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**ENERGY AND TELECOMMUNICATIONS SECTOR ASSISTANCE
FOR MINISTRY OF ECONOMIC POLICY AND DEVELOPMENT
OF THE CZECH REPUBLIC
PHASE 2**

REVIEW OF INTERNATIONAL ELECTRICITY REGULATION

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INTRODUCTION

The Czech Republic is currently in the process of restructuring and privatizing the major "natural monopolies" in the energy industry (i.e., electric power, natural gas, and heat distribution). Since these natural monopolies will have market power or possibly an exclusive franchise, economic regulation of these industries will be necessary. A major effort of the Czech Republic in the near future will be the development of this regulatory structure.

In addition to understanding the basic concepts of economic regulation, rate setting, and industry structure, the regulatory structures and experience in other countries should be examined. This report provides an initial review of economic regulation of electric utilities in five developed countries: United Kingdom, Japan, Spain, Germany, and Chile. These five countries were chosen because of the existence of a private-owned utility industry within these countries. The United Kingdom and Chile were particularly chosen because of their recent efforts to privatize their state-owned electric utilities. This privatization experience should provide important lessons or models for Czech privatization efforts.

This report is organized into individual country summaries for each of the five countries. For each country, the following information is presented:

- Current structure of industry
- Form of regulation
- Privatization efforts
- Pricing policies
- Recent events

Exhibit 1 provides an overview of this information for each of the five countries.

OVERVIEW OF ELECTRIC UTILITY REGULATION

Although the five countries have private electric power industries, the degree of state involvement and ownership varies. The United Kingdom (UK) and Japan both have minimal state ownership. The federal government in each country does own capacity (UK owns nuclear power stations, Japan owns hydroelectric facilities), but their involvement in transmission and distribution is limited. Spain, Germany, and Chile both have greater state involvement. Chile is actively privatizing its remaining state assets, Germany is not currently changing its mixed ownership pattern, and Spain has moved towards greater state ownership and control in recent years.

The level of vertical integration of the electric utility industry also varies. The UK has fully divided the generation, transmission, and distribution into separate components. Japan is primarily organized into fully integrated regional electric utilities. Spain and Chile

have a mixed structure. Both countries have regional electric power distributors who own generation capacity, but separate generation companies do exist. Germany has a diverse electric power industry dominated by a small number of large vertically integrated companies. The UK and Spain also have a single national transmission company which coordinates and operates the electric power grid.

All five countries regulate electricity prices and tariffs, although the level and extent of this regulation varies. The UK has adopted a limited form of price cap regulation as part of its electricity privatization. Price cap regulation sets maximum retail prices that can be charged by distribution utilities, and maximum annual increases in prices. The other three countries regulate rates and rate structures based on set rates of return and cost of service. Regulation in Japan, Spain, and Chile is conducted by cabinet ministries, as opposed to independent regulatory authorities. The Spanish government is the most ambitious of these three countries in directing utility planning. Retail rates in Germany are primarily regulated by local and regional governments.

The UK and Chile have been the most active in privatization of the electric power industry. This activity is based on the free market philosophies of their current governments. Indeed, the current form of the UK electricity industry incorporates competitive market forces to a greater degree than any other developed country.

With the exception of the UK, the countries reviewed use standard average cost of service methods for determining utility rates. Spain, however, has implemented a uniform retail tariff and costing system which does provide incentive for utility efficiency and performance. Instead of cost of service regulation, the UK has adopted price cap regulation.

SUMMARY

Although the five countries reviewed have structured and regulated their electric power industry differently, several generalizations can be made. First, in each of the five countries, cabinet level agencies regulate or have oversight over the electric power industry. These countries do not regulate utilities by means of an independent regulatory body such as the U.S. public utility commissions or FERC. Second, the UK approach is unique. No other country has restructured its electricity industry to the level currently in place in the UK. Finally, except for UK, average cost pricing is the basis for rate design.

