sell energy to UTE-Generation, UTE-distribution, large customers, or private distributors.

d. Power Market. Two markets will exist: a) a free long term market where generators will freely negotiate power contracts with distributors and large customers; and b) a regulated short-term market where electricity will be negotiated between generators and distributors in an hourly or daily basis at regulated prices defined by the short-run marginal cost of the system.

e. Transmission. UTE-transmission will own the interconnection system. It will charge a transmission tariff based on the economic cost per kWh for power transmitted through the system at cost levels defined by the regulatory body. It will allow free access to the system to all users, and will be responsible for investments in the transmission system.

f. National Dispatch Center (NDC). The operation of the generating and transmission facilities, and international interconnections, will be coordinated by the NDC. The NDC will define the economic dispatch of power generation aiming at minimizing production costs and losses.

g. Distribution. UTE-distribution will operate the existing distribution system, and will be responsible for supplying energy in its concession area. New distribution companies will be allowed to participate in regional areas which are not served by UTE. Large consumers should pay for the use of the distribution system owned by third parties.

70. A presidential decree creating the new institutional framework is expected to be signed the first semester of 1994. The regulatory body would be empowered within two months after issuing the decree, and the separation of UTE's activities into business units is expected to be completed within a year of the decree.

VENEZUELA

Power Sector Background

71. The Venezuelan power sector consists of five publicly-owned and seven private utilities. In 1992, installed generation capacity amounted to 19,000 MW (56% hydro); generation reached 64,000 MWh (74% hydro); sales attained 50,000 GWh; customers numbered about 3.5 million; and national electrification
coverage was 90%. In the same year, per capita consumption was near 2,700 kWh/inhabitant, one of the highest in the region. Private companies were responsible for 12% of generation capacity, 20% of final sales and 32% of customer service.

72. The most important state-owned utilities are: a) EDELCA, a generation and transmission company owning the hydro-power plants on the Caroni river and supplying bulk energy to the industrial electro-intensive complex in Guayana and other utilities; and b) CADAFE, an integrated generation, transmission and distribution utility, serving most of the country (almost 60% of all residential consumers) except for the largest urban centers and the industrial area of Guayana. Of the private power companies, the most important is Electricidad de Caracas, serving most of Caracas and a major shareholder of three other smaller private utilities.

73. Both the financial situation of the sector and the quality of service have been deteriorating due principally to insufficient tariff levels, distorted tariff structures, cross-subsidies, delayed collections, high distribution losses, excessive operational costs, and coordination problems in investment planning decisions and in the operation and dispatching of the system. Substantial transfers from the national budget and other measures of financial support from the Government were necessary to alleviate the sector's stringent financial circumstances.

Reform Description and Status

74. Under the present macro-economic difficulties and the requirements for power sector expansion and improvement, the Government has initiated reforms addressed to: a) establish tariff levels and structures reflecting cost-of-service; b) establish a stable regulatory framework for the functioning of the power sector; c) review the organizational structure of the power sector; and d) create the environment to allow competition and increased private sector participation.

75. In June 1992, the Government established two institutions to improve sectoral regulations: an inter-ministerial Electric Energy Regulatory Commission (EERC), whose principal functions include setting of electricity tariffs, utility operating regimes and customer service norms; and FUNDELEC, its technical support agency. FUNDELEC, among other tasks, is in charge of studying the basis for preparing a draft electricity law. In November 1992, the Government started a three-year tariff adjustment plan, now under execution, to increase end-user and inter-utility tariffs to reflect supply costs and reduce distortions and cross-subsidies.

76. Government guidelines for power sector restructuring have been to: a) maintain large hydro-electric developments and the main transmission system as Government property; b) privatize large thermal generating facilities; c) regionalize and subsequently privatize the distribution systems; and d) grant concessions to the private sector for small- and medium-size hydro developments. CADAFE is being restructured as an holding company: distribution functions were transferred to four newly created regional distribution companies and separate units were created for thermal generation, hydro generation and transmission. The Fondo de Inversiones de Venezuela, in charge of implementing the Privatization Program of the Power Sector, has taken preparatory measures for the privatization of three distribution companies (ENELVEN, ENELCO and ENELBAR) and a generation plant now owned by CADAFE (Planta Centro).

