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KYRGYZSTAN: OPTIONS FOR POWER SECTOR RESTRUCTURING

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Draft for Comment

Report on International Experience with Restructuring and Privatization of the Power Sector and Alternatives for the Kyrgyz Republic

Prepared for

United States Agency for International Development

Prepared by

Hagler Bailly Consulting, Inc

September 20, 1996

REPORT CONTENTS

This report has been prepared as part of the power sector reform project in the Kyrgyz Republic funded by the United States Agency for International Development It is intended to contribute to the discussion and analysis of the potential benefits of restructuring and privatization of the sector by focusing on the experience in restructuring and privatization in countries which have recently completed these activities Eleven countries which have undergone restructuring were examined, including Argentina, Bolivia, Chile, El Salvador, Hungary, Nicaragua, the Philippines, Poland, Portugal, Sweden and the United Kingdom Nine countries were examined which have either implemented power sector privatization (Argentina, Australia, Bolivia, Chile, Hungary and the United Kingdom) or are in the process of designing a privatization model and method (the Czech Republic, Poland and Russia)

The report is divided into two main sections The first section deals with power sector restructuring issues, particularly with respect to the experiences of countries that have already gone through the restructuring process Chapter 3 of this section includes lessons learned in each of these countries and how these lessons apply to Kyrgyzstan It outlines alternative restructuring concepts applicable to the Kyrgyz power sector and assesses them according to their advantages and disadvnatages relatve to Kyrgyzstan's current problems and future opportunities This section concludes with a compilation of further data and information on the countries examined in the report which have undergone power sector restructuring

The second section of the report examines various methods of power sector privatization Individual chapters focus on the role of the government in the privatization process, expectations of investors, and the experience in various countries that have recenty privatized their power sectors

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LIST OF EXHIBITS

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CHAPTER 1
DISTRIBUTION SEPARATION

1.1 INTRODUCTION

The first section of this report provides information intended to contribute to the discussion and analysis of reform in the electricity distribution subsector, including such topics as

- potential benefits that may be gained through restructuring
- structural alternatives for distribution
- ownership options for distribution utilities
- relationships between distribution utilities and other subsectors including transmission and generation
- relationships between distribution utilities and end-users
- regulation of the subsector

The report examines the international experience with the separation of electricity distribution from generation and transmission (G&T) and draws conclusions and recommendations applicable to Kyrgyzstan

The organization of the report is as follows The present section outlines the background, objectives and describes briefly the countries considered The next section, Chapter II, is a presentation of the overall results of this research while in Chapter III, conclusions are provided

1 2 COUNTRIES EXAMINED

A total of eleven countries are examined including Argentina, Bolivia, Chile, El Salvador, Hungary, Nicaragua, the Philippines, Poland, Portugal, Sweden, and the United Kingdom These nations can be divided roughly into two groups

- countries where the management and ownership of the distribution subsector has been separated (either managerial separation and/or changes in ownership) from generation and transmission as part of restructuring

- countries where an important share of the distribution subsector has historically been separate from generation and transmission

SECTION I
POWER SECTOR RESTRUCTURING

Name	Population (million 1994)	Per Capita GNP (US$/capita 1993)	Power Sector Size (MW)
Poland	38 5	2,250	32,200
Portugal	9 9	6,640	6,600
Sweden	8 7	20,300	34,500
UK	58	15,600	65,000

1.3 STUDY APPROACH

The distribution subsector exists in the context of a nation's entire power sector, it cannot be examined in isolation For this reason, overall power sector data was gathered so as to facilitate a deeper understanding of the experience of each country's distribution subsector

A list of specific topics guided this examination including

- background conditions of relevance to the separation of distribution
- the situation within the power sector before restructuring, including structure, ownership and regulation
- reasons for restructuring the power sector and the distribution subsector in particular
- the objectives of distribution restructuring
- the restructuring options considered and the interplay between the problems and objectives and how they influenced the selection of a specific restructuring option
- characteristics of the power sector after restructuring including structure, ownership and regulation
- evaluation of the power sector restructuring experience and the extent to which the objectives of restructuring have been achieved

Unfortunately, not all of the information was available for all the countries studied This was due to limitations in source material, as well as a decision to focus on those countries with the most relevance to Kyrgyzstan

Uneven depth of coverage has been afforded the eleven nations in this report Emphasis was placed on analyzing the experience of countries with more contextual similarity to Kyrgyzstan The countries of Latin America are particularly relevant in this regard The economies and societies of the region have been undergoing considerable change since the beginning of the 1980s Development models based on state intervention in the economy are giving way to free market approaches Significant characteristics of this change are an increased role of the market in establishing prices and allocation and a reduced role for the state which includes divestiture from a direct managerial and ownership role in the economy In the electricity sector this has meant withdrawal from state ownership and management and an increased role for the private sector

Power sector reform in many of the developing nations examined in this paper was driven by problems similar to those found in Kyrgyzstan These include serious financial problems for the power sector, no clear separation between the regulatory and commercial roles of the state, and high losses in the distribution subsector due to theft and technical problems (e g , poor or dilapidated infrastructure) Distribution-based problems represented an important share of the major difficulties found in the power sector and thus, became major motivators of change

In contrast, much of the recent restructuring in more developed nations has been driven by the quest for greater competition in electricity supply Competition in generation and the establishment of power pooling arrangements have been the foci of such reforms Nonetheless, the fact that the developed nations have had some share of distribution separated from other subsectors has led to their inclusion in this report

Exhibit 1-1 provides some overall comparative economic and power sector data for the countries examined

Exhibit 1-1
Countries Examined

Name	Population (million 1994)	Per Capita GNP (US$/capita 1993)	Power Sector Size (MW)
Argentina	33	7,600	15,700
Bolivia	7 0	1,000	850
Chile	13 8	3,200	4,300
El Salvador	5 5	1,210	820
Hungary	10	3,700	7,196
Nicaragua	4 3	410	350
Philippines	68	830	7,500

ARGENTINA

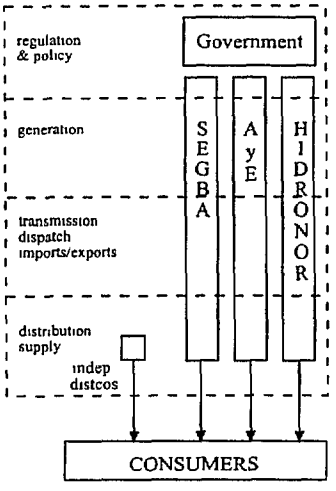
Restructuring and Distribution Separation

Argentinean electricity sector reform has meant a major overhaul of the nation's power sector The 15,700-MW capacity power sector was wholly state-owned until the beginning of the 1990s It was characterized by low generation availability, political interference in tariff setting and operation, and extremely high losses in much of the nation's distribution subsector Distribution losses reached 30% in much of the capital, Buenos Aires

Restructuring has involved the split-up of state-owned assets according to function and region, quickly followed by privatization Generation, transmission, dispatch, distribution, and regulation are now performed by separate entities There are now more than 30 private generation companies, an independent entity that manages the transmission grid and determines dispatch, 22 distribution companies, and a new regulatory body called ENRE The distribution subsector is managed according to innovative regulations on power purchases, concessions, and tariffs The primary goals of restructuring were the creation of a bulk power market based on marginal production costs, privatization, and general efficiency gains for all parts of the sector

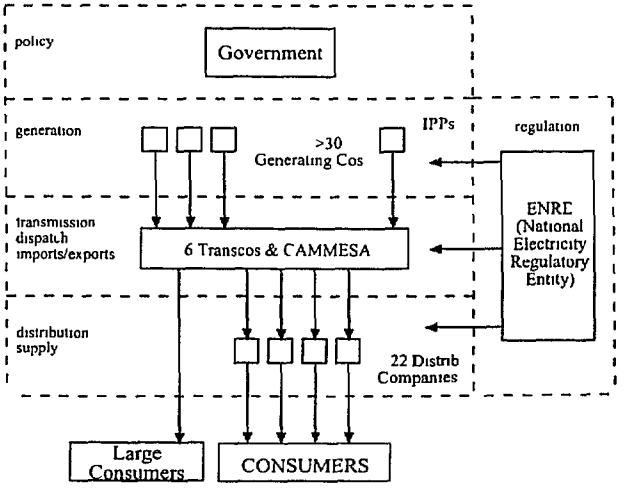
Exhibit 2-1
Argentinean Power Sector Restructuring

Before Restructuring



Power Sector Ownership
Public

After Restructuring



Power Sector Ownership
Public, Private, Employees

CHAPTER 2
INTERNATIONAL EXPERIENCE WITH DISTRIBUTION SEPARATION

2.1 DISTRIBUTION SUBSECTOR RESTRUCTURING EXAMPLES

The major aim of this report is to survey power sectors where distribution separation has taken place as part of restructuring This has occurred, or is proposed to occur, in nine of the eleven countries studied They are Argentina, Bolivia, Chile, El Salvador, Hungary, Nicaragua, Poland, Portugal, and the Philippines The other two nations included in the study, the United Kingdom and Sweden, were included because most of the distribution subsector has traditionally been separate from generation and transmission

For the nine countries where distribution separation has taken place, most, if not all, distribution infrastructure was vertically integrated with generation and transmission before restructuring The majority of electricity customers in these countries were served by distribution infrastructure owned and operated by the same institution that owned and operated the transmission and generation subsectors of the nation's power sector

Furthermore, in all eleven of the countries studied there was majority state ownership of the power sector Most commonly, it was the national government that held these power sector assets, though in a few countries regional and municipal authorities performed some ownership and administrative functions

Thus, for the majority of nations studied, and all of them developing countries, power sectors were operated by vertically integrated state-owned utility companies These entities carried out all of the commercial, regulatory, and planning functions required for power sector functioning

Brief summaries and exhibits describing each country are provided From a review of this information, it is clear that major transformations have occurred in the structure, ownership, and regulation of the power sectors in all the study countries In nine of the countries this has included the subdivision, privatization in some form, and separation of distribution infrastructure from other power sector infrastructure In the remaining two countries the distribution subsector had traditionally been institutionally separate from other power sector infrastructure

CHILE

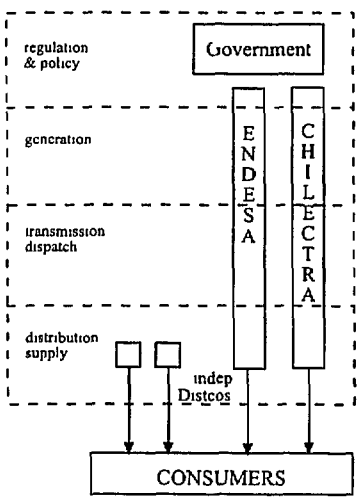
Restructuring and Distribution Separation

Chile's 4,300-MW power sector showcases the separation and divestiture of state-owned distribution, transmission, and generation infrastructure through a process of restructuring and subsequent privatization that took place between 1978 and 1990 Chile was the first power sector restructuring and privatization to occur in the recent period and is often cited in the literature on restructuring in developing nations An autonomous regulatory body, working in conjunction with other branches of the government, coordinates and regulates the nation's power sector

Major objectives of restructuring were privatization, a redefinition of the role of the state in the power sector as regulator, widespread citizen stock ownership of infrastructure assets (popular capitalism), increased efficiency in the use of capital and labor resources, and the facilitation of investment flows to the sector Evaluations to date show that these general objectives have been achieved

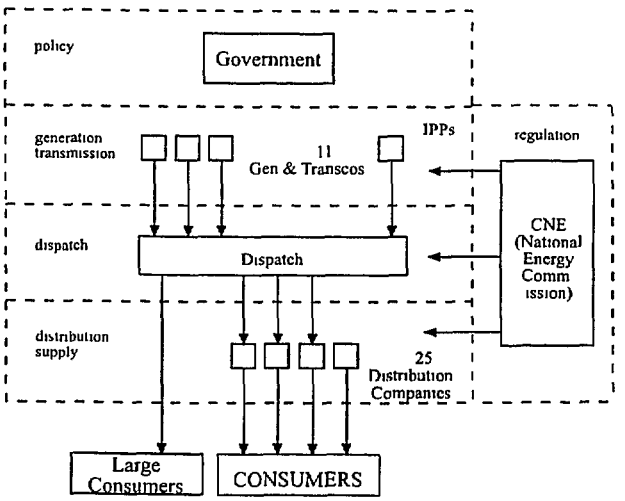
Exhibit 2-3
Chilean Power Sector Restructuring

Before Restructuring



Power Sector Ownership
Public

After Restructuring



Power Sector Ownership
Private, Public, Employees

BOLIVIA

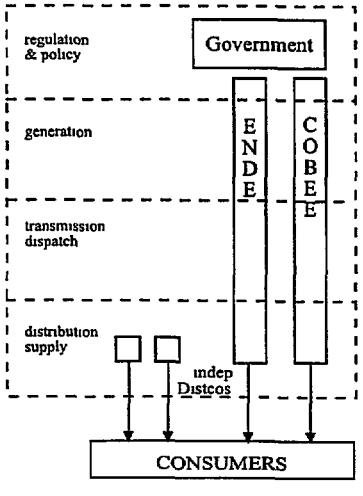
Restructuring and Distribution Separation

Restructuring of the Bolivia's 849-MW electricity sector began in 1994 with legislation that paved the way for the split-up and privatization of ENDE, the state-owned vertically-integrated power utility Fifty percent of ENDE's generation assets were won in a competitive solicitation by three US companies, the companies also have a management contract and have pledged to invest US$140 million over the next seven years as part of a capitalization program Proceeds of the sale will go to a pension fund for all Bolivians, and ENDE employees have been offered ownership stakes

Further legislation has established a Superintendent for the power sector, an autonomous regulatory body that will oversee the sector, protect the public interest, and approve tariffs In the restructured power sector no single generator is permitted to hold more than 35 percent of the nation's capacity ENDE will continue to operate the nation's transmission system, and other distribution infrastructure is in the process of separation from generation and transmission for subsequent sale Direct access is contemplated

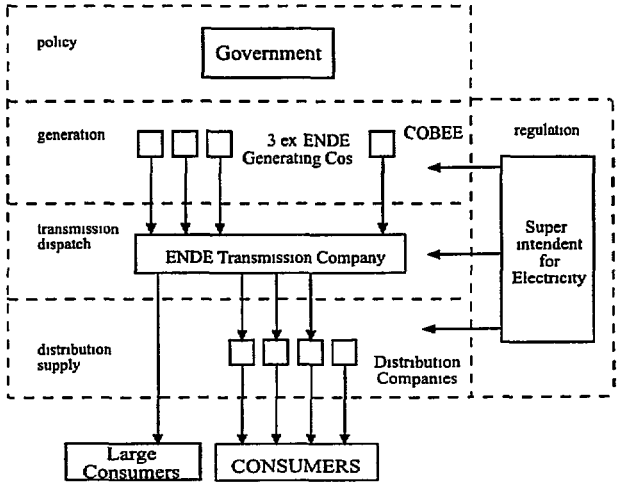
Exhibit 2-2
Bolivian Power Sector Restructuring

Before Restructuring



Power Sector Ownership
Public, Private

After Restructuring



Power Sector Ownership
Public, Private, Employees, National Pension Fund

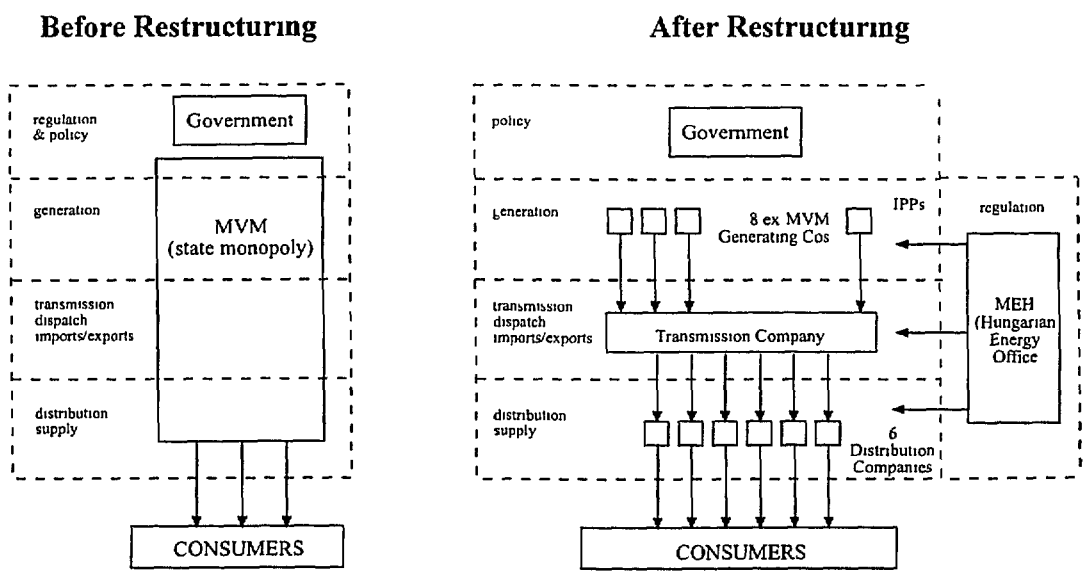
HUNGARY

Restructuring and Distribution Separation

Hungary's 6,600-MW electricity sector was reorganized in 1992 with the separation and corporatization of generation, transmission, and distribution assets of the state-owned and vertically-integrated power sector monopoly enterprise MVM The generation assets of MVM were divided into eight companies, and sector demonopolization encourages bulk power generation by independent power producers A transmission company has been set up to manage dispatch, coordinate transmission, and control power imports and exports Six distribution companies have been formed out of MVM's distribution assets

A regulatory body has been formed for the power sector and it is authorized to approve tariff increases The partial privatization plan for the electricity sector has recently been agreed upon Ownership of MVM's assets will be divided between strategic foreign investors, employees, municipalities, and the government's asset holding company

Exhibit 2-5
Hungarian Power Sector Restructuring



Power Sector Ownership
Public

Power Sector Ownership
Public, Private, Employees

EL SALVADOR

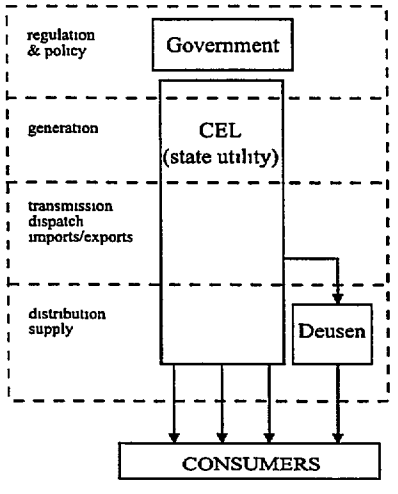
Restructuring and Distribution Separation

The El Salvadorean government has been studying private participation in the nation's 818-MW electricity sector since the late 1980s New capacity is being developed by private companies The government recently announced the reorganization and divestiture of the distribution subsector as a major component of its plans to restructure the sector and attract private participation

Restructuring legislation is currently being discussed in the national assembly It includes the creation of two new regulatory bodies to oversee the sector, protect the public interest, approve tariffs, coordinate expansion planning, and evaluate the nation's energy resource development options The distribution subsector will be separated from generation and transmission and there will be a total of five distribution companies operating in different regions of the country Direct access for large customer is proposed

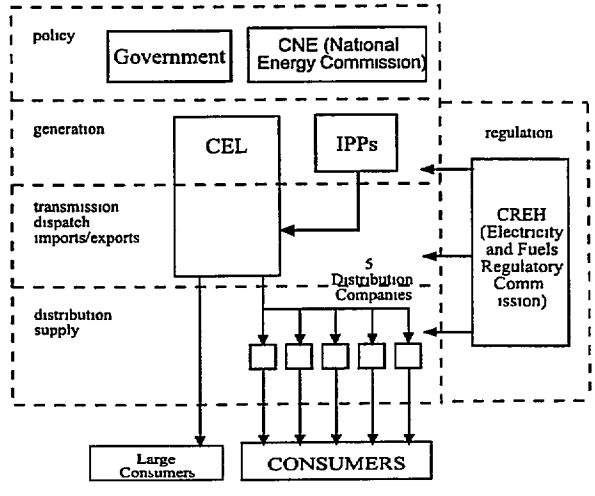
Exhibit 2-4
Proposed El Salvadorean Power Sector Restructuring

Before Restructuring



Power Sector Ownership
Public, Private

After Restructuring



Power Sector Ownership
Public, Private, Employees

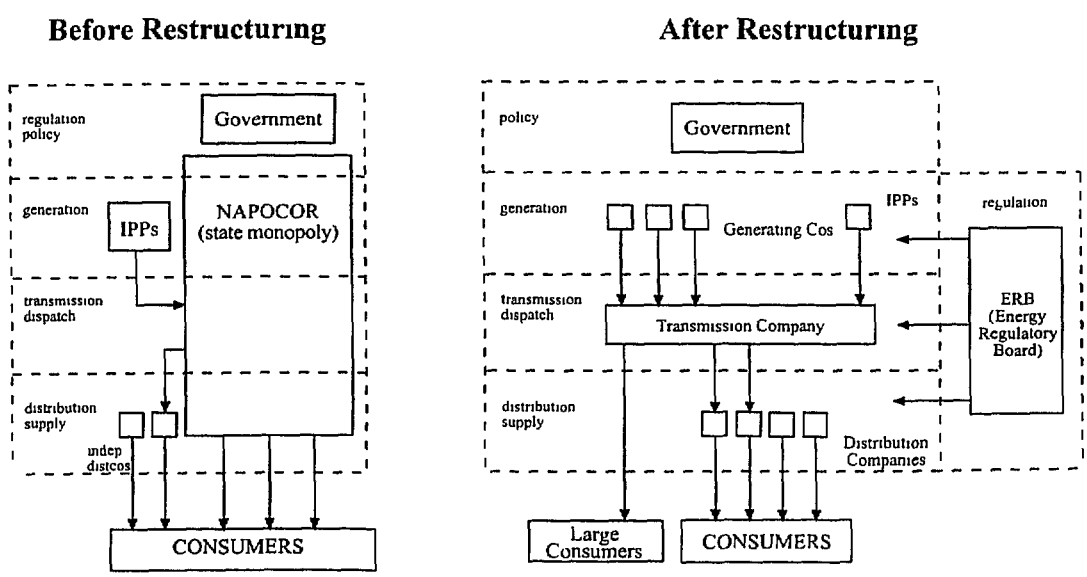
PHILIPPINES

Restructuring and Distribution Separation

The Philippine 7,500-MW power sector is just coming out of a six-year period of chronic brownouts, largely solved by the addition of 1,300-MW of privately-owned capacity At one point there was a 1,300-MW capacity shortfall Further independent power producer generation is under development and it has been proposed that direct access provisions be added to the power sector regulatory and legal framework

Accompanying the introduction of independent private power producers and recent power sector regulatory reform in the Philippines, there has been ongoing debate over whether and how further power sector restructuring should take place A recent restructuring plan calls for the restructuring and privatization of the state-owned vertically integrated utility, Napocor, into a U K - or Argentinean-style electricity industry At the same time, the existing multitude of independent distribution companies and cooperatives will remain as they are

Exhibit 2-7
Proposed Philippine Power Sector Restructuring



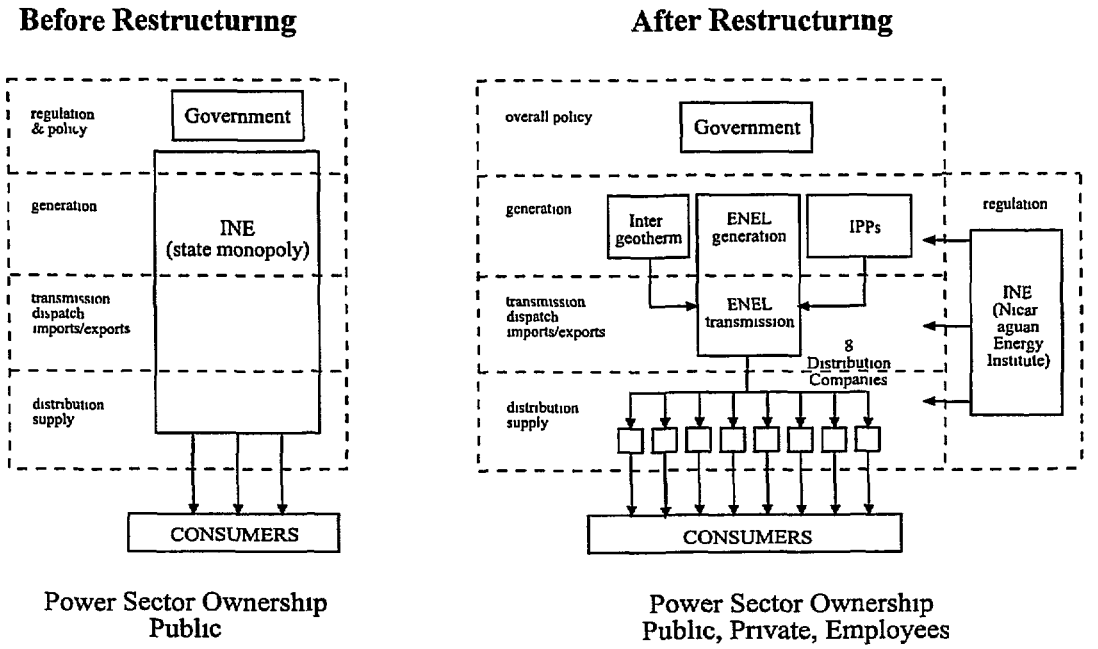
NICARAGUA

Restructuring and Distribution Separation

Nicaragua's restructuring program was motivated by a host of problems in the power sector Significant among these were the need to solve distribution-side problems, as well as financing shortfalls on the supply-side Distribution separation is being undertaken as part of the strategy to address these problems The goal is the creation of well-regulated regional monopoly distribution companies

Before restructuring the nation's 350-MW power sector was comprised of a single vertically integrated state monopoly After an extensive period of study and consideration of options, the sector was reorganized in January 1995 An autonomous regulatory body has been established to coordinate sector activities and approve tariff changes Generation is to be separated from transmission, and distribution will be carried out by eight regional enterprises Innovative regulation will aim to introduce competition into the distribution subsector Private participation is being encouraged in all activities of the nation's power sector

Exhibit 2-6
Nicaraguan Power Sector Restructuring



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PORTUGAL

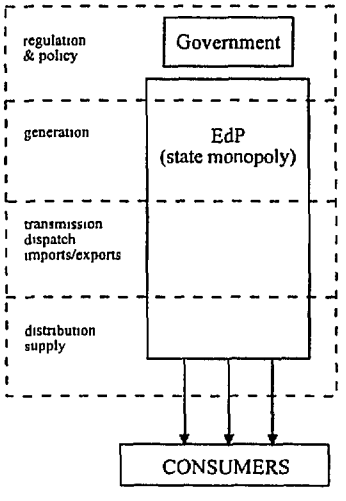
Restructuring and Distribution Separation

Until 1993, one State-owned company, Electricidade de Portugal (EDP), comprised 90 percent of the nation's 7,000-MW electricity sector Last year, new legislation began restructuring the power sector EDP was incorporated and divided into several business areas, one is charged with overall sector management, another with generation, one with transmission, and four with distribution Restructuring is ongoing and eventually a regulatory body will take charge of oversight of the power sector Privatization of EDP is being considered and allowing independent power producers is being contemplated

Restructuring has been driven by high losses in distribution, insufficient financing for electricity production expansion, and pressure from the nation's industries who stand at a competitive disadvantage due to the nation's highest electricity tariffs in Europe

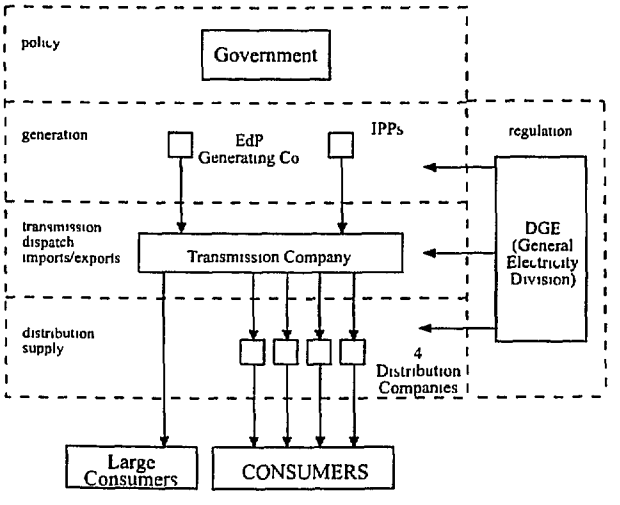
Exhibit 2-9
Portuguese Power Sector Restructuring

Before Restructuring



Power Sector Ownership
Public

After Restructuring



Power Sector Ownership
Public & Private

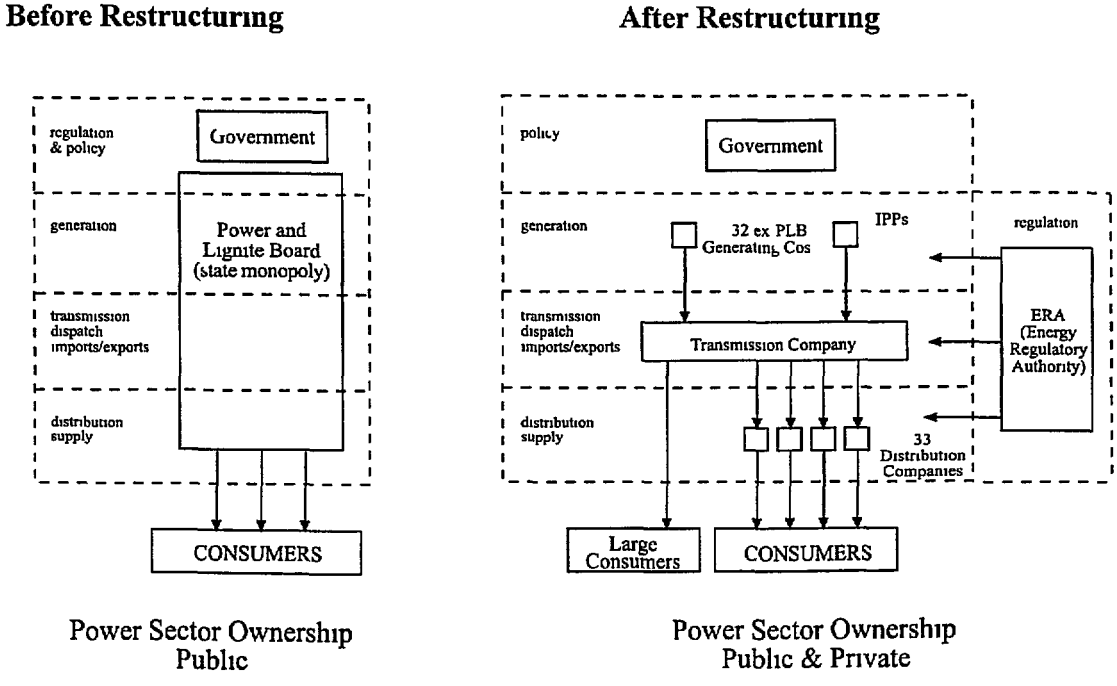
POLAND

Restructuring and Distribution Separation

Until 1989 Poland's 32,200-MW electricity sector was entirely state-owned and was operated by the Polish Power and Lignite Board In 1989 restructuring began with a power sector reorganization Thirty-three distribution companies and thirty-two generating companies were set up, and in 1990 the Polish Power Grid Company was formed to manage transmission and dispatch The goal of restructuring is to create a competitive generation market, form a regulatory body, introduce private ownership, and separate transmission and distribution from other sector activities It is hoped that reform will increase sector efficiency, facilitate requisite sector investment, and eventually ease pollution from coal burning (96% of electricity is generated from coal)

An Energy Law has been under formulation for four years and is soon expected to be approved by the parliament In the meantime the distribution companies, district heating plants, hydroelectric plants, and transmission companies have been set up as state-owned joint stock companies Generation plants are to follow The Energy Law will establish a regulatory body, permit open access, pave the way to privatization, and reform tariff-making procedures

