South American Electricity - 2006 Year in Review

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SOUTH AMERICAN ELECTRICITY — 2006
YEAR IN REVIEW

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I. INTRODUCTION TO ARTICLE

This article provides an overview of developments in the year 2006 in the electricity sector in South America.

II. ARGENTINE POWER MARKET

A. DEVELOPMENT OF THE EMERGENCY LAW 25,561

As a result of the 2001 economic crisis, Argentina enacted the Law of Public Emergency and the Reformation of the Exchange Regime No. 25,561, which, among other things, pesified transportation and distribution tariffs and authorized the government to renegotiate transportation and distribution concession agreements.¹ Several foreign investors (including several foreign energy companies) filed investor claims under their respective bilateral investment treaties with the International Center for Settlement of Investment Disputes.²

Although the renegotiation of these concession contracts started in 2002, the Argentine government was slow in granting relief to these affected foreign investors, perhaps mindful of the adverse political effects of tariff increases and the effect on inflation. In fact, in 2005 the government, acting via the designated agency, Unidad de Renegociación y Análisis de Contratos de Servicios Públicos (UNIREN), renegotiated four

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¹. Law No. 25561, Jan. 6, 2002, B.O. 07/01/02 (Arg.).
². In general, the petitioning foreign investors argued that the substantial reduction in tariffs (on an inflation adjusted basis) resulting from pesification violated their concession agreements, impeded their ability to pay off U.S. dollar-denominated debts incurred in reliance on the concession contracts, and resulted in significant economic losses.

In general, these renegotiated agreements in the power sector contemplate a temporary increase in tariffs, mandatory investment commitments, a complete review process for tariffs (still pending), the postponing of fines levied by the authorities for alleged breaches of the concession agreements, and waiver of investment claims under applicable bilateral investment treaties. For power distribution companies, the increases in tariffs were not applicable to residential customers, a politically sensitive constituency.

### B. High-Voltage Transportation Network

In 2006, in connection with the high-voltage transportation network, the government carried out the Federal Transport Plan and put up for bid certain public works projects, per resolutions 657/99 and 147/2000 of the Secretary of Energy, which had been suspended due to the Peso Crisis of December 2001. Under the Federal Transport Plan, the government is contemplating the construction of approximately 4,600 kilometers of high-voltage lines with a total investment of U.S.$1.3 billion. The following projects are the most advanced in this regard: (i) Mendoza–San Juan, involving 175 kilometers of line and U.S.$35 million of investment; (ii) Puerto Madryn–Pico Truncado, involving 538 kilometers of line and U.S.$130 million in investment; (iii) Recreo–La Rioja, involving 215 kilometers and U.S.$40 million of investment; (iv) Yacyretá Third Line, involving 500 kilometers of line and U.S.$300 million of investment; and (v) Tucumán–Chaco, involving 1,100 kilometers of line and U.S.$700 million of investment.

### C. Generation Power Plants

Following several years of negotiation, in October 2006, the government awarded turnkey construction projects for two power plants, the General Belgrano Power Plant and the General San Martín Power Plant, which will collectively contribute 1,647 megawatts to the national grid and will require an investment of U.S.$1.097 billion. Of such investment,

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3. The four concession agreements are: (i) Empresa Distribuidora La Plata S.A., (ii) Empresa de Transporte de Energía Eléctrica por Distribución Troncal de la Provincia de Buenos Aires S.A., (iii) Compañía de Transporte de Energía Eléctrica en Alta Tensión S.A., and (iv) Empresa de Transporte de Energía Eléctrica por Distribuidora Troncal de Cuyo S.A.

4. Please note that Law 24,065 divides generation, transmission, and distribution into distinct sub-sectors, each subject to different regulations.
more than one-half will be contributed by the State and approximately U.S.$500 million will be contributed by the Foninvemem, a fund comprised of credits that the power-generating companies have been awarded by the State. The government’s plan also contemplates an opportunity for third party investors to invest in the projects.

D. INVESTMENTS-CREATION OF SPECIFIC CHARGES

Law 26,095, passed in May 2006, envisions the creation and collection of specific charges for encouraging the financing of investments in power transportation and distribution, considered a national priority. The specific charges shall be allocated to trust funds for the development of the projects and shall remain in force until the complete repayment of the obligations related to the respective projects. Pursuant to this new law, the Executive Branch shall select the projects. To date, no regulations to Law 26,095 have been adopted.

E. WIND POWER

Despite a favorable environment for wind power generation, Argentina has not attracted extensive investment in this area to date. But several provincial and municipal governments have been promoting wind projects, particularly in the remote and windy southern parts of the country. In 1998, Argentina adopted Law 25,019, creating an alternative energy legal regime for wind and solar power. The law creates an incentive for the installation of wind power of one cent per kilowatt. Some provincial governments also offer a similar incentive. Energía Argentina Sociedad Anónima, state-owned energy company, has also made statements suggesting that there will be significant investment in wind power in the future.

III. BRAZILIAN POWER SECTOR

A. INTRODUCTION – GENERAL EXPECTATIONS

In October 2006, President Luiz Inácio Lula da Silva (Lula) won re-election, bringing a certain stability to investor expectations in the energy sector, and programs inaugurated under Lula such as Programa de Incentivo às Fontes Alternativas de Energia Elétrica (PROINFA) and Luz para Todos (Light for All) are expected to continue during his second term in office.