77. During 1993, the presidential election process slowed down the reform process and privatization plans. Future evolution of reforms and privatization programs will depend on the decisions to be made by the new Venezuelan Government that took office in February 1994.
ATTACHMENTS

REFORMS AND PRIVATE PARTICIPATION IN
THE POWER SECTOR OF SELECTED LATIN AMERICAN
AND INDUSTRIALIZED COUNTRIES
The Study Includes Small and Medium LAC Countries and Large Industrialized Countries

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Country Size Definition: For this study, a country is classified when it falls under one category for at least 3 of the 5 attributes.

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<td>US$ 2,700 - 5,000</td>
<td>&gt; US$ 5,000</td>
</tr>
<tr>
<td>MW</td>
<td>0 - 5,000</td>
<td>5,001 - 15,000</td>
<td>&gt; 15,000</td>
</tr>
<tr>
<td>kWh/capita</td>
<td>0 - 500 kWh</td>
<td>501 - 1,500 kWh</td>
<td>&gt; 1,500 kWh</td>
</tr>
</tbody>
</table>

After surveying various features for each of the study countries, it appears that the overall economic situation and ability of the public sector to finance system improvements and expansion in the power sector to meet growth exigencies are most significant in the developing countries, while the political direction is more significant in industrialized case-studies. A crisis in the economic, financial or electric operating condition of the country (Argentina, Peru) seems to be especially influential in putting the government on a path of major reform and/or privatization.

The size and regime attributes (see Attachment Two for regime stability and type in each country) have a less direct influence in the initiation and implementation of reforms, although new Governments seem to promote overall reforms and privatization programs on either a programmatic (Chile in 1973, the UK in 1980) or expedited basis (Argentina in 1989, Peru in 1989). In the LAC countries, size and regime factors may, however, have contributed—through political interference, rate manipulation, electricity theft in both densely populated urban slums or isolated areas, subsidization practices, etc.—to problems related to sectoral inefficiency and self-financing capability, and may also be the key in determining how enduring the changes will be in the future.
THE POLITICAL REGIME HAS CHANGED SIGNIFICANTLY IN SOME LAC COUNTRIES OVER THE PAST 50 YEARS

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<td>United Kingdom</td>
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<td>Colombia</td>
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<tr>
<td>Costa Rica</td>
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<td>Jamaica</td>
<td>C-Mo</td>
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<td>Peru</td>
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</tbody>
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**Type of Regime**

D = Democratic presidential system
C-Mo = Constitutional Monarchy
P = Parliamentary
M = Military regime
T = Transition government
Attachment Three: Power Sector Reforms Disaggregate Functions and Introduce Competition and Private Participation, and Strengthen Regulatory Institutions in Chile, Argentina and Peru