EXHIBIT 1

OVERVIEW OF ELECTRIC UTILITY REGULATION IN SELECTED COUNTRIES

Area	Great Britain	Japan	Spain
Current Structure of Industry	<p>Competitive Generation Sector</p> <p>National-level Grid Company</p> <p>Independent, Private Regional Distribution Companies</p>	<p>Regional, Vertically Integrated Electric Utilities</p> <p>Small Number of Wholesale Electric Utilities</p>	<p>Primarily Privately-Owned Electric Utilities</p> <p>National-Level Transmission Grid Owned in Common</p> <p>Two Large State-Owned Electric Companies own Generation and Distribution</p>
Form of Regulation	<p>Limited, No Independent Regulatory Commission</p> <p>Price Cap Regulation on Retail Rates</p>	<p>Extensive Involvement of Federal Government (MITI) in Planning</p> <p>MITI Review and Approval of Electricity Rates</p>	<p>Strong Federal Government Regulation of Rates</p>
Privatization Efforts	<p>Part of Massive Privatization of British Industry</p> <p>Shares of State-Owned Utility Sold by Public Offering</p>	<p>Japanese Utilities were Privatized in the early 1950s.</p> <p>Limited Introduction of Cogeneration</p>	<p>Mixed. State-Owned Utilities are Being Privatized, but these Utilities are also Purchasing Private Assets</p>
Pricing Policies	<p>Large Customer can Negotiate Directly with Electricity Suppliers</p> <p>Price Caps Determine the Level of Retail Price Increases</p>	<p>Japanese Utilities may Compete with one Another for Markets.</p> <p>Rate of Return Regulation Based on Average Costs of Service</p>	<p>Federal Government Sets Uniform National Tariff based on Average Total Costs</p> <p>Strong Incentives for Utility Efficiency</p>

EXHIBIT 1 (CONT.)
OVERVIEW OF ELECTRIC UTILITY REGULATION IN
SELECTED COUNTRIES

Area	Germany	Chile
Current Structure of Industry	<p>Mixed Private/Public Ownership Electric Utilities</p> <p>Over 1,000 Electric Supply and Distribution Companies</p> <p>Small Number of Vertically Integrated Utilities Represent Majority of Generation</p>	<p>Mixed Private and State Ownership, but with Limited Government Involvement with Planning</p> <p>Generation and Transmission Partially State-Owned</p> <p>Distribution Primarily Private</p>
Form of Regulation	Local and Regional Level Regulation of Rates	Federal Government Approval of Rates and Rate Structure
Privatization Efforts	None Currently Underway	<p>In Process.</p> <p>Most Nationalized Electric Companies have been Fully or Partially Privatized.</p>
Pricing Policies	Local and Regional Governments Set Rates Based on Average Total Costs	Federal Government Approves Rates and Rate Structure

UK (ENGLAND AND WALES) REGULATORY FRAMEWORK

The United Kingdom is in the midst of a massive restructuring of its electric power industry. This restructuring occurred as part of the privatization of its formerly state-owned electric company, the Central Electricity Generating Board (CEGB). The scale of this reorganization of the industry is unique and is designed to bring competition into the generation and sale of electric power. It is still too early to ascertain whether this new structure is efficient and workable, but early indications are positive. Thus, the experience of the United Kingdom is of relevance to the Czech Republic.

CURRENT STRUCTURE OF THE ELECTRIC POWER INDUSTRY

Beginning in 1989, the United Kingdom began a process of restructuring and privatizing the previously state-owned CEGB electric utility and the area electricity boards. The primary thrust of this reorganization was to break up the previous vertically integrated structure of the electric power industry. The current structure of the electric power industry is vertically disaggregated and is divided into three separate components: generation, transmission, and distribution.

The bulk of electric generation in England and Wales is supplied by two private companies (National Power and PowerGen) and one state-owned company which sells electricity from the existing nuclear power stations. These three companies are primarily comprised of the former assets of the CEGB. A major goal of this reorganization was to spur the development of an independent power industry. One regional electricity distributor, East Midlands Electricity, already has a portfolio of five major independent power projects totaling 2,500 MW. In addition, competition from other sources such as Scottish Power, Scotland's Hydro-Electric, and Electricite de France is permitted.

The main electric power transmission grid of CEGB was restructured into the National Grid Company (NGC), a holding company owned in common by the regional electricity distributors. The National Grid manages the operation of the transmission grid and administrates the operation of the competitive market for electricity, also known as "the pool."