Exhibit 2-8
Proposed Polish Power Sector Restructuring



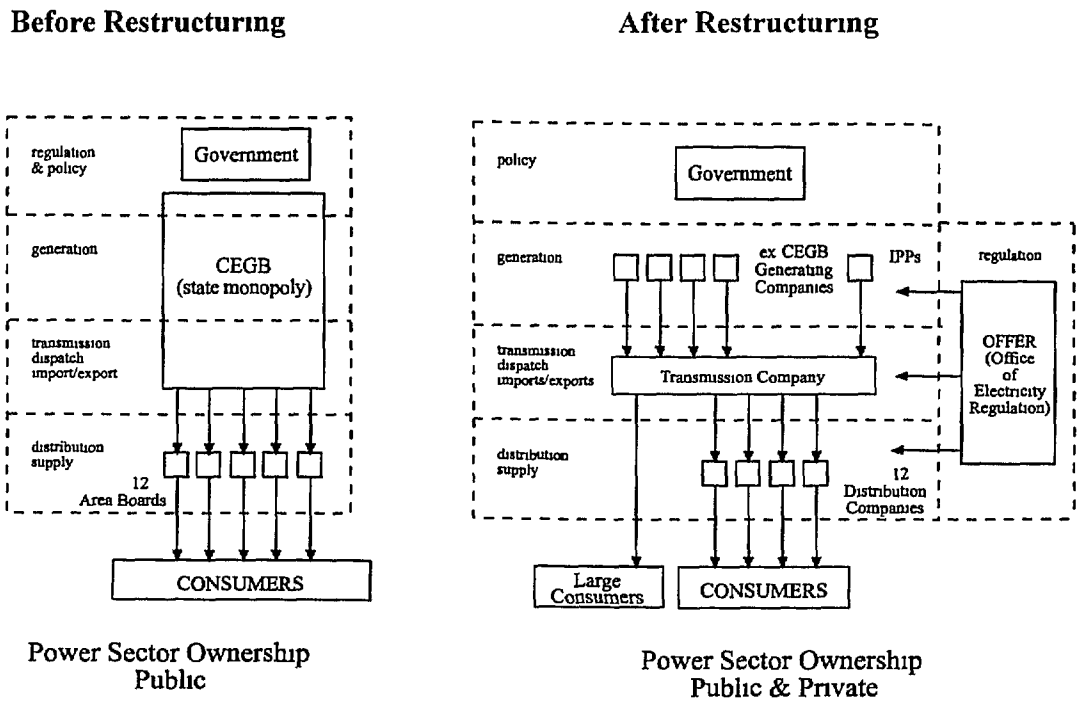
UNITED KINGDOM

Restructuring and Distribution Separation

The UK restructuring experience is widely cited as an example of how to encourage competition in generation and privatize large state-owned enterprises The nation's 65,000-MW electricity sector was transformed by the 1989 Electricity Act The state-owned Central Electricity Generating Board was divided into three generating companies and a grid company, two of the generating companies were privatized A regulatory body, the Office for Electricity Regulation, was set up to oversee sector functioning, licensing and approve tariffs

The nation's distribution subsector has traditionally been operated by organizations separate from generation and transmission, though the recent industry restructuring involved a change in ownership from the public to the private sectors Performance-based regulation has attempted to provide incentives to improve efficiency in the distribution subsector

Exhibit 2-11
United Kingdom Power Sector Restructuring



SWEDEN

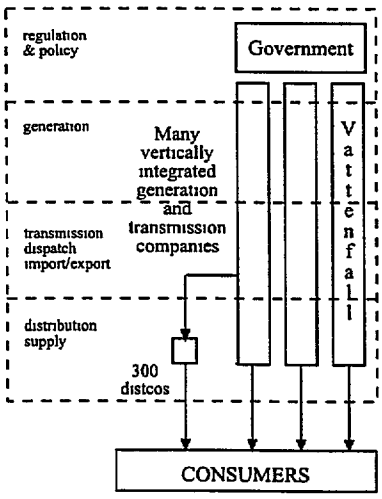
Restructuring and Distribution Separation

Recent reforms have been introduced to the nation's 34,500-MW power system with the primary intention of bringing competition to generation and distribution, as well as non-discriminatory access to the transmission grid On January 1, 1995, a new transmission company and regulatory body was established There will be direct access and contracts between generating companies and distribution companies as well as sales and purchases to the pool Competition will be stimulated in the power sector by allowing open access and by breaking the geographical monopoly of distribution companies to supply electricity to customers

The distribution subsector has always been largely separate from generation and transmission, and is made up of more than 300 distribution companies The largest distribution company has 12 percent of customers, while the second largest, Sydkraft, has ten percent of distribution All together, the ten largest distribution companies cover only 50 percent of the market

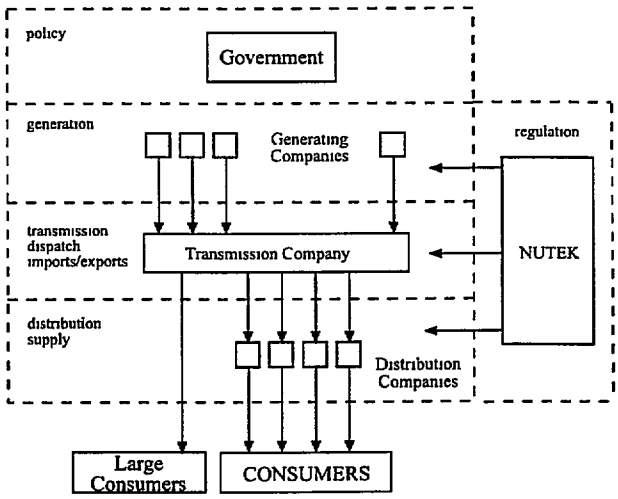
Exhibit 2-10
Swedish Power Sector Restructuring

Before Restructuring



Power Sector Ownership
Public & Private

After Restructuring



Power Sector Ownership
Public & Private

Exhibit 2-12
Power Sector Restructuring, 1 of 2

Country	Power Sector Pre-Restructuring			Identified Restructuring Objectives	Power Sector Post-Restructuring		
	Structure	Ownership	Problems		Structure	Ownership	Regulation*
Argentina	Vertically Integrated + independent Distcos	100% state	-Government interference -Low supply availability -Critical financial situation	-Competition in generation & distributn -Attract private investmt -Economic efficiency -Tariffs to MC -Government role only as regulator -Bulk power pool	>30 Gencos 6 Transco 22 Distcos	-53% private genertn -1 private Xmis -50% private distrib -50% public distrib -privatization ongoing	ENRE administration of pool by CAMMESA
Bolivia	Vertically Integrated + public Distcos	Majority state Some private	-No competition	-Clarify cost structure -Bring competition -Trans wheeling -MC prices	Gencos Transcos Distcos	State divestiture	Superin-tendency
Chile	Vertically Integrated + independent Distcos	95+% state	-No expansion financing -No reg and comm separation	Privatize -Separate regulation from commercial role -Pricing on MC	11 Gen and Transcos 25 Distcos	-90+% private -Private and public Distcos	CNE
El Salvador	Vertically Integ + 1 indep Distco	95+% state	-No expansion financing	-Privatize	1 Gen/Xmco 5 Distcos	-State gen/Xm + IPPs -4 private Distcos	CREH & CNE
Hungary	Vertically Integrated	100% state	-No expansion financing	-Privatize -Competition in generation	8 Gencos 1 Transco 6 Distcos	-Majority private -Minority state -Private IPPs	ME

* For all countries broad overall power sector policy is determined by the nation s government

2 1 1 Overall Power Sector Restructuring

A study of distribution subsector restructuring is not complete without an understanding of the transformations of a nation's entire power sector In all the countries studied distribution subsector restructuring has taken place in the context of changes in the entire power sector Thus, to facilitate analysis of distribution subsector restructuring, data was compiled on the entire power sector of all the nations studied

Exhibits 2-12, 2-13, 2-14, and 2-15 summarize all data collected from the eleven study nations Exhibits 2-12 and 2-13, titled "Power Sector Restructuring," summarize pre-restructuring and post-restructuring sector structure, ownership, and other details of the nation's entire power sectors

The bulk of analysis in this paper, though, centers on the distribution subsector Accordingly, discussion of broader power sector issues are only mentioned as they relate to, and lend a deeper understanding to, changes in the distribution subsector Exhibits 2-14 and 2-15, titled "Distribution Subsector Restructuring,"contain summary information on transformations to the distribution subsectors in the eleven study countries

It should be noted that the information presented in these four exhibits, particularly for the *Pre-Restructuring Problems* and *Restructuring Objectives* columns, includes only information gleaned from the source material available While multiple documentary sources of information were used to compile data, plus personal communication for confirmation, it must be noted that all problems and objectives involved in restructuring may not have been identified

Exhibit 2-14
Distribution Subsector Restructuring, 1 of 2

Country	Distribution Subsector Pre-Restructuring			Identified Distribution Restructuring Objectives	Distribution Subsector Post-Restructuring		
	Structure	Ownership	Problems		Structure	Ownership	Regulation*
Argentina	Vertically Integrated + >15 indep Distcos	100% public	-Government interference -Critical financial situation -Bad billing procedures -Losses up to 25 9%	-Competition in distribution -Attract private investment -Improve technical and economic efficiency -Government only as regulator	20+ Distcos	50% private 47% provin l 3% national privatization ongoing	ENRE
Bolivia	Vertically Integrated + indep Distcos	Public & private	Insufficient expansion financing	Make cost structure clearer -State divestiture	Private and public Distcos	Some Private Others Public	Superinten-dency
Chile	Vertically Integrated + some independent Distcos	85+% state	-Part of restructuring Inadequate cost breakdown	-Privatize -Separate distribution from generation -Separate regulation and operation	25 Distcos	22 Private 3 Public	CNE
El Salvador	Vertically Integrated + 1 ind distco	95+% state	-No expansion financing	-Privatize -Improve efficiency	5 Distcos	100% Private	CREH & CNE
Hungary	Vertically Integrated	100% state	No Data	-Privatize	6 Distcos	state, private municipal	MEH

* For all countries broad overall power sector policy is determined by the nation's government

Exhibit 2-13
Power Sector Restructuring, 2 of 2

Country	Power Sector Pre-Restructuring			Identified Restructuring Objectives	Power Sector Post-Restructuring		
	Structure	Ownership	Problems		Structure	Ownership	Regulation*
Nicaragua	Vertically Integrated	100% state	-No expansion $ -No regulatory and commercial separation -Distribution high losses	-Separate regulation and operation -Bring competition -Tariff reform -Improve efficiency -Meet lender req'rmts	2 Gencos 1 Transco 8 Distcos	-95+% state -Private IPPs -Public/private ventures in distrib & Transmission	INE National Comm on Energy Prices
Philippines	Vertically Integrated + other Distcos	90+% state	-No expansion financing	-Split regulatory and commercial functions	Gencos Transcos Distcos	Increasing Role for Private Sector	DOE & ERB
Poland	Vertically Int	100% state	-Efficiency -Pollution	-New Expansion Financing -Separate reg & comm	33 Gencos 1 Transco 32 Distcos	Privatization to take place	ERB
Portugal	Vertically Integrated	100% state	-No expansion financing	-Increase efficiency -Competition	1 Genco, IPPs 4 Distcos1Xco	-Most public -Private IPP	DGE
Sweden	20 Genco 1 Transco 300 Distcos	State and private	-Inadequate competition	-Competition in generation and distribution	Gencos 1 Transco 300 Distcos	No Data	NUTEK
UK	Integrated Gen & Trans 12 Distcos	100% state	-No competition -Inefficiency -Lack of incentives	-State divestiture -Competition in gener and distribution	3 Gencos 1 Transco 12 Distcos	-2 Private Gencos -Private Distcos -Collective Xmco	OFFER

* For all countries broad overall power sector policy is determined by the nation's government

2 2 DISTRIBUTION SUBSECTOR AFTER RESTRUCTURING

As is obvious from a review of Exhibits 2-1 through 2-15 dramatic changes to power sector structure, ownership, and regulation have been made, are underway, or are proposed in the countries examined This has been accomplished by the approval of a new set of laws, constitutional changes, and executive decrees

Typically, restructuring has been a process involving study, legislation, restructuring and privatization over a three to five year period The particular time period has depended on the degree of changes proposed, the amount of public debate on the issues, the relative strength of opposition to the proposals made, and, for cases of privatization, the eagerness of investors to purchase divested assets In each country, a variety of restructuring options were proposed and evaluated by policy makers before the selection of a specific approach was determined

The major changes that have resulted from restructuring can be approximately categorized into three areas structure, ownership and regulation The following section details these changes

2 2 1 Structural Changes

For all of the countries examined, the total separation of distribution functions from generation and transmission has been made, or is underway Furthermore, in ten of the eleven countries studied (Argentina, Bolivia, El Salvador, Hungary, Nicaragua, the Phillippines, Poland, Portugal, Sweden, and the United Kingdom), generation and transmission assets have been, or are proposed to be, separated from one another as a result of restructuring Thus, distribution separation as part of total power sector vertical unbundling has been the most common outcome of reform in the countries examined

Accompanying this vertical break-up, the distribution subsectors have been horizontally divided In all, nine of the countries studied (Argentina, Bolivia, Chile, El Salvador, Hungary, Nicaragua, the Phillippines, Poland, and Portugal) went through, or will be going through, the formation of separate distribution organizations In the remaining two, the distribution function has been traditionally handled by entities institutionally separate from those involved in generation and transmission, and in all of these countries the distribution subsector was divided among multiple enterprises

The number of different distribution organizations varied greatly among the countries examined Generally, the more populous the nation, the greater the number of distribution companies Nicaragua, with a population of 4 5 million (of which only 35 percent have electricity service) is scheduled to have eight distribution companies while the 14 2 million citizens of Chile (where 92 percent have electricity) are served by 25 distribution companies El Salvador will have five

Exhibit 2-15
Distribution Subsector Restructuring, 2 of 2

Country	Distribution Subsector Pre-Restructuring			Identified Distribution Restructuring Objectives	Distribution Subsector Post-Restructuring		
	Structure	Ownership	Problems		Structure	Ownership	Regulation*
Nicaragua	Vertically Integrated	100% state	-No expansion financing -No reg/comm separation -Low end-use efficiency -High electricity theft -No cost breakdown -Low power quality -Distribution system losses approx 22%	-Separate regulation and commercial operation -Tariff Reform -Improve sector efficiency -Clear reg framework -Reduce losses -Meet requirements of multi-lateral lenders	8 Distcos	100% State but Pub/Priv venture in distribution	INE National Comm on Energy Prices
Phillippines	Vert Integ + others	90+% state	-No expansion financing	-Split regulatory and commercial functions	Many Distcos	Private proposed	DOE & ERB
Poland	Vertically Integrated	100% state	No Data	-Improve commercialization -Enhance comp in gener	33 Distcos	Privatization to follow	ERB
Portugal	Vertically Integrated	100% state	-No expansion financing -Expensive electricity	-Improve efficiency	4 Distcos	100% public	DGE
Sweden	300 Distcos	Mostly municipally owned	No Data	-Open Access -Retail Wheeling -Breaking regional monop	300 Distcos	Variety	NUTEK
UK	12 Distcos	100% state	-No Competition	-Retail Wheeling -Partial Competition	12 Distcos	100% Private	OFFER

* For all countries broad overall power sector policy is determined by the nation's government

are Argentina, Bolivia, Chile, El Salvador, Hungary, the Philippines, Poland, and the United Kingdom However, in the two nations where the state still holds an important share of power sector assets, Nicaragua and Portugal, participation of the private sector is contemplated by independent power producers (IPPs), joint ventures for distribution and transmission system expansion, eventual partial privatization, and in other ways such as outsourcing of specific utility activities

For the distribution subsector, the pattern of changing ownership under restructuring has followed changes occurring in the rest of the power sector In all countries the national government has divested, or is planning to divest of all, or at least an important share of its distribution subsector assets In many countries the only public ownership in the distribution subsector will be by provincial, municipal, or co-operative authorities Where divestment of distribution assets has not been complete private investment is to play an increasingly important role Private participation will include capitalization programs, outsourcing, and joint ventures

Employee share ownership has also resulted or is proposed for shares of distribution companies divested of by the state A minority of total distribution entity value in Nicaragua as well as in Hungary, Chile, Argentina (ten percent), and El Salvador (20 percent) has been, or will be, turned over to employees This has been carried forth to reduce opposition to restructuring from employees within the enterprises undergoing privatization, as well as their sometimes powerful power sector labor unions In addition, it reinforces the achievement of restructuring's operational efficiency objectives by granting workers a financial stake in company performance

Other owners of newly privatized distribution subsector assets include a variety of shareholder types for the different nations studied In Argentina, foreign companies were able to compete for the purchase of divested assets on the same terms as domestic investors As a group, Chilean domestic pension funds, with a 26 3 percent holding of the assets of the old state-owned utility ENDESA, are the largest share holding group In Bolivia, it is proposed that after privatization 50 percent of the nation's largest utility will be held by a pension fund for all Bolivian's over age 21

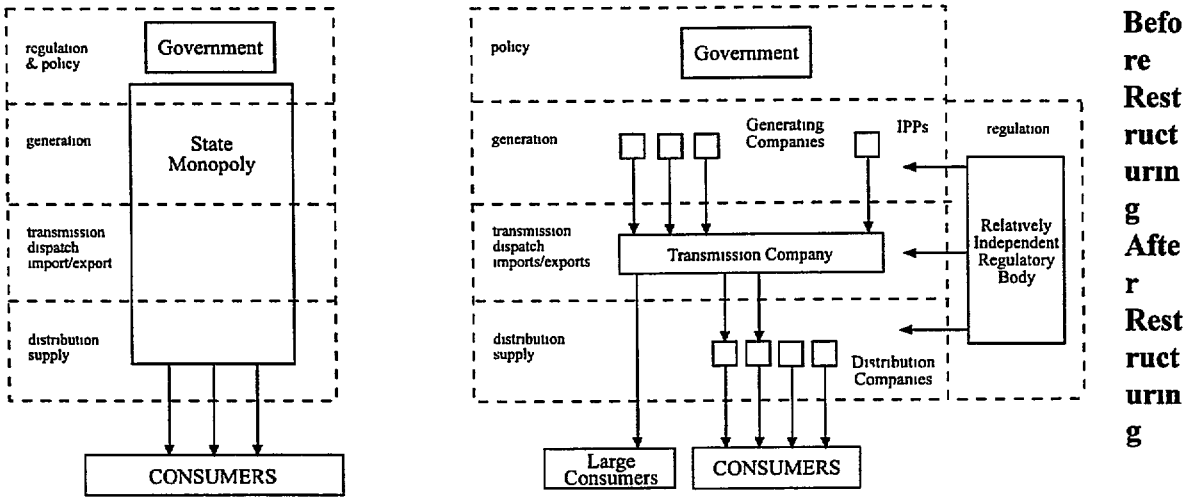
There has been a certain amount of diversification into other power sector activities by the private owners of some distribution companies In Chile, shareholders of the capital's distribution company (ENERSIS) hold shares in generating companies In Argentina, the rules for distributors' bulk power purchases will most likely lead to strategic alliances between distributors and generators This will probably include joint stock ownership by investors

Exhibit 2-17 provides an overview of the changes in ownership that have occurred as part of reform in each nation's power sector

distribution companies, Argentina has more than 20, there are 12 in the UK, 6 in Hungary, 33 in Poland, 300 in Sweden and it is proposed that Portugal will have four The two other nations studied, Bolivia and the Philippines, already have independent distribution companies, restructuring will create even more

Typically capital cities, particularly in the developing nations, are served by their own distribution companies, while remote areas may be served by isolated distribution systems not connected to a nation's interconnected transmission grid, and are managed by independent distribution companies This indicates horizontal division is a function of regional differences and attributes, be they geographic, population density-related or political-administrative Such differences have determined how the distribution subsectors were disaggregated in all of the countries studied

Exhibit 2-16
Typical Restructuring of Country Power Sectors



2 2 2 Ownership Changes

State divestiture of electricity sector assets has been the common strategy in the majority of the nations studied For the entire power sector, ownership changed, or is proposed to change, from predominantly public to predominantly private in eight of the eleven countries These countries

Hungary, Nicaragua, Poland, and Portugal, where the national government was slated to continue to have an ownership role in the power sector

New power sector regulatory agencies have been established in **all** of the nations studied In Chile, restructuring began with the creation of the National Energy Commission (CNE) in 1978 In Nicaragua, regulatory functions will be carried out by the recast Nicaraguan Energy Institute (INE), with tariff approvals made by the National Commission on Energy Prices In Argentina, ENRE (National Electricity Regulatory Entity) was created, in El Salvador the CREH (Electricity and Fuels Regulatory Commission) and the CNE (National Energy Commission) In Bolivia, the Superintendent was established, in the Philippines the ERB (Energy Regulatory Board), in Portugal the DGE (Electricity Department at the Energy Ministry), in Sweden NUTEK (the National Board for Industrial and Technical Development (NUTEK), in Hungary the MEH (Hungarian Energy Office), in the UK OFFER (the Office of Electricity Regulation), and in Poland the ERA (Energy Regulatory Authority) is to be created

While these regulatory bodies are government entities, most possess a certain degree of autonomy from direct political interference of government officials In most countries their relationship with other institutions of government can be described at relatively independent, though interdependent The scope of jurisdiction of these regulatory bodies is usually defined by higher levels of government, and the government (usually by way of an Energy Ministry) remains responsible for overall national energy sector policy The approvals of the operating budgets of these regulatory bodies, the appointment of their personnel, and expenditure audits may be performed by other branches of government Within their area of jurisdiction, however, the regulatory bodies have independence decision-making authority Exhibit 2-18 provides an overview of each nation's regulatory body, as well as some of their characteristics and responsibilities

The new regulatory bodies carry out a variety of functions In the broadest terms they implement power sector policy This includes the analysis and evaluation of power sector functionality, the monitoring of compliance with all laws and regulations governing power sector activities, the study and approval of expansion options and other investment decisions, the granting of concessions and licences, and the determination of tariffs This last activity is the usual way of determining profitability for distribution subsector market participants

Among the nations examined, there is variety in the rules governing tariff-setting Restructuring, particularly through the establishment of competition in generation and power pooling arrangements, has facilitated a change in the structure of generation prices Cost-based approaches have yielded to more market-oriented prices

Exhibit 2-17
Ownership of Distribution Assets

Country	Before Restructuring		After Restructuring				
	Public	Private	State Holding Company	Municipal	Employee Shareholders	Pension Funds	Private (Domestic & Foreign)
Argentina	✓		✓	✓	✓		✓
Bolivia	✓	minor[1]		✓	✓	✓	✓
Chile	✓	minor[2]		✓	✓	✓	✓
El Salvador	✓	minor[3]			✓		✓
Hungary	✓		✓	✓	✓		✓
Nicaragua	✓		✓		✓		✓
Philippines	✓	minor[4]		✓			✓
Poland	✓		✓				✓
Portugal	✓		✓				✓
Sweden	✓	✓	✓	✓			✓
U K.	✓						✓

Notes

1 Distribution in the capital, La Paz, as well as in some mining communities remote from the national grid are served by private companies

2 There were a handful of private distribution companies providing electricity distribution services before restructuring Together they supplied 18 percent of total electrical energy

3 One private company, Deusen, distributed electricity in the south-east of the country

4 There have been 17 private distribution companies operating in the Philippines, out of a total of 136

2 2 3 Regulation of the Distribution Subsector

An integral part of the restructuring process in most of the countries studied has been the separation of the regulatory role of the state from its commercial and long term broad policy roles This was an explicit objective of restructuring in all countries studied The separation of roles by means of the establishment of a regulatory body was of explicit importance even for

There is also some variety in the regulation of distribution utilities from country to country This includes such areas as whether distributor-owned generation is permitted, open access provisions, standards of performance and methods for fostering competition in the distribution subsector (e g , bidding for the distribution franchise)

For illustrative purposes, some of the regulations governing distribution subsector functionality and tariff determination are explained below for Nicaragua, Chile and Argentina

In Nicaragua, it is contemplated that distribution companies will be permitted to invest in their own generation facilities up to a capacity of 10 MW, while regulations to facilitate competition in the distribution sector are presently under development This limited vertical reintegration is allowed for purposes of enhancing competition in generation and to add needed capacity

In Chile, the distribution market is divided into two market segments, the regulated and unregulated segments All customers with a demand below two MW must pay regulated rates for electricity from their local distribution company while others are free to negotiate directly with generators Distribution tariffs for the regulated franchise market are calculated based on the electricity value for generation and transmission at the "node" of the transmission system where the distributor receives power To this is added a "Value Added of Distribution" (VAD) which includes the cost of investment, operation, maintenance, losses, and the fixed costs of administration, billing, and customer service The VAD is calculated by CNE by use of a computer simulation of a "model firm" Tariffs are then determined to bring distribution entities a forecast profitability of between six and fourteen percent

Argentinean distribution companies are regulated monopolies with exclusive franchise rights, and obligations to serve, as set out in their concession agreements Penalties are imposed for failing to supply as well as for poor power quality The quality of delivered power must be within certain voltage, frequency, and interruption specifications Distribution companies must contract for power in long term contracts with generators and purchase other requirements from the pool at spot market rates

Similar to Chile, there is an unregulated end-user market segment in Argentina though it is for consumers whose peak consumption is greater than 100-kW Unregulated market contracts must be made public In the regulated franchise market, distributors are entitled to recover their costs (network expansion, O&M, commercial activities, and power purchases) and a reasonable profit

Exhibit 2-18
Regulatory Bodies and their Responsibilities

Country	Regulatory Body		Responsibilities
Argentina	ENRE [1]	Ente Nacional Regulador de Electricidad (National Electricity Regulatory Entity)	Tariff calculations and approvals, licenses, technical specifications, politically independent
Bolivia	Super-intendent [2]	Electricity Sector Superintendent	Guard against monopoly power, tariff approval
Chile	CNE [3]	Comisión Nacional de Energia (National Energy Commission)	Tariff calculations, licenses, technical specifications, jurisdiction over disputes
El Salvador	CREH [4]	Comisión Regulador de Electricidad y Hidrocarburos (Electricity and Fuels Regulatory Commission)	Tariff calculations, compliance of sector participants, formulation of regulations
Hungary	MEH	Hungarian Energy Office	Licenses, wheeling tariffs
Nicaragua	INE [5]	Instituto Nicaraguense de Energía Nicaraguan Energy Institute	Tariff calculations, licenses, expansion planning, politically independent
Philippines	ERB [6]	Energy Regulatory Board	Tariff calculations and approvals, integrated resource planning, bid evaluation, prevent monopoly power
Poland	ERA [7]	Energy Regulatory Authority	Issue Licenses, approve resource plans, approve tariffs
Portugal	DGE	Electricity Sector Regulatory Body at the Energy Ministry	Tariff calculations, general oversight
Sweden	NUTEK	Price Control Board	Tariff calculations, general oversight
U K.	OFFER	Office for Electricity Regulation	Tariff calculations and approval, licenses, general oversight and guard against monopoly power

Notes

1 ENRE regulates the electricity sector in conjunction with the Secretary of Energy CAMMESA, the Wholesale Electricity Market Administrative Company, administers the transmission grid and the bulk power pool

2 The Superintendent of the electricity sector has not yet been appointed, though will be by 1996

3 The CNE regulates the electricity sector in conjunction with the Superintendent for Electricity and Fuels, the Ministry of Economy, the Ministry of Planning, and municipalities

4 The El Salvadorean National Assembly is currently debating proposals for power sector restructuring Along with the CREH, it is proposed that a Comision Nacional de Energia (National Energy Commission) be formed to coordinate electricity sector planning, functionality, and policy

5 INE regulates the electricity sector The National Commission on Energy Prices approves tariffs

6 The ERB regulates the electricity sector in conjunction with the government's Department of Energy

7 The ERA will be formed upon passage of the Energy Law presently under discussion by the government

in generation has been the primary goals Addressing these issues aimed to facilitate greater sector resource-use efficiency, reduced energy costs, and improvements in the provision of electrical energy services

It should also be noted that for most of the developing nations studied, the recommendations, support, and lending conditionality of bi- and multi-lateral lending institutions, such as the World Bank, have been important drivers of restructuring

Exhibit 2-19
Major Objectives for Distribution Subsector Restructuring

Country	Enhance Competition in Generation	Commercial ization/ Attract Investment	Improve Sector Regulation	Decentral ization of Political Control	Public Sector Sell Off	Encourage Distribution Utility Competition
Argentina	3	1	2	3	2	2
Bolivia	1		1	3	3	2
Chile	2	3	3	1	1	
El Salvador	2	2	2		1	
Hungary	1	2	2	3	1	3
Nicaragua	1	1	1	3	3	1
Philippines	1	1	3	3	1	3
Poland	1	1	1			
Portugal	2	2	2	3		3
Sweden	1		2			1
U K.	1	1	1	3	1	1

Importance of Objectives

[1] Primary [2] Secondary [3] Tertiary [ ] Unimportant

2 3 1 Improve the Commercialization of the Distribution Subsector

Separating distribution from generation and transmission has been motivated so as to improve the commercialization of electricity by the distribution subsector In fully-integrated power

Distribution Tariffs in Argentina The Regulated Market

Tariffs for the regulated segment of the distribution subsector are set by the regulatory body, ENRE They vary by customer category (residential, commercial, industrial) and are formed by three components

- **The Wholesale Cost of Electricity** Distribution companies purchase electricity in long-term contracts (8 years, typically 60 percent of total energy) or from the pool (typically 40 percent of total energy) The Seasonal Market Price is used for tariff calculations It is set by the power pool administrating body, Cammesa, and is a measure of the Wholesale Cost of Electricity It includes costs of energy and capacity on the system, plus the costs of connection and transmission, and is adjusted every six months Technical losses of 11 percent are recognized in these costs, and are passed through to customers
- **A Distribution Margin** This is the value added by distribution It includes the cost of distribution and a "reasonable" return to distributors This figure is fixed by ENRE for the first ten years of a concession period, and then revised for every subsequent 5-year period
- **Taxes** Distributors are liable for all national taxes In addition, distributors pay the National Electricity Fund tax that subsidizes electricity supply and grid extension in rural areas

Tariffs are calculated in US dollars and converted to local currency at the time of billing

In Argentina, distribution licenses last for 95 years and are divided into nine management periods (15 years for the first and ten years each for each of the remaining periods) Six months before the expiration of a management period, ENRE will invite tenders for the license for the next management period, while at the same time announcing distribution charges for the next five years The current licensee has the option of keeping the license or being paid the highest bid for the next period This is intended to eliminate complaints about distribution charges and to add competition into the determination of distribution licenses

Restructuring has resulted in major changes in the regulation, management and operation of the distribution subsector The next section of this report examines the factors and objectives that have been responsible for driving the restructuring process

2.3 FACTORS ENCOURAGING DISTRIBUTION RESTRUCTURING

Power sector restructuring has been driven by a set of factors In some cases, especially for the developing nations, distribution subsector problems were prominent among them For the developing countries, the need to reduce losses (both commercial and technical), the inability of existing institutions to attract investment, the need for clear separation of the state's regulatory and commercial roles, and the demonopolization of the subsector to encourage competition were the primary drivers for restructuring In the developed nations, the enhancement of competition

Distribution Fighting Losses in Argentina

Since restructuring and privatization in September 1992 two of the new distribution companies operating in the Greater Buenos Aires area of Argentina, Edesur and Edenor, have made important reductions in losses

Between 1991 and 1994, Edesur reduced losses from 25 percent to 18 percent, while over the same period Edenor has cut losses from 30 percent to 20 percent Losses continue to fall and are expected to drop to below 10 percent by the year 2000

In 1993 47 percent of Edesur s losses were considered "technical losses' while 53 percent were considered "non-technical losses" This means that technical losses accounted for 10 percent of total electricity distributed, and non-technical losses accounted for 12 percent Technical losses are the natural losses incurred in the transportation of electrical energy and, until newer technology can be installed, technical losses of nine percent are considered reasonable for the vintage of equipment in Buenos Aires Non technical losses are caused by theft, fraud, non-payment of bills, and other administrative problems For Edesur, theft alone accounts for 33 percent of all losses

The regulatory framework in force allows Edesur to "pass through" only 11 percent as losses So even though Edesur s losses have been dropping steadily since privatization seven percent of its electricity purchases in 1994 had to be paid for by the company, as no revenues were collected to cover them Understandably, major efforts are being undertaken to continue loss reduction so that Edesur can achieve improved profitability

2 3 2 Clarify the Regulatory/Policy and Commercial/Operational Role of the State

Separating the state's regulatory and operational roles in the power sector to remove any contradictory or politicizing government role from the daily operation of the power sector has been a major restructuring objective in all of the countries studied

Public ownership of the distribution subsector has often led to conflict between the state's goals for the commercial operation of the subsector and the goals of the state's regulatory and policy roles When one state monopoly organization sets policy, self-regulates, and at the same time operates an enterprise, there can be great difficulty in separating and reconciling regulatory and policy objectives from commercial objectives Often the results are contradictory objectives and responsibilities, and a lack of clarity in operational focus

These contradictions are typically seen in the tariff-setting process Before restructuring in Nicaragua tariffs had been held by the government at levels insufficient to cover even fuel purchases Political interference in tariff-setting was seen in Chile and Argentina before restructuring In each instance, self-financing for state-owned utilities was made difficult Subsidies were required to meet the day-to-day operational costs, leaving insufficient investment

systems, the organizational and management structure governing the distribution subsector may not be able, or have appropriate incentives, to devote its full attention to the problems in the subsector Even the personnel involved primarily in distribution-related activities may not have the authority to address the specific problems seen in the distribution subsector and there may be little incentive for them to attempt to find innovative ways of improving performance