<table>
<thead>
<tr>
<th>Features</th>
<th>Chile</th>
<th>Argentina</th>
<th>Peru</th>
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</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>Reduce public enterprises and associated public debt and operating deficits as consistent with overall macroeconomic policy</td>
<td>Rescue federal power system from technical/financial crisis; reduce Government role in sector and in all commercial enterprises; reduce public debt and sector operating deficits consistent with macroeconomic policy</td>
<td>Resolve technical/financial crisis afflicting national power system, threatening economic growth; reduce Government role, public debt and operating deficits in sector consistent with macroeconomic policy</td>
</tr>
<tr>
<td>Objectives and Scope of Privatization</td>
<td>Obtain private financing for new system investments, stabilize tariff system; let commercial interests drive utility management decisions; improve financial and debt position of power sector to enhance country's overall credit rating. Aimed to sell all generating, transmission and distribution assets except Colbun-Machichura (a hydroelectric generator).</td>
<td>Lower operating/financial costs, improve operating performance, stabilize tariff system, obtain new sources of financing for rehabilitation/expansion programs and new capacity from private sector. Sell Segba and AyEE's thermal generation, and Segba distribution business; then sell hydropower units, federal (high-voltage) transmission and future transmission projects in next phase; transfer central dispatch functions to corporate entity (later modified to committee type of ownership); promote provincial utility divestiture</td>
<td>Improve operating performance to meet current demand, reduce operating and financial costs, stabilize tariff system, shift investment burden to private sector to meet growing expansion needs. Sell all operating assets of power system, and rely on private sector competition, economic dispatch and a rational pricing system to ensure lowest-cost expansion options in the future. Transfer central dispatch functions to a generator-transmission committee organization</td>
</tr>
<tr>
<td>Government Commitment to Privatization</td>
<td>Steady support for reform on step-by-step basis over long-term planning timeframe; Government achieved high level of credibility among foreign investors</td>
<td>High level of commitment displayed in moving process through Congress and Implementation of initial privatization goals so quickly; wait-and-see attitude remains among internal critics and foreign investors, but active participation by numerous foreign entities in privatization efforts</td>
<td>The Government prioritized electric sector privatization early in its overall privatization program, and a new electricity law was enacted quickly, demonstrating a high level of commitment and overall political support. Foreign investors appear interested, but cautious in Peru</td>
</tr>
<tr>
<td>Public Acceptance</td>
<td>Utility employees persuaded first at managerial level to support privatization with prospect of merit pay and promotions, improved career options; then all utility and public employees notified by means of stock investment options set aside for them; unions ceded opposition after protracted negotiations to get maximum benefits; pension funds and institutional investors became strong proponents of and participants in privatization; inter-ministerial makeup of CNE, coordinating privatization with CORFO, reduced government-level opposition. Main public criticism related to valuation of assets for sale at discounted prices</td>
<td>Effects of government economic and financial crisis evident to public, as well as that related to the emergency situation of the electric sector in 1988-1989, when blackouts on daily basis occurred throughout country. Unions provided strong political support to President Menem, thus had to support his program for privatization. Employees persuaded by compensation packages and investment options reserved for them</td>
<td>The prolonged, daily blackouts, and their consequences on the productive industrial sector and commercial interests made the public generally aware of the need to resolve the power crisis; further support was gained by using a portion of privatization revenues to fund various poverty alleviation programs. Unions generally resist the privatization program, but have not been able to obstruct it in a significant way beyond negotiating for worker compensation and retaining benefits. A portion of the shares of the new electric enterprises will be reserved for purchase by utility and public sector employees</td>
</tr>
<tr>
<td>Country</td>
<td>Features</td>
<td>New Sector Structure</td>
<td>Regulatory Framework</td>
</tr>
<tr>
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<tr>
<td>Chile</td>
<td>Separate Generation, Transmission, and Distribution functions and distribution system, which may be owned by private companies or cooperatives</td>
<td>Separately regulated by the Ministry of Energy</td>
<td>Separately regulated by the Ministry of Energy</td>
</tr>
<tr>
<td>Argentina</td>
<td>Separate Generation, Transmission, and Distribution functions and distribution system, which may be owned by private companies or cooperatives</td>
<td>Separately regulated by the Ministry of Energy</td>
<td>Separately regulated by the Ministry of Energy</td>
</tr>
<tr>
<td>Peru</td>
<td>Separate Generation, Transmission, and Distribution functions and distribution system, which may be owned by private companies or cooperatives</td>
<td>Separately regulated by the Ministry of Energy</td>
<td>Separately regulated by the Ministry of Energy</td>
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</tbody>
</table>