The distribution segment of the industry has been fully privatized. Each of the 12 regional publicly-owned electricity boards have been privatized and restructured into regional electricity companies (RECs). Although these companies have the primary franchise within each region, large industrial customers can negotiate and contract for the purchase of electric power from other distributors, the National Grid, or specific generation companies.

FORM OF REGULATION

The regulation of the new (after privatization) electricity industry is the responsibility of the Office of Electricity Regulation (OFFER). Its primary duties are to ensure that power supplies are secure, to protect the interests of consumers and to ensure adherence to the terms and conditions of licenses issued within the system. Initially, 35-year licenses were issued to the privatized companies by the government. The future licenses will be issued by OFFER; the first annual report describes OFFER's purpose as "to monitor, enforce, and where appropriate modify all licenses, and prescribe standards of performance for Public Electricity Suppliers." OFFER is equivalent to the state-level Public Utilities Commissions in the U.S.

The Public Electricity Supply (PES) license is governed by "Condition 5" which imposes a duty on the PES to acquire electricity at the most reasonable price from a wide portfolio of sources, including fossil, non-fossil, and renewable. This is intended to ensure a diversified power supply in terms of source and contract length. It is widely believed, when sufficient competition from independent producers has entered the market, OFFER will regulate the total number of long term contracts. Independent producers need long-term contracts in order to arrange their project financing.

The primary form of regulation in the United Kingdom is price cap regulation of the regional electricity companies. Price cap regulation sets a maximum level of prices that a regulated utility can charge in any given year. The British government has adopted the "RPI-minus-x" form of price cap regulation. Price cap regulation provides an incentive to regulated firms to innovate, increase efficiency, and cut costs. If they are successful, regulated utilities can receive higher return than under traditional cost of service regulation, and if they are not successful in their efficiency activities, they will only receive a maximum of the current allowed price.

PRIVATIZATION EFFORTS

The restructuring of the electric power industry has occurred within a climate of privatization in the United Kingdom that has been created by the current Conservative Party government. Previously in the 1980s, British Telecom and British Gas were privatized. In March 1988, the government outlined its plans for privatizing the electricity industry in two policy statements known as the White Papers. This process of reorganization began in 1989, and in November 1990, the privatization was completed with the sale of the publicly-owned regional electricity companies. The primary means of privatization was by a securities flotation on the London Stock Exchange. Each of these issues were oversubscribed.

An important problem did arise during this privatization process, i.e., the disposition of CEGB's nuclear power stations. The British Government determined that inclusion of these nuclear power stations in the assets of the privatized generation companies would reduce the value of these companies substantially. As a result, in July 1989, the Department of Energy announced that nuclear power would be withdrawn from the sale. A new public company, Nuclear Electric, was to be formed.

PRICING POLICIES

In order to create a market based system, a mechanism known as power pool was set up. The power pool is operated by the NGC. In the pool system prices are fixed by the half-hour: 48 in a day. Two prices were in effect; the pool input price (PIP) is the amount paid to generators for electricity made available to the grid. This was determined by the system marginal price (SMP), based on the marginal operating cost in operation in any half hour.

For the purposes of setting actual prices, NGC draws up a schedule of plant dispatch. The pool price reflects the true market value of generating plant, and thus encourages the construction of new plant when this becomes necessary. In order to do this, a capacity element is built in. This consists of loss of load probability (LOLP), which is essentially a reflection of how near maximum capacity the system is running, and value of lost load (VOLL), which is a premium paid to avoid a loss of supply. The price paid to the generator then becomes the system marginal price plus the capacity element. The higher demand goes, the higher the capacity payment. The capacity payment is therefore partially determined by the size of the reserve margin.

The generators bid prices daily at which they are willing to supply electricity in the future twenty-four hours. These bids are made in pounds sterling per Megawatt hour on the basis of 48 half-hourly segments. The NGC calculates from these figures the average prices which it will pay for electricity the following day.

Each day, generators in the power pool bid their prices for the next day, and inform the NGC of the availability of their plant, whether in operation or on standby. The NGC puts these stations into a merit order, which is a table starting with the most efficient to the least efficient.

The members of the power pool are the 12 RECs and all those who generate power for sale in the pool; the major generators, the two Scottish utilities, Electricite de France, the Nuclear Industry, and independent producers.