An example of this can be seen with the handling of technical and commercial losses In Buenos Aires, losses (both technical and commercial) on the distribution side were estimated at 26 percent of total generation, in Nicaragua, the figure was 22 percent In both countries electricity theft was largely responsible for these higher-than-normal losses Separation of the distribution subsector was used to better "internalize" the need for pursuing loss reduction strategies and take responsibility and action to do so By severing the ownership and managerial relationships between distribution and generation and transmission, the responsibility for controlling costs and increasing revenues from distribution-related activities became clearer Furthermore, privatization and regulation created incentives for loss reduction as profitability depended on it The distribution subsector could not rely on hidden subsidies and "opaque" cost accounting to keep the subsector afloat financially Separating distribution allowed the managerial and technical staff to focus exclusively on the task of distributing and commercializing electricity

Restructuring has helped to establish distribution entities whose costs of operation are more easy to identify, and better understood This facilitates improved subsector management and planning, as well as facilitating regulation With improved financial and operational management, distribution companies are more likely to be able to build-up financial reserves for self-financing In addition, with improved commercialization perceived risk on the part of potential joint venture partners and other investors is reduced

Thus, commercialization of the distribution subsector facilitates investment In Argentina, Bolivia, Chile, El Salvador, Hungary, Nicaragua, the Philippines, Poland, Portugal, and the UK, a primary goal of restructuring has been to attract capital from new sources so that existing equipment could be upgraded and new infrastructure installed Commercialization helps accomplish this

systems is often heavily centralized Decisions, including those related to investment, are made by a central management authority that may not effectively use information from outside of the centralized management structure As a result, decisions made in this way may be based on less-than-perfect information Demonopolization of the subsectors of the power sector allows for the decentralization of management decision-making This helps improve the quality of the managerial process by facilitating better understanding of the factors affecting decisions, and thus allowing management to better tailor its activities to local conditions

The degree to which a power sector is disaggregated in a process of power sector demonopolization, does however, have limits Splitting the distribution subsector into too many separate utilities can be counterproductive as scale economies are lost

2 3 4 Privatization

In some countries, an increased role for the private sector and privatization have been major objectives of power sector reform Broadly speaking, there are four perceived benefits of privatization

- privatization and private participation allow new sources of investment to flow to the sector
- privatization can be a method to gain monies for the public sector through a one-time sell-off of public sector assets,
- privatization can reduce or avoid altogether any public sector subsidies to the power sector,
- privatization introduces greater market orientation into the operation and management of a company or stated differently, privatization avoids the perceived inefficiencies associated with public sector ownership, in some cases (such as Russia), privatization has been used to effect a change in senior management at an organization

In countries such as Chile, the UK and Bolivia, privatization of the power sector was, and still remains, an important objective Bolivia intends to use the monies earned from privatization to establish a pension fund for Bolivians In Chile, privatization was used for financial reasons including the state's perception that the power sector needed at least $200 million annually to meet its requirements However, there was also a political objective to dramatically break with the past state interventionist economic practices and to encourage "popular capitalism" by distributing shares to the populace In the UK, privatization of the distribution subsector (as well as most of the power sector with the exception of nuclear generation) was used as a way to gain funds from a one-time sale of assets and to improve the efficiency of the distribution subsector

for rehabilitation, maintenance and system expansion In addition, low tariffs sent price signals has stimulated poor end-use efficiency thereby further exacerbating problems in the energy sector (supply shortages, overloaded infrastructure, bad power quality)

In every country studied, a primary objective of restructuring has been the clarification of the state's role in the power sector In every case the state has withdrawn from direct commercial operation and has focused its efforts on sector regulation and the determination of broad policy In turn, corporatization has strived to create an environment in which the utilities are free to operate with greater market-orientation and free of political interference The state has withdrawn from the day-to-day operation of power sectors and concentrated on the extremely important tasks of effective sector regulation and broad policy determination This is demonstrated by Exhibit 2-17

2 3 3 Demonopolization of the Power Sector

Power sector demonopolization entails the opening of the industry from a structure in which one enterprise holds all rights and responsibilities to a situation where multiple entities participate In all of the countries studied demonopolization has occurred in generation and distribution

In the study countries, demonopolization of the distribution subsector was achieved by separating it from generation and transmission and disaggregating the subsector horizontally This new industry structure facilitates the attainment of restructuring objectives in a variety of ways

Demonopolization facilitates private participation in the power sector It permits industry to self-generate and sell excess power to the national grid or other users Furthermore, demonopolization and disaggregation makes for smaller entities with smaller asset values and liabilities that can more easily be privatized as lower investment amounts are required for their purchase

Demonopolization permits "benchmark" competition between distribution utilities With several distribution utilities operating independently regulators can gauge the extent to which one utility is outperforming another in its operations Benchmark competition combined with a performance-based regulatory scheme can lead to improvements in efficiency and encourage unique solutions to the problems of the subsector (such as how to reduce losses) Further, expanding the role of the private sector either through privatization of a distribution utility or through the outsourcing of certain activities can also help stimulate benchmark competition

Power sector demonopolization is beneficial in that it forces a decentralization in the management of the sector The management of the power sector in vertically integrated power

often be traced to the distribution subsector Electricity theft, inadequate attention to consumers, poorly maintained and overloaded distribution infrastructure are some such problems

Given the importance of the distribution sector in many developing nations, it is unfortunate that little detailed evaluation of distribution subsector restructuring experience has been made What has been identified discusses experiences in Chile and Argentina Highlights of these evaluations are found below

2 4 1 Distribution Separation in Chile

An evaluation of Chile's largest distribution company, Enersis, was recently commissioned by the World Bank (Galal, 1994) The study evaluated the company's performance from 1981, when it was separated from generation and transmission and corporatized, through its divestiture in 1986 and up to the early 1990s

The study concluded that divestiture facilitated a significant reduction in electricity losses due to theft, from a high of 22 4 percent in 1983 to a low of 14 2 percent in 1989 Losses were reduced faster under private ownership than under state ownership and are expected to be reduced to 12 5 percent in the medium term In addition, the report concludes that as regulated tariffs in Chile are in part derived from actual losses, then tariffs would have been higher had divestiture not occurred

Also accompanying corporatization were increased public and private profitability as well as improved labor and capital productivity, with gains being greater after divestiture The number of employees working for Enersis increased since privatization, contrary to expectations that divestment would mean a reduction in the workforce Since divestiture, particularly since 1989, the company has invested in extremely profitable nonoperating assets which have boosted profitability

Other conclusions stemming from the evaluation are that "divesting monopolies in well-regulated markets limits their ability to exercise their market power and improves resource allocation," although "reforming and regulating public enterprises improves efficiency " On balance though, for the case of Enersis, "the net benefits of divestiture accompanied by effective regulation can outweigh the net benefits from reforming and regulating public enterprises "

In the case of the UK, productivity has risen sharply in the distribution subsector due in part to significant workforce reductions

In countries that have privatized, the spin-off and break-up of distribution assets allowed for the division of liabilities and can lead to greater transparency of distribution subsector finances (such as more clearly identifying the source of financial losses)

Experience shows, however, that private capital will only be forthcoming where investment risk is clearly understood A solid regulatory framework with defined procedures, and transparency in decision-making greatly improves any chances of private participation By accomplishing this, the study countries have facilitated restructuring objectives for privatization and have attracted private investment

2 3 5 Encouraging Competition in Generation

Encouraging competition in generation was a major motivation for reform in Argentina, Bolivia, Chile, El Salvador, Hungary, Nicaragua, the Philippines, Poland, Portugal, Sweden, and the UK It has also been a major motivator for reform in other countries undergoing restructuring such as Australia and New Zealand For these nations, unless distribution was already handled by separate distribution utilities (which was the case in the UK, Sweden and New Zealand), the distribution subsector was separated from generation and transmission to facilitate this introduction of competition in distribution

The direct retail access by large electricity consumers to bulk power purchases from the transmission grid may also add competitive pressures to the competitive generation market

2 4 SUMMARY OF EVALUATIONS ON DISTRIBUTION RESTRUCTURING

Most of the information available on the evaluation of the results of distribution subsector restructuring is descriptive The evaluations of power sector restructuring tend to focus on the bulk power side of the industry (generation and transmission) This is understandable as the creation of competitive bulk power markets has been a driver underlying much of the restructuring undertaken to date

Distribution is often overlooked in discussions of power sector reform when such reform is focused on increasing competition in generation In the developed nations this is understandable as the distribution subsector is rarely a major source of inefficiency or other fundamental power sector problem In stark contrast, within developing nations problems of the power sector can

CHAPTER 3
LESSONS LEARNED

3.1 INTRODUCTION

The recent power sector restructuring trend began in Chile in the late 1970s For Latin America, this started a reversal of the power sector vertical integration and state-ownership that occurred in the 1950s Since the Chilean restructuring and privatization, and particularly since the overhaul of the UK's power sector in 1990, there has been a rising tide of power sector restructuring worldwide

This report has surveyed available information in the restructuring literature with special attention to the structure, ownership, and regulation of the distribution subsector In the following, some of the major trends that have emerged are indicated

3.2 TRENDS IN RESTRUCTURING

3 2 1 Trajectory Horizontal and Vertical Division and Privatization

It is clear that the trajectory of restructuring is towards vertical and horizontal division of the power sector To promote competition in bulk power markets, existing generation assets have been divided and new capacity is being constructed by new players Transmission assets have been recognized as being of great strategic importance in the power sectors It has been common for all transmission infrastructure to be consolidated and managed by one organization, though in some countries transmission assets are still owned in common by other power sector enterprises

Horizontal division, or break-up, of the distribution subsector has accompanied these changes on the bulk power side of the market Where distribution entities have not been spun-off from generation and transmission, it is because they were traditionally independent anyway In none of the countries examined have any distribution assets been absorbed by an enterprise that operates generation or transmission, though common share holding has occurred in some countries

Significant change in ownership has accompanied vertical and horizontal break-up of integrated power sectors Ownership has shifted from public to predominantly private, though with great variety in ownership structure between countries This change in ownership has occurred in all areas of the power sector Increased private participation has been motivated by the search for improved sector efficiency, access to new sources of financing, and for other reasons

2 4 2 Distribution Separation in Argentina

An evaluation of the Argentinean reforms (Perez-Arriaga, 1994) includes the results of two well informed Argentinean studies, which reached opposite conclusions Though empirical evidence is certainly lacking (very little time has passed since the reforms), the paper does reach some general conclusions

Positive aspects of the reforms in Argentina are that political interference in the power sector has been reduced, there is a new competitive atmosphere including a quest for economic efficiency, investment has been stimulated, and the diversity of market agents makes it difficult to exercise market power

On the other hand, it was concluded that technical regulation is complex and has not been finalized, there has been no hoped-for reduction in electricity prices, that new regulation does not encourage energy conservation or load management, and that the roles of ENRE, CAMMESA, and the Secretary of State for Energy still need to be adjusted to minimize political interference

Analysis of Argentinean power sector reform by other experts has resulted in the expression of concern on the apparent lack of prohibition on ownership of both distribution and generation assets Share ownership of distribution companies by holding companies that also own generation assets, or even directly by generating companies, would allow a return to vertical integration and affect competition in bulk power markets

2 4 3 Evaluation in Perspective

When reviewing the results of the evaluation of any restructuring, it should be noted that reviewers may criticize a restructuring effort for its failure to achieve specific results that are considered to be of importance to the evaluator However, it has also been the case that the metric being used by the evaluator may not have been an explicit objective set by policy makers for the restructuring For instance, in the UK, the restructuring and privatization of the power sector has been criticized by some reviewers for failing to encourage utility-sponsored activities to promote energy efficiency Although energy efficiency is no doubt a worthy objective, encouraging utility-sponsorship of energy efficiency was not a specific target of the UK restructuring Improved pricing was felt to be the appropriate driver for energy efficiency Therefore, interpreting the results of any evaluation should include an examination of all important aspects including the extent to which the restructuring achieved its originally expected results The next chapter of the report examines the lessons that can be learned from the experience with distribution subsector restructuring, focusing in turn on those applicable for Kyrgyzstan

competition Such competition has been brought about by breaking up the distribution subsector in order to create, at a minimum, benchmark competition (the comparison of the performance of entities relative either to each other or to an external standard) as well as to create some market competition through the implementation of innovative rules on distribution concessions, direct access, tariff design and self-generation

The distribution subsector has been divided also in order to create markets for the purchase of bulk power in order to limit the exercise of monopoly power in the generation subsector

To form these distribution companies, distribution assets have been split along regional lines They have been divided according to the logic of the branching of distribution power lines, which usually follow differences in population density, political administration, and geographic land-form These "natural" divisions, and in some cases limits to economies of scale (for example, in cases of grids remote from a nation's main interconnected system) have served as the boundaries of the new distribution subsector enterprises

When designing the division of the distribution subsector, particularly in a country where limited resources mean a shortage of qualified administrators and technicians, policy makers have been careful not to establish an excessive number of distribution companies This could have resulted in inadequate administrative and technical capacity in the new companies and doom a new distribution company to commercial failure right from the start Furthermore, too small a size for a distribution company may be unable to capture scale economies

To avoid such problems, regional differences in distribution subsector operations, maintenance, and administrative costs were given serious consideration by policy makers when formulating the break-up of the distribution subsector

3 2 3 Separation of Regulatory/Policy and Commercial/Operational Functions

Accompanying the vertical and horizontal disaggregation and significant changes in ownership, a major aspect of reform has been change in the institutional framework of the power sector In particular, independent regulatory bodies have been established in order to separate more clearly the government's policy, regulatory, and operational functions with respect to the power sector and to insulate commercial enterprises in the sector from day-to-day political interference After the creation of these relatively independent regulatory bodies, national government's and ministries continue to determine and give broad policy guidance for the power sector, but they delegate to the regulatory authority sufficient authority to oversee the implementation of the government's policies

Commercial enterprises are thus able to concentrate on improving operational efficiency within a transparent and predictable regulatory environment as established and maintained by the

regulatory body The independence of the regulatory body gives confidence to private investors by assuring stable and transparent "rules of the game" for all participants in the power sector, assuring that new entrants receive fair treatment This facilitates obtaining sufficient and timely financing for the power sector

A major responsibility of the regulatory body is the execution of tariff studies In some countries, the regulatory body acts more autonomously and may make final tariff approval In others, the regulatory body submits its recommended tariff proposals to higher authority in the national government In Chile, for instance, the Minister of Economy can refuse to approve tariffs submitted by the regulatory body, but only if certain conditions are believed to have been violated by the regulatory body If the Minister refuses to approve, there is an automatic appeal to the judiciary and the judiciary will decide whether the Minister correctly withheld approval

In many of the countries examined, electricity price reform has accompanied restructuring In these countries electricity tariffs now more generally correlate with the long run marginal costs of electricity production and supply This has allowed for an appropriate valuation of electricity relative to other factors of production, and has improved efficiency Furthermore, such a tariff level is invaluable if the power sector is to attract the investment capital required for rehabilitation, modernization and expansion of the system Without reasonable expected streams of cash revenues, banks and other private investors will not risk investing their financial resources commitments, or, if they do so, they will require a very high risk premium or more stringent requirements for guarantees either directly through government guarantee of debt or indirectly through long term purchase power agreements with or backed by the government

By separating regulatory and policy functions from the operation of power sector enterprises, utilities are able to focus on improving their operational activities Such improvement has been facilitated by corporatization and commercialization Corporatization has involved the establishment of new organizational structures and objectives for power sector enterprises, as well as the clarification of the responsibilities of management and owners This has resulted in better control of costs, increased revenues, and more efficient management of power sector enterprises

3.3 KYRGYZSTAN'S SPECIFIC SITUATION

3 3 1 Present Structure of the Power Sector

The existing power sector in Kyrgyzstan is a government-owned monopoly under the administrative management of Kyrgyzenergoholding Company (KNEHC) The total capacity in the system is 2,922 MW of operating plants and 610 MW in construction The majority of existing capacity and all of that under construction is hydro power The Toktogul Cascade on the Naryn River has a capacity of 2,180 MW The downstream plants of this Cascade are used as

peaking units Several small hydro plants on other rivers supply another 83 MW There are two combined heat and power thermal plants 609 MW in Bishkek and 50 MW in Osh

The annual electric energy output in 1994 was 12,860 Gwh, of which 10,336 Gwh was available for sale Of this, 2,505 Gwh was exported to Kazakstan and Uzbekistan The developed hydro plants in the country are estimated to be only about 10% of the hydro potential, and so electricity is seen as an important export commodity now as well as in the future

The transmission system consists of two high voltage levels, 500 kV and 220 kV, and a number of 110 kV lines in the less developed parts of the country The distribution line are of 35 kV, 10 kV, and 0 4 kV The transmission and distribution network is divided into eight administrative centers (Osh, Chui Valley, Jala Abad, Issi-Kul, Naryn, Bishkek, Kemin and Talas) serving the total KNEHC system Kyrgyzstan's transmission grid is connected to the Central Asia Grid

3 3.2 Operational Problems and Special Circumstances

Because Kyrgyzstan's hydro resources are "dual-use" -- that is, they are used for both electricity generation and for irrigation in Kazakhstan and Uzbekistan, -- the problems besetting the power sector cannot be resolved without consideration of the effect on strategic waterways, control of water flows, and international relations

Operational problems of Kyrgyzstan's power sector include very large accounts receivable balances and extremely high losses, both technical losses and losses due to theft It's most daunting problem, however, is the need raise up to an estimated $650 million in capital investment $ 380 million to repair existing facilities and $270 million to complete construction of Kambarata 2 The estimate of capital investment needed for repair and rehabilitation includes the following

$80 million for the Bishkek Thermal Station,
$65 million for District Heating,
$145 million for transmission and distribution,
$70 million for the hydro plants downstream of the Toktogul Reservoir
$20 million for other hydro plants and miscellaneous facilities
---
$380 million

Of this $380 million, about $70 million is slated to be provided by a consortium loan led by the World Bank and the Asian Development Bank in a long term loan on very favorable conditions, provided that the sector meet certain specified conditions that include, among others, institutional reform through the creation of an independent regulatory body and provision of a "social safety net" to mitigate adverse affects of tariff reform on low income consumers

Much hope for the growth of Kyrgyzstan's economy is placed on the development of the 1900 MW Kambarata 1 project This project has been estimated to cost about $4 billion about $2 billion for construction of the reservoir and plant and about $2 billion for transmission There are currently studies being conducted to determine the potential market for the power

3.4 LESSONS FOR KYRGYZSTAN

Having examined the restructuring experience of several countries in light of Kyrgyzstan's special circumstances, the major lessons applicable to Kyrgyzstan include the following

1) Even in relatively small countries in crisis conditions, power sector restructuring that includes the complete institutional separation and commercialization of distribution enterprises has been undertaken Increasing centralization of the power sector under direct government control has not been found to be a solution in any of the study countries

< 2) The major factors that have driven restructuring in developing nations are all seen in Kyrgyzstan These include

-higher-than-normal losses (both commercial and technical)

-poor or deteriorating financial performance of the power sector

-tariffs that are insufficient to cover the costs of the power system sue primarily to political decisions

-the inability to finance the capital investment needed to rehabilitate the system and/or meet new supply requirements either through the government's budget, from private domestic pools of investment capital or access to foreign capital

-a lack of a commercial orientation in the operation of the power sector including an investment decision-making process that does not necessarily prioritize investments in accordance with economic criteria

3) For the study countries, restructuring that has included power sector corporatization, commercialization, and the establishment of clear regulation has been effective in addressing each of the problems identified above Further, restructuring has "across-the-board" met with the support of private investors and multi-lateral financing bodies such as the World Bank, and in fact has been supported with significant financial commitments

4) Those countries that have restructured and established a transparent regulatory process based on sound economic principles and concepts of regulatory autonomy have successfully gained access to investment on reasonable terms

5) An increased role for the private sector and privatization have been important components of restructuring and have occurred in all study countries Although vertical disintegration of a state-owned enterprise is better than the status quo, private participation can be a significant driver of improved efficiency and investment Private participation includes total or partial privatization, joint ventures with private firms, private participation in generation or grid interconnection, or outsourcing of specific utility functions

6) Regulatory reform must be undertaken in concert with restructuring The importance of sound economic regulation of natural monopoly functions especially using performance-based approaches will help to spur efficiency gains for the power sector

3.5 ALTERNATIVES

3 5 1 The Two Basic Choices Whether to demonopolize and whether to denationalize

Based on the findings of this report, most governments evaluate four basic options when considering whether and how to either demonopolize and/or denationalize their power sectors The decision to demonopolize (restructure and unbundle) is separate and distinct from the decision to denationalize (increase private participation) Both decisions, however, are related to reform of the sector and should be considered together The four basic options are to

1 Separate the power sector from the Government by creating a joint stock company that is wholly owned by the government and creating a regulatory agency to oversee sector policy and implementation of government policy This option results in two significant institutional reforms in the sector, changing relationships among government entities, but it does not by itself represent either denationalization or demonopolization

(This is a "Status Quo" option for the Kyrgyz Republic KNEHC became a joint stock company in 1993 by Decree of the Government with the stated intention of selling 20% of its shares on stock exchanges, 27% to specific investors, transferring 2% to employees, and retaining 51% The State Energy Agency was created in 1996 by Decree of the Government)

2 Keep the power sector as a fully integrated monopoly and sell a percentage of its shares to a strategic investor or enter into a long term lease of its assets to a strategic investor This option denationalizes the sector but does not demonopolize it

3 Unbundle the sector but keep it in public ownership This usually involves the division and transfer of ownership of distribution systems to local authorities This option demonopolizes the sector but does not denationalize it

4 Both unbundle and privatize all or parts of the sector This involves separating the sector into generation, transmission and distribution corporations and then, with respect to each of the various individual parts of the unbundled sector, decide whether to

-retain state ownership,
-divest state ownership to local authorities,
-sell a minority share to passive investors or
-sell a majority share or lease assets to active ,strategic investors

The four basic denationalization and demonopolization choices being discussed now in Kyrgyzstan are shown in the following diagram This report takes the fourth choice (to both demonopolize and denationalize) and outlines two variants of it, called Alternative 4 and Alternative 5 later in this report Alternative 4 is a scenario of partial unbunding and privatization Alternative 5 is a scenario of full unbundling and privatization

THE FOUR BASIC WAYS TO DEMONOPOLIZE AND/OR DENATIONALIZE

1 Keep KNEHC vertically integrated and 100% GOK owned

2 Keep sector vertically integrated and sell or lease to one foreign investor

3 Unbundle KNEHC and keep it all in public ownership

4 Unbundle KNEHC and keep, lease or sell parts

	Nationalized (Public Ownership)	**Denationalized** (Private Participation)
Monopolized (Vertically Integrated Monopoly)	1 Status quo	2 18-year lease to one foreign investor
Demonopolized (Unbundled KNEHC)	3 Keep generation & transmission in state ownership, divest state ownership of distribution assets to local authorities	4 Retain public ownership of some parts and lease or sell other parts to foreign & domestic investors

3 5 2 Alternative Ways to Denationalize and/or Demonopolize

The need for reform of the Kyrgyz power sector is clear The objectives of this reform include the following

- To raise capital for system repair and expansion,
- To improve financial performance of the sector by increasing efficiency, reducing losses, and operating on a commercial basis,
- To assure future domestic supply at prices that are fair, socially acceptable and encourage energy efficiency,
- To reduce and phase out government subsidies,
- To reduce the need for Government financial guarantees and free up its credit capacity,
- To enable the development of power export opportunities

Based on the nature and extent of the problems in Kyrgyzstan's power sector and on the lessons learned from other countries that have used the strategies of denationalization and demonopolization to reform their power sectors, at least five alternative concepts about how to restructure and privatize Kyrgyzenergoholding (KNEHC) merit serious consideration

In each case, the new regulatory body, the State Energy Agency, would serve as an independent regulator of KNEHC and any other energy enterprises that eventually participate in the sector

In those alternatives that involve denationalization by bringing in strategic investors, the Government has the choice of which mechanism it prefers to use sale, economic lease, joint venture, or management contract for all or various parts of the system The primary decision at this point is not which mechanism to use, but how far and how fast to demonopolize and denationalize -- that is, which concept of sector reform the Government of Kyrgyzstan wants to pursue and at what pace

Once the Government selects one of the concepts to pursue in earnest, then more detailed analysis, based initially on data and information supplied by KNEHC, could be made to determine how it would be implemented and in what time frame, identifying specific problems and their solution, and evaluating it relative to several decision criteria that are important to the Government of Kyrgyzstan These criteria include

- potential affect on tariffs,
- the time frame for repair and modernization of system facilities,
- the time frame for improved financial performance and ability to self-finance,
- fair value of the assets (including reduction of liabilities)
- potential affect on employment levels,
- potential affect on the Republic Budget and the GOK's credit capacity,
- the likely impact on regional water issues and international relations,
- political feasibility, and
- the likely effect on the GOK"s reputation in the global financial community

The five alternatives considered in this report are as follows

Alternative 1 Status Quo

Maintain the status quo, Keep KNEHC vertically integrated and regulate it through the newly created State Energy Agency to prevent monopoly abuse, to balance the interests of consumers and producers, to set tariffs that are fair and reasonable and recover costs, and to bring about the improved financial performance of the sector

Alternative 2 Lease the Vertically Integrated Monopoly

Maintain KNEHC in its present form as a vertically integrated utility and privatize up to 10% of its shares through a coupon auction and employee share distribution (Phase 1), KNEHC would then be further privatized, but not further restructured (or only minimally restructured), by leasing the entire, vertically integrated system to a foreign investor (Phase 2)

Alternative 3 Decentralize Distribution

Transfer the low voltage transmission and distribution systems to local authorities and encourage them to enter into joint ventures with private investors

Alternative 4 Partially Unbundle and Partially Privatize

Put the main hydro plants of the Toktogul Cascade and the high voltage transmission lines into Joint Stock Companies and offer up to 10% of their shares in the coupon auction, (Phase 1) KNEHC would then be further unbundled and further privatized under a variety of mechanisms, as most appropriate for each part of the system and the KNEHC conglomerate

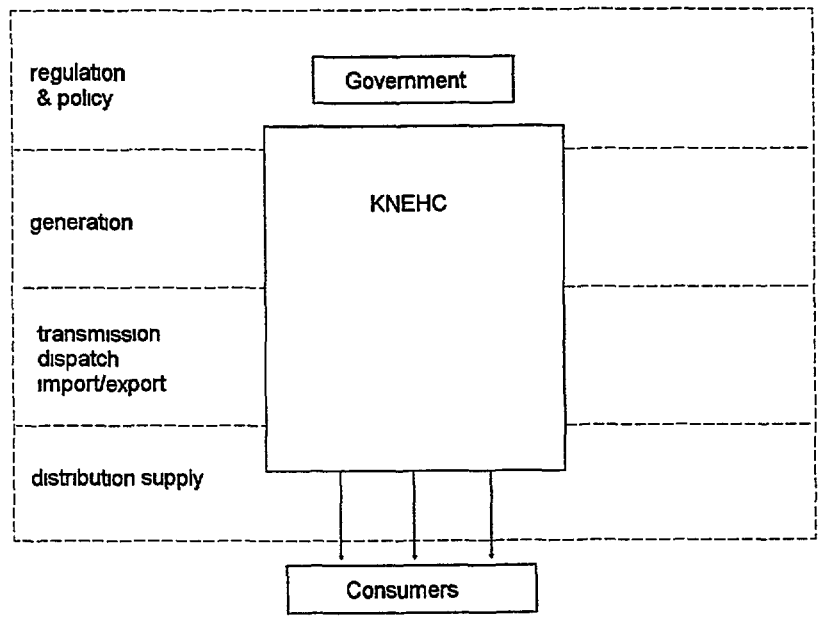
Alternative 5 Fully Unbundle and Fully Privatize

Separate the transmission grid and dispatch functions into a JSC, create separate JSCs for all of the different generating stations, and create JSCs from all of the eight distribution companies Corporatize and commercialize these JSCs, create open access to the transmission grid and the distribution grids, and create least cost dispatch and a settlements function in the transmission company

Each of these alternatives are illustrated and discussed below

3 5.3 Alternative 1 Status Quo

The Government of Kyrgyzstan took the first steps toward reform in 1993 when it created KNEHC as a joint stock company, even though to date it remains a joint stock company in name only This FIRST STEP is illustrated below



The Government of Kyrgyzstan took sector reform one step further when it again restructured the sectors's institutional framework by creating the independent State Energy Agency

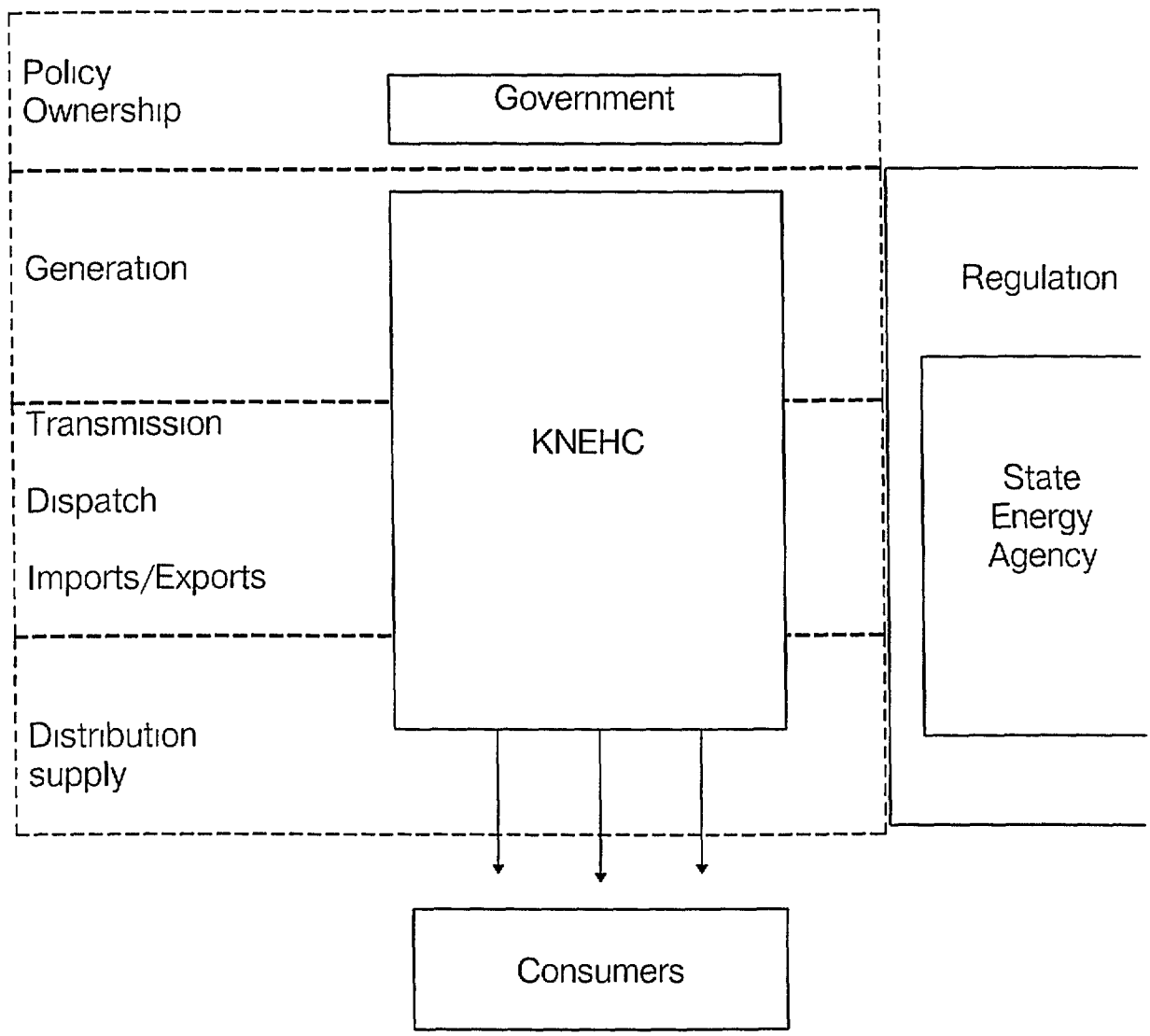
Alternative 1 Status Quo would consolidate the gains from taking this additional step, but would go no further toward denationalization or demonopolization Under Alternative 1, the financial performance of the sector would gradually improve due to the steady adoption of commercial business practices, tariff reform, and investments made on the basis of economic criteria rathen than political criteria, as a result of regulatory oversight by the State Energy Agency

Relative to the other four alternative, this alternative (illustrated below) has the advantage of facing the least internal political opposition, but the disadvantages of

- Slower adoption of commercial business practices
- Slower improvement in sector's financial performance
- More limited access to investment capital

Alternative 1

Status quo



3 5 4 Alternative 2 Lease the Vertically Integrated Monopoly

Alternative 2 - Phase 1 allows a small share of the entire power sector to be privatized quickly through the mass privatization program A recent survey showed that there is very high public interest in KNEHC being offered in the coupon auction, and that KNEHC is the primary entity for which people have been holding back their coupons