5. Law No. 26095, May 17, 2006, 20 B.O. 18/05/06 (Arg.)
8. Id.
B. UNBUNDLING PROCEDURES

According to the New Model for the Energy Sector issued per Federal Law 10848/04, energy distribution companies may not carry out other activities such as energy production, energy transmission, or the sale of energy to free consumers. Therefore, companies that had several concessions for different public services or authorizations for activities in the energy sector were forced to segregate such activities into separate companies. During 2006, the Agência Nacional de Energia Elétrica (ANEEL), the Brazilian electricity regulatory agency, approved unbundling proceedings for several important companies in the power sector—Companhia Energética de Minas Gerais SA, Light SA, Grupo Rede’s public utility distribution companies, Companhia Energética de Goiás, and Centrais Elétricas de Santa Catarina. In addition, ANEEL is in the final stages of review for others such as Companhia Estadual de Energia Elétrica do Rio Grande do Sul, Companhia Força e Luz Cataguazes Leopoldina, and Empresa Energética de Sergipe SA.

C. IMPORTANT MERGER & ACQUISITION TRANSACTIONS IN 2006

There has also been important merger and acquisition activity in the Brazilian power sector. First, in April 2006, Light SA, previously controlled by the French group Electricité de France Internacional SA (EDF), had 75 percent of its shares sold to Rio Minas e Energia Participações SA (RME). RME (owned by Andrade Gutierrez SA de Cemig Luce Brasil Fundo de Investimento e Participações SA, and Pactual Energia) now has direct control of the holding company and indirect control of the concessions Light Serviços de Eletricidade SA, Light Energia SA, and Itaocara Energia Ltda., as well as the company Lightger. EDF will continue to hold a minority interest in the company. In addition, in June 2006, the transmission company Companhia de Transmissão de Energia Elétrica Paulista was sold by the government of the State of São Paulo to the Colombian company Isa Capital do Brasil Ltda. for approximately U.S.$540 million. Finally, Grupo Rede sold Ente Nazionale per l’energia Elettrica (Enel) Group several small hydro power plants resulting from the unbundling procedures of Centrais Elétricas Matogrossenses, Cauá Serviços de Eletricidade S.A., Companhia de Energia Elétrica do Estado

9. Free Consumers are large users of power with a high level of commercial sophistication who are permitted to either purchase their power from (i) the applicable regulated regional distribution company based on government established tariffs or from marketing companies or (ii) independent power providers, in which case they may freely negotiate the terms and conditions of their power purchase agreement, including bargaining for a lower price of megawatt per hour. Lei No. 10.848, de 15 de março de 2004, D.O. de 16.04.2004 (Braz.), available at http://www.aneel.gov.br/cedoc/lei200410848.pdf.

10. In a Brazilian unbundling proceeding, ANEEL reviews the integrated activities of the applicant and assigns tariffs to its various activities so that the public or larger free consumers can purchase electricity from the applicant.
D. Recent Energy Auctions

The first energy auction under Lula's reforms took place in December 2004 and involved the sale of R$80 billion in electricity. Subsequent auctions involved sales in the respective amounts of R$7.7 billion, R$2.7 billion, and R$7.8 billion. The government is now preparing the fifth existing energy auction, in which distribution companies would supply power starting in January 2007. Power producers and trading companies may participate as sellers. The auction was held in December 2006, and for the first time the bids were handled via the internet and not in a closed environment as in prior auctions.

E. New Energy Auctions

Via the new energy auctions, the government seeks to purchase power from new plants (i.e. those that are not yet operating or have not received a concession or other authorization from the authorities). In October 2006, the Electric Power Marketing Chamber carried out the third new energy auction, whereby distribution companies were authorized to supply the government with electricity starting in January 2011. Electricity produced by hydroelectric plants is sold in thirty-year contracts, and energy produced in thermoelectric plants is sold in fifteen-year contracts.

The Brazilian government plans new energy auctions for the power plants of the Rio Madeira Complex, Santo Antonio, and Jirau in the first quarter of 2007. The power plants will be located in the Brazilian State of Rondonia in the Amazon region and are intended to deliver nearly 7,000 megawatts through the operation of eighty-eight turbines. The total estimated investment for the construction of the complex is U.S.$7.5 billion. The auctions will be contingent on the winning bidder obtaining environmental authorizations. International energy groups, such as Endesa, have already expressed interest in the auctions.


12. In the first auction, the agents were released from their existing contracts and were required to purchase power under a new agreement for the entire period. Distributors are required to acquire the full amount of energy to supply 100 percent of their markets and each agreement was for an eight-year term, so the subsequent auctions were basically used to cover differences between the energy already purchased and the energy actually consumed by the market. Eletrobrás participates in the auctions as any other actor and, therefore, will purchase energy from all sellers that offer winning bids, proportionally divided with all other buyers. See Chamber of Commercial Electric Energy, http://www.ccee.org.br (last visited Mar. 22, 2007); Eletrobrás, http://www.eletrobras.com.br (last visited Mar. 22, 2007) (for more information on the auctions).
F. Investments in Power Transmission

The government has scheduled an auction in December 2006 for the granting of a concession for ten transmission grids and three substations involving investments of R$680 million for the construction of 1,033 kilometers of transmission grid in the States of Bahia, Ceará, Minas Gerais, Paraná, Piauí, Rio Grande do Norte, Rio Grande do Sul, Santa Catarina, and São Paulo. According to government plans for the expansion of the transmission system, other auctions may be announced in the following years.