The final end use consumers fall into four groups according to their maximum demand as follows:

1. Under 100 kW, consumers are entitled to a supply from their local REC on published tariffs, but in most cases not to a direct contract with a supplier.
2. 100 kW - 1 MW; as above except that the limitation on direct contracting ends in 1994.
3. 1 MW - 10 MW; consumers are entitled to a supply from the local REC but are also free to strike direct contracts with generators, within certain specified limits, representing a percentage of the local RECs total sales. These limits lie in the range 15 - 25 percent and may be subject to further adjustment by

the regulator.

4. Over 10 MW; consumers must contract for their electricity. RECs are obliged to offer a contract, but have no obligation to offer a supply.

Prices to small residential consumers not allowed to negotiate direct contracts, are regulated by a formula comprising the retail price index plus an 'x' factor, set at a different level for each REC ($RP1 + x$) and subject to scrutiny by the regulator. The x factor falls in the range 0 to 2.50, according to the particular problems or advantages which apply to each REC. In the first case of price increase after privatization (April 1991) this resulted in tariff increases averaging 9 - 10 percent for all 12 RECs. The level of x is also reviewed periodically by OFFER.

The intent of this plan is that limitations on direct contracting between suppliers and consumers would reduce steadily over the next seven years, opening up the market to small independent producers.

JAPAN REGULATORY FRAMEWORK

The Japanese electric power industry was chosen as a potential model for review because of its reliance on privately-owned electric power companies. In addition, the Japanese electric power industry has incorporated in a limited form competition between utilities for customers and cogeneration.

CURRENT STRUCTURE OF THE ELECTRIC POWER INDUSTRY

The electric utility industry in Japan consists of 10 "general electric utilities" and 56 "wholesale electric utilities." The general electric utilities are full service, integrated electric power supply operations from generation to delivery to the end users in respective service territories. The wholesale electric utilities mainly supply electric power to the general electric utilities, consisting of 22 investor-owned corporations and 34 publicly-owned companies. The general electric utilities supply almost 90% of the total electricity demand of end users. The remainder of retail electricity sales is supplied by a handful of small utilities and by industrial generation.

Unlike other countries, established Japanese utilities may compete with one another for markets. To achieve its goal of a stable electricity supply at the lowest feasible cost, utilities consider the stability of fuel supply, economic viabilities and operational plant characteristics in determining the best electric power supply mix. In accordance with Government policy, nuclear energy is to be continuously developed as the core supply for baseload use, supplemented by hydroelectric and geothermal power. In the short-term, oil has improved its competitive position as a fuel in non-utility power generation, inhibiting new investments in coal use.

In addition, two other organizations operate in the wholesale power market by selling output to one or more of the IOUs. The Japan Atomic Power Company (JAPCO) operates several nuclear plants that are jointly owned by IOUs. Another company, mostly owned by the government and in small part by the IOUs, has developed and operates large hydro projects. This power is then marketed wholesale to the IOUs.

The history of the Japanese electric power industry is instructive for the Czech Republic. Early in the development of the industry the bulk of the industry was privately owned. In 1939, the Japanese government established the Electricity Agency to oversee the industry and the Japan Electric Generation and Transmission Co., which was a state-owned utility. Under JEGTCO, the industry was consolidated into nine distribution companies. This structure lasted until 1951, when the industry was restructured once again into privately-owned utilities. Initially, the newly organized regional electric utilities had financial difficulty because the pricing policies of the nationalized industry kept electricity rates below costs of service. With support from and cooperation with the government, a regulatory system was

developed, rates were increased approximately 70% over three years, and capital assistance was provided to capital poor electric utilities.

FORM OF REGULATION

Private electric utilities in Japan are regulated by Public Utility Bureau within the Ministry of International Trade and Industry (MITI). MITI regulates the distribution of operating licenses and electricity price levels. During rate review and approval, MITI also relies heavily on its Electric Utility Industry Council for guidance and recommendations.

MITI has approval authority over the following retail electricity and bulk power rates:

- Electricity supplied by general electric utilities to end users.
- Wholesale electric utilities' sales to general electric utilities.
- Wholesale transactions between general electric utilities.