Phase 1 of this Alternative, while politically appealing if not a political imperative, brings little of value to KNEHC It does not bring in capital, nor does it bring in commercial business expertise because the coupon investors can only be passive investors

Real privatization would occur in Phase 2, when the entire vertically integrated monopoly would be offered in an 18-year "Economic Lease" to a foreign, strategic investor after spinning off the thermal plants that are currently a significant financial burden to the system and in need of $65 million in capital (This is the "TACIS Lease Option described in the August 28, 1996 "Concept Paper" prepared for the State Property Fund

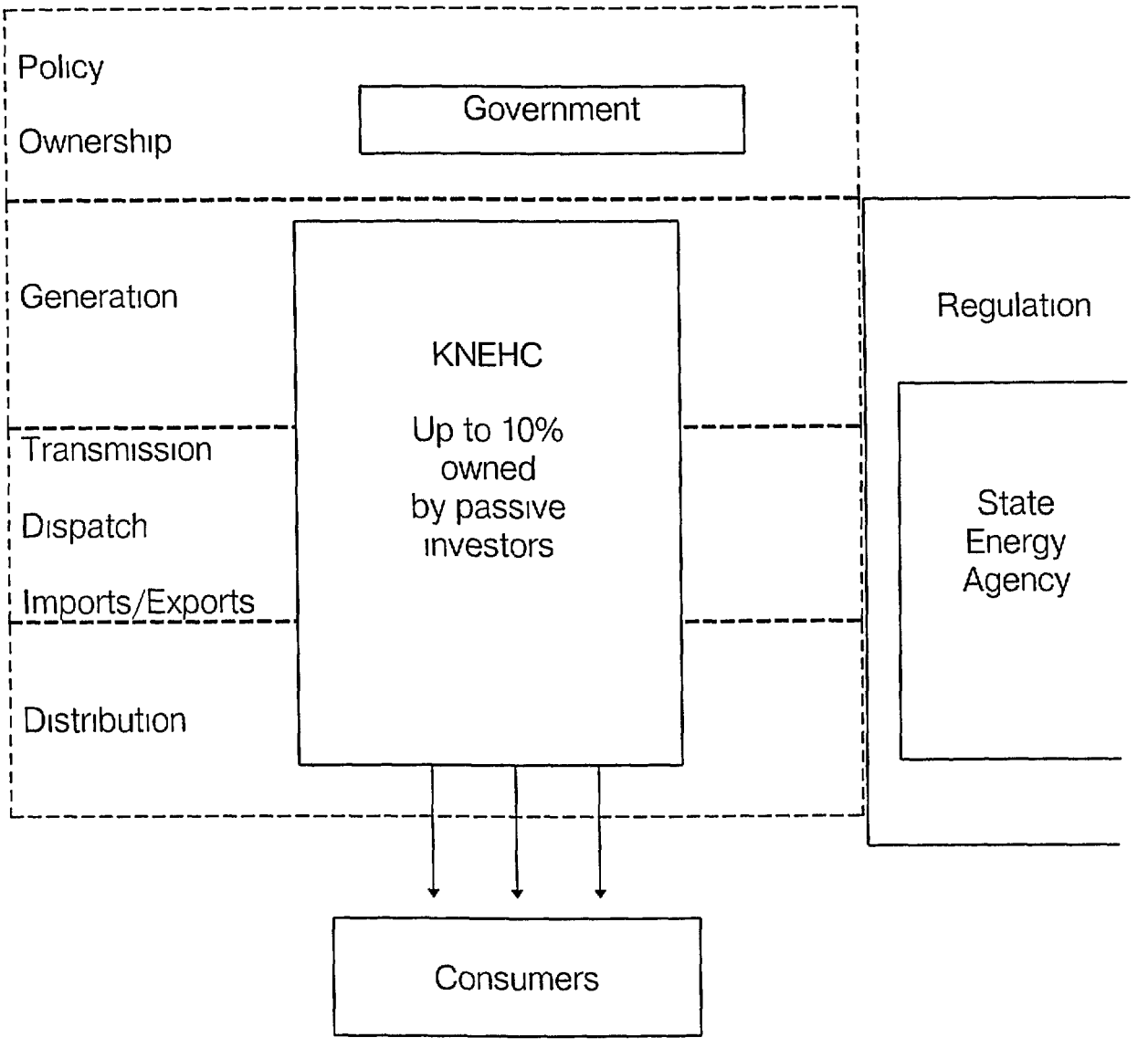
Under such an Economic Lease of all KNEHC assets, the investor would presumably pay a nominal up-front fee and a scheduled annual fee and be required to invest a sizeable amount of capital over an agreed upon time frame In exchange, the investor would be given complete control of the operations of the entire system, and allowed to earn an unlimited rate of return as long as the rates charged to customers did not exceed a certain level This could be spelled out in the lease document that would specify the starting point for tariffs, a rate path for the next five years, and a provision that escalations would be tied to an agreed upon economic index

While this option has the political appeal of not giving up ownership of the system, it has the equivalent effect of a sale because it turns over the economic value of as well as operational control of the entire system to the foreign investor for the 18 years of the lease

Both Phase 1 and Phase 2 of this Alternative are illustrated below

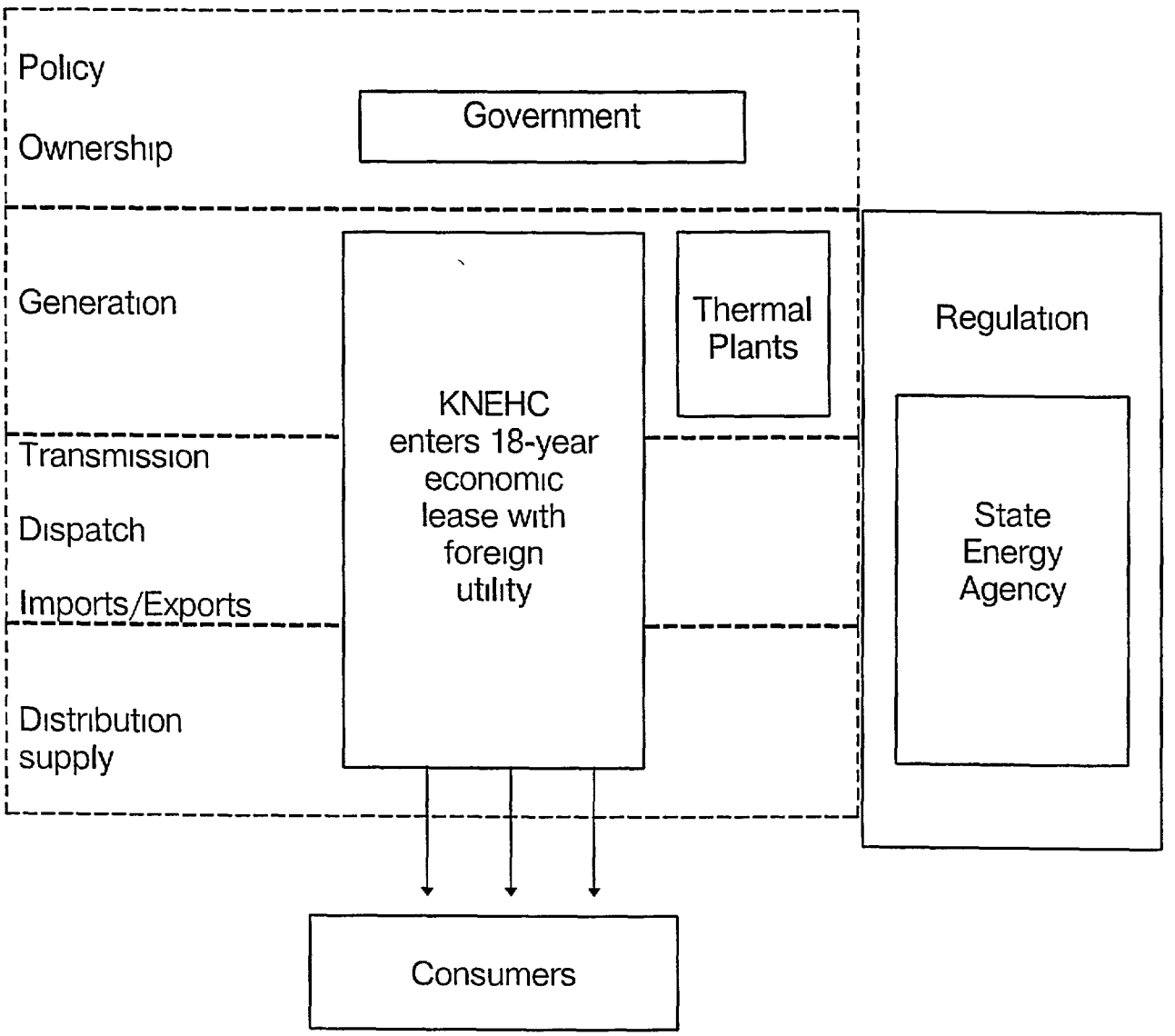
Alternative 2 - Phase 1

Offer up to 10% of the entire KNEHC in coupon auction



Alternative 2 - Phase 2

Long-term economic lease to foreign investor



The "Economic Lease" being proposed by TACIS consultants is very innovative and has not been tried frequently before, if at all It appears to be like a concession in some aspects, and like a lease in other aspects, most particularly in its shorter time frame

The more standard mechanisms used most frequently to bring private sector participation into public enterprises include Management Contracts, Lease Agreements, Concessions, and Asset Sales to a Strategic Investor These are described in brief below

Management Contracts are the most limited form of private participation The private entity is involved only in the operatiton and maintenance of the facilities for a period of 3 to 5 years, and does not provide any significant capital investment The GOK??KNEHC would receive the revenues and pay the scheduled operating costs for the services thereby continuing to assume all commercial risks The management contractor is paid a fixed fee for its services, together with any incentive fees for increasing revenues beond targets, lowering annual costs or achieving various targeted performance criteria The main benefit of this arrangement is that it allows the public enterprise to benefit from the expertise in managment through the involvement of an experienced private sector organization in a relatively short period of time

Lease Agreements move towards establishing a longer-term involvement by a private sector operator Given the longer time horizon of lease agreements, they not only bring to bear operational efficiencies through commercial managemnt practices, but also begin to attract private capital for system improvements In a lease contract, the fixed investments and debt service would remain the GOK/KNEHC's obligation, but short term assets and working capital would financed by the lessee The lessee bears full net revenue responsibility and commercial risk, usually with a revenue sharing agreement with the GOK/KNEHC The increased efficiency in operation and the related increase in customer satisfaction, combined with the reduced financial burden of financing system investments, are the major benefits to the GOK/KNEHC

Concessions are essentially long-term lease agreements, ranging from 15 to 50 years With the longer involvement, there is a commensurate increase in the obligations of the concessionaire Unlike lease agreements, were the lessee finances only short-lived assets, a concessionaire is liable for long-tem investments for the growth of the system In essence, the concessionaire becomes the de facto owner/operator of the system for the duration of the concession and assumes all commercial risks At the conclusion of the concession the assets are returned to the GOK/KNEHC, including the investments made over the life of the concession by the contractor The GOK/KNEHC gets an initial concession fee, an annual concession fee and a negotiated profit participaction

Asset Sales to Strategic Investor(s) can mark a change in ownership from prublic to private entities, resulting in full commercial discipline The ownership of the assets can vary in degree, from the private investor owning a minority share to the private party having full ownership

Under such an agreement the buyer takes control of both operating and non-operating assets Inventorying and valuing the assets prior to the sale becomes a major undertaking of the GOK/KNEHC Most imprtantly, the powers and duties assumed by the GOK/KNEHC need to be conveyed explicitly to private owners in a purchase and sale agreement, including the right to enter onto private property, the power of condemnation (taken with compensation) of land, granting of easements, and other matters

It is important to note that under any of these arrangements, the GOK can regulate the behovior of the private participants through performance agreements developed under the auspices of the State Energy Agency

Relative to the other alternatives, this option to lease the entire vertically integrated system has the following advantages and disadvantages

Advantages

- Easiest way to offer part of KNEHC for mass privatization in coupon auction

- Brings in foreign capital

- Brings in foreign management expertise

- Rapid adoption of commercial business practices

-Has political appeal because it retains state ownership of entire system (even though it gives up operating control over the entire system to a foreign investor, possibly to another state-owned monopoly)f

Disadvantates

- Maintains centralized decision making authority and political leverage in one dominant entity that is still a monopoly, but now controlled by a foreign investor

- Likelihood of disinvestment in last years unless lessee hold a purchase option or knows the lease will be renewed (in effect making the lease equivalent to a sale)

- All improvement in sector's financial performance benefits the investor unless enforceable performance incentives and profit sharing mechanisms are nade conditions in the licenses issued by the State Energy Agency

- Maintains cross-function and cross-regional subsidies within the vertically integrated monopoly rather than solving problems at their root

- Loss of flexibility because it closes GOK's opportunity to restructure the sector for at least 18 years

- Likely to preclude either market competition in generation or benchmark competition in distribution for at least 18 years

3.5.5 Alternative 3. Decentralize Distribution

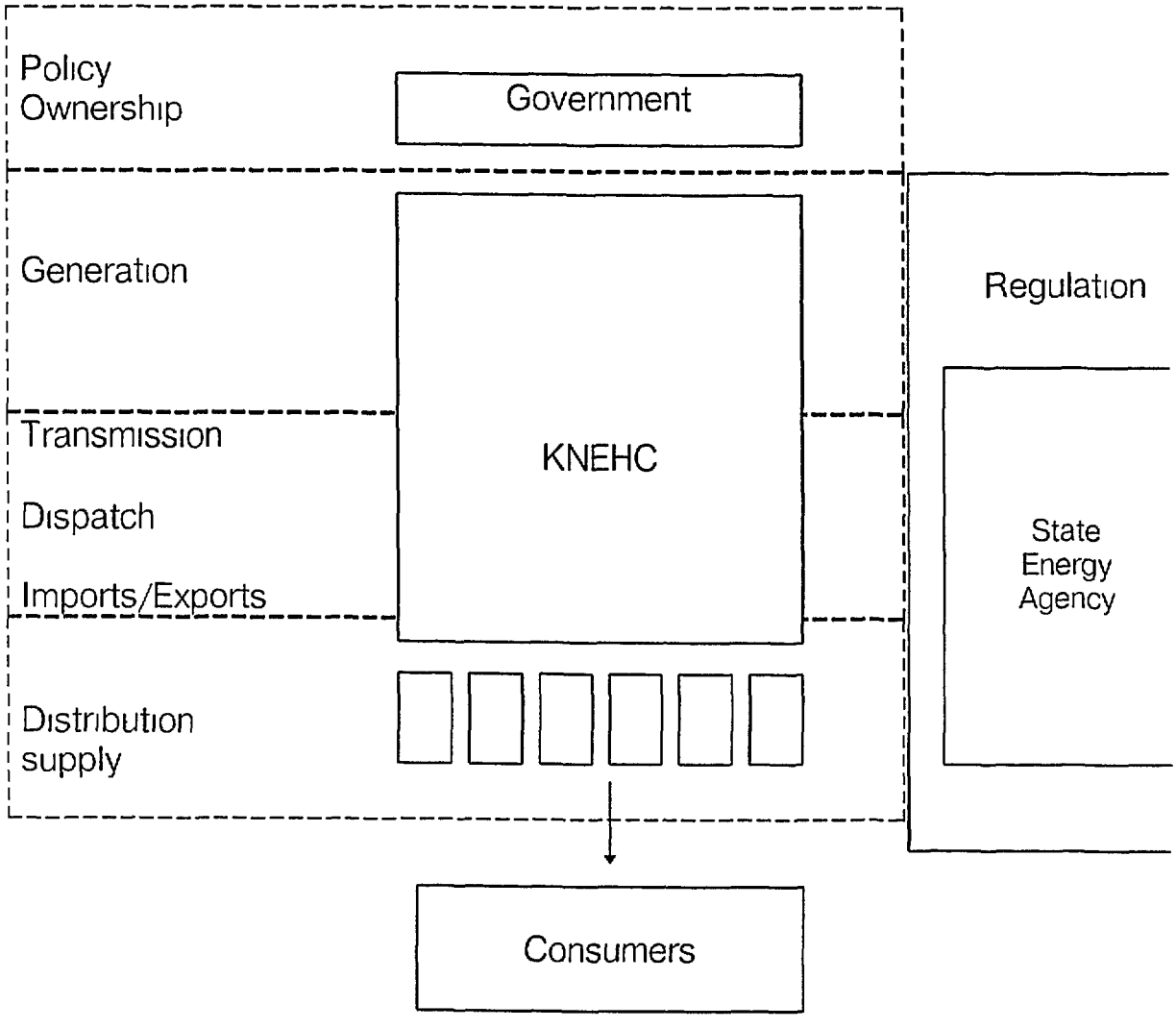
This altenative would transfer the low voltage transmission and distribution systems to local authorities, who could then lease or sell them to private investors, enter into joint ventures with private investors, or turn them into employee-owned or consumer-owned cooperatives depending on their potential to become commercial enterprises

Relative to the other alternatives, this alternative has the advantage of delegating solution of the accounts receivable problem to local authorities This is an important step in the right direction, since the international experience studies for this report has shown that decentralization of management and financial systems is the key to solving problems such as exceptionally high accounts receivalbe and losses due to various forms of theft However, it has the disadvantages of slower adoption of commercial business practices and more limited access to investment capital Both these disadvantages are lessened to the extent that local authorities involve the private sector in joint ventures Although the notion of customer-owned rural cooperatives is being considered in Kyrgyzstan, they have the added disadvantage of requiring subsidies in one form of another from the central government This is still true even in the United States

This Alternative is illustrated below

Alternative 3

Transfer distribution to local authorities



3 5 6 Alternative 4 Partially Unbundle and Partially Privatize

In Phase 1 of this alternative, the main hydro plants of the Toktogul Cascade and the high voltage transmission lines would be formed into two Joint Stock Companies (JSCs) and up to 10% of their shares would be offered in the coupon auction for mass privatization About 3% of the shares would be distributed to employees Another 2% of the shares would be held in escrow for employees and distributed to them after two years based on productivity gains in plant operations, similar to the program Canada used recently when denationalizing its transportation sector The remainder of the sector would be retained by the government within KNEHC until the next steps were taken in Phase 2 of this option

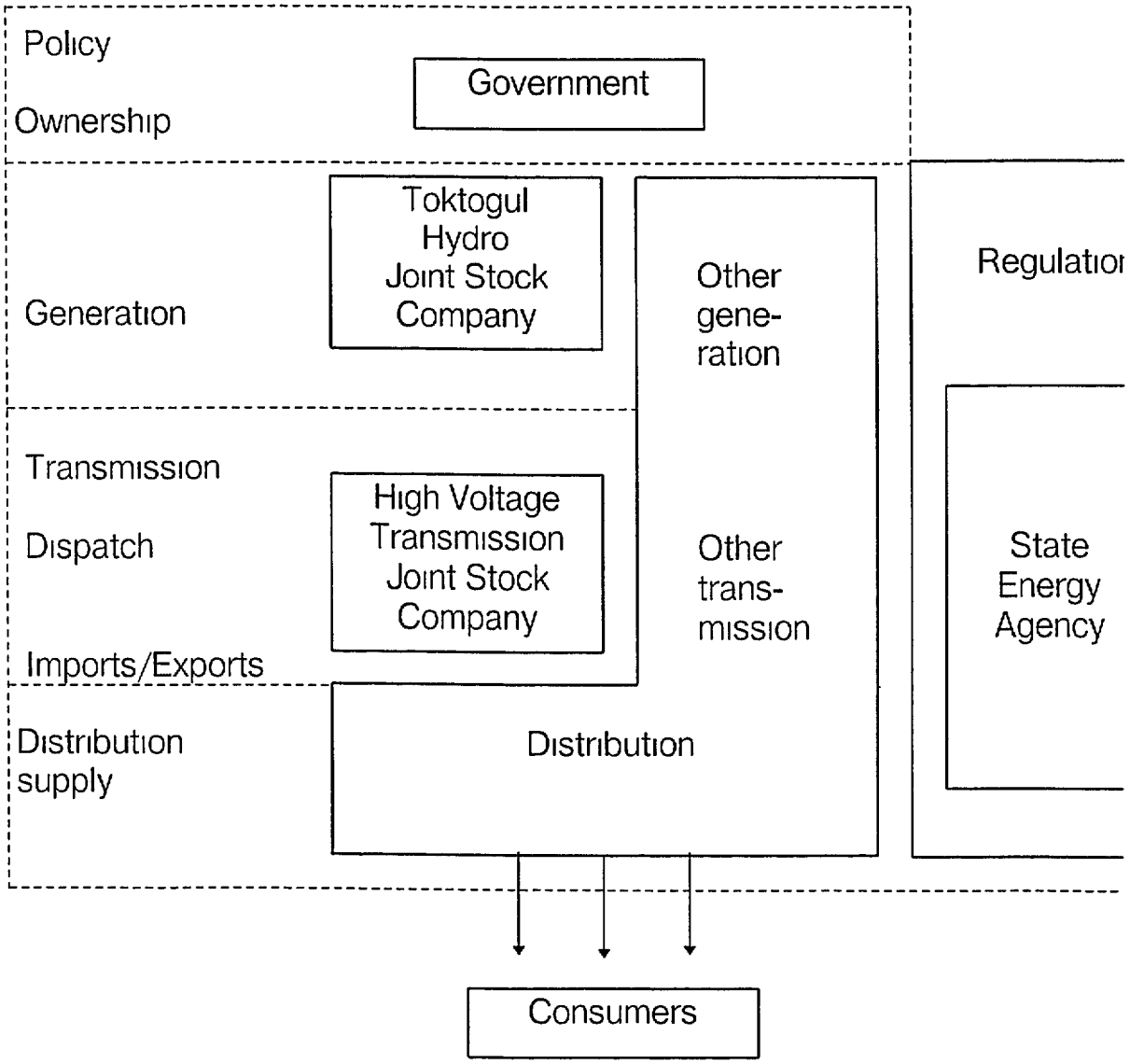
In Phase 2 of this alternative

- KNEHC would retain 85% ownership interest in and 100% operational control of the Transmission Company, and no further privatization would take place in the transmission subsector, except for the possibility of KNEHC entering into a fee-based (either a flat fee-for-services or a percentage-of-profits) management contract whose primary purpose is to speed the adoption of commercial business practices,
- KNEHC would also retain an 85% ownership interest and 100% operational control of the Large Hydro Company To raise capital at some later time, however, the GOK would have the option of selling up to 33% of the shares without loss of controlling interest in the plants Or, also at some later time, the plants could be leased to a foreign investor if the GOK were willing to give up operational control of the plants and their strategic water flows
- The small hydro plants would be offered for sale or lease to private investors,
- The thermal plants would be put into a Joint Stock Company and offered for sale or lease, backed for the first few years by a guaranteed agreement by KNEHC to purchase a specified amount of power at a specified price
- New generation would be provided by independent power producers, and Kambarata 1 would be developed as a joint venture of the GOK with private investors, backed by purchase power contracts in the export market
- The distribution sector would be divided into 6 to 10 systems and put into joint stock companies or transferred to local authorities for lease, sale, joint venture, or cooperative enterprise depending on their economic profile,
- Non-energy related enterprises in the KNEHC conglomerate would be sold, leased, spun off, set up under contract or divested as appropriate

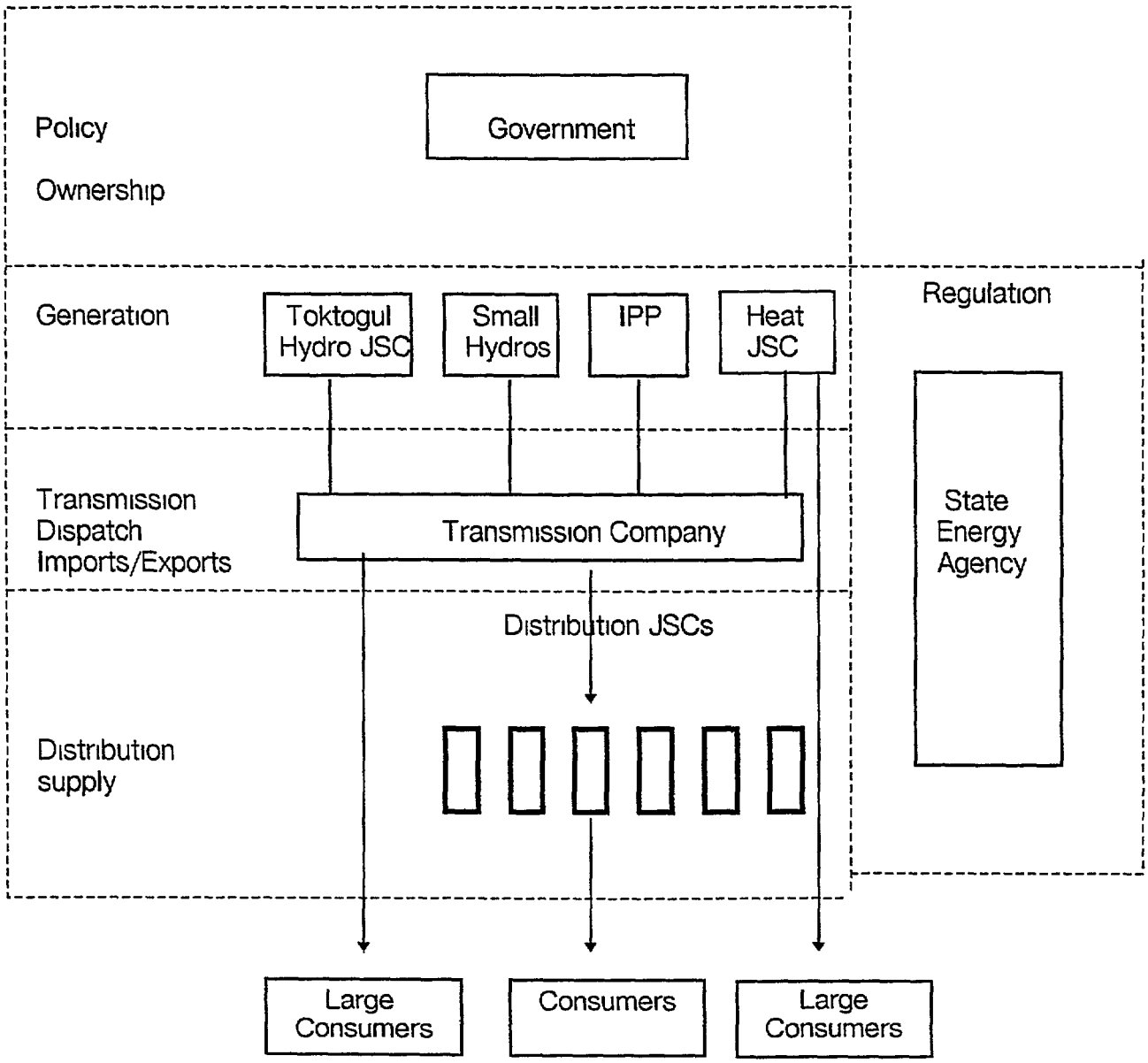
Both Phase 1 and 2 of the alternative are illustrated below

Alternative 4 - Phase1

Offer up to 10% of large hydro and high voltage transmission JSC in coupon auction



Alternative 4 - Phase 2
Partial restructure and further privatization



IPP -Independent Power Producers

Relative to other alternatives, this alternative has the following advantages and disadvantages

Advantages

- Brings in foreign capital

- Keeps control of electricity import and export by retaining both ownership and control of transmission

- Keeps control of strategic waterways and flows by retaining at least majority share of large hydro plants

- Brings in foreign business management expertise

- Timely adoption of commercial busines practics

- Disperses decision-making authority and political leverage among several energy enterprises rather than just one dominant monopoly

- Benefits of sector's improved financial performance are automatically shared among different owners (public and private) and between owners and customers through tariff setting authority of the State Energy Agency

- Focuses KNEHC on energy functions by divesting all non-energy related assets and operations

Disadvantages

- Complicates, but does not preclude putting KNEHC into coupon auction by the deadline

- Involves several negotiations and transactions rather than just one and will take longer to complete

- Political opposition to sale of any energy facilities

3 5 7 Alternative 5 Fully Unbundle and Fully Privatize

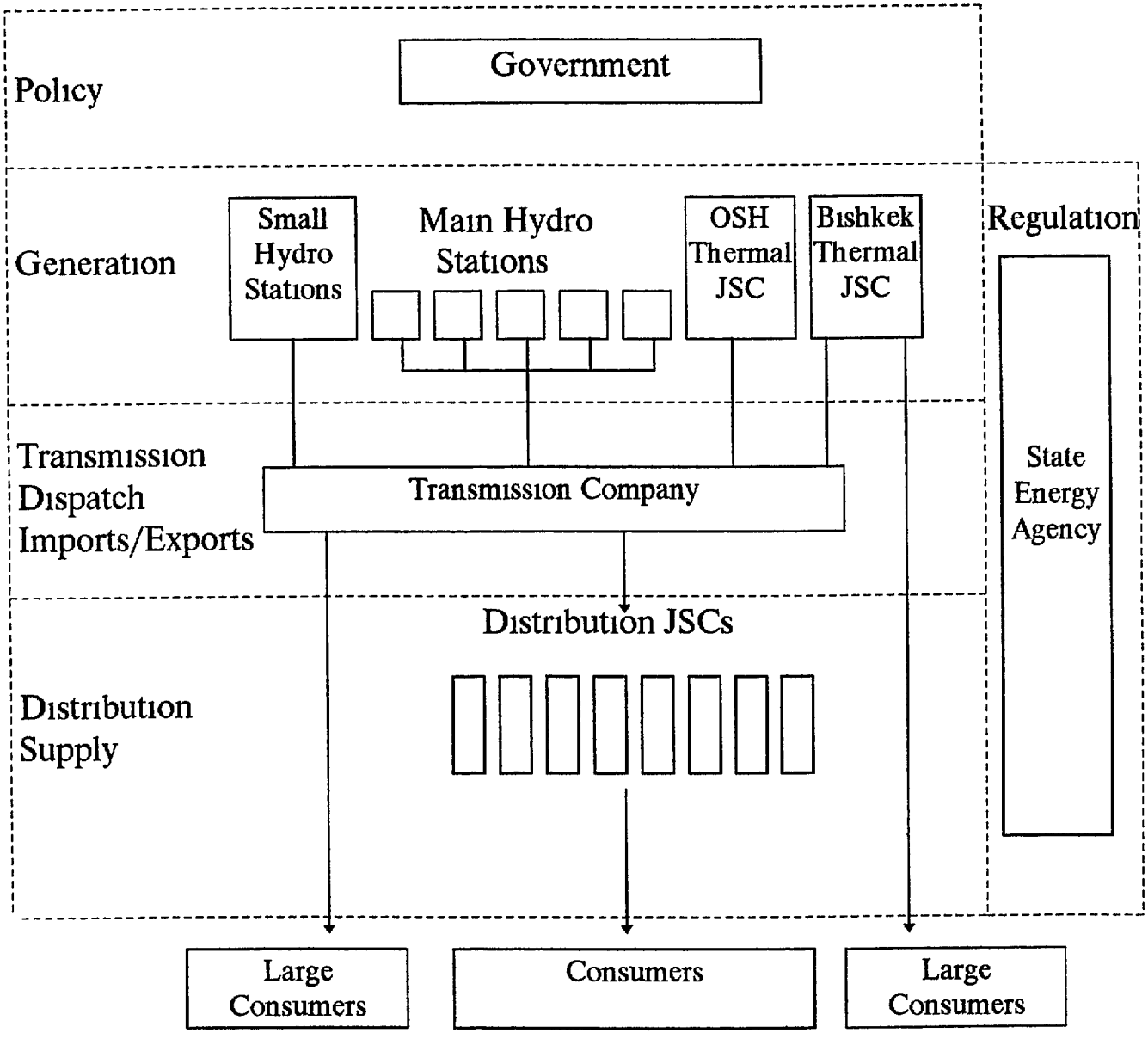
Alternative 5 is a completely unbundled power sector, with the generation companies made into separate JSCs, the transmission company into an independent JSC, and the 54 distribution divisions combined into 8-10 groups of separate JSCs, depending on size, geography and population distribution When all of these JSCs are corporatized and commercialized, and the legal/regulatory and tariff reforms have been made, they can then be privatized by selling them to give the maximum expected maximum return to the government because investors will give them the highest possible valuation relative to the other alternatives

Not only does this alternative offer the advantage of maximum revenues to the Government, it also offers maximum opportunity for efficiency gains throughout the sector However, it has the disadvantage of signficant political opposition because it involves the sale of the hydro plants and the transmission system

This alternative is illustrated below

Alternative 5

Fully unbundled KNEHC and privatized sector



3 6 RECOMMENDATION

It is recommended, given the special circumstances in the Kygyz Republic and the lessons learned from this report on experience in restructuring and privatizing power sectors around the world, that Alternative 4 be adopted as the demonopolization and denationalization concept to be pursued by the Kyrgyz Republic It offers the best opportunity to result in real reform throughout the sector so that the serious problems can be solved, but it does so without the Government having to give up controlling interest in the large hydro plants and, especially, ownership or control of the transmission system Pursuing Alternative 4 can be done without delaying the coupon auction, and it preserves flexibility to pursue a variety of mechanisms in the near future, including some combination of lease, sale or management contract for the various parts of the system

CHAPTER 4
COUNTRY DATA

4.1 ARGENTINA

4 1 1 Summary

Argentinean electricity sector reform has meant a major overhaul of the nation's power sector The 15,700-MW capacity power sector was wholly state-owned until the beginning of the 1990s It was characterized by low generation availability, political interference in tariff setting and operation, and extremely high losses in much of the nation's distribution subsector Distribution losses reached 30% in much of the capital, Buenos Aires

Restructuring has involved the split-up of state-owned assets according to function and region, quickly followed by privatization Generation, transmission, dispatch, distribution, and regulation are now performed by separate entities There are now more than 30 private generation companies, an independent entity that manages the transmission grid and determines dispatch, 22 distribution companies, and a new regulatory body called ENRE The distribution subsector is managed according to innovative regulations on power purchases, concessions, and tariffs The primary goals of restructuring were the creation of a bulk power market based on marginal production costs, privatization, and general efficiency gains for all parts of the sector

4 1 2 Power Sector Organization

The installed capacity for the nation is 15,700MW Of this, 6,200MW is hydroelectric, 1,018MW is nuclear, 5,070MW is oil-fired, 2,138MW is gas-fired, and 405MW uses coal or lignite

Restructuring Period The restructuring process began in 1991 and continues with the sale of generation, transmission, and distribution assets As much as 8,000 MW remains to be sold to the private sector, including the 2,700 MW Yacyreta hydroelectric project which is presently under construction

After Restructuring Reform of the Argentinean power sector started in 1991 with the introduction of the wholesale electric power market (WEEM) WEEM is administered by

CAMMESA who manages the pool WEEM's management board is made up of the Energy Secretary and four representatives of each market participant group generators, distributors, transmission companies, and large customers with a demand exceeding five MW A regulatory body, ENRE, was established to set tariffs for distribution companies, award licences and protect consumers

The former state-owned utilities SEGBA, AyE, and Hidronor were split and much of their assets sold Restructuring was based on the disaggregation of generation, transmission and distribution activities into separate companies and then selling their shares by open competitive tender in which foreign and domestic investors competed on an equal footing

The reform has been based on the electricity sector restructuring and privatizations of both the UK and Chile

Competition has been introduced to generation, while transmission and distribution remain monopolies Transmission and distribution have been established as public services and as such are considered regulated monopolies Nevertheless, some innovative regulatory rules attempt to introduce competition into distribution and transmission activities

Distribution companies operate under a license and have regulated tariffs, while both transmission and distribution can be performed by any company with the proper concession and which is granted under a public bidding process

Electric utilities and private companies are free to sign supply deals with distribution companies, large end-users and other private companies, and to negotiate the terms The minimum effective period of such a contract may not be shorter than two six-month settlement periods for distributors In addition, these contracts must be made public A generating utility may not contract for power it is not able to generate from its own capacity Consumers wanting to buy directly from a generating utility must contract for at least 50 percent of their anticipated demand with such a utility and have a peak demand greater than 100-kW When distributors contract for more than 60 percent of their planned demand, they must purchase the remaining share of energy from the spot market at pool prices

Transmission companies and distribution companies are required to provide open access to third parties after publishing relevant rates, though transmission companies may neither buy nor sell electricity Distribution companies, power producers, private power companies, and industrials may not own transmission facilities Distributors buy electricity with transmission charges calculated from the load center to the bulk power supply point on their network

4 1 3 Why Restructure the Power Sector?