Note: The table above provides a high-level overview of the electricity market structure and regulatory framework in different countries.
<table>
<thead>
<tr>
<th>Features</th>
<th>Chile</th>
<th>Argentina</th>
<th>Peru</th>
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</thead>
<tbody>
<tr>
<td>Regard for Environmental Protection</td>
<td>Environmental protection regime just starting; focus mainly on mobile sources (Santiago) and on mining pollution; new thermal plants likely to have stricter pollution emission standards</td>
<td>New environmental regime just starting up, but expected to enact and enforce stricter emission standards for thermal powerplants in next few years</td>
<td>Concessionaires required by new electricity law to preserve national resources, protect environment. New environmental protection regime being started to set standards and overcome environmental issues</td>
</tr>
<tr>
<td>Privatization Timetable</td>
<td>During 1970s undertook privatization in various other sectors. 1978 law establishing CNE largely to bring about reforms of power sector enacted in 1982 law. Between 1980-1990, gradually completed privatization of about 85% of state-owned generation, 95% of the public transmission grids, and 100% of its distribution franchises</td>
<td>In 1989, initiated privatization in other sectors, set power sector as target; 1990-1992, legal reforms undertaken to set new base for sector. Initiated and mostly completed privatization of State-owned thermal generation in 1992; by mid-1993, 40% of total federal generation, 100% of federal (40% of total) distribution; 100% of high-voltage transmission sold to private sector. Completion expected in 1994</td>
<td>In 1991, new privatization law; Government started privatizing other sectors, issued decrees for private investment in the power sector; passed new electricity law in 1997, set up Privatization Committees for each electric enterprise; issued implementing regulations in 1993. Privatization of Electroamina and Electroperu scheduled for early 1994; 100% privatization expected by 1995</td>
</tr>
<tr>
<td>Reorganization &amp; Transfer of Government Assets</td>
<td>Reorganization of government assets by generating, transmission and distribution functions and by geographical area; divestiture of assets via public auctions, stock sales, employee stock options, sales to regional investors</td>
<td>Reorganization of government assets into generating, transmission or distribution business units; asset sales via bidding process, public stock sales, and employee stock options; minor distribution concessions transferred to provincial government</td>
<td>Reorganization of electric companies into separate generating, transmission, distribution entities with more focused areas. Most assets expected to be sold separately to maximize competition. Process to include bidding, stock sales and popular capitalism</td>
</tr>
<tr>
<td>Deconcentration &amp; Competition in Reformed Power Sector</td>
<td>5 vertically-integrated public utilities and 3 regional affiliated utilities yielded 10 generators supplying public grids, 22 distribution utilities, and 2 private transmission concessionaires.</td>
<td>3 national generators serving the grid have thus far been broken up into 10 or so private generators, and one transmission and one dispatch entity. Segba yielded 3 private distribution utilities. Final privatizations will further deconcentrate the sector</td>
<td>Number of distribution entities to increase prior to privatization—Electroamina split into 2 distribution and 1 generating units; Electroperu to be split into several generating units and 1 transmission entity. Regional utility deconcentration, then privatization</td>
</tr>
<tr>
<td>Private Sector Ownership</td>
<td>Private participation as a total of all generating, transmission and distribution functions involved in providing public service is around 93% in 1993; future privatizations may occur in the near future for ENELNOR, an integrated utility in the North, and the hydro generating company, Colbun-Machichra.</td>
<td>Private investors now own Segba’s distribution (about 40% of total distribution in Argentina) and generating assets; most of Ayee and Hidrocor’s generating assets (around 70% of total public power capacity); and the high-voltage transmission system. Remaining national hydropower is to be privatized in 1993 and 1994; binational utilities and nuclear plants will remain in Government hands for now, with the latter being studied for possible privatization. Some provinces plan to follow San Luis and Cordoba utilities’ privatization of distribution or (minor) generating assets</td>