Regulation of the industry is based on the following articles in the Japanese constitution:

Article 19 — A general electric utility must obtain authorization of the MITI in setting or revising electricity rates, and the criteria of approval are stipulated.

Article 21 — A general electric utility may not supply electricity at rates other than the authorized ones. Under special circumstances, however, it may supply electricity at rates other than the authorized by the MITI. Special circumstances are interpreted as the cases, when it is required to provisionally reduce the electricity rates in an area affected by a disaster. It also includes difficult to cover transactions with general rate schedules, such as the case of the Load Adjustment Contract applicable to customers with large contract demand.

Article 22 — An electric utility must obtain authorization of the MITI setting or revising the rates of electricity supplied to a general electric utility.

Article 23 — The MITI may order electric utilities to apply for revision of any of the electricity rates approved under the above articles with a certain time limit, when the MITI judges that the current rates present impediment to promotion of public interests. And the MITI may revise such rates at his discretion if the application for revision is not filed within a time limit.

PRIVATIZATION EFFORTS

Since the Japanese electric power industry is already primarily privately-owned, privatization is not of concern. Nevertheless, Japan has been introducing competition into the industry. Since 1987, the Government relaxed existing regulations on co-generation.

Larger scale private electricity generation, including co-generation, has been limited to industrial use, accounting for about 10% of total power supply. In the future, supply of cogeneration electricity by non-electric enterprises will be permitted in the commercial sector, if supply is restricted to one building.

PRICING POLICIES

In Japan, energy prices are generally determined by market mechanisms. Benefits resulting from falling crude oil prices and the appreciation of the yen have been passed onto consumers to a large extent; electricity rates were cut between 1986 and 1987, and were further reduced in 1988. The tariff cuts amount to a total of 18% for electricity compared to pre-1986 levels.

Based on the regulatory articles, the following three principles govern the determination of electricity rates.

1. Cost-Based Calculation. Pursuant to Article 19, the electricity rates must be determined on the basis of the "total cost of service" which is required to provide satisfactory service under efficient management. This principle allows for both the sound development of electric utility business and the benefit of the end users.
2. Fair Return. As electricity in Japan is considered an essential commodity in daily life and industrial activity, it is desirable that the rates be as low as practicable. However, a certain return on capital invested must be assumed in order to cover business risks and enable the utility to raise the funds in markets.

In this sense, the Article 19 says that the total cost of service shall contain a component corresponding to "fair return." Out of the fair return the utility must make up for the payment of interests of loans and bonds, dividends to shareholders, and the legal reserve. The fair return is calculated as follows:

$$\text{Fair Return} = \text{Value of Property (Rate Base)} \times \text{An Appropriate Rate of Return}$$

3. Fair Treatment of Customers. This provision is designed to protect the end users by preventing the general electric utility from discriminating against specific customers with its monopoly power. In order to realize this principle, the total cost of service is allocated to each end user class in an appropriate manner, and the rates thereby determined for a specific class of service should be applied to all users in the same class without discrimination.

Electricity rates in Japan are comprised of a minimum or demand charge and an energy charge that varies according to the amount consumed. Residential service is supplied at low tension, single-phase 100/200 V and the maximum household demand is generally less

than 50 kW. Since 1974, the three-block inverted rate system has been in use for residential service in order to encourage energy conservation.

Commercial users (three phase, 6 - 70kV) are supplied to office buildings, department stores, schools, hospitals, etc. with a contract demand of 50 kW or more. The industrial users are divided into three categories: low-tension, high-tension, and extra high-tension power. Low tension, three phase, 200 V, is supplied mainly to small factories. High tension power, three phase, 6 kV is for medium-sized factories with contract demand of 50 kW through 1999 kW. The extra high tension power (three-phase at between 20 kV and 140 kV) is for customers with contract demand of 2,000 kW or more. Also, certain large-scale consumers may, on approval of MITI, conclude a special supply contract with a utility at lower than normal rates on the condition that they adjust their demand to specific terms.

In November 1990, ten electric utilities introduced a new time-of-day rate system to residential customers for load shifting purposes. This is different from existing rate schemes in that it charges high rates for electricity consumption during day hours and low for energy consumption during night hours. The newly introduced rate innovation is applicable to the residential customers who can shift their demands by using thermal storage heaters.