Electricity sector restructuring and privatization was part of a broad plan by the Menem government to privatize public commercial undertakings These policies are founded on a new conception of the role of the state in the industrial sector

Problems Pushing Restructuring The following problems have been identified as contributing to the decision to restructure and privatize

- Excessive government interference in the electricity sector The government planned excess capacity, but serious delays in construction and poor management resulted in low plant availability and consequent power shortages
- The power sector found itself in a critical financial situation as a result of government interference to keep tariffs artificially low
- There were cross subsidies to the electricity sector that were economically inefficient

Objectives of Reform Reform was implemented so as to promote

- Competition and to attract private investment to ensure reliable power supply in the long term
- Free, non-discriminatory access to transmission and distribution facilities
- Private sector involvement in power generation, transmission, and distribution
- Fair and reasonable rates and protection for end-users Tariffs were to be based in conformance with marginal cost pricing
- The entrance of private capital to the sector within a well defined and competitive framework
- Enhance economic efficiency, encourage investment and improve plant availability
- A limitation of the government role to that of the regulation of tariffs, promotion of efficiency and the protection of consumers

4 1 4 Distribution Sector After Restructuring

There are more than twenty distribution companies operating in Argentina Of these, three are privately-owned and the rest are publicly-held, either by municipal, state, or national governments Although there are only three privately-held distribution companies, they represent a significant share of the market The following table shows the new structure of the distribution subsector

Exhibit 4-1
Argentinean Distribution Companies Post-Restructuring

Type of Company	Number	Market Share
Private	3	50 percent
Public	16	47 percent
National	2	3 percent

Source (Perez-Arriaga, 1994)

There are three distribution utilities that have been privatized, they are EDENOR, EDESUR, and EDELAP The major problems of power theft and losses are being addressed EDESUR has embarked on a program of meter repairs at industrial sites and the installation of special transformers that shut down upon the detection of illegal connections In addition, the municipal government of Buenos Aires has agreed to pay for the electricity used by a large shanty town These measures should reduce losses and lead to an annual revenue boost of US$3 million On top of these measures consumers have been reclassified to assure that appropriate charges for electricity are made At the same time, deals are being negotiated with consumers that owe back-payments EDESUR's losses have dropped from the 25 9 percent before restructuring and privatisation in 1991 to 18 7 percent in 1994, it is expected that losses will be further reduced to below the nine percent mark within five years

Distribution companies are regulated monopolies with exclusive franchise rights and an obligation to serve Penalties for failing to supply are imposed Electricity service quality must be within certain voltage, frequency, and interruption specifications Customers receive tariff discounts if power quality falls outside of these specifications Distribution companies must expand their facilities when needed to meet their license obligations, while the government acts as distributor of last resort to areas where private capital is not investing

The distribution obligation to serve is not related to the availability of energy in the bulk power market Distribution companies must contract for power in long term contracts Eventually, this may result in the participation of distribution companies in the generation market

In the regulated distribution market, distributors are entitled to recover their costs (network expansion, O&M, commercial activities, and power purchases) as well as a reasonable profit Tariffs are determined based on two components including the wholesale electricity price at the corresponding node on the transmission grid and the distribution charge (value added by distribution)

Distribution licences last for 95 years and are divided into nine management periods (15 years for the first and ten years for each of the remaining periods) Six months before the expiration of a management period ENRE will invite tenders for the license for the next management period, and will announce the distribution charges for the next five years The current licensee has the option of keeping the license or being paid the highest bid for the next period This is intended to eliminate complaints about distribution charges and to add competition into the determination of distribution licenses

The three privatized utilities still have minority state-ownership of 39 percent, which will eventually be sold off in a public offering The companies have allowed for ten percent employee ownership, while their controlling stakes are held by consortiums that include Argentinean, Chilean, US, and Spanish investors

4 1 5 Evaluation of Restructuring

It is perhaps too early for any definitive assessments, as empirical evidence is lacking Nevertheless, two studies by local experts have been carried out, and they reached different conclusions Despite these contradictory results, some preliminary conclusions can be made about the reforms to date

Positive aspects of the reforms are the following

- Political interference in the power sector has been reduced
- System operational performance has improved
- Generation availability has improved
- There is a new competitive atmosphere and a quest for economic efficiency
- There is encouraging investment activity
- The diversity of market agents makes it difficult to exercise market power

On the other hand, the following negative aspects have also been identified

- There has been no discernable improvement in the performance of the distribution sector
- Technical regulation is complex and has not been finalized
- There has been no hoped-for reduction in electricity prices

- New regulation does not encourage energy conservation or load management
- The roles of ENRE, CAMMESA and the Secretary of State for Energy still need to be adjusted to minimize political interference
- There has been concern on the lack of regulations on vertical integration of ownership in the power sector Generators, or holding companies owning generation assets, appear able to purchase distribution assets

4.2 BOLIVIA

4 2 1 Summary

Restructuring of the Bolivia's 849-MW electricity sector began in 1994 with legislation that paved the way for the split-up and privatization of ENDE, the state-owned vertically-integrated power utility Fifty percent of ENDE's generation assets were won in a competitive solicitation by three US companies, the companies also have a management contract and have pledged to invest US$140 million over the next seven years as part of a capitalization program Proceeds of the sale will go to a pension fund for all Bolivians, and ENDE employees have been offered ownership stakes

Further legislation has established a Superintendent for the power sector, an autonomous regulatory body that will oversee the sector, protect the public interest, and approve tariffs In the restructured power sector no single generator is permitted to hold more than 35 percent of the nation's capacity ENDE will continue to operate the nation's transmission system, and other distribution infrastructure is in the process of separation from generation and transmission for subsequent sale Direct access is contemplated

4 2.2 Overview of the Power Sector

Installed capacity in Bolivia is 849 MW The electricity industry consists of a mixture of investor-owned, co-operatively owned, and publicly-owned (national and regional government) electricity utilities Major institutions are ENDE (national government-owned), COBEE (privately-owned concession serving La Paz), COMIBOL (state mining company), ELFEC (distribution utility serving Cochabamba) owned by ENDE, private investors, and Cochabamba's municipal government, CRE, a rural distribution cooperative serving Santa Cruz, and others Most of the distribution companies are served by the Empresa Nacional de Electricidad (ENDE) There are also more than 100 rural electricity co-operatives engaged in generation and distribution

only country in Latin America to be rated as investment grade by both Standard and Poor's and Moody's Investors Service

A military coup brought down the Allende government in 1973 The military dictatorship of General Pinochet ruled Chile from 1973 to 1988 when, through a plebiscite, Chileans voted for a return to democracy The first democratically-elected government since 1970 was subsequently elected in 1989, and there has been one hand-over of power since The military regime fundamentally reorganized Chilean society and the economy, implementing free market policies and divesting from direct state-involvement in the economy

4 3 3 Entire Power Sector Organization

Overview Within Chile, there is 4,342 MW of installed capacity In 1992, 22 4 GWh of energy was produced Between 1983 and 1993, 70 percent of electricity generation was from hydropower This included the period of severe drought ending in 1991, which lowered the hydropower contribution from 92 percent in 1987 to 65 percent in 1989 Current electricity rates are $0 063 per kWh or industrial users, $0 102 per kWh for commercial, and $0 111 per kWh for residential

The vast majority of power sector infrastructure is privately owned In 1978 the majority was state-owned A major restructuring and subsequent privatization of the power sector took place between 1978 and 1990 The total value of power sector assets in 1993 was US$8,016 million, of which US$5,232 million (65 percent) was generation, US$1,510 million (19 percent) was transmission, and US$1,274 million (16 percent) was distribution

Before Restructuring Before the restructuring period began in 1978 nearly all the nation's electricity generating, transmission, and distribution infrastructure was owned by the state Most of these assets were held by two state-owned vertically integrated utilities called ENDESA and Chilectra On Chile's largest interconnected system, the Central Interconnected System (SIC which represents 84 percent of the installed capacity), ENDESA controlled 70 percent of generation and Chilectra virtually all of the remaining 30 percent ENDESA was also the owner of the majority of the transmission system, except for the metropolitan area which was controlled by Chilectra In addition, ENDESA controlled some generation and all transmission and distribution in the Norte Grande Interconnected System, as well as most of the countries two largest isolated systems

Chilectra was nationalized in 1970, and became a part of the Corporacion de Fomento de la Produccion (CORFO), the state's holding company The following three year period, under the Allende administration, was characterized by an increasingly direct role of the state in the economy This period was also a period of hyperinflation though no electricity price adjustments

distribution tariffs, assure that monopoly power is not exercised, and provide for the general oversight of the sector The new structure should be in place by mid-1996

Under the new electricity law owners of electricity distribution assets are not allowed to also own generation infrastructure Therefore COBEE must sell off its distribution assets (book value approx US$30 million) so that it can participate in the new open generation market The new law also prohibits any one company from owning more than 35 percent of the nation's capacity

Currently, there are many small utilities owned by different municipalities and there is a high difference in rates between regions, restructuring aims to resolve this In addition, the distribution assets of the city of Cochabamba, the third largest distribution system in Bolivia, are now being sold through a private offering

There has been strong criticism of the proposals to date, mostly based on a questioning of how effectively competition can be brought to a system of only 849MW Some have questioned whether the current vertical structure has economy of scale benefits that may be lost through restructuring

4 3 CHILE

4 3 1 Summary

Chile's 4,300-MW power sector showcases the separation and divestiture of state-owned distribution, transmission, and generation infrastructure through a process of restructuring and subsequent privatization that took place between 1978 and 1990 Chile was the first power sector restructuring and privatization to occur in the recent period and is often cited in the literature on restructuring in developing nations An autonomous regulatory body, working in conjunction with other branches of the government, coordinates and regulates the nation's power sector

Major objectives of restructuring were privatization, a redefinition of the role of the state in the power sector as regulator, widespread citizen stock ownership of infrastructure assets (popular capitalism), increased efficiency in the use of capital and labor resources, and the facilitation of investment flows to the sector Evaluations to date show that these general objectives have been achieved

4 3 2 Overview of Country

There are 14 2 million inhabitants, 84 percent of which live in urban areas Average annual real per capita GDP growth has been about 3 4 percent over the 1983-1992 time period Chile is the

Between December 1986 and December 1990 ENDESA was gradually sold to the private sector Over this period state ownership of the company dropped from 99 percent to only one percent By December 1990, the ownership structure was as shown in Exhibit 4-1

By 1986, almost all distribution functions of ENDESA and Chilectra had been separated from generation and transmission by means of the creation of more that twenty distribution entities across Chile

Exhibit 4-2
Chilean Distribution Companies (1991)

ENDESA Shareholding (Dec 1990)	*Share (%)*
CORFO (state holding company)	1 0
AFP (pension fund associations)	26 3
Public Employees	13 8
Armed Forces	13 0
Chilean Citizens	12 0
Foreign Investment Funds	7 3
ENDESA Personnel	3 3
Others	23 3
Total number of shareholders	51,833

Source ENDESA (1992)
"La Privatización en Chile" in (CEPAL, 1995)

After Restructuring Today, there are eleven power generating companies, 25 electricity distribution companies and two integrated companies Many of these companies are traded on the Chilean stock exchange In fact, in 1992 the average daily trading of eleven of the companies was 45 percent of the value of all stock trading, of these ENDESA accounts for 21 percent and ENERSIS 12 percent In the SIC, ENDESA controls 50 percent of generating capacity Bulk electricity is sold through the Economic Load Dispatch Center (ELDC)

As a result of restructuring, electricity prices appear to closely approximate long run marginal costs and the market is fairly dynamic as measured by the variety of contracts among and between suppliers and end-users Also, private investment is being undertaken in hydropower and other infrastructure and importantly, the regulatory regime appears to have withstood government and interest group influence

were allowed This led to the inability of the power utilities to self-finance, cover projected investments, and operating costs The operating deficit was carried by the national treasury

Subsequent to the coup that brought Pinochet to power there was a process of financial normalization at the state power companies Electricity tariffs, as in the pre-1970 period, again were set to give up to a 10 percent return on assets, with automatic revaluation of fixed assets In addition, efforts to improve administrative standards and management of the state-owned electricity companies were made This was part of the larger transformation of the state-owned portion of the Chilean economy, and laid the way for the subsequent privatizations

The Restructuring Period 1978-1990 The restructuring and privatization process took place between 1978 and 1990 First there was a separation of the state's regulatory role from its commercial role as operator of the power utilities by means of the creation of the National Energy Commission (CNE) This was followed by the break up of the two state-owned and vertically integrated power utilities The last step was privatization of nearly all assets

The CNE was created by the government in 1978 as an autonomous regulatory agency At the same time ownership of state-owned electricity infrastructure was assigned to the government holding company, the CORFO In 1980, electricity tariff-setting policy was changed from a methodology that assigned up to a 10 percent return on fixed assets to a marginal cost methodology

In 1982, a new electricity law was passed called the General Electricity Service Law It legislated the new methodology for electricity tariffs setting, the deregulation of generation-transmission, the rules for distribution concessions and tariff-setting, and the organizations charged with running the various interconnected systems

The last step of the restructuring process was the divestiture of most of the country's state-owned electric power enterprises Chilgener S A was incorporated in 1981 as a state-owned limited company It was subsequently divided into three entities, one generator and two distribution companies, thus splitting the company's debt three ways The sale of its stock to the public began in 1982 though the economic recession impeded the process In 1985 there were better conditions for sale and by 1987 all of the company had been sold off to the private sector

In 1981, nine distribution companies were spun-off from ENDESA In 1982, ENDESA was incorporated as a limited company and its shares began to be traded on the Chilean stock market Also in 1982, three hydroelectric generating plants were established as separate entities while in 1985, the Colbun generating company was spun-off By 1986, the national treasury had absorbed about $500 million in ENDESA debt as a prelude to privatization

- The regulatory framework requires a high degree of coordination, is highly transparent, and facilitates competition between generators CNE encourages larger projects that are in the national interest but yet would not be undertaken alone by the private sector

4 3 4 Why Restructure the Chilean Power Sector?

Problems that Motivated Restructuring In the mid-1970s Chilean electricity prices returned to levels that covered operations Despite achieving self-financing, the government identified several further problems

- Huge state financial commitment in the electricity sector for system expansion The growing investment requirements were reaching $200 million annually in the mid-1970s The state was not prepared to make this commitment, and it is doubtful whether it could have even if there had been the political will to do so

- The government of the time believed that private economic agents could run the electricity sector better than the state, and that breaking up the state-owned and vertically integrated companies would allow for a more efficient operation of the sector

- Concern about the growing monopolization of the electricity sector under one state-owned company ENDESA

- No clear separation of the regulatory and commercial roles of the state in setting sector policy and operating infrastructure This complicated the potential entrance of new private agents into the market

- Absence of economic efficiency criteria and transparent procedures for the fixing of tariffs Tariffs were set based on what each company had spent producing electricity, without regard to it's efficiency Furthermore, the law governing the electricity sector before restructuring was weak in governing how tariff studies were to be carried out As a result the Tariff Commission had lost influence to the Economy Ministry in tariff setting, thereby allowing non-technical and economic factors to enter into tariff determinations Within the context of high inflation during the early 1970s this led to reduced profitability of the electricity companies

Objectives of Restructuring The following objectives were to be accomplished by restructuring and privatization

Regulatory Framework Set Up During Restructuring The regulatory framework was spelled out in the General Law of Electric Power of 1982 It's most important features are as follows

- Prices paid to generators are based on short- and long-run marginal costs (SRMC and LRMC) CNE calculates LRMC twice a year from a model that calculates the least-cost investment program to meet peak demand Differences due to location are taken into consideration Spot prices are set by the ELDC based on SRMC at stations of origin

- Prices are unregulated for consumers with a demand exceeding two MW In 1989, this unregulated segment of the market accounted for 52 percent of all electricity consumption These negotiated tariffs must be made public, and regulated tariffs can be automatically adjusted if they deviate from unregulated tariffs by more than 10 percent

- Wheeling, with appropriate toll charges, is permitted to any producer Self-generation is encouraged, subject only to pre-specified technical standards

- CNE advises the government on tariff, system expansion, and investment policy It also arbitrates disputes Its board includes a representative of the presidency, and the ministers of defense, economy, finance, mining, and planning, as well as CNE's chief administrator The Ministry of Economy has the approval authority for the tariff changes There is, however, a predisposition to assume that the tariffs recommened by CNE are appropriate and the Minister must approve the tariffs unless the Minister believes that they fall outside of certain guidelines If the Minister refuses to approve the tariffs as recommended, there is an automatic appeal to the judiciary

- CNE carries out studies on node prices for electricity generated and delivered at the various nodes on the transmission grid In addition it calculates the value added by distribution (VAD) which is the basis of price regulation for the monopoly distribution subsector

- A Superintendent of Fuels and Electric Service (SEC), established in 1985, oversees that technical and financial requirements of the law are met and keeps information on the various electricity companies For the distribution companies the entity oversees distribution concessions and determines various components of the distribution companys' VADs

- The Economic Load Dispatch Center is administrated by a commission made up of representatives of the generating companies and is known as the "generators club "

In this context the private sector was the favored economic agent, whose actions in free markets would allow the most efficient use of resources Consequently, the privatization of companies was initiated with sales that included worker ownership (popular capitalism) and the involvement of new financial institutions Financial markets were liberated and new institutions appeared such as the Pension Fund Associations (AFP)

Thus the political and economic context of the Chilean restructuring clearly affected the final outcome Privatization appears to have been the goal Some observers of the reforms point to ongoing imperfections in the regulatory framework as evidence that the search for efficiency was not the primary objective Rather, the restructuring of the electricity sector was part of the process to remold the Chilean economy and society

4 3 5 Opposition to Restructuring and Privatization

Criticism of the reforms fall into the following categories

- Claims that the process and valuation methods used for privatization were not open and that the "dictatorship had a monopoly on information " There were alleged undervaluations of infrastructure and conflicts of interest in certain of the sales
- Concerns on the strategic nature of electricity public service passing into private ownership
- Potential personnel losses from privatization Opposition from labour was diffused by letting the employees of ENDESA be the first to participate in the privatization They were permitted to purchase shares at prices lower than the general public
- Fear that private investors would not continue to invest in infrastructure as required to keep up with demand growth and thus constrain development of the Chilean economy and society
- Critiques that privatization was the end in itself rather than the goal being a reregulation and restructuring to optimize the efficiency of the sector
- The decision to sell the state's substantial power sector holdings was made by a relatively restricted group of authorities of the military government with little public discussion and certainly no public consensus

- Development of a regulatory framework that tended to decentralize and deconcentrate activities so as to stimulate competition and increase efficiency Monopoly power could thus be controlled in generation, while distribution companies could operate as for-profit companies with performance and profits regulated by the state's regulatory body By taking the state out of the commercial side of the electricity sector it could concentrate instead on regulation

- The formulation of a pricing policy based on the true costs of producing, transmitting, and distributing electricity

- Focusing of the State's resource evaluation efforts on the evaluation of hydropower resources

- The formation of a policy on least cost expansion planning

- The establishment of a policy for the efficient and reliable operation of power plants and the transmission system

- To achieve a broad degree of efficiency in the electricity sector, that promotes competition, assigns a major role to the private sector, and a subsidiary role to the state

- By divesting of state ownership privatization would help recast the role of the Chilean state as a leader in economic reform At the same time "popular capitalism" could be stimulated by having workers and pension funds own shares in the new private companies

Additional Considerations -- Political-Economic Context for Restructuring The establishment of the CNE was of major importance in restructuring the electricity sector, though it appears to have been the privatizations that defined the process In a relatively short time the structure and ownership of the sector changed dramatically Although economic, financial, and efficiency goals contributed to the decision to restructure the sector, they were subordinated to the dictates of a political strategy to recast Chilean society As a consequence, the restructuring can only be truly understood within its political and economic context

Starting in 1973, Chile underwent a social and economic reordering The political-economy of the Military Government was based on the belief that the Import Substitution Industrialization economic development model followed all over Latin America, characterized by major state intervention, had stunted the action of the market In response, the new government drastically reduced import taxes, reduced the role of the state in the economy, and increased the role of the market as arbiter of economic activity

infrastructure for other purposes, they now rent out their wharf But there has been no increase in investment attributable to divestiture

The productivity increase has meant total welfare improvements of Ch$4 0 billion, equivalent to 21 percent of the private value of the company Private shareholders were the biggest winners of the divestiture, making Ch$6 6billion Foreigners made Ch$2 7billion of this benefit The big loser was the Chilean government's treasury It came out Ch$2 7billion poorer, thus the fiscal impact of divesting Chilgener was negative by 22 percent of the sale price (Galal, 1994)

4 3 7 Distribution Sector after Restructuring

Organization of the Distribution Subsector Exhibit 4-3 lists the distribution companies that operate in Chile today, as well as their pre-restructuring affiliation

Exhibit 4-3
Chilean Distribution Companies (1991)

SYSTEM	OWNERSHIP	CUSTOMERS (1000s)	CAPACITY (MW)	ENERGY (GWh)
NORTE GRANDE INTERCONNECTED SYSTEM				
EDELNOR	S <1>	140	96	139
CENTRAL INTERCONNECTED SYSTEM				
CHILECTRA METRO	P <2>	1106	902	4741
CGEI	P	365	217	1138
CHILECTRA RegV	P <2>	285	213	1119
SAESA	P <1>	114	62	328
EMEC	P <1>	110	55	289
FRONTEL	P <1>	107	35	184
CONAFE	P	94	52	271
EMEL	P <1>	91	37	195
ELECDA	P <1>	84	36	187
EMELAT	P <1>	46	36	187
EMELARI	P <1>	39	17	90
ELIQSA	P	35	17	90
EE DEL SUR	P	16	6	29
EE PTE ALTO	P	14	5	26
CE LITORAL	P	13	3	14
OTHERS		12	4	22
TOTAL		2531	1699	8932
AYSEN ISOLATED SYSTEM				
EDELAYSEN	S <1>	14	8	148
PUNTA ARENAS ISOLATED SYSTEM				
EDELMAG	S <1>	36	46	72

4 3 6 Evaluation of the Results of Restructuring and Privatization

Market Structure Competition was a major motivation for privatization But today there is a high degree of concentration of ownership in the electricity sector ENDESA controls 63 1 percent of the value of the market, Chilgener 19 3 percent, and Colbun 12 5 percent ENDESA and Chilectra together control 90 percent of the market on Chile's SIC In transmission ENDESA owns the country's main transmission company Sistemas de Transmision del Sur
The distribution subsector is totally privatized with the exception of some isolated systems that include cooperatives ENERSIS controls over 73 percent of Chilectra Metropolitana and 85 percent of Rio Maipo, which together control the major share of the market in the Metropolitan Market Chilectra Metropolitana is the biggest distribution company on the SIC with nearly 50 percent of the total

ENERSIS controls ENDESA though does so by holding only 16 percent of its shares This is explained by a series of interrelations of executives and board members Similarly ENERSIS board members and executives are present to a significant extent in all areas of the electricity market generation, transmission, and distribution

Regulatory Issues Internationally the Chilean restructuring and privatization is seen as successful, though in Chile very little analysis of the pros and cons has been done, despite the economic importance of the sector From a broad perspective the Chilean electricity sector works well, though there are certain things that impede a more efficient operation of the sector

1 Further regulation is needed on transmission system use and wheeling charges
2 Incentives need to be improved to facilitate investment in generation
3 There is an absence of adequate rules governing service quality
4 The composition of the management of the EDLC, the "generators club "
5 The efficiency and transparency in the fixing of distribution tariffs According to law, distribution prices are set using the "value added of distribution" (VAD) This is calculated for model firms operating efficiently in one of the three distribution zones (low, medium, and high density) This method is meant to incentivize efficient operation because it considers only the model company not the actual cost of the distribution companies What actually happens is that the CNE and the distribution companies commission studies on costs to the model firm and then settle on the average from the two studies This obviously tends to stimulate the distribution company to raise its study results so as to attain a better negotiating position

Chilgener Case Study of a Generating Company A recent World Bank paper evaluated the performance of the Chilgener generating company It concludes that divestiture meant an increase in productivity due to coal fuel-use consumption improvements and the use of Chilgener

The process of spin-off, breaking-up and rationalization of distribution prior to privatization meant that ENDESA and Chilectra's distribution infrastructure was transformed into regional companies with limited responsibility This permitted the identification of geographic areas that were generating losses

4 3 9 Evaluation of Distribution Restructuring

In terms of access to electricity by Chilean citizens, distribution coverage has increased from 85 percent of population in 1980, at the beginning of the restructuring period, to 92 percent in 1993

In addition to the aspects on the distribution subsector included in the above evaluation of the Chilean power sector reform, the following recent World Bank sponsored evaluation of the activities of one of Chile's distribution companies is included

Case Study of Enersis Enersis is the largest of Chile's distribution companies It's customer base, in share of total electricity consumption, breaks down in the following way Industrial 40 percent, residential 30 percent, commercial 16 percent, while the remaining 14 percent is split between agriculture, government, and transportation Since 1987 the company has diversified into other electricity sector activities

The Enersis distribution company used to be called Chilectra Metropolitana Enersis has the concession to distribute electricity in the metropolitan area of Santiago, Chile The enterprise is regulated as a natural monopoly and has the largest economies of scale of any of Chile's distribution companies because it has the largest and most densely packed customer base The entity was a private firm until it was nationalized in 1970 by the Allende government In 1985 the government announced divestiture In 1986 62 percent of the enterprise was sold, and in 1987 it became 100 percent privately-owned

Chilgener, Enersis, and Chilquinta were the three subsidiaries of Chilectra S A , a government-held company Together they comprised one of the nations largest vertically integrated electricity companies (second largest after ENDESA) In 1981 the government incorporated the three enterprises This accomplished three objectives first, the tariff setting process was facilitated by avoiding the joint cost problem, second, it enhanced competition between generating companies prior to divestiture, and third, it facilitated divestiture by splitting the company and its debt into three smaller entities that were easier to find buyers for

A recent study (Galal, 1994) shows that divestiture facilitated a significant reduction in electricity losses due to theft Furthermore it made output diversification possible, and increased returns from nonoperating investment Also accompanying divestiture, but not directly attributable to it, were increased profitability and improved productivity

The study shows that the combined effects of divestiture on welfare are positive to a level of 31 percent the private value of the company The welfare gain was made mostly by private shareholders, including employees, but gains were also made by customers due to reduced losses and the consequently cheaper electricity Nevertheless, the government and the Chilean citizenry as a group were worse off as a result of the privatization

Further conclusions of the evaluation are that "divesting monopolies in well-regulated markets limits their ability to exercise their market power and improves resource allocation," although "reforming and regulating public enterprises improves efficiency " On balance though, for the case of ENERSIS, "the net benefits of divestiture accompanied by effective regulation can outweigh the net benefits from reforming and regulating public enterprises" (Galal, 1994)

4.4 EL SALVADOR

4 4 1 Summary

The El Salvadorean government has been studying private participation in the nation's 818-MW electricity sector since the late 1980s New capacity is being developed by private companies The government recently announced the reorganization and divestiture of the distribution subsector as a major component of its plans to restructure the sector and attract private participation

Restructuring legislation is currently being discussed in the national assembly It includes the creation of two new regulatory bodies to oversee the sector, protect the public interest, approve tariffs, coordinate expansion planning, and evaluate the nation's energy resource development options The distribution subsector will be separated from generation and transmission and there will be a total of five distribution companies operating in different regions of the country Direct access for large customer is proposed

4 4 2 Power Sector Overview

There is 818MW of capacity in El Salvador of which 388MW is hydropower, 105MW geothermal, and 325MW oil-fired At present, only 547MW is currently available because of poor maintenance and the deterioration of old equipment The state-owned vertically integrated utility, CEL, manages and operates the majority of El Salvador's power sector CEL is projecting a 40MW capacity shortfall for 1995, this will worsen because demand is growing at 15 percent per year

4 4 3 Before and After Restructuring

Restructuring of El Salvador's electricity sector is presently being debated in the country's National Assembly It is proposed that the new legislation will overhaul the power sector El Salvador's state-owned and vertically integrated power utility, la Comision Ejecutiva Hidroelectrica del Rio Lempa (CEL), will concentrate on electricity generation and transmission Distribution will be spun-off, direct access is contemplated, and private participation will be allowed in generation and transmission Furthermore, the Comision Nacional de Energia (National Energy Council, known as the CNE) will be set up to coordinate electricity sector planning, functionality, and policy In addition a Comision Regulador de Electricidad y Hidrocarburos (Electricity and Hydrocarbons Regulatory Body, known as CREH) will also be established The CREH will perform regulatory functions such as tariff calculations, legal compliance of sector participants, and the formulation of regulations

CEL presented its plan for the privatization of its distribution subsector to the president of El Salvador on 4 April 1995 It is expected that subsequently the legislature will make approve of the plan

CEL opted for dividing its distribution assets in the country into four distribution companies and selling off the assets to the private sector by the beginning of June 1995 According to one observer there is a lot of turmoil over the privatization process and the process itself is not at all transparent

The four distribution companies to be privatized include infrastructure consisting of CEL's Rural Electrification Program and four old distribution companies currently under the ownership and management of CEL The assets will be auctioned to the highest bidder, with no limits on ownership To make the distribution assets more attractive to potential buyers electricity rates were scheduled to increase by 30 percent in June 1995 At that time average tariffs were to go to $0 052 per kWh from $0 04 per kWh The national constitution has already been amended so that there is no term limit on electric power concessions, this is also designed to attract private investors CEL believes that the distribution assets in the nation's largest city, San Salvador, are worth some $150 million

4 4 4 Why Restructure the Power Sector?