G. Tariff Periodic Revision for Distribution Companies

After an intense debate, in October 2006, ANEEL approved new rules for the periodic revision of the consumer tariffs charged by distribution companies. These rules replace the prior ones used in the first term of periodic revisions in 2003. The prior rules (particularly the ones pertaining to the politically sensitive subject of consumer tariffs) were strongly questioned by the distribution companies and are currently being challenged in a lawsuit brought by the Brazilian Association of Distribution Companies. A periodic revision is contemplated in these concession agreements every four or five years in order to assess the financial condition of the concessionaires and whether an adjustment in tariffs is warranted. In this particular review, ANEEL analyzes the costs, revenues, and return on investment of each project and adjusts tariffs upwards or downwards accordingly. In 2007, the following companies will be subject to periodic revision: Coelce (from the State of Ceará), Eletropaulo (from the State of São Paulo), Celpa (from the State of Pará), Escelsa (from the State of Espírito Santo), Elektro (from the State of São Paulo), Bandeirante (from the State of São Paulo), and Piratininga (from the State of São Paulo).

H. Tariff Periodic Revision for Transmission Companies

ANEEL has also approved the first set of rules for the periodic revision of the tariffs used by the transmission companies. Resolution 203/06 was issued by ANEEL after a public hearing and sets forth the methodology to review the annual revenue of the transmission companies in order to maintain the economical and financial balance of the concession agreement.

The delay in the approval of the rules for the periodic revision of the transmission companies caused the suspension of the auction for the construction of the transmission grid initially scheduled for September 2006. The suspension was ordered by a court after companies complained of the impossibility to bid due to the absence of final periodic revision rules. After the approval and publication of the periodic revision rules in September 2006, the auction finally took place in November 2006, with ANEEL contracting for the construction and operation of seven different
I. PROINFA

PROINFA, the Alternative Sources Incentive Program, carried out by Eletrobrás, is designed to diversify Brazil's energy matrix by offering to purchase alternative energy (i.e. wind, biomass, and power produced by small hydroelectric projects). The program's first phase was successfully completed with the auction for the purchase of 3,300 megawatts of power. The government authorized extending the beginning of PROINFA's projects from December 2006 to December 2008. To date, PROINFA has announced thirty-seven projects scheduled to start operating in 2006, producing a total of 914.57 megawatts and 102 projects, producing a total of 2,235.43 megawatts. These latter projects are scheduled to start operating in 2007.

In addition, Eletrobrás announced that it is studying the possibility of launching PROINFA's second stage in 2007, involving the offer of 3,000 to 4,000 megawatts of power. Interestingly, one company, Empresa de Pesquisa Energética, asserted that there is no need for the implementation of PROINFA's second phase as alternative energy projects are sufficiently competitive to participate in the current auctions (referring to biomass, small hydroelectric projects, and wind projects that won contracts in the first phase).

IV. BOLIVIAN ELECTRICITY MARKET

Before the capitalization process of 1994, the Bolivian State served as the generator, distributor, and regulator in the power market. But after the capitalization program was adopted, a new model was adopted in which (i) the private sector acts as the generator, transporter, and distributor; and (ii) the Bolivian State serves as the regulator, acting via a new autonomous regulatory entity, Sectorial Regulation System, which is responsible for regulating the day-to-day operations of the private sector and the enforcement of electricity-related regulations.

As a result of these reforms made in the electricity sector, Bolivia adopted Law of Electricity No. 1604, dated December 21, 1994, which regulates the activities of the electricity industry and establishes the principles for the setting of prices and electricity rates throughout the country. All individuals and companies performing activities within the electricity industry are subject to this law. There have no been material changes to the Electricity Law in 2006. Nevertheless, due to the political changes mentioned above, foreign investors have delayed making new investments in this sector until the policy of the incoming government is further defined.
V. CHILEAN ELECTRICITY MARKET

A. INTRODUCTION

In November 2006, Chile’s Energy Commission issued its Energy Security Policy that seeks to implement short and medium-term measures to diversify the country’s energy matrix and achieve greater energy autonomy through the efficient use of energy.\(^\text{13}\) Given the robust growth of the Chilean economy, national electricity demand is estimated to grow 6 to 8 percent annually. Moreover, demand in the Central Interconnected System (SIC), the grid that serves central and southern Chile covering almost 90 percent of Chile’s population, is expected to double in the next ten years and to triple in the next twenty.