SPAIN

REGULATORY FRAMEWORK

Spain was chosen for review as a potential model for the Czech Republic due to the existence of a primarily privately-owned electric supply industry combined with a strong national transmission grid.

STRUCTURE OF THE ELECTRIC POWER INDUSTRY

The Spanish electricity industry is comprised of private and mixed private/public enterprises. The mixed (public-private) ownership structure of the generation, transmission and distribution are summarized as follows:

1. The generation assets (45 GW) are owned by private investor-owned utilities (IOUs) and by publicly controlled companies. The IOUs account for 67 percent of generation output. Empresa Nacional de Electricidad, S.A. (ENDESA), which is controlled by the Central government, and accounts for the remaining 33 percent. The generation sector has become increasingly competitive. When the Spanish government identifies a capacity need, various generation companies can bid for the development and construction of this capacity.
2. High voltage transmission assets belong to Red Electrica de España S.A. (REE). This is a mixed public/private company with a majority (51 percent) of state capital. Its creation in 1985 effectively amounted to nationalization of the transmission and dispatch system in the sense that the government gained effective control of the grid and its functions from the previous owners. REE's aim is to assure optimal use (planning and merit order dispatch) of existing generation and transmission assets, and to undertake future transmission investments. REE also coordinates electricity trading with other countries.
3. Distribution, like generation, is the responsibility of many different electric utilities. The private utilities (mainly the large IOUs) account for about 87 percent of distribution and the publicly-owned utilities account for the remainder.

FORM OF REGULATION

The power sector is directly regulated by the Ministry of Industry, Commerce and Tourism, not by an independent regulatory body. The Ministry plays an important role in capacity planning. The goal of the Ministry is to develop least cost plans and then direct the Spanish utility industry to conduct the required construction or resource development. In

reality, the Ministry relies on the expertise and planning capabilities of the electric companies, e.g., Red Eléctrica. In addition, the industry association, Unidad Eléctrica S.A. (UNESA), plays an important coordinating role.

This regulatory system is based on the following simple principles:

1. To provide an automatic mechanism for setting a unified national retail electricity tariff which is equal to the expected total cost of supply divided by the expected consumption of electricity.
2. To refine the inter-utility compensation system to ensure that utilities would earn a fair return on their investments and would not be penalized for having a particular mix of plant or a particular market structure.
3. To provide incentives for better management performance through the application of industry standard costs as the basis for company remuneration. Companies whose cost of service are below the average costs for the Spanish industry can keep the difference and increase their profits.

The attraction of this system is that it replaces the time-consuming negotiations over tariff increases. In the previous Spanish electric system, setting tariffs annually on the basis of negotiations with the government created undesirable short-term solutions. There was political pressure to keep the prices down. The absence of a long-term price adjustment agreement introduced unnecessary uncertainty that weakened the incentive to make rational long-term investment decisions.

The system now offers incentives to improve performance. The Spanish regulatory system is designed to competition between electric utilities by remunerating companies on the basis of industry standard costs. Utilities with costs below the standard can keep the difference, and those with costs which are above the standard must absorb the difference.

The Spanish regulatory system is far from perfect. There is no regulatory body which is independent of the central government, thus there is a strong element of political uncertainty built into the system. Moreover, the regulatory system works well for a "closed" system in which all companies play by the same rules. It would have to be revised when competition from European Common Market becomes a reality.

PRIVATIZATION EFFORTS

Spain is currently in the process of partial privatization of its largest state utility, ENDESA. This privatization is complicated, however, by the purchase of assets and debts of several private electric utilities, e.g., shares in the Vandellos and Asco nuclear power plants.

PRICING POLICIES

In Spain, like many other European countries the government uses the electricity sector to collect various kinds of taxes. Electricity tariffs are liable to 12 percent value added tax (VAT). The tariff also recovers a number of general costs which are either subsidies to particular groups (e.g., the coal industry, large industrial consumer groups, etc.), or used to cover various other expenses associated with the electricity industry (e.g., uranium stocks, R&D program, back-end cost of nuclear), as well as the costs associated with the nuclear moratorium.