CEL had originally planned to sell off its generation assets to the private sector but it has now decided to keep its hydropower and geothermal infrastructure Nevertheless, it may perhaps sell its 325MW of oil-fired capacity All new generating capacity will be by private firms, and 250MW of private new capacity is presently under solicitation

CEL and the Salvadorean government have been trying to bring private participation to the power sector for some time A conference was held in 1991 by CEL and USAID to promote private participation in the sector At the time the government stated that it did not have the financial capability to fully develop the 1,100MW of new capacity required between 1992 and 2007 to meet demand It convened the conference to discuss with the private sector how private investment could supplement the public development of the power sector At the time, President Cristiani stressed that the public and private sectors needed to work together and that the participation of the private sector was indispensable

4 4 5 Why Restructure Distribution?

Objectives The distribution sell-off will bring in cash that CEL needs to upgrade existing generating capacity In addition, CEL believes that the establishment of the four distribution companies, each with an ample area of operation, will allow for an improvement in service and the speeding up of the operations that electricity service requires Improvements in operation and maintenance are expected, as well as a reduction in construction time and the adoption of new technologies and administrative systems

The expected private participation in the new distribution companies is in accordance with the current government's policies, as well as the government's commitments under loans it has acquired, and the need to modernize public administration

According to CEL, one of the principal advantages of private participation is that the State need only regulate distribution and can thus concentrate its activities and resources on the basic needs of the population as well as social projects The sale of distribution assets will facilitate the reduction of public-sector loans, and allow for the use of capital from investment markets

Opponents The Sindicato de la Industria Electrica (SIES), the union of the country's principal distribution company, went on strike against key provisions in the privatization plan immediately upon the plan's announcement CEL quickly agreed to include the counter-proposal of the union and the union went back to work The union stated that they had approved a CEL restructuring plan, but the proposal submitted was different The union said that the workers are not against privatization, but only CEL's proposal They ask that CEL finance the purchase of shares for employees with interest-free loans CEL proposes that the shares be purchased with the indemnification that workers will receive upon privatization

4 4 6 Distribution Subsector Restructuring

The Integral Public Service Management Plan for Electrical Power Distribution calls for the creation of four companies from the assets of the Compania de Alumbrado Electrico de San

Salvador (CAESS), the Compania de Luz Electrica de Santa Ana (CLESA), the Compania de Luz Electrica Sonsonate (CLES), the Compania de Luz Electrica de Ahuachapan (CLEA), and CEL's rural electrification program (REP) These four distribution companies came under CEL administration in 1987 when their 50-year state-issued operating concession expired

The new companies are to be

1 The Western Distribution Company, whose assets will come from those of CLES, CLEA, CLESA, and zones 1,2,3 and 17 of the REP

2 The Central Northern Distribution Company, whose assets will be formed from those of CAESS and the REP's zone 6 and 7

3 The Central Southern Distribution Company, whose assets will be formed from those of CAESS and REP's zone 14, 15 and part of 17

4 The Eastern Distribution Company, whose assets will be made up of those assets in the east of the country, except for the those of the private company DEUSEM These include assets of CAESS and the REP's zone 8,9,10,11 and 18

The country will be divided into five distribution regions represented by the four companies described and the private company DEUSEM which operates in the southeast of the country The following table lists the assets of the distribution companies to be reorganized

Exhibit 4-4
Data on Distribution Entities to be Restructured

Company	Km of Lines	Substations	Transformers
CAESS	7,407	29	15,069
CLESA	1,118	6	1,095
CLES	784	12	1,191
CLEA	475	1	523
Total	9 854	48	17,878

Source El Diario de Hoy (4 5 1995) San Salvador

The assets of CEL's rural electrification program are in the process of being valued so as to be subsequently included in the privatization program Employees of CEL will have access to the shares of the four new electricity companies, shares to them will be sold in two stages, first, to workers of CEL, CAESS, CLESA, CLEA, CLES and CECSA (a generation cooperative to be

retained by CEL), and then subsequently to the private sector at a price to be determined by CEL Twenty percent of all shares will be sold to workers, up to a maximum of 100,000 Colones per person CEL will provide financing to workers for this purchase Purchases will be made at the Stock Exchange

Generation assets of CAESS, CLESA, CLEA, and CLES have been transferred to CEL jurisdiction and will not form part of the privatization The only other private distribution company in El Salvador, DEUSEM, will continue to operate independently

4.5 HUNGARY

4 5 1 Summary

Hungary's 6,600-MW electricity sector was reorganized in 1992 with the separation and incorporation of generation, transmission, and distribution assets of the state-owned and vertically-integrated power sector monopoly enterprise MVM The generation assets of MVM were divided into eight companies, and sector demonopolization encourages bulk power generation by independent power producers A transmission company has been set up to manage dispatch, coordinate transmission, and control power imports and exports Six distribution companies have been formed out of MVM's distribution assets

A regulatory body, the Hungarian Energy Office (MEH), has been formed for the power sector and it is authorized to approve tariff increases The partial privatization plan for the electricity sector has recently been agreed upon Ownership of MVM's assets will be divided between strategic foreign investors, employees, municipalities, and the government's asset holding company

4 5 2 Power Sector Overview

In 1992, the state-owned electric utility, MVM, accounted for 98 percent of domestic electrical energy generation with a workforce of 38,000 The nation's total installed generating capacity is approximately 6,600MW In 1992, coal and lignite accounted for 31 percent of generation, nuclear 39 percent, hydroelectricity one percent, with the remaining 29 percent generated from oil and gas Demand for electricity fell six percent in 1991 and 1992, though a slight recovery began in 1993 More than half of the country's total gas consumption is imported In 1992, imports from the former USSR made up ten percent of total electrical energy supply, down from a high of 30 percent in 1989 The Hungarian electricity system is interconnected with Ukraine, Slovakia, the former Yugoslavia, and Austria

4 5 3 Power Sector Organization and Restructuring

On December 31 1991, the Hungarian Electricity Board was reorganized into a two-tier joint stock company called Hungarian Power Companies Ltd (MVM) The first tier of MVM is made up of eight generating companies, organized by fuel type and region, and six regional electricity distribution companies The second tier of the electricity sector is a holding company for the group and is the owner and operator of the transmission grid and the national dispatch center The dispatch center buys power from the cheapest generator

Power sales to distribution companies are made according to a compensation scheme where prices are adjusted to account for different proportions of industrial and residential customers It is a long-term goal of the Hungarian government that private power producers will be permitted to sell power to the grid company By 1993 MVM had already signed an agreement with a private company and the Hungarian oil and gas company for the construction of a 40MW gas-fired power plant

The vast majority of MVM shares are held by the State Asset Management Company, APV Rt This entity has been charged with improving MVM's financial performance and preparing for privatization MVM was to receive no subsidies from the state and no state guarantees, while being required to remit a dividend to the national treasury There has been ongoing debate, and controversy, on the schedule of tariff increases that will bring Hungarian electricity rates up to international levels Institutions involved include the Ministry of Industry and Trade, the Ministry of Finance, APV Rt, the nation's trade unions, and the government's budget-making body

Electricity price reform has aimed at achieving adequate revenues to cover depreciation, insurance and dividends to shareholders (not covered at 1993 tariff levels), though MVM has run into serious problems caused by forint devaluation and the accompanying increase in its costs of imported fuels and investment requirements According to a recent report MVM was having trouble even covering maintenance costs in early 1995 A mid-April request by MVM to the MEH for a reported ten percent immediate tariff increase was turned down, though apparently an increase will be permitted later in the year

4 5 4 Regulation

A new Electricity Law was passed by the Hungarian government in April 1994 It gave power sector regulatory responsibilities to the Hungarian Energy Office (MEH) The MEH had been established by Act XLI on Gas Supply of 1994 to regulate the Hungarian gas and electricity industries

The MEH is a new office of the Ministry of Industry and Trade, and its specific activities and procedures are currently in the process of development MEH is headed by a professor, and a number of ex-MVM managers are also on its staff It has been a weak institution in the power sector in comparison to the influence on power sector policy that MVM has traditionally held This will undoubtedly change as a result of the break-up and partial privatization of MVM that is currently underway (see the following section for details)

To further strengthen the role of MEH in the Hungarian power sector the institution will soon be separated from the Ministry of Industry and Trade and be established as a wholly independent entity Dates and a timetable for the separation of MEH have not yet been announced

In the electricity sector MEH's duties include the establishment of energy tariffs, general oversight of the power sector, and the granting of licenses for the production, transport, and supply of electricity Specific responsibilities of the MEH include the approval of the operational codes and charters of companies operating in the nation's power sector, the elaboration and application of the regulations by which electricity tariffs are set, ensuring that power sector participants abide by the regulations and procedures established for their operation, and the protection of consumer interests International development assistance has played an important role in the training of MEH staff and the development of its activities

In addition to calling for the establishment of the MEH the 1994 Electricity Law demonopolized the electricity sector and includes provisions for the grid inter-tie of renewable energy production, self-generators, and private producers

4 5 5 Privatization

There has been much debate over the last three years on the specifics of MVM privatization, particularly on the proportion of the generation and distribution companies to be divested by the government Parliament passed legislation in May to speed up the pace of divestiture of state-owned infrastructure assets

The firing of the trade and industry minister, Laszlo Pal, by the prime minister, which took effect July 15, will facilitate the implementation of the plan Pal did not disguise his opposition to earlier plans, openly siding with MVM's management and employee unions and had delayed the privatization plan by slowing down the establishment of appropriate regulatory and pricing mechanisms International Monetary Fund requirements for cash injections that would be forthcoming from divestment have also contributed to the recent movement on power sector privatization With an external debt approximately equal to one year's GDP, capital is needed to shore up the nation's economic performance

As of July 1995, the Hungarian government has decided to keep a majority ownership of the national grid company and the Paks nuclear plant and to reduce the share of the other companies that it plans to sell off

On June 29 of this year, the Hungarian government passed a resolution spelling out a process for the partial privatization of the nation's strategic energy assets, so as to facilitate required investment in the sector and to improve its management and operation Oil, gas, and electricity infrastructure were included For MVM's assets, the sale will proceed in two stages The first stage of sales has already been announced and a tender submission date of 30 November 1995 has been set

In the first stage of the privatization process APV Rt will divest of between 46 15 and 49 23 percent of its ownership of MVM's six electricity distribution companies It is also contemplated that purchasers will be permitted some management rights and the chance to increase ownership to 50 percent plus one by the end of 1997 Upon completion of these first stage asset transfers 25 percent of the shares of these regional electricity companies (RECs) will be given to local municipalities Local municipalities had already been in the process of receiving ownership shares of the distribution companies to a level proportional to the value of land upon which electricity infrastructure installations had been built

Strategic partners will be offered partial ownership of MVM's seven non-nuclear generating companies Ownership of between 34 and 49 71 percent is being offered These share sales will be combined with a capitalization plan, thus allowing investors to take majority stakes right away Further expansion of this private ownership to 100 percent is contemplated, and will probably include any shares held by municipalities

The core transmission company will be partially privatized with the sale of an initial 24 percent of shares Buyers will be also offered an opportunity to increase ownership to 25 percent plus one subsequently A plan is being considered to offer three to four percent of the core company to owners of the compensation coupons issued to victims of the former regime

Many analysts and potential investors are disappointed that the government's original privatization plans have been watered down though at the same time are glad that a divestiture plan has been decided upon After last year's election, the momentum towards privatization in the energy sector slowed considerably, despite encouragement from the US president, Western governments, and officials at the World Bank and International Monetary Fund Concern has also been expressed about the lack of experience at APV Rt and within the government that could impede the smooth execution of these sales Nevertheless, Hungary is under pressure to divest of some of the electricity companies this year so that it can reach its US$1 2billion privatization revenues

On a state visit to the US this summer, the Hungarian prime minister met with US investors at the Overseas Private Investment Corporation in Washington D C As well as keen interest from US companies, many European companies have expressed interest in the purchase of Hungarian electricity sector assets The sale is scheduled to begin in September and be concluded by the end of the year Industrial action may be taken by MVM employees in opposition to the privatizations, though an as yet unspecified plan to include worker ownership in the new ownership structure of the electricity companies may help alleviate such opposition

Hungary has been quite successful in attracting foreign direct private investment It is estimated that Hungary has been the destination of half of such investment coming to the region over the last five years This is approximately US$8 billion, 40 percent from the US, with the second most important share coming from Germany, followed by Austria Thirty-five of the world's 40 largest multinational companies now have interests in the country

4.6 NICARAGUA

4 6 1 Summary

Nicaragua's restructuring program was motivated by a host of problems in the power sector Significant among these were the need to solve distribution-side problems, as well as financing shortfalls on the supply-side Distribution separation is being undertaken as part of the strategy to address these problems The goal is the creation of well-regulated regional monopoly distribution companies

Before restructuring the nation's 350-MW power sector was comprised of a single vertically integrated state monopoly After an extensive period of study and consideration of options, the sector was reorganized in January 1995 An autonomous regulatory body has been established to coordinate sector activities and approve tariff changes Generation is to be separated from transmission, and distribution will be carried out by eight regional enterprises Innovative regulation will aim to introduce competition into the distribution subsector Private participation is being encouraged in all activities of the nation's power sector

4 6 2 Overview of Country

The country has about million inhabitants Since the Sandinista revolution of 1979, and during the civil war of the 1980s, the Nicaraguan economy has been in steady decline Average annual per capita GNP growth rate was an average -5 0 percent between 1983 and 1992, and the nation currently has the highest per capita external debt of any nation in the world The Sandinista period was characterized by high inflation and an expanding state role in the economy (in 1990 more than 30 percent of GNP was owned or controlled by the state) In 1990, free elections were

held and the Chamorro government came to power Since 1980, and with financial support from the International Monetary Fund (IMF) and the Interamerican Development Bank (IDB), the current government has lowered import tariffs, run tight fiscal and monetary policy, cut the public workforce, and sold off much of the state-owned sector of the economy Inflation has been controlled, though the economy has not shown many improvements Unemployment remains high, and even in nominal US$ terms, exports are still below the levels of the mid-1970s

4 6 3 The Nicaraguan Electricity Sector

Total installed capacity in 1992 was approximately 350MW of which 60MW is geothermal, 120MW hydro, and most of the remainder oil fired thermal capacity Approximately 35 percent of the population has electricity service System losses were 22 percent of generation in the early 1990s Much of industry operates at low power factor (75 percent common) Ten percent of residential customers pirate electricity & pay no bills Tariffs now approximate utility average costs, after a 3 year period of gradual increases Four to five hours (and more) of electricity rationing per day has not been uncommon during the 1990s, especially during the dry season when hydropower generation is reduced

Before Restructuring In 1979, subsequent to the Sandinista revolution, all energy-related activities including in the electricity and hydrocarbons sectors came under the control of one centralized state-owned entity called the Nicaraguan Energy Institute (INE) INE was divided into 4 divisions Operations, Distribution and Commercialization Planning, and Hydrocarbons

After Restructuring The old INE organization was divided up in January 1995 when a new organizational structure for the electricity sector was declared by presidential decree A new electricity law should be approved soon, it is currently held up due to the nation's constitutional crisis All hydrocarbon-related activities had been previously separated and are now managed under the government-held organization Petronic INE's electricity sector activities have been restructured in the following way

- INE remains a branch of the government, with its director retaining ministerial status, though it is now only staffed by 50 people It has assumed electricity sector planning, regulatory, import/export control, and other functions The newly recast INE proposes tariffs, expansion policy, and performs evaluations of bids for new capacity for the electricity sector
- A National Commission on Energy Prices was established It is made up of the director of INE, the Minister of Economy and Development the Minister of

Finance, two representatives of the private sector, and two customer representatives It approves the energy prices suggested by INE

The electricity generating, transmission, and distribution activities of the old INE were temporarily reconstituted into one wholly state-owned entity called ENEL ENEL is to be further restructured in January, 1996, when the generation, transmission, and distribution functions will be separated into distinct state-owned entities The long term goal is the formation of a state-owned transmission company which will be open to private investors for joint ventures for expansion A state-owned generation company will compete against private producers to supply power to the transmission entity No new solely state-owned generating capacity will be built The distribution sector will most likely be separated into eight companies where private investment will be welcomed for partial ownership for capitalization and joint venture arrangements for system expansion

Intergeotherm, the state-owned and Russian joint venture geothermal development entity has been established as a separate generating entity It has been developing a 100MW geothermal site, though it has not been able to achieve financing as Russian nuclear submarine turbines, unproven in any geothermal application, have been proposed

Private Participation The new structure of the electricity sector aims to facilitate the participation of private investors Foreign and privately-owned generators have already been granted concessions to develop generating capacity in the country Forty MW of diesel-powered base load is presently under construction, electricity will be purchased by ENEL at around $0 06 per kWh, and it will be operational in 1995-96 Private participation is proposed for geothermal capacity and in the sugarcane cogeneration industry As mentioned, private participation is now possible in the transmission and distribution sectors though the state will remain in firm control of transmission system operation

Restructuring Process Time Period The reform process began in 1991 when an original restructuring proposal by INE was submitted to the World Bank (WB) This was under the new government and policies of president Chamorro Projects financed by the IDB and the Swedish government began in 1992, with the goal of developing restructuring proposals after detailed study of the Nicaraguan power sector By 1993, elaborate restructuring proposals had been developed At the same time, and as part of efforts to educate and build consensus on restructuring among the Nicaraguan public government officials, and INE employees, INE officials published an informative and widely distributed six times a year "Information Bulletin" starting in May of 1993

The first reorganization step was made in January 1995 by presidential decree, a new electricity law should be approved soon, though it is currently held up by the constitutional crisis In

January 1996, a second phase of restructuring will commence In this second stage ENEL will be split into generating, transmission, and distribution companies The distribution subsector will be further broken down into eight separate entities over the following year

The total period of time from initial presentation of proposals to the consolidation of the final institutional structure will be perhaps five years Officials at the old INE have led a cautious and well thought-out process of study of options analysis of international experience, and proposals for change Their aim throughout has been the institutionalization of a transparent structure of regulation that minimizes perceived risk on the part of foreign investors, and maximizes competition As a result it is hoped that the nation will have access to the cheapest electricity possible

Opponents and Proponents of Restructuring There has been opposition to the proposed changes from within INE, from certain sectors within the central government, and from some of the nation's bilateral and multilateral aid donors Nevertheless, the leadership of the old INE has led a detailed, cautious, and well informed process of restructuring and has managed to successfully defend its positions and proposals by demonstrating that they are in the best interests of the whole nation and work towards reasonable long term goals and under realistic assumptions of the present and future context Complete privatization has been called for by some government officials and members of the private sector On the other side of the issue, Nicaragua's powerful labor unions would most likely have supported strikes by INE's employees' union had any abrupt privatization occurred

Outside the small core of INE policy makers there is very little understanding of the Nicaraguan electricity sector, of international experience in electricity sector regulation, or an appreciation of the high costs and importance of electricity for the nation's economy More than once, INE officials have successfully defended their course of action against the critique of government officials and members of the private sector The INE-led restructuring of the hydrocarbons sector has been criticized, but because of INE's policies the nation had an oil import bill savings of US$6 million in 1992, purchasing the cheapest fuel in Central America by buying it on the open market, as opposed to leaving purchases to the oil companies as is common within other countries of the region

The "Information Bulletin," combined with the generally open nature of restructuring discussion and proposal formulation, has greatly contributed to the achievement of consensus on the proposed trajectory of restructuring

4.6.4 Why Restructure the Electricity Sector?

The major motivations for restructuring were INE's inability to raise financing for adequate system capacity expansion and the sorry state of existing infrastructure There was low efficiency

in power delivery to the consumer (22 percent losses), and a high degree of customer theft The economic crisis during the war years between 1977 and 1990, along with the previous model of organization and central government control over the sector had combined to create a situation of near crisis in the electricity sector By the early 1990s utility officials were convinced that restructuring and reform were desperately needed to turn around the troubled electricity sector They were greatly encouraged in this regard by the policies of the new government as well as those of the multilateral financial institutions (IMF, WB, and IDB)

Electricity Sector Problems The problems of the Nicaraguan electricity sector, as envisioned by INE in 1993, are as follows

- A deterioration of existing infrastructure There were frequent power interruptions, voltage fluctuations, and an increase in losses to 22 percent of generation at customer point of sale The heavy losses included the widespread theft of electricity by an estimated 10 percent of residential customers, in addition to bill non-payment

- Insufficient capital for capacity expansion old infrastructure in need of rehabilitation and low reserve generation levels

- Centralization of regulatory and operational activities for hydrocarbons and electricity in one institution with different, and sometimes contradictory, objectives and responsibilities Resulting lack of clarity between regulatory and commercial roles

- Lack of a regulatory system that could critically evaluate the commercial role of the state as electricity producer evaluate projected investments, proposed prices, quality of service and efficiency

- Electricity users without protection in case of problems INE was the judge of problems, while it was at the same time seen as the cause

- Tariff levels and structure set mainly as a function of national government macroeconomic and social policy This had led to a weak financial situation for the electricity company that has not allowed it to cover its operating costs, obtain spare parts, give adequate maintenance to existing infrastructure, pay its debt, finance required investments and gain access to foreign capital

- Lack of strict application of commercial criteria in management of the institution This had tended to lead to the accumulation of a significant debt

- On the consumer side there was a very low energy use efficiency The energy intensity of the country was 5 4 BEP/1000 US$ of GDP Low energy prices in previous years had disincentivized efficient use of energy and led to the increasing use of energy without a corresponding increase in production Primary energy imports had therefore increased, further exacerbating the trade and current account deficit of the nation This was particularly troublesome for the nation as the performance of Nicaragua s economy is extremely sensitive to foreign exchange availability

- Lack of qualified personnel in the country, made worse by emigration of such individuals since 1980

Objectives of Restructuring The objectives of electricity sector restructuring, as stated by INE's planning division in 1993, were the following

- The creation of a transparent legal framework and institutional structure that works to best address the aforementioned problems

- To establish conditions that facilitate the highest possible levels of competition and efficiency in the electricity sector, while protecting consumers from monopoly power

- The definition of a new market structure that encourages private participation, foreign investment, and access to funds from the multilateral financial institutions

- The establishment of a level and structure of rates that reflects economic costs of the resource, and that

  - Sends correct price signals to consumers, particularly as it relates to efficient use of energy and makes possible adequate incentives to capital for such investments

  - Permits the electricity sector entities to generate funds adequate to cover operating costs, future investment, as well as debt service

  - Efficiently assigns subsidies only to the poorest customers

- Assures the independence of daily management from political interference through a clear separation of regulatory and commercial functions \

- Separates generation and transmission from distribution so that organizations can focus on function
- Improves efficiency in use of resources in the construction and rehabilitation of infrastructure through the introduction of commercial criteria, competition, and the use of private capital
- Establishes realistic and verifiable regulatory financial oversight of the new entities
- Guarantees minimum electricity cost through the coordinated operation of the system, while achieving acceptable standards of reliability, safety, and quality of service
- Facilitates the expansion of the electricity system at minimum cost using a diversification of indigenous natural resources and imported fuels so as to reduce the adverse impact on electricity supply of any potentially disturbing natural, commercial or political circumstances
- Increases the share of the population receiving electricity from 35 percent in 1994 to 60 percent in 2003
- Allows for the construction of efficient infrastructure, by efficient use of financial and other resources while reducing impacts on the environment to a minimum

Additional Considerations Affecting Restructuring These additional considerations affecting restructuring were also stated by INE in 1993

Nicaragua's multi-lateral lending institutions most particularly the Interamerican Development Bank (IDB), have been encouraging power sector restructuring for quite some time The IDB had placed balance of payments support lending under conditionality of restructuring in the electricity sector during 1993 and 1994 This has, therefor been an extremely important driver of restructuring

INE wanted to establish a clear legal framework governing the electricity sector so as to promote and attract private investment to the sector The attraction of private capital was a major goal of restructuring, though it was not considered an end it itself Rather, it was considered a means, among others, by which the needs of the population, and national economic development, could be achieved Private participation is part of the strategy to bring the benefits of competition to the electricity sector, that at the same time avoids monopolistic or oligopolistic conditions in the small and easily dominated Nicaraguan market

INE officials quote studies by the World Bank and OLADE (Latin American Energy Organization) showing that electricity system operational efficiency does not correlate with the form of ownership (public vs private), rather it is more the degree of government intervention driven by political decisions

While the levels of investment required for generation and transmission infrastructure are probably too large for domestic financial groups to take on, INE hopes that domestic capital will be invested in the distribution sector where more appropriate opportunities will be available

Different Restructuring Models Considered Five different models of electricity sector restructuring were chosen as options by INE in the preliminary stages of their discussions on an appropriate restructured form for the sector See the following Figure for a graphical representation of the different restructuring options

Model 1 Complete vertical and horizontal integration in that all generation, transmission, and distribution in the country would be concentrated in one entity Could be entirely publicly- or privately-owned, or a combination

Model 2 A number of completely vertically integrated entities operating in different regions of the nation Could be publicly- or privately-owned, or a combination One of these entities should be responsible for economic dispatch and international interchanges, this entity would remain state-owned

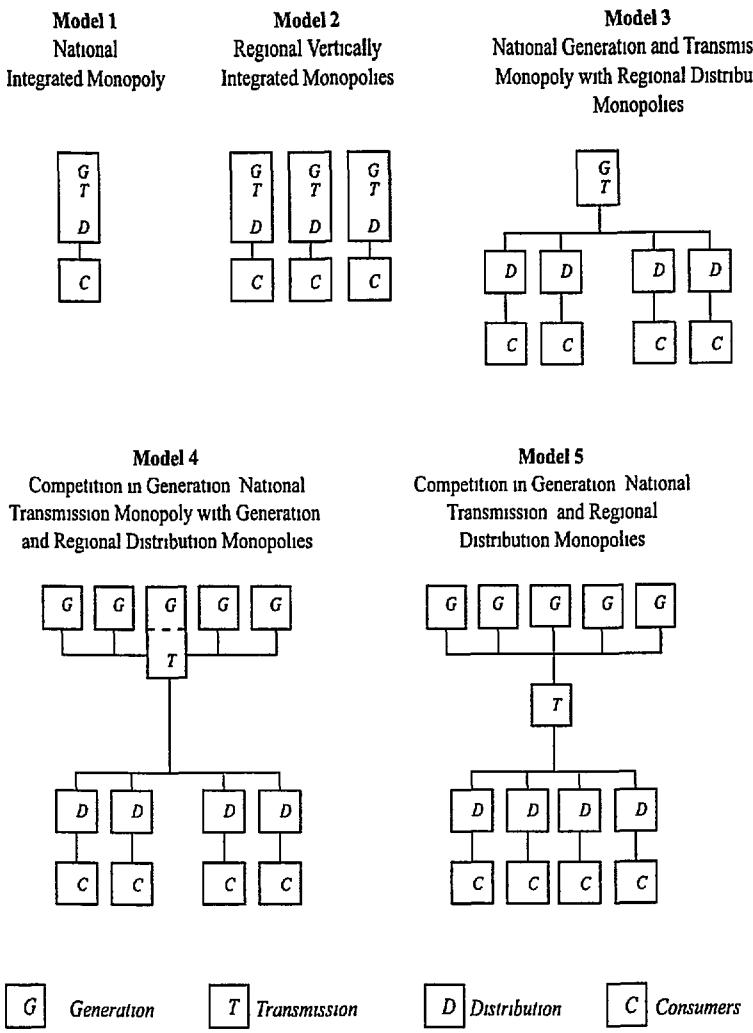
Model 3 A state-owned generation and transmission company owns all generation and transmission, and distribution is separated and broken into regional distribution companies The state-owned generation and transmission company would sell energy to the distribution companies It would also manage economic dispatch and international exchanges The distribution companies could be publicly- or privately-owned or a combination

Model 4 – Model Selected Maintain a state-owned generation and transmission entity (though with the generation and transmission functions organizationally and financially separated), and separate the distribution function into various regionally-defined companies Additional privately-owned generating companies are encouraged to form that will sell their electricity production to the national generation-transmission company The national generation-transmission company will sell power to the distribution companies and manage dispatch and international exchanges

Model 5 Present and new generating capacity, as well as distribution infrastructure, to be separated from transmission One state-owned transmission company would determine economic dispatch and international exchanges The generation and distribution companies could be publicly- or privately-owned, or a combination

Of the five models chosen for consideration model 4 was chosen as the new structure for the electricity sector It was thought to facilitate the expeditious resolution of electricity sector problems, attract private participation to the sector, retain the institutional cohesion and more than 40 years experience of INE, and to do this while preserving the interests of the widest Nicaraguan public

Figure 4-1
Restructuring Models for the Nicaraguan Power Sector



Source INE (1993a)

4 6 5 Distribution Sector Restructuring

Planned Structure of the Distribution Sector In the second phase of restructuring, to begin in January 1996, the distribution function will be separated from ENEL It is most likely that one distribution entity will be established at the beginning, though by the end of 1996 there will most likely be eight separate distribution companies The exact arrangement is yet to be determined, and will be decided upon when the recommendations of a Swedish consulting company (Sydkraft) are made later this year

Issues being studied by Sydkraft are the actual management capability of current ENEL staff working on the distribution side, as well as issues related to rate differentiation and costs of service in the different distribution zones of the country The distribution and commercialization companies to be set up will be exclusively dedicated to such activities, and shall most likely be the following

Exhibit 4-5
Proposed Distribution Companies in Nicaragua

Distribution Company Name	Estimated Value (US$m)
Empresa Electrica de Managua	33 90
Empresa Electrica del Sur	15 50
Empresa Eléctrica de Occidente	7 96
Empresa Electrica del Norte	15 22
Empresa Electrica del Amerisque	8 20
Empresa Eléctrica de Bluefields	N A
Empresa Eléctrica de Puerto Cabezas	N A
Empresa Electrica de Ometepe	N A

Source INE (1991)

Since 1979 all electricity sector distribution functions were managed by INE However, before 1979 there were a variety of distribution companies operating in the country They were municipally- and privately-owned and there were also rural distribution cooperatives, all together they served 37 percent of the nation's consumers and sold close to 17 percent of all electricity consumed An important segment of distribution had been constructed in the 1970s in rural areas with the technical and financial support of NRECA (the National Rural Electric Cooperative Association, a US government-funded agency) A number of the proposed distribution entities (Table A 1) very closely resemble the rural distribution cooperatives established by NRECA and incorporated into INE in 1979

The distribution entities spun-off from ENEL will initially be wholly state-owned Private ownership, and share holding by employees is contemplated, however A one to two year period of gradual privatization of up to 70 percent of distribution assets was proposed in 1993 This original distribution subsector restructuring proposal called for an initial sale of 40 percent of assets by international solicitation, with a further 30 percent going to employees The state would retain 30 percent of ownership Subsequent distribution system expansion by means of private sector (foreign and domestic) joint venture would be encouraged by the distribution companies The smaller scale of required investment and technical capability (compared to generation and transmission) lends itself to such participation by Nicaraguan national construction, engineering, and financing companies

The INE hopes that the exclusive focus of the proposed distribution entities be electricity distribution and commercialization They would not compete or involve themselves in larger national level generation and transmission projects INE hopes this will allow for the dedication of effort and resources to solving problems of energy losses, the installation of meters, and attention to customer needs at the distribution level

Distribution Subsector Regulation The principal function of the distribution companies will be to distribute and commercialize electricity They will be required to purchase electricity from the transmission entity that will be established from ENEL The details of this arrangement have yet to be determined, though it is contemplated that the distribution companies will be able to own and operate generation assets up to plants of 10 MW capacity There is much small hydropower potential in the central and northern regions of the country

INE and the Commission will work with the distribution companies to set prices according to geographic location, type of customer, etc Tariff structure determination could be by the company or in accordance with a national tariff schedule The distribution companies will be obliged to serve customers within their areas, while customers requesting connections may be asked to contribute to the cost of making a connection

Investment decisions for the distribution companies will be made by the companies themselves, though they would be required to inform and consult with INE, the Commission, and ENEL on such undertakings

4 6 6 Why Restructure Distribution?