<td>The intention of the current privatization program is to fully privatize the power sector and remove the State from any proprietary or commercial role. Transmission is likely to be the last function to be privatized, as a separate entity for each of the interconnected systems, and overseen by committee organizations.</td>
</tr>
<tr>
<td>Autonomy and Authority of the Regulatory Regime</td>
<td>CNE used to have, but now lacks, the technical staff it needs to fulfill its tasks, and relies heavily on outside contractors; SEC is weak, lacking the resources to become an effective, active overseer; the President of the Republic appoints the President and the Executive Secretary of CNE, and the CNE’s Council consists of Government Ministers</td>
<td>SE completed technical staffing, and is hiring consultants to advise SE on internal restructuring; legal basis to provide NRC with independence from political criteria; the Congress must approve the appointment of NRC Commissioners. CFEE has yet to nominate its allotted 2 (of the 5) regulatory Commissioners</td>
<td>Three CTE members nominated individually by 1 of 3 Ministries, 1 by a group of distribution concessionaires and 1 by a group of generator concessionaires. MEM nominates the CTE head. The CTE Commissioners choose the Executive Secretary, set size of the staff and budget. 1992 emergency suspended rate adjustments; COFRI reduced state-enterprises’ scheduled tariff increases</td>
</tr>
<tr>
<td>Features</td>
<td>Chile</td>
<td>Argentina</td>
<td>Peru</td>
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<tr>
<td>Anti-Trust Regime &amp; Arbitration Mechanisms</td>
<td>Established Anti-Monopoly Commission reviews anti-trust issues; appeal to Supreme Court. Major case re: Endesa heard in 1992 by Commission, but required no changes: Supreme Court upheld decision without review. Pricing/service quality issues heard by SEC, Ministry of Economy, or civil courts</td>
<td>Current laws relevant to electric sector corporate and anti-trust issues for litigation unclear, but Congress now considering legislation to clarify anti-trust and consumer protection issues. After passage of new anti-trust laws, Argentina expected to set up an Anti-trust Commission to arbitrate these issues</td>
<td>CTE is to administratively arbitrate all issues related to tariffs; MEM to resolve disputes related to concessions. Resolution of anti-trust issues is not yet provided for</td>
</tr>
<tr>
<td>Impact on Electricity Rates</td>
<td>Since 1990, there has been a modest overall downward trend in electricity rates, after a period between 1984 and 1990 in which electricity rates had steadily increased</td>
<td>In 1992, pre-privatization adjustment to increase rates to economic costs, but smallest increase for residential users. Rates expected to decrease eventually after plant improvements and new hydro capacity is brought online and increased competitiveness of the supply market</td>
<td>In past, rates subsidized, but recently increased gradually to bring rates in line with real economic costs of electricity supply by 1996. Government plans to fiscally subsidize low-income residential users</td>
</tr>
<tr>
<td>New Investment</td>
<td>Remains of concern; indicative planning prioritizes proposed projects on economic basis; Government may support larger projects. Private investors building 2 hydro plants (130 MW total); 450 MW hydro project (Endesa); coal plant under study</td>
<td>Expected from most efficient generators; issue deferred as large government projects come online until 1998. Privatized generating assets already benefiting from investments in upgrades and efficiency improvements</td>
<td>Totally expected to be covered by private investors; initial privatizations for generating units likely to require upgrades to improve efficiency/availability</td>
</tr>
</tbody>
</table>
Electricity Price Trends by Country

ARGENTINA
Electricity prices have been distorted and erratic in recent years

CHILE
Electricity prices are not distorted and tend to stabilize

COLOMBIA - Electricity prices have been low, distorted and have been declining since 1988
COSTA RICA - Electricity prices are distorted but have remained stable over the past 10 years.

JAMAICA - Electricity prices are not distorted and have a declining trend over the past 10 years.

PERU - Electricity prices have been distorted. Commercial rates have fluctuated over the past 10 years.
NORWAY - Electricity prices have increased over the past 10 years but have been stable

United Kingdom - Electricity prices are not distorted but have gradually increased over the past 10 years

United States - Electricity prices are not distorted and have a decreasing trend over the past 12 years
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