Currently, Chile imports 72 percent of its energy needs in the form of oil, gas, and coal, making the country vulnerable to the volatility of international prices, supply interruptions, and shortages. Today, hydroelectricity represents almost 60 percent of the power generated in the SIC. The former executive secretary of Chile’s Energy Commission has suggested that the government is examining the country’s river basins to determine which rivers could be developed for hydroelectricity. He expressed the opinion that the administration expected other fuels such as coal to play a resurgent role in power generation, but recognized that water will remain the key resource.\(^\text{14}\)

Chile has numerous water resources in the Aysén Region located in the far south of the country. A variety of factors—burgeoning demand, the need to secure energy supply over the upcoming years, the growing restrictions on Argentine gas exports, high fossil fuel prices, the difficulties encountered with such fuel supplies (e.g. gas, oil, and coal), and the improvements made in transmission technology—have led some observers to suggest that Chile should develop its own available water resources in the Aysén Region and enhance its energy self-sufficiency.\(^\text{15}\)

To this effect, Chilean power generators, Endesa Chile and Colbún, are trying to jointly develop in this area a U.S.$4 billion hydroelectrical project on the Baker and Pascua Rivers. The project contemplates four power plants that would generate 2,400 megawatts of electricity, equivalent to more than five years worth of new demand at the current annual growth rate of 450 megawatts. It also contemplates a transmission line running at least 2,000 kilometers to the central Chilean market at a cost of approximately U.S.$1.5 billion, which would be constructed by Transelec, a former subsidiary of Canada’s Hydro-Quebec.\(^\text{16}\)


\(^{15}\) Id. Id.

\(^{16}\) Ninety-two percent of Translec was recently acquired in July 2006 by a consortium led by Brookfield Asset Management, Inc., which includes the Canadian Pension Plan Investment Board, British Columbia Investment Management Corporation, and other institutional investors for U.S.$ 1.55 billion.
assets serve as the backbone of Chile’s electrical sector with over 8,000 kilometers of transmission lines and fifty-one power substations, delivering electricity to approximately 99 percent of the Chilean population through various local distribution companies.

But the Aysén projects have generated great controversy and debate and fierce opposition from environmentalist groups, as concerns have been expressed that approximately 9,300 hectares of land would be flooded and sensitive river ecosystems would be altered. Environmentalists contend that no level of compensation would offset the lasting environmental impact.\footnote{Garip, * supra note 14.}

### B. New Developments in Chile’s Electricity Regulatory Framework

The Electricity Act of 1982 was published on September 13, 1982, and amended in 1988 (pertaining to the rules on trunk transmission pricing), in 1990 (pertaining to rules dealing with regulated clients’ rights in the event of energy shortages), in 2000 (pertaining to pricing of ancillary services at the distribution level), in 2004 (containing the First Fast-Track Law providing new pricing rules for trunk transmission and sub-transmission), and in 2005 (containing the Second Fast-Track Law pertaining to the new pricing rules for regulated clients and incentives for investments in power generation).

Chile’s governmental efforts to overcome the energy crisis and related contingencies and threats to the country’s general economic performance, to foster new investments (particularly on power generation so as to achieve greater autonomy), and to ensure adequate supply within a secured energy scenario, have resulted in the enactment of two Fast-Track Laws, both of which have played a crucial role in improving Chile’s electricity regulatory framework. A bill for a Third Fast-Track Law is currently pending, which addresses improving the pricing system of electricity distribution companies.

#### 1. First Fast-Track Law

Enacted in March 2004, this law was primarily intended to enhance new investment in transmission by means of clarifying the pricing rules for existing assets and establishing a stronger framework to identify upgrade and expansion projects and related economic returns. The main issues addressed by this law were: (i) trunk transmission pricing is based on 100 percent payment of existing assets (valued at current market prices), by all generators and users—the old pricing scheme based on direct negotiations between generators and transmission companies was abolished; (ii) sub-transmission pricing is based on 100 percent payment of demand-adapted assets at current market prices; (iii) recovery of administrative costs both for trunk transmission and sub-transmission; (iv)
threshold level for free market customers able to choose their supplier is reduced from 2 megawatts to 0.5 megawatts, thus lifting a portion of non-residential customers out of the captive market of distribution companies to be freely disputed by generators; (v) access charges applied by distributors to generators to reach current or future free clients existing over their networks; (vi) new pricing rules for small, isolated, and vertically-integrated electricity grids; (vii) the assets that will be part of the trunk system for purposes of the first trunk transmission study are established; (viii) preferential conditions are set forth for access to transmission for renewable or non-conventional, small-size generators—such preferential rules will imply a subsidy from large conventional generators to their small and non-conventional peers with respect to transmission costs (non-conventional users of up to 20 megawatts in size will have no prorate in transmission usage); and (ix) rules are issued on the structure and scope of duties and the authority of an expert panel created as a mechanism to resolve conflicts between the utilities and Chile's Energy Commission as well as conflicts between the utilities themselves.

2. Second Fast-Track Law

This law was a response by the government to the lack of investment in power generation. Its main features were: (i) liberalization of node prices—starting in 2009, prices at which distribution companies buy energy for their regulated clients are going to be set by up to fifteen-year power purchase agreements (PPA) auctioned among generators (current or potential, national or international to enter into the Chilean market); (ii) setting price caps for the new prices to be obtained in the auctioned PPA; (iii) setting a transitory regime for energy prices with respect to current distribution companies’ PPA that become due between May 2005 and December 2008; and (iv) setting the conditions under which small and non-conventional generators may sell their electricity to distribution companies at prices equal to those obtained in the PPA auctions.