The retail tariffs are generally considered to be high enough to cover costs, but for the most part they reflect average rather than marginal costs. Consequently, they do not provide proper economic signals to the consumers. For instance, a national tariff cannot properly reflect the differences (mainly from transmission and distribution) in the cost of supplying customers throughout the country. It is also recognized by UNESA and others in Spain that sharpen price signals (to reflect peaks) would help to lower investment requirements, and the need for expensive peaking supplies, by flattening the load curve. Spain has made some progress on this matter in recent years, but there is room for improvement.

From an early stage, the Spanish government established a unified national electricity tariff and a system of compensation between the utilities. The unified tariff was largely for nationalism and the desire to encourage a sense of national unity. One electricity price for all Spaniards seemed like a good idea. The commercial side of such a policy was that it permitted industrialized areas (in the Basque region, Catalan region and Madrid) to obtain relatively cheap electricity from hydro and coal-rich regions of Northwestern Spain.

The absence of regional differentials creates some economic inefficiency. When a competitive market is introduced, the market forces will expose areas of inefficiency and force changes. These trends are encouraging the location of industry far from the sources of energy, requiring expensive transmission or higher cost generation. If generators are paid their costs, rather than what the energy is worth, there will also tend to be over-development of high cost sources and under-development of low-cost sources.

CHILE

REGULATORY FRAMEWORK

The regulatory framework in operation in Chile was examined because the Chilean electric power industry has recently been restructured and privatized.

CURRENT STRUCTURE OF THE ELECTRIC POWER INDUSTRY

Chile has three major generation companies, all subsidiaries of the Government-owned holding company, CORFO:

- (i) ENDESA (60% privately-owned) — with 80% of installed capacity, and most of the transmission system.
- (ii) COLBUN S. A. (98% Government-owned) — operates the Colbun-Machicura Hydro Project.
- (iii) PEHUENCHE S. A. (fully privatized) — for implementation of the Pehuenche Project.

Electricity is distributed through private companies owned largely by pension funds, municipalities and employees. The Economic Dispatch Center for the Central Interconnected System (CDEC-SIC), which was created in May 1985, is formed of representatives of the main generation companies to coordinate the system. It is operated and managed by ENDESA.

FORM OF REGULATION

The main legal instrument is the General Law of Electricity Services (Decree Law No. 1 of 1982) which sets up the basic principles governing the sector, particularly concessions and rights, operation and supply, and consumers' contributions to capital stock and tariffs. The entity that monitors compliance with the General Law of Electric Service is the National Energy Commission (CNE) established as a public entity by law (Decree Law No. 2224) in 1978. Its function is to design and coordinate plans, policies and guidelines for the performance and development of the energy sector in Chile, to monitor the adequate implementation of such plans, and in general, to advise the Government on energy matters. Responsibility for the structure and level of tariffs rests with the Ministry of Economy, Development and Reconstruction advised by CNE.

The National Planning Office (ODEPLAN) coordinates the actions of the state entities and enterprises with the National Development Program.

Further regulations are needed and are being planned by CORFO with consultation

with the World Bank to provide:

- (i) Guidelines and legislation on the environmental and resettlement aspects of power projects.
- (ii) Systems and procedures for the design of small and medium-sized hydroelectric projects.
- (iii) Reduction of illicit use of electricity.

The Government has also agreed to update the legislation pertaining to the concession and operation of electricity services.

PRIVATIZATION EFFORTS

After the nationalization of the electric power industry in the early 1970's, the Chilean government has engaged in privatizing large parts of the industry. At present ENDESA has a majority (60%) private ownership and the distribution companies have all been privatized. Divestment of Government ownership of electric utilities has proceeded in an orderly manner, starting with regional distribution companies, small generating companies, larger distribution companies and then the process will be completed with major generating companies. Except for COLBUN S. A., this process is nearly complete.

Although the Chilean government has privatized major parts of the industry, the government still owns major components. The degree of autonomy and accountability to Government afforded to power sector entities can be gauged from its involvement in ENDESA. The Government is not involved in the daily management of ENDESA and this high degree of autonomy has been maintained throughout its existence. ENDESA is subject to the country's Corporation Law and the commercial and labor codes governing Chile's corporations. It requires the approval of the Ministry of Finance to undertake any major financing. The Government has in the past given financial support through equity and other contributions and loans. The policy of the present Government is to encourage the company's financial autonomy.