The restructuring of the distribution sector is considered by INE officials as an integral component of sector reform and is conceived of to address pressing needs on the distribution side The specific problems on the distribution side are the following

- Deteriorated quality of electrical service and infrastructure frequent power interruptions, voltage fluctuations 30,000 legal customers without meters or with broken meters, distribution lines, transformers, and protection equipment in need of replacement

- Technical inefficiency of electricity supply, particularly on the distribution side Total generation to sale point inefficiency was estimated at 22 percent in 1993, one of the highest system inefficiencies in Latin America Reduction of losses to 12 percent of generation is desired On the distribution side utility officials have very little data on the real and reactive loads in individual distribution voltage circuits, many circuits do not have the minimum power factor correction equipment, while phase balance problems are also prevalent Distribution circuit protection is by means of only the most rudimentary devices, which often trip due to overloading Furthermore, distribution circuits have been extended beyond their design limits due to a lack of knowledge of loading as well as the absence of a system expansion plan A detailed inventory of circuit routing, protection, and loading is needed

- Large amount of electricity theft, particularly in urban areas It is estimated that more than ten percent of the nation's residential users of electricity obtain it from illegal connections to distribution circuits In many situations this has led to severe overloading of distribution voltage circuits and a consequent reduction in service quality for paying customers The utility lacks the required funds to expand the distribution grid and purchase the required transformers and metering equipment to legitimize these connections

- Officials in charge of electricity distribution and commercialization have no direct control over their operating budgets, which would be required for setting aside funds for system repairs and expansions and turning illegal connections into paying customers

- Inefficient use of electricity by customers Many large industrial users of electricity consume at low power factors (75 percent is common), while only the very largest users are metered for reactive power consumption Many smaller industrial, commercial, and government consumers that are not measured for reactive power consumption have very low power factors Much electricity end-use equipment is old, obsolete, and highly inefficient though customers have no incentive to change and in many situations are not even aware of the extremely fast paybacks from investments in efficiency improvements Although tariffs have been recently increased to better reflect production and delivery costs, there is still a lack of appreciation on the part of customers of the real economic costs of the use of electricity and its alternatives

- Inadequate billing system There is a great need for a new billing system that facilitates the obtaining, recording, and reporting of accurate data in a timely fashion In addition, the system for issuing bills and distributing and receiving payment for them needs to be improved, as does the response of the utility for cases of disconnection and connection of service

4 6 7 How Has Distribution Restructuring Been Carried Out?

As stated in the above general description of the restructuring of the Nicaraguan electricity sector the distribution subsector will not be spun-off from ENEL until the beginning of next year, although a structure is contemplated and it has been described above Sydkraft has been working closely with INE since March 1993 on these issues While the INE-Sydkraft cooperation has been directed at most aspects of the restructuring there has been particular emphasis on institutional reinforcement within INE (and now ENEL) so that the various entities that ENEL will be broken into in January 1996 will be equipped and able to succeed as independent organizations The program aims to assist in the commercial areas of generation, transmission, and distribution so that the entities can operate under commercial criteria Establishing such a "commercial culture" within what was once INE is the goal, and represents a major challenge to employees of the institution

There has been much activity by the INE-Sydkraft project on distribution subsector issues, this has been headed by the INE-Sydkraft working group on distribution and commercialization Detailed analysis of equipment, personnel, and capacity within the proposed distribution entities has been undertaken so that the proposed structure of the sector will be successful Areas where institutional, technical, and management inadequacies have been identified are being addressed through project programs and training

Specific activities of the project include a detailed analysis of the costs of electricity distribution (including technical and commercial losses) in the different regions of the country In addition, there has been the establishment of, and training on, financial investment and accounting computer models, and an in-depth market analysis This last activity included customer categorization, improved internal reporting systems, and attention to customer needs and marketing including establishment of free technical assistance to large customers and easier bill payment for customers (payment through banks, establishment of new payment offices)

The project has also assisted in the establishment of "centers or responsibility" within the existing ENEL institution These centers of responsibility will soon become the administrative and management leadership of the new autonomous generation, transmission and distribution entities Each entity will have financial and operational independence from other electricity sector entities This will facilitate the commercial objectives of the restructuring

It is expected that these autonomous entities will be better able than the old INE to respond to the challenges and opportunities in the distribution side of the electricity sector -- such as improvement of service quality, reduction of illegal connections, and improvement of system operational efficiency In addition, a more direct and dynamic relationship will be established between management and workers within the various entities Furthermore, such an organization will permit more direct control of profitability by bringing those responsible for commercial operation closer to customers Detailed market studies are currently underway so as to better inform distribution company personnel and at the same time facilitate a new culture with an emphasis on customer service

4 6 8 Evaluation of Restructuring

Private participation in the Nicaraguan electricity sector is currently underway Nicaraguan indigenous energy resources are being developed within this new framework including geothermal, small hydropower and sugarcane biomass cogeneration Thus, on the supply-side private capital has been attracted for system capacity expansion

For the distribution subsector, assessment and evaluation of the restructuring process is not possible as the new distribution utilities have not yet been created

4 7 PHILIPPINES

4 7 1 Summary

The Philippine 7,500-MW power sector is just coming out of a six-year period of chronic brownouts, largely solved by the addition of 1,300-MW of privately-owned capacity At one point there was a 1,300-MW capacity shortfall Further independent power producer generation is under development and it has been proposed that direct access provisions be added to the power sector regulatory and legal framework

The period of severe electricity rationing in the early 1990s was partially motivated by the failure to complete a large nuclear reactor that the national power utility, Napocor, had commissioned Westinghouse to build in the 1980s Construction of the nuclear power plant had come close to completion, though problems forestalled its entering into service Napocor and Westinghouse are still in litigation to determine responsibility for failure to complete the project At the same time, conversion of the plant for gas fueling has been considered

Under the Ramos presidency the Philippine government took active steps to address the problems of the power sector As stated above, private power capacity was contracted to alleviate electricity supply shortfalls This included the connection of barge-mounted power generating

systems to the national grid and the purchase of power under relatively short term contracts at elevated prices Regulatory reform was also introduced during this period with the establishment of the Department of Energy The Energy Regulatory Board is also responsible for regulation of the Philippine power sector

Accompanying the introduction of independent private power producers and power sector regulatory reform in the Philippines, there has been ongoing debate within the government and among the nation's international development assistance organizations over whether and how further power sector restructuring should take place

A detailed restructuring proposal for the significant overhauling of the nation's power sector was presented to the Philippine government at the end of 1994 However, it appears that little progress has occurred toward the implementation of the plan

The plan calls for the restructuring and privatization of the state-owned vertically integrated utility, Napocor, into a U K - or Argentinean-style electricity industry At the same time, the existing multitude of independent distribution companies and cooperatives will remain as they are It is proposed that Napocor be split into five subsidiaries, including one each with Napocor's generation, transmission, and distribution assets Assets will temporarily remain under government ownership but will be operated by the private sector and then subsequently privatized The government's commercial and regulatory roles will be split in this way, and power sector regulation will continue to be coordinated by the two existing regulatory bodies

4 8 POLAND

4 8 1 Summary

Until 1989, Poland's 32 2-GW electricity sector was entirely state-owned and was governed by the Polish Power and Lignite Board In 1989 restructuring began with a power sector reorganization Thirty-three distribution companies and thirty-two generating companies were set up, and in 1990 the Polish Power Grid Company was formed to own and operate transmission and dispatch The goal of restructuring has been to create a competitive generation market, form a regulatory body, introduce private ownership, and separate transmission and distribution from other sector activities It is hoped that reform will increase sector efficiency, facilitate requisite sector investment, and eventually ease pollution from coal burning (96% of electricity is generated from coal)

An Energy Law has been under formulation for four years and is soon expected to be approved by the parliament In the meantime, the distribution companies, district heating plants, hydroelectric plants, and transmission companies have been set up as state-owned joint stock

companies Generation plants are to follow The Energy Law will establish a regulatory body, permit open access, pave the way to privatization, and reform tariff-making procedures

4 8 2 Power Sector Overview

Ninety-six percent of Poland's electricity generation is from coal, of this 57 percent is from hard coal and 39 percent from brown coal There is 32 2-GW of installed capacity in the country, of which 94 percent is generated by publicly-owned power plants The rest is autogeneration by industry Fifty percent of electricity is generated from plants over 1000-MW in size, the largest plant is 4,300-MW There are 115 hydro plants with a total capacity of 600-MW and 220 plants run by industry making up 3 2-GW Many plants produce both heat and power for district heating systems Tariffs were a third those of Western Europe until 1989 They have increased but still remain below those in the West In 1992 tariff revenues made up only 45% of the total cost of electricity supply -- including investment costs for reconstruction and development up to 2001 By 1994 revenues only covered 50% of this required value

4 8 3 Power Sector Organization and Restructuring

Until 1989, the Polish power sector was state-owned and operated by five regional power utilities under the Polish Power and Lignite Board At that time the utilities were broken up and reorganized Thirty-two generation enterprises and thirty-three distribution companies were formed

Further restructuring plans were announced in 1990 after a team of Polish and international experts were commissioned to study reform options for the power sector The proposed model called for the establishment of competition in the generation market, with transmission and distribution remaining as natural monopoly market segments The restructuring experience of the UK was an important influence on the proposed sector structural design

This general restructuring model was approved by the government and parliament in early 1990, and the Polish Power Grid Company (PSA) was formed to manage transmission, dispatch, and international interconnections PSA also acted as pricing policy and system development coordinator for the enterprises of the sector While more progress has been made towards the proposed industry structure, there have been many delays

The Energy Restructuring Group (ERG) was formed in November 1992 to facilitate reform, but ongoing debate on an appropriate Energy Law has been a major source of delay International development assistance has made important contributions to reform in the power sector This assistance has included funding for the ERG, facilitating improved commercialization of power sector enterprises, pricing and tariff reform, and work in the area of energy conservation

In 1993 the 33 distribution companies were incorporated as joint stock companies, a move designed to emphasize an improvement of commercialization and prepare for privatization Until they become privatized they are to be controlled by the Ministry of Industry and Trade

There are no plans to privatize the PSA This allows it to carry the support of the government in backing the contracts it enters into with generators and distributors In 1993 all power transmission systems over 110-kV were transferred to its ownership It also became the main shareholder in the newly created joint-stock company that owns all the nation's pumped storage assets

There have been many delays in the reform of the Polish power sector Opposition to reform has been the major source of delays This has come both from the management and workers of power sector entities Major opposition from the Solidarity trade union federation has held up the break-up of Poland's immense mining and power generation complexes In addition, opposition has come from the institutions of the Polish power system that have had considerable difficulty adjusting to and gaining experience in the new free-market context towards which restructuring has directed the power sector

Despite the delays there has been progress on the passage of a new Energy Law (see below) Another recent development has been the formation of the PAK coal-fired generation company as a joint-stock enterprise It's progress will have implications for the other coal generating entities in the country that currently all remain as state enterprises It has been proposed that they eventually be restructured and managed by seven different holding companies The state would maintain ownership for the present and privatization would be expected in the future

Despite these hold-ups in the restructuring of the coal generating companies the nation's large hydroelectric plants and, in 1994, its combined heat and power plants, have been established as commercial joint stock companies

Restructuring has been driven by a number of factors The context for reform has been the nation's turn away from the command economy model of economic development The need to attract investment for future system expansion of the sector has been of major importance and was the initial driver of reform in the late 1980s Also of importance is the drive for improved efficiency of resource-use in the sector, and compliance with growing environmental protection regulations

4 8 4 Regulation

The Polish Ministry of Industry and Trade (MoIT) has been responsible for Polish energy policy since 1987 Since the formation of joint stock companies in the sector it has acted on behalf of the single shareholder of the enterprises, the State Treasury Under a 1934 law, however, the

Ministry of Finance is responsible for setting electricity prices to final consumers The MoIT is responsible for setting prices within the industry between generators, the transmission grid, and distributors

The MoIT is also responsible for power sector expansion planning In January 1995 it introduced a wholesale tariff for all distribution companies and large industrial customers As energy prices to customers are set by the Ministry of Finance, the wholesale tariff led to different economic results for the distributors

An Energy Law has been under debate for four years The law deals with generators, transmission, distribution, and the use of energy and fuels It will not cover fuel extraction and atomic energy A basic principle of the new law is the clarification and separation of the state's role in the areas of policy making, regulation, and ownership

The new law leaves the MoIT responsible for national energy policy A newly established Energy Regulatory Authority (ERA) will be the central administrative body overseeing power and gas enterprises It will issue licenses, approve resource plans, and enforce provisions of the energy law The law also gives the go-ahead for privatization of the energy sector, though the State will maintain ownership of a few strategic enterprises (such as the PSA) In addition, the law provides for third party access and right of way on the transmission grid

The main goal of the Energy law is to reconfigure the setting of prices for electricity The MoIT will publish ordinances on the calculation of justified costs and reasonable rates of return on investments for power sector enterprises On this basis, enterprises will submit tariff requests to the ERA The ERA will balance the interests of customers and energy enterprises with final electricity price determinations There will be a transition period for the implementation of these plans up to the end of 1996 Within this period the Ministry of Finance shall hold the right over final determination of electricity prices

In August 1995 the Economic Committee of the Council of Ministers accepted a draft of the new energy policy guidelines This was subsequently approved by the entire Council of Ministers and sent to the lower house where discussions on the draft Energy Law will start in the autumn

4 9 PORTUGAL

4 9 1 Summary

Until 1993, one State-owned company, Electricidade de Portugal (EDP), comprised 90 percent of the nation's 7,000-MW electricity sector Last year, new legislation began restructuring the power sector EDP was incorporated and divided into several business areas, one is charged with overall sector management, another with generation, one with transmission, and four with

distribution Restructuring is ongoing and eventually a regulatory body will take charge of oversight of the power sector Privatization of EDP is being considered and allowing independent power producers is being contemplated

Restructuring has been driven by high losses in distribution, insufficient financing for electricity production expansion, and pressure from the nation's industries who stand at a competitive disadvantage due to the nation's highest electricity tariffs in Europe

4 9 2 Power Sector Organization and Restructuring

In 1991, 27 9 TWh of energy was produced with 7,000-MW of installed capacity A third of generation is from hydroelectric sources with the rest coming from traditional thermal plants

EDP was created soon after the 1974 revolution by the nationalization of 14 private electricity companies Subsequent transformations to the power sector began after the country joined the EEC in 1986 In 1991, the Portuguese government decreed that EDP's status should change from wholly state-owned to a public limit company, and the company was instructed to develop a restructuring plan This was brought about to pave the way towards better efficiency, improved service, and better financial results for electricity sector participants

As well as the incorporation of independent electricity generation, transmission, and distribution joint stock companies, the 1993 restructuring plan recognized the regulatory role of the Ministry of Energy's Department of Energy (DGE) and led the way to the creation of four other companies in the EDP Group These entities cover the areas of technical services, international trade, and information technology

The restructuring plan opens the sector to private investment, both in the form of subcontracting to EDP and direct sales to the national grid There is already non-EDP generation in the country including two 300-MW blocks owned by the UK-generation firm National Power, and a 900-MW natural gas-fired plant currently under construction This plant is owned by Siemens and is to come on line in 1997

The new industry structure establishes a concession regime for transmission grid operation as well as binding and non-binding power market segments The binding market consists of long-term agreements between generators, the transmission company, and distributors In this market segment the government would determine which energy resources are to be developed The non-binding market, on the other hand, is to be more market-oriented

Tariff regulation sets out to accomplish three main objectives Primarily, the main objective is to improve the economic signals seen by all sector participants, second, to balance risk and reward for all parties, and lastly, to keep tariffs reasonably stable and uniform throughout the country

Tariff regulation will be carried out by the independent regulatory body, who will also ensure consumer protection, adequate competition, and supervise the construction of new power stations

Direct access will be permitted for large consumers, and the transmission grid operating company will be renumerated on a rate of return on assets basis For distributors there will be a Bulk Supply Tariff, and separation of the costs for supply and the costs for electricity These costs will be determined every five years by the regulator and adjusted according to a Consumer Price Index minus a regulated productivity offset (CPI-X) method

4 10 SWEDEN

4 10 1 Summary

Restructuring of the Swedish power sector began in January 1992 with a major overhauling of the State Power Board The bulk power network was spun-off and constituted into a new state utility called the Swedish National Grid company This entity controls the transmission system and international power exports and imports The rest of the State Power Board was corporatized into a state-owned limited liability corporation called Vattenfall AB Subsequent emphasis has been placed on achievements for Vattenfall's commercial performance At present, the government is considering the partial or total privatization of Vattenfall

Further power sector reform legislation was passed by the Swedish parliament in May 1994 The aim of the legislation was to bring competition to the generation and distribution subsectors of the nation's 34,500-MW power system, as well as non-discriminatory access to the transmission grid On January 1, 1995, a new regulatory body was established The regulatory body is called the National Board for Industrial and Technical Development (NUTEK)

In the new power sector structure and regulatory environment there will be direct access and contracts between generating companies and distribution companies, as well as sales and purchases to the pool Competition will be stimulated in the power sector by allowing open access and by breaking the geographical monopoly of distribution companies to supply electricity to customers Electricity customers will be able to purchase power from any domestic or foreign provider

The distribution subsector has always been largely separate from generation and transmission, and was traditionally made up of more than 300 distribution companies About 280 of these were municipally owned companies The largest distribution company has 12 percent of customers, while the second largest, Sydkraft, has ten percent of distribution All together, the ten largest distribution companies cover only 50 percent of the market The average number of customers

per distribution company is 19,500 Only 23 distribution companies have more than 50,000 customers

Within the restructured power sector environment it is expected that there will be a consolidation in the distribution subsector Some municipalities are divesting of their electricity distribution interests due to an inability to compete in the new environment At the same time, others are forming pools with other municipalities or outright combining assets and creating new larger distribution and supply entities more commercially viable in the new power sector context

4 11 UNITED KINGDOM

4 11 1 Summary

The UK restructuring experience is widely cited as an example of how to encourage competition in generation and privatize large state-owned enterprises The nation's 65,000-MW electricity sector was transformed by the 1989 Electricity Act The state-owned Central Electricity Generating Board was divided into three generating companies and a grid company, two of the generating companies were privatized A regulatory body, the Office for Electricity Regulation, was set up to oversee sector functioning, licensing and approve tariffs

The nation's distribution subsector has traditionally been operated by organizations separate from generation and transmission, though the recent industry restructuring involved a change in ownership from the public to the private sectors Performance-based regulation has attempted to provide incentives to improve efficiency in the distribution subsector

4 11 2 Power Sector Overview

Total capacity in 1993 was 65,000-MW There are more than 25 million customers The fuel mix in 1992-93 for England and Wales was as follows coal 66 percent, nuclear 20 percent, oil and orimulsion five percent, natural gas one percent, while imports from France and Scotland comprised eight percent It is estimated that by 1998 coal's share of fuel used in the electricity sector will drop to 38 percent while natural gas will rise to 29 percent

4 11 3 Restructuring in the UK

The UK electric power industry was restructured and privatized on March 31, 1990 under the 1989 Electricity Act The privatization of the electricity sector was undertaken at the same time as state divestiture of other infrastructure Water, natural gas, and telephones were privatized

under the policies of a series of Conservative governments that dominated British politics during the 1980s

Before restructuring, the state-owned and managed Central Electricity Generating Board (CEGB) was the sole entity responsible for all generation and transmission Twelve Area Boards handled distribution, sales, and retail services The Boards purchased power from the CEGB at a bulk supply tariff Other players were large consumers who purchased power directly from the CEGB, and independent generators who sold power to the Area Boards

After restructuring, the CEGB was separated into four entities the National Grid Company and three generating companies Two of the generating companies were privatized, National Power and PowerGen The other generating company, Nuclear Electric, remains state-owned The 12 Area Boards were privatized and renamed Regional Electricity Companies (RECs) The RECs generally have two main functions the so-called "wires" business (distribution network operation) and the supply business (sales of electricity to consumers within or outside of their specific service area)

The power pool created by the restructuring legislation is operated by the National Grid Company Generating companies bid 1/2 hour prices a day in advance to the pool and the pool price is the marginal dispatch bid price Generating companies receive the pool price for all power sold into the pool The RECs purchase power from the pool at a price equal to the pool price plus a surcharge for transmission, reserves, and ancillary services The RECs have a responsibility to purchase power economically for their franchise market (any customer with consumption at or below the 100-kW level) At the same time, the customers in the nonfranchise market (above the 100-kW threshold) can purchase from a RECs supply arm, from the pool or from another licensed supplier By 1998, it is expected that the franchise market will be removed entirely permitting any consumer to purchase from the supplier of their choice In addition to the electricity supply price, the consumer must also pay the applicable wheeling charges for the power

The regulatory body is the Office for Electricity Regulation (OFFER) which is headed by the Director General of Electricity Supply In broad terms, OFFER approves tariffs for transmission and distribution wheeling and retail supply functions (such as metering and billing) using a price cap formulation Additionally, OFFER is responsible for monitoring and enhancing competition and establishing standards of performance for power sector participants

There are many conclusions that can be drawn from the UK restructuring experience Some of the few of particular importance include

- to establish a market structure that is effectively competitive, there is a need to consider the number of players in that market, the UK restructuring established a

duopoly that has resulted in "gaming" of the pool and pool prices being driven higher than would be expected in a sufficiently competitive market,

- standards of performance are important components to the licensing process and enforcement of the standards is critical,
- privatization combined with the performance-based regulatory mechanism used to regulate the RECs has led to dramatic improvements in productivity through aggressive cost-cutting, it is doubtful that a state owned enterprise could ever have achieved such impressive productivity improvements,
- having twelve RECs has provided an opportunity for OFFER to consider benchmarks in reviewing the performance of each REC and determining the components of the price cap formulation, additionally, having numerous has led to the development of new options for serving customer needs,
- establishment of a semi-autonomous regulator is a critical need to insulate the power sector from serious government interference and to support market reform

SECTION II
POWER SECTOR PRIVATIZATION

CHAPTER 5
PRIVATIZATION OPTIONS AND METHODS FOR THE POWER INDUSTRY

Many countries around the world are currently divesting their ownership in both large and small enterprises in favor of private sector control and management This transfer of public enterprises to private ownership has become an increasingly important domestic policy goal for many countries Privatization itself is not a new concept, the economies of various nations have ebbed and flowed between largely social to largely private control for centuries However, the most recent wave of large-scale privatizations, beginning in Chile and the United Kingdom in the late 1970s-early 1980s, marks both the latest movement towards greater private sector control in many of the world's economies and represents one of the most important fundamental economic changes in the global economy in the last decade

Today, the privatization of various sectors of the economy is a major political objective for a growing number of both developed and developing countries Following the successes of the privatization programs in Chile and the United Kingdom, many other countries, particularly in Latin America and Europe, have adopted their own domestic privatization policies Perhaps nowhere is the growing shift in momentum towards private ownership more evident than in the former socialist countries of Eastern Europe and the Newly Independent States (NIS) For these nations privatization has become one of the cornerstones of the transition from a command-and-control economy to a free market system

In the privatization of state enterprises, the electric power sector has typically been one of the last sectors to be considered for privatization because its function is often considered vital to the strategic interests of the state However, because of the massive investment needs of the electric industry, a growing number of governments are increasingly looking to power sector privatization as an attractive means of reducing their fiscal deficits both by eliminating the need to finance the sector and by generating substantial revenues from its sale

The underlying political, economic, and social reasons for implementing privatization programs differ from country to country Whether these reasons stem from a change in the ideology of the political leadership, the economic burden of maintaining state enterprises, or the desire to promote greater social welfare, numerous underlying factors shape the goals that a country hopes to achieve through privatization Such goals may include

- attracting private capital for the rehabilitation/expansion of the enterprise or industry

- raising money for the government budget through the sale of state assets
- reducing government expenditures on owning and operating certain enterprises
- increasing operating efficiency and enterprise management
- eliminating subsidies and fostering cost-based pricing
- promoting free market principles through private ownership

The privatization process may include transferring ownership in existing facilities to private citizens or investors, allowing private investors to build and operate new facilities, and/or contracting for private supply services But the simple transfer of ownership or responsibilities does not in itself guarantee that the expected results will be achieved, or that privatization will be a cure-all for the ailments of an industry or enterprise For privatization to succeed, a government must set realistic expectations and goals for its privatization program and in designing a program, adopt a privatization model that will meet these goals Political opposition by government officials and special interest groups must be considered and diffused Legal and financial institutions and statutes must also be put in place to create a stable foundation for the privatized companies

Successful privatizations in the power sector are often preceded by a restructuring of the industry in order to create an environment favorable for attracting private sector activity Power sector restructuring may be necessary in order to establish corporatized entities, competition, an independent regulatory body The importance of having restructured the power sector, or of having an active and clear restructuring program is particularly important for attracting strategic private investors to the sector and even for launching an initial public stock offering However, this study focuses on the privatization options themselves for the power industry, not the methods for designing and implementing restructuring

Although some privatization principles can be universally applied, each country must be viewed individually, taking local political, technical, economic, and social circumstances and conditions into account This study examines the methods and models used in recent attempts to privatize electric power industries in a number of countries with a variety of political and economic backgrounds The study begins by outlining different types of power sector privatizations and discussing the benefits and drawbacks of each method as well as the threshold level of preparation needed on the part of the enterprise or government to ensure a successful privatization Other sections examine government and investor perspectives in terms of the methods and models used in privatization These sections address the concerns of each group in the privatization process and how their concerns directly influence the privatization process and its eventual success or failure

Accompanying case studies illustrate both successful and unsuccessful experiences in power sector restructuring, examining the way in which countries have used a privatization method, or a combination of methods, to construct an ownership model for power generation, transmission, and distribution While in some cases the resulting privatization model allows for 100%

ownership by private investors, there are many instances in which the government, employees, foreign investors, and other groups control varying shares of the enterprise The case studies highlight countries that have both implemented power sector privatization programs, such as Argentina, Australia (Victoria Province), Bolivia, Chile, Hungary, and the United Kingdom and those that are in the process of designing and implementing a privatization model, including the Czech Republic, Poland, and Russia

CHAPTER 6
THE ROLE OF GOVERNMENT

When the government decides to privatize an industry, it is extremely important that it first complete a detailed plan of the privatization process *The first step in developing this plan is to determine the goals and objectives that the government hopes to achieve by privatization* There will no doubt be a list of such goals These items on the list should be ordered according to their importance to the government because some goals may be in conflict with each other

Each goal must have associated with it a method of privatization that best achieves the results of that goal The methods that best support the high-priority goals should be those upon which the privatization plan is based Each method has certain advantages and disadvantages for the government and investors, and these must be carefully evaluated to assure that the desired result is obtained When this is done, the government can take the critical steps in restructuring and reform that the privatization methods require If the goal is to attract capital to repair and expand the utility, for example, regulations must be written to emphasize profitability over consumer protection or the achievement of such public policy aims as employment and welfare

6 1 ISSUES OF OWNERSHIP CONTROL

Even when there are strong motives for privatization, the government may be reluctant to relinquish control of the enterprise to be privatized This desire to retain control can lead the government to try to achieve some of the advantages of privatization without giving up ownership This could be accomplished by selling a minority share to the public or a strategic investor However, this is not really full privatization, and it is unlikely that a strategic investor would buy into this situation unless the government has an exit plan to relinquish its control by selling more of its shares in the near future (for example, the government could give the investor an option to buy additional state shares in a given number of years) Any sales that would be concluded with the government remaining in control of the enterprise would in all probability bring a lower price than they would if the government were not in control

A second way in which a government can maintain control of the privatized utility is to retain ownership of shares with special voting rights that give it the power to veto actions that it does not approve of These shares are the so-called "golden shares " Because they are special shares, the government may be able to maintain the rights of a controlling shareholder without assuming any of the financial risks of ownership This method of control will cause real problems in

attracting strategic investors However, the UK, Argentina, and Hungary all had "golden shares" in their privatization programs, retaining either majority control over some privatized power sector enterprises or special voting rights

The government could also privatize, yet still maintain control over the enterprise by retaining ownership in the utility, but buying services and output from private firms These private firms could raise capital, build new generating plants, and sell their output to the government-owned utility The government could even contract for a private firm to run the power sector enterprise In this case, the government maintains the ownership and the appearance of control, but private firms actually account for much of the output and services This form of privatization goes only part way toward achieving the usual goals of privatization because the ownership of the enterprise is not transferred to private investors

6.2 ISSUES OF REGULATORY CONTROL

A government's attempt to control the privatized utilities through shareholding, whether by majority or through special voting rights, is a misguided form of control The government does not need to retain ownership to control the industry Its most powerful form of control over the power sector is its ability to determine the rules under which the privatized industry will operate, and put in place an independent regulatory process to enforce the rules This regulator will be independent of the ministry, but it will still be a government agency staffed by people who are independent of both the ministry and the industry being regulated

The rules of regulation should be in the form of statutes so that the government cannot change them for expeditious political reasons The government and regulatory body must also establish the rules of operation for the industry before the privatization process begins If the rules are created or changed drastically during the privatization process, potential investors could be scared away

There are other areas in which regulations must be developed to govern the way the privatized utility is run Because at least part of the utility may be either a regional or natural monopoly, rules must be developed to protect the consumer These rules must assure that the prices charged are not too high or discriminate against certain groups, and will set minimum standards of service Environmental and safety standards must also be determined and controlled by the regulator

Investors will evaluate all of the regulations in determining what they can afford to pay for shares in the utility, but they must know what the rules are and be assured that they will not be changed by any political wind that blows through the government Investors need consistency, and the government needs to develop a reputation for consistency to attract them

The role of the government in the privatized utility industry will be changed by the privatization process, but it will not be diminished It must give up ownership control, but not control of the industry Parts of the industry will remain a monopoly, and so must be regulated by the government This regulation must be performed by an independent regulatory body, with rules that have the power of statutes After privatization the regulator will enforce the regulations and act as the arbiter in resolving conflicts between the new owners of the utility and its customers

CHAPTER 7
INVESTOR PERSPECTIVE

Power sector privatization is often carried out with the aim of attracting private sector capital to rehabilitate and/or expand the electricity infrastructure of a country To attract foreign or domestic investment, the government launching the privatization program must understand the needs and perspectives of potential investors This section details the findings of a 1996 survey of 26 power sector investors worldwide concerning the major factors these companies consider when analyzing investment opportunities The appendix contains a list of these companies

One requirement for investment in the power sector that was cited unanimously by all investors and investment advisors interviewed is the presence of an independent regulatory agency The rules and regulations under which the industry will operate must be known so that future economic behavior can be reasonably predicted It is important that the regulatory body be independent so that it will not be directly influenced by the political requirements of the ministries All investors said that they would prefer, and some said they would require, a stable regulatory track record At the least, they want to see a long-term regulatory policy in place with the strength of a statute

7 1 INVESTOR ROLES

The survey includes the perspectives of both strategic and institutional investors Strategic investors, typically power utilities or independent power producers (IPPs), play a key role in the privatization process because they bring both financial resources and technical and managerial expertise to a newly privatized power sector enterprise These investors seek to enhance the value of the privatized company by actively improving the enterprise's management and the facility's technical staff, to restructure the enterprise into a private, market-oriented business Through their private sector experience, strategic investors bring an understanding of the pressures of managing in a competitive market where they must purchase fuel, control operating costs, sell power at a price that will produce profits for shareholders, and provide satisfactory service to their consumers

Institutional investors, such as investment banks and funds, are important players in the privatization process because they are often the source of the substantial financial resources required in the privatization of power sector assets In many cases, investors will form a

consortium, including at least one strategic investor, to spread project risk and financing burdens The inclusion of a strategic investor is important for a consortium that wants to increase the value of its newly privatized asset

7.2 INVESTMENT TARGETS

In the main, the investors interviewed for this report favored investment in either generation or distribution assets, or both Very few expressed an interest in investing in transmission enterprises, which tend to offer lower rates of return because governments tend to maintain involvement in transmission (a natural monopoly) operation through ownership or strict regulation Investors tend to view distribution as slightly less regulated than transmission and therefore able to earn greater returns The recent examples of highly profitable distribution companies in the UK testify to this point Most investors see generation as offering the lightest amount of regulation and consequently the greatest potential returns, especially in a competitive generation structure

7 3 OWNERSHIP

Investors face many key ownership issues with respect to privatizations, including the investor's percentage ownership in an asset, the timing of the privatization, and the equity role for management and workers Investors were generally willing to be flexible with respect to many ownership issues, as long as they were treated fairly and were able to maintain control over issues affecting the long-term value of their asset

Some investors said that they could accept a minority share of a privatized asset However, all of them required the ability to control important managerial and financial decisions that affect the asset's long-term profitability, especially when they are key factors influencing the investor's plan to improve the asset's operation and value This control could take one or more of several forms 1) majority control over the asset's operation and maintenance, 2) veto power over key management decisions, and/or 3) majority control by a consortium that shares the investor's interests and background (usually an investor from the same country) None of the investors were willing to take a passive role to the government in the privatized enterprise Investors universally expected to be able to make important decisions concerning the operation of the utility

Some investors said that they would accept a minority position with respect to government ownership of the enterprise temporarily, as long as the government publicly proposed a plan to exit the project in the near term This was the situation in the privatization of generation in Chile

Many investors did not oppose a gradual privatization of a state-owned enterprise over a period of a few years However, in exchange for this delay, investors would want the guarantee of an option to increase their ownership stake by buying additional shares divested by the government, as has occurred in Hungary, or to take a controlling interest in the asset as the government divests its shares or distributes them to other investors, as in Chile A few investors said that they would not require a controlling bloc of shares at all if certain voting privileges were arranged on such key issues as management of the enterprise

7 4 RISK AND RISK MANAGEMENT

All investors require stability and a reasonable amount of certainty in any investment opportunity In a stable environment where the future is reasonably predictable, an investor can accurately assess an asset's potential viability, and therefore is able to determine the risks it faces The way in which investors view and manage these risks will largely dictate their investment decisions