These long-term PPAs for regulated clients, intended to be operating for fifteen years, will allow the setting of long-term node prices. It is expected that this mechanism will unleash investments in generations to come as the lack of such investments was attributed to a growing gap between node prices set by Chile’s Energy Commission and the actual cost of generation. This gap was caused to some extent by the supply problems Chile has been facing related to Argentine gas.

Under this Second Fast-Track Law, distributors must issue public tenders for the energy required to supply their regulated clients. In October 2006, CGE, Chilquinta, Saesa, Chilcetra, and Emel distribution companies received offers for the first block of tenders, which totaled 2,750 megawatts. The second set of tenders for the supply of more than 2,832 megawatts is scheduled for award in the second quarter of 2007.

Chile's leading electric generators, Endesa Chile and Colbún, led the first bidding process for the long-term energy supply of the above five
electric distributors. Endesa Chile won the largest portion of the bid package, followed by Colbún, with two other generators winning smaller portions. The distributors bid out a total of nearly 12,000 gigawatt hours per year to be supplied between 2010 and 2024. The average price from the generators was U.S.$52.60 per megawatt hour, well below the distributor ceiling of U.S.$62.60 and lower than the current wholesale prices in Chile’s central region of U.S.$54.20 per megawatt hour.

3. Government Prepares a Third Fast-Track Law

Over the past months, the government has been working on an initiative to introduce new changes to the current regulation on electric distribution in Chile. Although the First Fast-Track Law corrected the electrical transmission market’s distortions, and the Second Fast-Track Law established incentives for the stimulation of investment in generation, the third law seeks to improve the pricing system of electrical distributors.

One of the main elements of the initiative seeks to modify the form in which the value added cost of distribution (VAD) is calculated. Distribution rates, or VAD, are set once every four years. Rates are set based on a theoretical model company that serves the concession area where the actual distribution company operates. The model company is understood to be perfectly efficient with regard to operating expenses and capital investments as well as to energy losses. Economies of scale are transferred to the customers each time new rates are set. Today, the system works via two reports, one prepared by Chile’s Energy Commission and the other prepared for the distribution companies. The final calculation is made by weighing two-thirds of the commission’s report and one-third of the companies’ report. The government believes that this method creates perverse incentives since it encourages the parties to take extreme positions. Thus, the government is considering a formula in which a panel of experts will resolve the pricing differences among the parties. Another aspect of the initiative is to make amendments to the price calculation of the supplemental services associated to the distribution of power supply.

C. NEW INVESTMENT PROJECTS AND TRANSACTIONS

The adoption of the Second Fast-Track Law has triggered a major investment boom in the power generation sector. According to governmental sources, more than sixty new generation projects are under consideration, representing a total capacity of 11,800 megawatts and an investment of some U.S.$12 billion.18

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U.S.-based energy supplier AES Gener plans to spend U.S.$1 billion through its subsidiary Norgener in the development of a 600 megawatt coal-fire power station in Mejillones, located in the north of Chile. The plant will provide the electricity used by mining and industrial companies located in northern Chile, including state-owned Codelco. The Angamos project will have four plants producing 150 megawatts of power each, four seawater desalinization plants intended to transform 1,300 cubic meters of water per day and four water demineralization plants capable of processing 300 cubic meters of water per day. The entire project will make the U.S.-based Gener the third-largest contributor to the SING grid, which covers the north of Chile.19

In July 2006, Empresa Nacional del Petróleo (ENAP) announced the signing of a memorandum of understanding with BG International Ltd.’s branch in Chile and Empresas Copec S.A, setting out their commitment to carry out technical-economic feasibility studies for evaluating the construction of a latest-generation steam and electricity co-generating plant on the land of the ENAP Aconcagua refinery in central Chile. The cogeneration plant project would provide electricity in a stable and reliable way to the SIC grid and provide steam and electricity for ENAP’s Aconcagua refinery, using as fuel natural gas from the LNG re-gasification terminal being built at Quintero. The project involves an investment of between U.S.$200 and U.S.$300 million and the introduction of the latest generation environmental technology to Chile. It also confirms the interest of Copec in positioning itself again as an important player in the electricity sector.20

As part of the country’s energy security plan, and given that the new power plants will not come online until 2010, the government has determined that the SIC grid could require back-up diesel turbines to increase the installed capacity. “These turbines, which take only six months to install, have capacities that range from 30 to 120 MW and can be located in different parts of the country.”21 Chile’s Energy Commission, in coordination with the National Commission for the Environment and the electricity generators and distributors, has identified twenty-five preliminary sites in central and southern Chile for the installation of these back-up turbines. In the event of energy deficits by the actual power generators, these sites could generate, in the aggregate, 2,170 megawatts.22

Hydro Austral, a partnership between Italy’s Hidro Energía Italiana y Scotta and Chile’s Unifrutti, announced plans to invest U.S.$80 million in hydroelectric energy in the lake region. The project involves the construction of fifteen power stations that will provide 65 megawatts to the