PRICING POLICIES

The Government regulates energy prices principally for the distribution companies and is establishing coherent and comprehensive information systems to ensure market transparency and efficient use of energy resources. Larger consumers have some freedom to negotiate and purchase power on a competitive basis.

Pricing of electricity to major consumers is set through bargaining between consumers and suppliers. This policy promotes competition among the generation companies, provides incentives to major consumers to seek the most economic generation source and to make optimal use of the transmission system. Distribution tariffs are regulated by the Ministry of Economy on the basis of marginal cost subject to recommendations by CNE. Distribution

companies, as a group, can earn an economic rate of return of six to fourteen percent based on new replacement values. Consumers are allowed to choose from the alternative tariffs within their corresponding voltage range. This tariff scheme is established under Decree Law No. 1 of 1982.

GERMANY

REGULATORY FRAMEWORK

Germany was chosen for review as a potential model for the Czech Republic due to the existence of a diverse electric supply industry, with large private ownership levels. The interesting characteristics of the German utility industry is the variety of electric utility sizes and the lack of Federal regulation. The industry is comprised of both large and small companies, and both publicly and privately owned power. Note that this review is only of the electric power industry in the former West Germany.

CURRENT STRUCTURE OF THE ELECTRIC POWER INDUSTRY

The German electric supply industry is concentrated among a small number of larger firms with a highly fragmented group of small residual suppliers.

There are over 1,000 electric supply and distribution companies, although 80% of the country's electricity is generated by the eight large utilities which make up the Deutsche Verbundgesellschaft (DVG). The DVG utilities are part-owned by the Land governments and generally have a complex ownership pattern. Although ownership of generation is highly decentralized, the bulk power market is dominated by these vertically integrated and interconnected DVG systems.

In general, public investment, federal, state, and local accounts for about 70 percent of total investment in generation. These systems jointly own and operate the bulk power transmission grid.

The majority of the electric companies in existence in Germany are small electric power distribution companies. These distribution companies operate communally and usually only as distribution agents without their own generating capacity.

FORM OF REGULATION

Germany does not have a federal level electric utility regulatory agency with responsibility for oversight of electric distribution companies. Nevertheless, wholesale rates are directly regulated by the government. The individual electric distribution companies are subject to public price and investment controls by municipal and Land governments. Retail rates and transmission charges for large users and industrial generators are negotiated directly between the parties involved. An element of competition exists in that if such users cannot succeed in negotiating a satisfactory rate, they are then permitted to negotiate service from a more distant utility.

The overall energy policy has the following objectives:

- 1) Seek to find a new consensus on the objectives of energy policy, especially in the areas of coal and nuclear energy, which are recognized to be essential for future secure energy supplies, and on the actions to achieve these objectives.
- 2) Continue efforts to further liberalize energy markets in order to remove distortions affecting the competitive positions of the various fuels in domestic markets and internationally.
- 3) Carefully consider pricing measures to further encourage conservation and efficient use of electricity, increasing as well the transparency of electricity prices.

PRIVATIZATION EFFORTS

The mixed ownership structure of the German electric power industry is not currently being considered for modification, and no privatization efforts are underway.

PRICING POLICIES

Electricity tariffs in Germany are significantly higher than those in most other European Community countries. A part of the difference is attributable to the rise in the value of the Mark as compared to other currencies since 1985. Since electricity is one of the few energy forms where costs have been rising, utilities are beginning to face greater competition from other fuels in certain markets. The Government and utilities are considering steps that might encourage competition among utilities and independent generators and other producers. First, a revision in the model used by most utilities to establish the prices paid for power purchased from non-utility independent producers, especially those using renewable energy. This revision has increased the prices utilities pay for such power and therefore may increase the incentives for independent generators. Second, the Federal Government is considering modifying the cartel laws which give utilities exclusive rights to serve all users within a defined region. If the modifications are adopted, competition in the supply of electricity and the balance between the various commercial interests involved will be strengthened, by increasing the opportunities for users, underrating conditions, to purchase electricity from other producers and to arrange wheeling agreements with other utilities.

Since 1980, tariffs for the residential users have included a linear component designed to eliminate reduction in the cost per kWh to the end user above a certain consumption level.