19. El Mercurio (Santiago, Chile), Nov. 2, 2006; La Tercera (Santiago, Chile), Nov. 2, 2006.
22. Id.
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SIC. Three of the stations are expected to be ready by the end of 2007, and the remainder would become operational in 2008. This consortium is analyzing more than forty other mini hydraulic projects in the country. Additionally, the group is evaluating an aeolian energy project in the north that would supply a future water desalination plant.23

Suez Energy Andino announced plans to invest up to U.S.$450 million in its project in northern Chile that consists of the construction of a coal power station with 400 megawatts of capacity and a diesel petroleum unloading terminal. The power plant will consist of two units of 200 megawatts of power each, operating on the basis of coal or petcoke, or a mixture of both. In November 2006, the company formed Central Termoeléctrica Andina, which is responsible for advancing the two initiatives.24

Chilean generator Edelnor has submitted its Environmental Impact Statement (EIS) to the environmental authority for a U.S.$12 million fuel storage project in the northern coastal city of Mejillones.

The project would entail the reception of fuel, particularly diesel, through either existing installations at the Mejillones port or the diesel terminal planned by the Suez Energy Andino unit of Belgium’s Suez Energy. . . .

The first stage of construction would involve installing a 4,000m3 storage tank over six months to operate alongside Edelnor’s current 4,000m3 tank . . . . .

A second four-month period has been planned for the construction of three 10,000m3 tanks.

The tanks’ total 38,000m3 capacity could be available for storage a month after completion of the second construction stage.25

Chilean power generator Colbún is planning a 700 megawatt, coal-fired power plant facility in south-central Chile. The plan includes the construction of two 350 megawatt plants for a total investment of U.S.$1 billion, with the first plant to go online in 2010 and the second in 2013. In addition to coal, Colbún expects three new hydroelectric plants to go online next year, including 70 megawatt Quilleco, 55 megawatt Hornitos, and 20 megawatt Chiburgo. Additionally, it holds water rights from central through southern Chile that could allow it to construct two plants of unspecified scale that would go online after 2010.26

As mentioned above, Colbún and Endesa Chile are studying the construction of a U.S.$4 billion hydroelectric project in Chile’s far southern

Aysén region, with an estimated capacity of 2,355 megawatts. Endesa Chile plans to submit its environmental impact study in late 2007. Construction would begin in 2009, with the plants going online in the middle of the next decade.

Chile's Energy Commission has granted Endesa Chile "a concession to conduct the engineering and environmental impact studies for the 2.5GW Aysén project . . . . The US$4bn project consists of US$2.4bn for four hydroelectric projects, two on the Baker river and two on the Pascua river plus a fifth smaller plant." Endesa Chile and Colbún formed a 51/49 percent joint venture called Centrales Hidroeléctricas de Aysén for the development of this project.

Endesa has signed an MOU with Chilean transmission company Transelc to develop a 2,000km transmission line to take energy from Aysén to the country's central SIC grid. The project has come under heavy fire from environmentalists, tourism agencies as well as salmon and cattle farmers. Endesa, however, argues the project would diversify energy supply, increase current generation capacity 30% in the central grid and create 4,000 jobs.

D. ALTERNATIVE AND RENEWABLE ENERGY SOURCES

President Bachelet has stated that by 2010, 15 percent of the nation's energy should come from alternative, renewable sources. According to Minister of Mining and Energy, Karen Poniachik, about 2.4 percent of installed capacity is currently renewable energy, requiring Chile to add 450 megawatts of capacity by 2010 to meet this goal. To this effect, the government is seeking investment in non-conventional sources of energy such as hydropower, wind, geothermal, and biomass. The government is introducing a variety of investment incentives, including more streamlined bureaucratic procedures for new projects at the local level and national standards for emissions from thermoelectric plants. Officials are also looking into some models that would make it more attractive for distributors to buy renewable energy. Specific measures are expected to be adopted in 2007.

In September 2006, President Bachelet announced that the government would conduct preliminary studies to evaluate the potential development of a nuclear energy plant in Chile. But the government has no plans to build such a plant during the current administration. This announcement generated strong criticism because she claimed in her election campaign that she would not include nuclear energy in the national energy policy. The geographic feasibility studies involve analyzing the seismological and climatic aspects of such a project and the regulatory structure relative to the nuclear energy.

28. Id.
29. See CHILE'S ENERGY COMMISSION, supra note 18, at 7.
ENAP has announced that it will spend U.S.$22 million in geothermal explorations in the central region through Empresa Nacional de Geotermia (ENG). ENG is a joint venture between ENAP (49 percent) and Italian Enel (51 percent) created in 2005. ENG filed its EIS with the local environmental authority, Chile's Regional Environmental Commission (Corema), in November 2006 regarding its Nevados de Chillán Deep Geothermal Exploration Project.

The exploratory project consists of the drilling and production testing of two exploratory wells at a depth of between 2,000 and 2,500 metres, plus other complementary works like the building of roads (3.2 kilometres) and two drilling platforms (of one hectare each). The project will take between 12 and 16 months [and requires an investment of U.S.$9 million]. Once the environmental permit is obtained from Corema, expected in February 2007, the road and platform work will begin, in order to complete them before the start of winter.30

Enel has four other similar projects under development in Chile, seeking to generate a total of 200 megawatts.31

Chile's government is [in] the process of signing an agreement to allow the German company Südzucker - Europe's biggest sugar producer . . . - to develop biocombustible energy in Chile. CropEnergies, a subsidiary of Südzucker [which operates Europe's largest bioethanol plant], opened the Orafti inulin plant [in 2006] in Chile. The plant extracts the soluble fiber inulin from chicory for use in foods. The company is now looking to expand its operations in Chile, developing both biodiesel and bioethanol from wheat and beetroot.

Before starting operations in Chile, CropEnergies will have to meet regulatory standards set by the government. In turn, Chile's government will have to guarantee crop supplies, which involves increasing the production of the necessary crops.

The company's predicted turnover for 2006 is US$160 million, which translates into 210,000 cubic meters of bioethanol. Currently using wheat and barley as base products, the company will start production from sugar in 2007.32

ENAP and Empresas Iansa S.A. successfully concluded the studies phase for determining the feasibility of producing vegetable-based fuels in Chile.

On March 3 [of 2006], the two companies signed a Memorandum of Agreement to carry out these studies and [in September 2006], fol-

31. Id.
Following six months of joint work, have agreed that the development of bio-fuels in Chile is feasible, subject to the authorities determining the public policies and legal framework for regulating their eventual production, distribution, quality and tax regime for these kinds of fuel.

ENAP and Empresas Iansa S.A. expressed their wish to continue an active collaboration with the authorities to define the country strategy with respect to bio-fuels which, with their widely-known advantages, would help to diversify the energy matrix, reduce greenhouse effects and the re-conversion of Chilean agriculture.\(^\text{33}\)

As to promoting measures aimed at encouraging alternative energies, Chile's government decided to advance two initiatives. The first one seeks to promote the use of biofuels. To this end, Chile will establish a regulatory framework allowing vehicles to use mixtures that contain conventional fuels (gasoline and diesel) and biofuel (ethanol and biodiesel). The specific taxes applicable to fuels derived from petroleum will not be applied to biofuel, and thus the taxes applied to fuel mixtures of, for example, 95 percent petroleum and 5 percent biofuel, will be pro-rated.

The second initiative involves a bill before Congress to promote non-conventional renewable energies, thus setting the legal framework for these alternative energies. This bill provides that beginning in January 2010, 5 percent of the energy generated for free and regulated clients coming from the SIC and the SING power grids must come from non-conventional renewable sources based on contracts signed after January 1, 2007. Fulfillment of this 5 percent requirement will be measured through a certificate system. The power generators will have to deliver certificates stating that their clients are complying with this commitment. In locations where access to non-conventional renewable energy is limited or non-existent, a market will be created where these certificates can be traded.\(^\text{34}\)

VI. COLOMBIAN ELECTRICITY SECTOR

In 1994, the Colombian Congress enacted Law 142 to create a broad regulatory framework for private participation in the power sector. At the same time, Congress passed Law 143, referred to as the Electricity Law. These two laws established that public utilities would operate based upon the principles of equality, continuity of service, efficiency, free access for investors, economic freedom, and protection of consumers.\(^\text{35}\)


\(^{35}\) The regulation refers to the consumers as users.
The Electricity Law created an agency, the Energy and Gas Regulatory Commission, to regulate the power sector. The Electricity Law has not been materially amended since its 1994 passage.

The current regulations that govern the electricity sector classify the activities that parties may perform into four groups: (i) generation; (ii) transmission; (iii) distribution; and (iv) marketing. Each type of activity is subject to special rules. Generation and marketing of power are governed by the principle of free competition, while transmission and distribution activities are treated as monopolies.

Due to the regulations that contemplate private sector participation, the sector has been transformed. Several power companies were privatized between 1996 and 1998, and companies in the sector have become more productive and efficient and have improved the level of service. Colombia is working on several projects to improve its power infrastructure and ensure that the supply of power permits the country's continued strong economic growth. Isagen S.A. (Isagen) is Colombia's second power generator. Isagen was formed in 1995 as a result of the spin-off of Interconexión Eléctrica S.A., a product of the power sector transformation that followed the enactment of Laws 142 and 143 of 1994.

VII. PARAGUAY

A. INTRODUCTION TO PARAGUAYAN ENERGY SECTOR

The Paraguayan energy sector is made up almost exclusively of renewable energy sources with approximately 68.6 percent of the gross internal supply coming from hydroelectricity, 30.9 percent coming from biomass (firewood, vegetable residues, and other biomasses), and 0.5 percent coming from oil and mineral carbons. Paraguay is one of the largest hydroelectric producers in the world, and, given the small internal demand, it is able to export a relatively large amount of power. But approximately 98 percent of Paraguay's electricity exports are sold to Brazil and Argentina under the terms and conditions agreed to under the Itaipú and Yacyretá treaties, respectively, at prices significantly below international market levels.

The Vice-Ministry of Mines and Energy, a branch of the Ministry of Public Works and Communications (MOPC), is the regulatory authority for the national energy sector. The Paraguayan government plays a key role in the energy sector, both as a regulator and as a commercial actor. The state-owned companies acting in the energy sector are the national

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36. Although the distribution and transmission activities are treated as monopolies, the regulation allows certain conditions of competition when it is possible. In these cases, the monopoly, for efficiency reasons, is on the participant who builds and installs the connection.

power company, Administración Nacional de Electricidad (ANEDE), which holds a legal monopoly in the power sector and is responsible for the generation, transmission, and distribution of electric energy in the Paraguayan territory, and Petróleos Paraguayos, which holds the authority to industrialize oil and the legal monopoly in the importation of crude oil and diesel oil. As Paraguay does not yet produce oil or gas, the government is providing incentives for national and international investment in hydrocarbon exploration and exploitation activities.

B. Paraguayan Electricity Market

As mentioned above, Paraguay has a plentiful supply of hydroelectric energy with an electric energy production capacity of greater than 45,000 gigawatt hours per year, one of the largest in the world in terms of power generation per inhabitant (9,000 kilowatt hours per inhabitant). The most important hydroelectric facilities in the country are: (i) Itaipu Binacional, jointly owned with Brazil on a 50/50 percent basis with an allocated generation capacity granted to Paraguay of 35,000 gigawatt hours per year; and (ii) Entidad Binacional Yacyretá, jointly owned with Argentina on a 50/50 percent basis with an allocated generation capacity for Paraguay upon full operation will be 10,000 gigawatt hours per year. Finally, the Acaray hydroelectric dam is owned by ANDE and has a generating capacity of 850 gigawatt hours per year.

As mentioned above, less than 12 percent of Paraguay’s energy generation capacity is used in the internal market. The remaining 88 percent is exported to Argentina and Brazil under the terms and conditions set forth in the Itaipu and Yacyretá treaties, respectively.

In addition to its plentiful energy supply, Paraguay has significant hydroelectric potential. One of the objectives of the MOPC for the 2003-2008 term is to continue bilateral negotiations with Argentina for the reconsideration of the CORPUS Hydroelectric Project. Despite Paraguay’s comparatively economical and ample energy supply, there are not many national industries to consume this output. Moreover, there is a lack of investment incentives for this type of industrial activity, particularly after the suspension by the Fiscal Adjustment Law, Law 2421/04, of many of the incentives set forth in Law 60/90 entitled Incentive Regime for National and Foreign Investment.

VIII. Peruvian Electricity Market

In November 1992, Peru enacted the Law of Electric Concessions by which all restrictions to private investment in the electricity sector were

38. There is a privately owned company that buys electricity from ANDE and distributes it in the city of Villarrica. But its participation in the national electricity market is not significant.
40. Id.
eliminated. In Peru, the electricity sector is divided into generation, transmission, and distribution activities. A concession is required in order to carry out (i) generation activities with geothermic resources (with an installed power of more than one megawatt); (ii) transmission activities (when it is required to affect state-owned goods and easements); and (iii) distribution activities (over 500 kilowatts). In all other instances, a mere authorization is required. Concessions and authorizations are obtained from the Ministry of Energy and Mining.41

Although Peru has a national interconnection system that connects the country, some isolated systems still exist. Peru has also formed an Economic Operation Committee (COES),42 consisting of generation and transmission companies for the purpose of coordinating their operations at the most economical cost possible and guaranteeing the supply of electricity.

The Law of Electric Concessions contemplates a tariff regime applicable to transmission and distribution systems, the general public, and members of the COES. For those instances when electricity is not being sold to the general public as a public service, prices and other terms may be negotiated freely. Tariffs are approved by the Organismo Supervisor de la Inversion en Energía.43

Certain competition limits in the Peruvian power sector may be applicable, particularly as to vertical and horizontal integration, and approval of the Peruvian competition authorities may be required.

IX. CONCLUSION

The year 2006 highlighted the continued return of petro-nationalism44 to Latin America, and this development surely affects the power sector. Among other countries, Ecuador, Venezuela,45 and Nicaragua elected or re-elected left-of-center populist governments, and other candidates with similar views ran strong presidential campaigns in Peru and Mexico. These figures are calling for an enhanced role of the state and national oil companies in an effort to recoup additional revenues and address national anxiety resulting from the failure to keep pace with countries in other parts of the world (notably Asia and Eastern Europe) that have enjoyed more robust economic growth. Although these nationalistic trends are visible in other parts of the world, they have become particularly visible in Venezuela, Ecuador, and Argentina. Often times

45. President Hugo Chavez has recently announced his intention to nationalize the principal Venezuelan power company.
the victims are enhanced regional collaboration and integration, the rule of law (as evidenced by recent state disputes between Brazil and Bolivia, Argentina and Chile, and Bolivia and Chile), and production and efficiency. At the same time, Venezuela is using its enhanced purchasing power to develop its own regional energy initiative entitled PetroAmerica, 46 which contemplates ambitious projects throughout Latin America and the Caribbean. 47 Whether these projects are commercially viable or more politically motivated efforts, the trend highlights some of the challenges to economic growth in the region and the regional tendency to swing from one ideological extreme to another—a tendency which impedes the economic development of the region. 48 Perhaps what the region needs is a serious social democratic movement (akin to Chile and Brazil), which can participate in peaceful transitions of power and govern in a manner that meets the needs of its constituents and still attracts needed foreign investment. Such a development could be pivotal in transforming the region from one that exports natural resources to one that exports intellectual capital.

46. Guzman, supra note 44, at 21.