Political risk Political risk includes issues such as the stability of the government, the prevalence of corruption, the amount of civil, military, or labor unrest, and the chance that the state will once again expropriate privatized firms Also, some political risks are particularly associated with energy projects, these include contract abrogation, regulatory risks, "creeping" expropriation, and the sanctity of the dispute resolution mechanisms Many investors surveyed said that the form of government (democratic, communist, dictatorship, etc) was not a major concern so long as that government was stable and had a clearly defined succession process

Investors can mitigate certain types of political risk by purchasing investment risk insurance from agencies such as the Overseas Private Investment Corporation (OPIC), the US Government's investment insurance agency, or from the Multilateral Investment Guarantee Agency (MIGA), the counterpart organization at the World Bank These agencies offer insurance against political risks for certain methods of privatization it is normally available only for foreign direct investment (e g , strategic investors, joint ventures, debt-equity swaps) The definition of investment is broad, and can include equity, debt, management contracts, and contingent liabilities

IPOs are probably not insurable because political risk insurance benefits the owner and in an IPO, the owner is frequently changing Employee ownership and vouchers have no foreign ownership and do not qualify for political risk insurance, but they do offer some insurance on their own against expropriation when combined with foreign direct investment

Financial risk Financial risk covers a broad spectrum of issues, including potential payment guarantees, the country's macroeconomic situation, currency repatriation, exchange rate risks, and market risks

- *Payment guarantees* The guarantee of payment is a major financial risk concern for any investor These guarantees depend on the contract law of the country Investors who commented on this point said that they would require a legal structure that would allow contract disputes to be settled through international arbitration

- *Macroeconomic situation* The country's macroeconomic situation is important because potential investors need to discern whether a country has enough money to provide for an investor's hurdle rate of return (i e , the rate of return below which the investor has no interest) In the power sector the key macroeconomic issue is generally whether the government has the political will to charge a tariff that provides the investor's hurdle rate This can only be accomplished if the government and/or energy consumers have sufficient economic wealth to pay the tariff Several investors who were considering the NIS cited this as a concern

- *Profit repatriation* Most investors expressed major concerns over the ability to convert local money to hard currency and then to repatriate profits from an asset Power sector investments are inherently riskier in this respect than those in many other business sectors for two reasons First, while investors typically receive payments for electricity assets in local currency, they must often import fuel or efficient Western-designed equipment using hard currency If a country lacks strong foreign currency reserves, this issue is problematic Some investors interested specifically in power generation said that a strong, stable domestic fuel market could mitigate this problem because it would alleviate the need to convert local currency in order to buy foreign coal, gas, or other fuels

  Currency repatriation can also be more difficult for power projects than for oil, gas or other energy projects because it is usually difficult to export power in order to earn hard currency In some CEE countries, independent power developers expressed some optimism that they may be able to export power in order to mitigate potential currency convertibility problems

- *Exchange rate risks* In addition to the ability to collect, convert, and repatriate earnings from the project, all of the investors interviewed expressed concerns over potential exchange rate risks (the risk that local currency earnings from an asset would depreciate relative to the cost of items that may be imported, such as fuel) Those interviewed were more willing to invest if they believe that a local currency is stable

- *Market risks* In many countries, investors also face market risks, especially in "spot electricity markets," where prices are set by market forces rather than through long-term supply contracts between generators and customers Most independent power and many other generation construction projects receive project financing based on pre-arranged long-term electricity supply contracts between the generator and a customer(s) In a spot

market, electricity prices are determined by demand and generators run based on a merit order system

This market price system increases an investment's uncertainty Prices may not be high enough to cover costs, and a generation project may not operate enough under a country's dispatch to earn sufficient revenues All lenders interviewed said that they are still adjusting to project finance in such a situation However, several tools are now being developed to address this risk The ability to hedge (to operate in the electricity pool but to still make arrangements with certain customers for a price based on the future pool price) is one way to mitigate some of the risks inherent in a spot market Such a system, called "contracts for differences," has already developed in the UK market A few investors said that they try to get a mix of contracts and spot market sales, preferably 70% contracts and 30% spot sales

- ***Environmental concerns*** These were listed by several investors as a major concern, particularly in CEE and the NIS where many of the power sector entities to be privatized are several decades old and have high levels of emissions and associated pollutants Investors stressed a consistent environmental policy as an important factor because environmental laws that would be strengthened after an investment was made may suddenly make the investment unviable

Technical risk Every power sector project has associated technical risks These risks vary by power industry sector as well as by individual power sector project Some technical risks include constraints on the transmission system that may favor certain generators or distribution networks over others, the ability of different plants within the generation system to be dispatched, the age and design of the enterprise's capital assets, and the emissions levels of generating plants For the strategic investors interviewed in the survey, technical risks do not provide an impossible hurdle, but they do affect the price

7.5 RATE OF RETURN

In general, the principal mitigating factor for risk is the corresponding rate of return on the investment A high rate of return decreases the time investors need to recover their original investment A project with a real rate of return (the amount by which the required rate of return exceeds the expected rate of inflation) of 25% will return the initial investment in four years, limiting the amount of time investors are exposed to losing their initial capital Thus, the riskier the investment is perceived to be, the greater the return must be in order to entice investors

The specific rate of return will vary by project, location, and a number of other important factors However, many of the investors surveyed for this study were able to indicate the general rates of return that they would require on power sector investments in different geographic regions

Country/Region	Rate of Return
United States	greater than 10%
United Kingdom	greater than 10%
Asia	greater than 14%
South America	greater than 16%
Central and Eastern Europe	greater than 18%
New Independent States	25 to 50%

However, several sources cautioned against taking the rates of return given by investors at face value In many regions investors are looking for investments with the returns shown above, but are often settling for projects with slightly lower returns

For power sector investment opportunities in CEE and the NIS, the rate of return expected by U S and U K investors was higher than that expected by continental European investors There are several reasons that the latter investors cite for this difference

Many continental European electric utilities are still largely state owned Because these firms are financially backed by the state, they are often willing to make riskier investments because they can take a longer view on the investment instead of having to be concerned about the short-term return to shareholders As one of these investors said, they will accept a lower return in investing in certain regions to suit the geographic interests of their business or the political interests of their government Many major Western European governments have made greater political and economic integration with CEE and the NIS a top political priority The countries in CEE and the western countries of the NIS also have political and economic aspirations in Western Europe One investor said that this gives the latter countries some leverage over their eastern neighbors if payments are not made

7 6 INTEREST IN CENTRAL AND EASTERN EUROPE AND NIS MARKETS

While many strategic and other investors are not currently interested in investments in CEE and, in particular, the NIS, two groups among the investors interviewed see the opportunities in the region as fitting their investment profile The first group of strategic investors viewed their market niche as investments in existing utilities in need of considerable rehabilitation and managerial restructuring They see excellent potential returns on these assets after an intensive period of equipment rehabilitation and managerial reform Among these investors are the equipment suppliers and service companies, as well as the nationalized utilities that want to support their national industries

The second group that sees a niche market is the independent power developers seeking opportunities in small, specialized markets where they believe they have a better control of risks than if they had to work with the whole system They may work within a single industry under a barter agreement with a multinational company within the industry

7.7 RISK OF INVESTMENT BY REGION

Each investor interviewed had his own criteria for investment, and each had different views on the risk of investing in the regions we examined However, we have been able to compile an overall picture of their views, and present it as the consensus, or general agreement, of investor views on the risk of investing in the different regions The results are shown in Figure 7-1

Figure 7-1: Risk of Investment – Consensus of Interviews

	Political Risk	Macro-economic Risk	Payment Risk	Project Repatriation	Exchange Rate Risk	Market Risk	Environ-mental Risk	Technical Risk
Western Europe	○	○	○	○	◑	◑	○	○
Asia – Developing Countries	◑	◑	◑	◑	◑	◑	◑	◑
Latin America	◑	◑	◑	◑	◑	◑	◑	◑
Central and Eastern Europe	●	●	◑	◑	●	●	●	◑
NIS	X	X	X	●	●	●	●	◑

X Too risky to consider ● Major risk ◑ Some risk ○ Little or no risk

CHAPTER 8
COUNTRY DATA

8.1 ARGENTINA

Argentina's power sector, with a capacity of 15,700 MW, was entirely state-owned until 1991, when the newly-elected Menem government began restructuring the sector based on the British and Chilean models The state power monopoly was vertically unbundled into generation, transmission and distribution The generation and distribution units were then horizontally broken into smaller entities, creating more than 30 generating and 22 distribution companies A national electricity pool and a wholesale power market were created to encourage competition among generators An independent regulatory body was created and given the authority to set tariffs for the distribution companies, to award licences, and to protect consumer rights

One of the primary objectives of Argentina's power sector restructuring is to promote the privatization of the electricity industry The privatization program's main goals are to

- improve power plant availability and efficiency, and reduce power shortages by attracting private capital and management to the industry
- reduce the extremely high losses in the distribution subsector, particularly in the capital, by subjecting it to the financial rigors of the private sector
- reduce project and construction delays and cost overruns through greater competition and private sector management

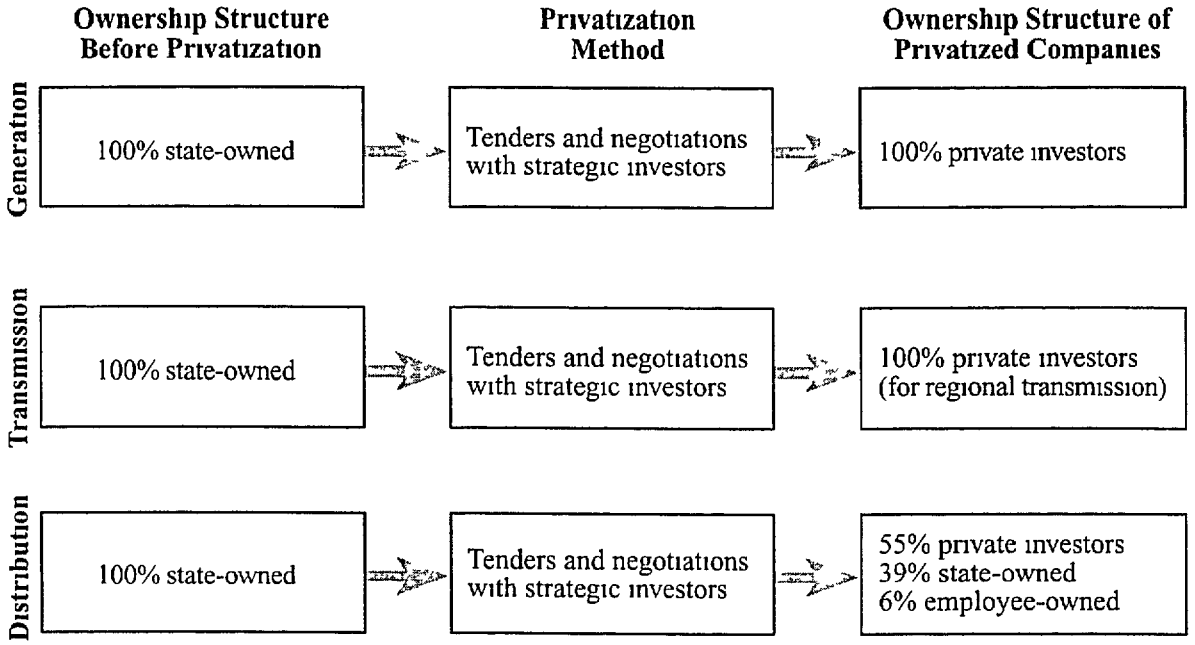
Shortly after restructuring, the government began to privatize the power industry's subsectors

Generation About 50% of Argentina's generating plants are thermal units fueled by coal, lignite, oil or gas Almost all of these plants have been fully privatized using direct negotiations and tenders to attract strategic investors This method was used to create a straightforward privatization model in which 100% of the enterprise is sold to strategic investors Nearly 40% of the nation's generating plants are hydroelectric plants, 90% of them have also been privatized The remaining 10% are nuclear plants, they have not yet been privatized

Transmission The transmission system consists of one large national transmission company and five small regional companies The national company has not been privatized, but four of the five

regional companies were sold to strategic investors In a model similar to that used in generation, the strategic investor owns 100% of the privatized regional transmission company

Argentina Power Sector Privatization



Distribution Three of the largest distribution companies, constituting 50% of the market, have been privatized through negotiations and tenders with strategic investors In the privatization of these three companies, the Government of Argentina adopted a model in which the state retains 39% ownership and the employees 6%, the remaining 55% was sold to strategic investors, both domestic and foreign The other 19 distribution companies are still owned by national, state or municipal governments Some or all of them may be subjects for future privatization

STRATEGIC INVESTORS IN ARGENTINA

Argentina	Perez Company	***France***	EdF
	Polledo		
	Acindar	***Italy***	Gamuzzi Gazometri
	Malvicino		
	Iate	***Spain***	Iberdrola
	Eleprint		
	Argon	***United States***	PSI Resources
	FATLyF		Dominion Resources
	Steag A G		Duke Power
			AES
Canada	Transalta		CEA
			CMS
Chile	Chilgener		Southern Electric
	Chilquinta		BEA
	Endesa		Dominion Resources

8 2 AUSTRALIA

Regional structures control generation, transmission, and distribution within each of Australia's seven states In 1991 the Industry Commission, a federal statutory body formed to improve the efficiency of the Australian economy, recommended reforms for the power industry The core of these reforms was the restructuring and privatization of the electric supply industry

The reforms called for the unbundling of generation, transmission, and distribution, and the creation of multiple distribution and generation companies Following the vertical and horizontal unbundling of the industry, the reforms call for all of the newly created companies to be privatized The proposed reforms have been implemented very slowly in most states with the exception of Victoria Victoria has already completed the restructuring and unbundling of its power industry and is well on its way to completing the privatization process

Victoria's power sector has a total capacity of 6,500 MW Following the election of a conservative government in the state, the restructuring of the industry proceeded rapidly All generation, transmission, and most distribution functions were formerly under the vertically integrated, state-owned State Electricity Commission of Victoria (SECV) Prior to reform, SECV was organized into three business units 1) Production Group - consisting of power stations and coal mines, 2) Power Grid Group - operating the high-voltage transmission system and hydroelectric generation, and 3) Customer Service Group - responsible for the low-voltage distribution system and retail electricity sales and services In addition to SECV's distribution network, there were eleven Municipal Electricity Undertakings (MEUs) responsible for about 15% of the state's electricity distribution

As part of the restructuring process, five generating companies were created for the state's generating plants The high-voltage transmission system is now owned by Power Net Victoria, and VicPool has been formed to create a wholesale electricity market Both of these companies are state-owned Victoria Power Exchange was created to monitor and regulate the wholesale market, and to ensure the security of supply for the system The distribution network was also divided into five companies, primarily radiating out from the state's capital of Melbourne

After the restructuring, the power industry began to be privatized The privatization goals of Victoria's government include

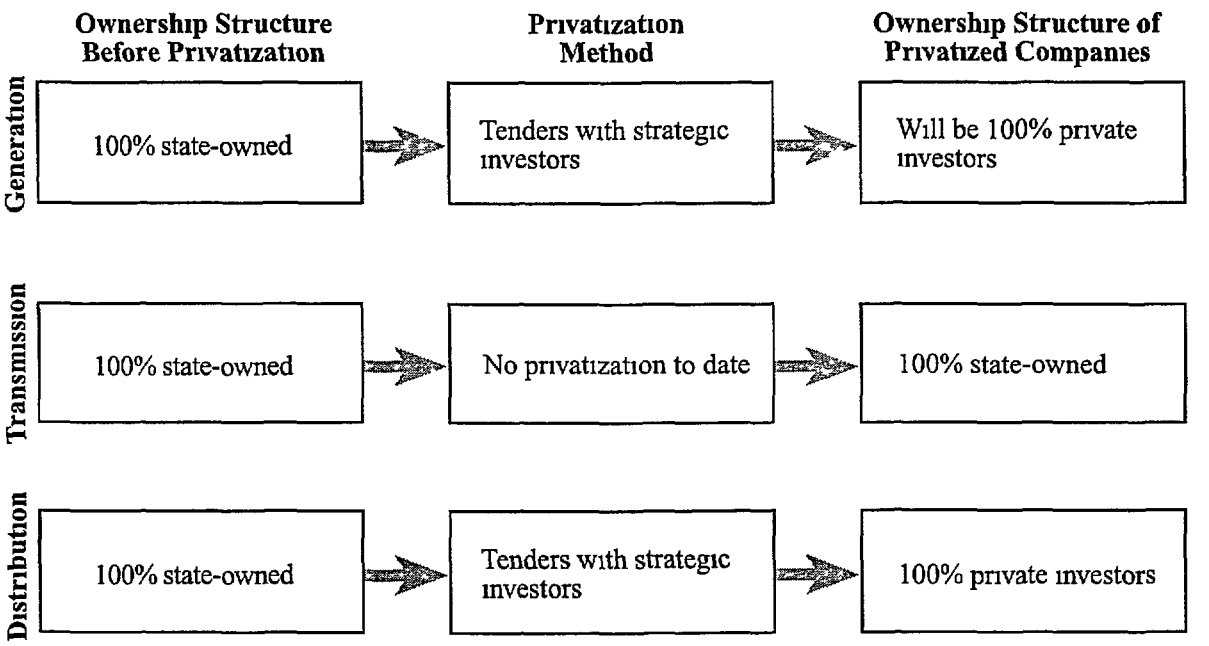
- increasing revenues through the sale of state-owned enterprises in order to reduce the state's multi-billion dollar debt
- improving efficiency within the industry and promoting private ownership and free market competition

Generation Plans to privatize these companies are underway using tenders to attract strategic investors Bids have already been received from strategic investors for one of the plants, and the sale of the other four is expected to be completed this year

Transmission The transmission company has not been privatized at this time

Distribution The former distribution and retail sales services of SECV, along with the 11 MEUs, have been consolidated into 5 distribution companies Their privatization was completed by the end of 1995 All five were bought by strategic foreign investors or consortiums of these investors and domestic firms In every case a U S -based utility was the sole investor or a member of the winning consortium The sale price of each utility was much higher than anticipated Some observers speculated that the timing of Victoria's privatization combined with the likelihood of greater competition in the United States has sent many U S utilities actively looking for foreign investments

Australia Power Sector Privatization



STRATEGIC INVESTORS IN VICTORIA, AUSTRALIA

Australia	Australian Gas Light Co	*United States*	Utilitycorp
			Entergy Corp
United States	Texas Utilities		Pacificorp
			Energy Initiatives Inc

8.3 BOLIVIA

The electricity industry in Bolivia, with a capacity of 849 MW, consisted of a mixture of investor-, cooperative-, and government-owned (national and regional) electric systems The largest of these was the national government-owned Empresa Nacional de Elecatricidad (ENDE) ENDE was a vertically integrated utility that owned about 70% of the country's generating capacity, all of its high-voltage transmission, and much of its distribution COBEE, a vertically integrated utility serving the capital of La Paz, was already privately owned ELFEC, the third-largest distribution company, was owned by ENDE, private investors, and the municipal government There are more than 100 rural electricity cooperatives engaged in distribution, some of which also have generation capacity

A 1994 study by the World Bank recommended a restructuring of the electricity industry, the aim of which was to

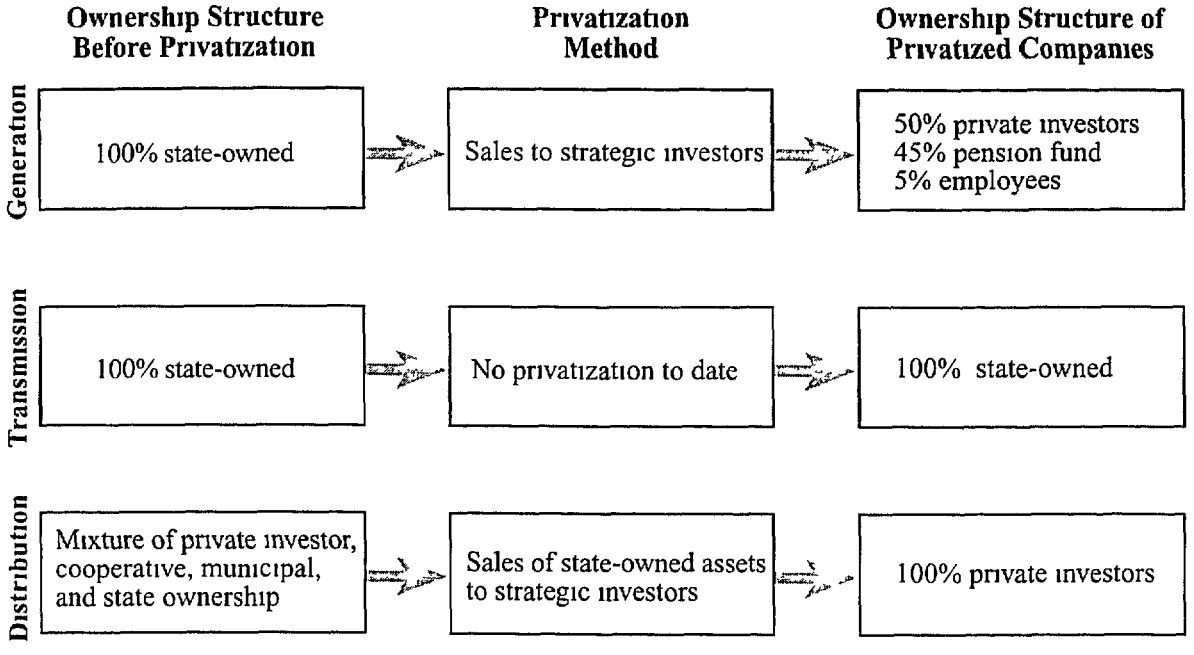
- create a transparent settlements system for electricity payments
- unbundle generation, transmission, and distribution
- promote competition in generation based on marginal costing
- create open access in the transmission system
- privatize the new generation, transmission, and distribution companies

Generation In late 1994 final legislation was passed which incorporated the reforms, clearing the way for the privatization of ENDE's generation assets These assets were split into three companies and were sold to strategic foreign investors through tenders and negotiations The investors received 50% ownership in the generating companies, plus exclusive management contracts for 40 years The remaining ownership will be divided among the company's employees (about 5% of the shares) and a national pension fund (45% of the shares) The pension fund will provide for all Bolivian citizens

Transmission Bolivia's transmission assets continue to be managed by ENDE for the time being Their future disposition is still undecided The 1994 legislation created an independent regulatory office for the electricity sector, whose responsibilities are to regulate the distribution tariffs, assure that monopoly power is not exercised to the detriment of the consumer, and to provide for the general oversight of the industry

Distribution Under the new electricity law, the owners of distribution assets are not allowed to own generation as well Privately owned COBEE is planning to sell off its distribution assets so that it can participate in the new open generation market Also, the distribution company ELFEC, once scheduled to be Bolivia's first IPO, was sold through a private sale to a strategic investor in 1995 The ELFEC IPO was scrapped due to the turmoil in the South American financial markets following the massive devaluations of the Mexican peso in late 1994 There are no plans at present to sell the distribution assets of ENDE, but this could change in the future

Bolivia Power Sector Privatization



STRATEGIC INVESTORS IN BOLIVIA

Chile	EMEL S A	*United States*	Dominion Energy Energy Initiatives Constellation

1/2

8 4 CHILE

Chile's electric power sector, with an installed capacity of 4,340 MW, was the first power sector to be privatized in the 1970s The restructuring and divestiture of the state-owned system through the separation of the generation, transmission and distribution systems, and subsequent privatization, occurred between 1978 and 1990 An autonomous regulatory body was created that coordinates and regulates the power sector

The Chilean Government's main goals in the privatization of the power sector are to

- redefine the role of government from that as an owner of the power sector to one as its regulator
- introduce popular capitalism by providing for widespread citizen stock ownership
- increase efficiency in the use of capital and labor resources
- facilitate the flow of investments into the power sector

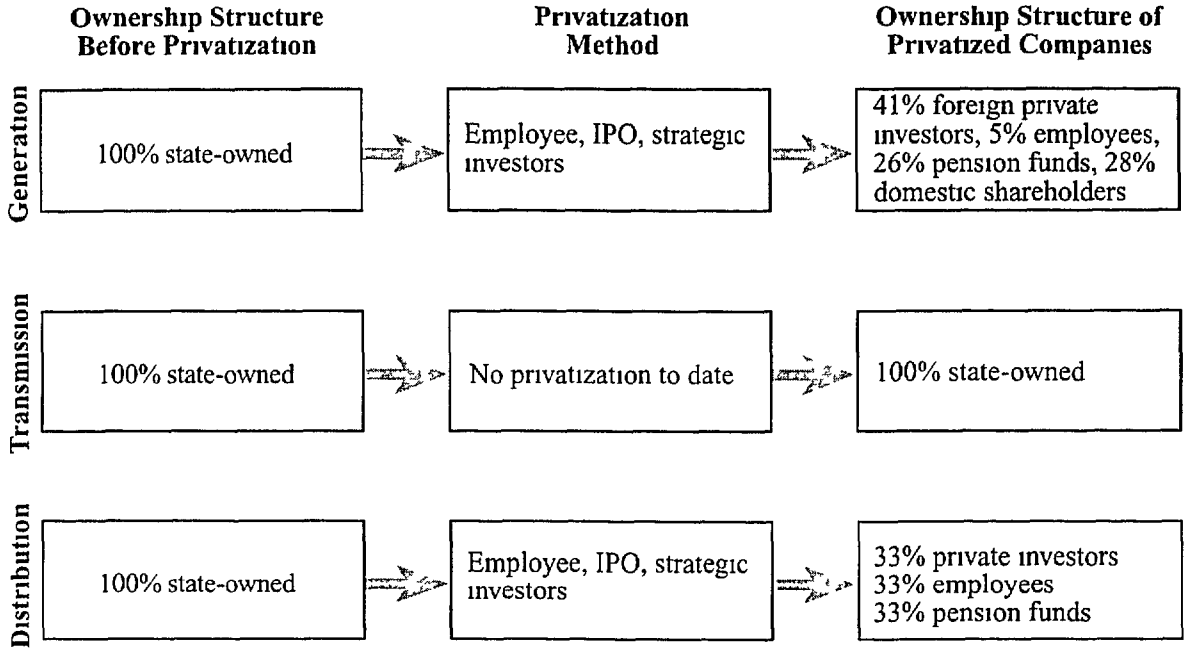
Before the restructuring, most of Chile's generation, transmission and distribution assets were held by two state-owned, vertically integrated utilities ENDESA, with 70% of the generation and all of the transmission except in the metropolitan area of Santiago, and Chilectra, with almost all of the remaining 30% of generation and the rest of the transmission Today there are 11 power generating companies, 25 electricity distribution companies, and 2 integrated companies Most of these companies are traded on the Chilean stock exchange

Generation Generation companies were privatized using a combination of methods including employee ownership, pension funds, sales to strategic investors, and an IPO in the case of ENDESA The ownership of the generating companies is 5% percent by employees, 26% by pension funds, 28% by other domestic shareholders, and 41% by foreign private investors

Transmission Transmission has not been privatized

Distribution Distribution companies were also privatized using a combination of employee ownership, IPOs, sales to strategic investors, and a national pension fund The ownership of the distribution companies is roughly 33% employee, 33% national pension funds, and 33% private companies, financial institutions and individuals

Chile Power Sector Privatization



STRATEGIC INVESTORS IN CHILE

Belgium	Powerfin (a subsidiary of Tractabel)	***Spain***	Iderdrola
Canada	Transalta	***United States***	Entergy Southern Electric International U S Generating
Chile	Angelini Group Enagas SA Enersis		

8 5 CZECH REPUBLIC

Until recently, the electricity industry in the former Czechoslovakia was operated as a vertically integrated, state-owned enterprise In 1990 the government decided to restructure the industry with the goal of eventually privatizing certain power sector enterprises As part of the restructuring, distribution was unbundled from transmission and generation, and eight distribution companies were created A joint stock company, CEZ, was created to own all generation and transmission assets Following the split of Czechoslovakia in 1993, the new Czech Republic continued with the plans to privatize the electricity industry

The total generation capacity in the Czech Republic is 14,200 MW CEZ owns approximately 80% of the generation, with independent power producers, industrial cogenerators, and combined heat and power plants making up the remainder

The primary goal of privatization was to

- transfer state-owned assets to the general public

The government instituted a voucher program in which privatization certificates were distributed to all adult citizens These vouchers could be traded for shares in CEZ, or any other Czech company going through privatization, during privatization auctions

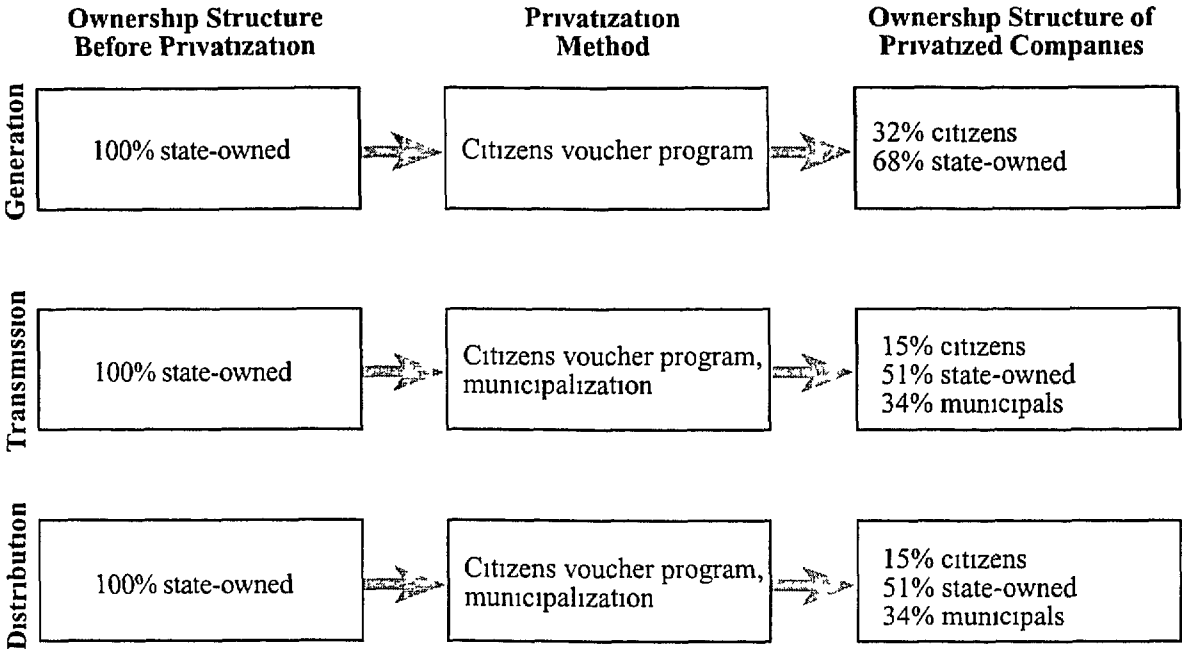
Generation/Transmission In 1994, 27% of CEZ was sold to private citizens through the voucher privatization program An additional 5% of CEZ was sold through a second wave of voucher privatizations in 1994-95

Distribution In 1994, the eight distribution companies were made into joint stock companies, preparing them for privatization Fifteen percent of the distribution companies were sold through voucher privatization in 1994-95 During this same period, 34% of the distribution companies were transferred to municipals, in a non-monetary transaction

The government plans to privatize another 20-34% of the distribution companies This next step was scheduled for late 1995, but with elections now set for mid-1996, it has been delayed indefinitely The government currently plans to retain at least a 50% ownership in CEZ, with a possible future sale of 15 to 18% on the Prague stock exchange using an IPO

No independent agency has been created to regulate the electric industry The retail price of electricity is still set by the Ministry of Finance The price is not based on the cost of operation, but rather, is premised on a set of economic, social and political factors The inefficient pricing perpetuates the subsidies that plague the industry Retail prices will have to increase to make the industry financially self-sufficient, and this is one of the problems which has caused additional asset sales to be delayed until after the next elections

Czech Republic Power Sector Privatization



8.6 HUNGARY

The Hungarian power sector, with an installed capacity of 6,600 MW, was owned in its entirety by the government prior to 1992, through Magyar Villamos Muvek (MVM) The reforms of 1992 unbundled and corporatized generation, transmission and distribution A new Electricity Law in 1994 created an independent power sector regulatory body, The Hungarian Energy Office (MEH) Its duties include the establishment of tariffs, general oversight of the power sector, the granting of licenses for the production, transmission and distribution of electricity, and the protection of consumer interests The 1994 Electricity Law also demonopolized the power industry by including provisions for self-generators and independent private producers

The objectives of the privatization have been to

- reduce the government's subsidies to the electricity industry
- obtain revenue for the state budget
- create a competitive market for generation so that private power producers will be permitted and encouraged to sell power to the grid

Hungarian electricity rates were significantly below market rates Price reform was instituted to create a schedule of tariffs that will bring electricity rates up to international levels, so that adequate revenues are obtained to cover depreciation, insurance, and dividends to shareholders

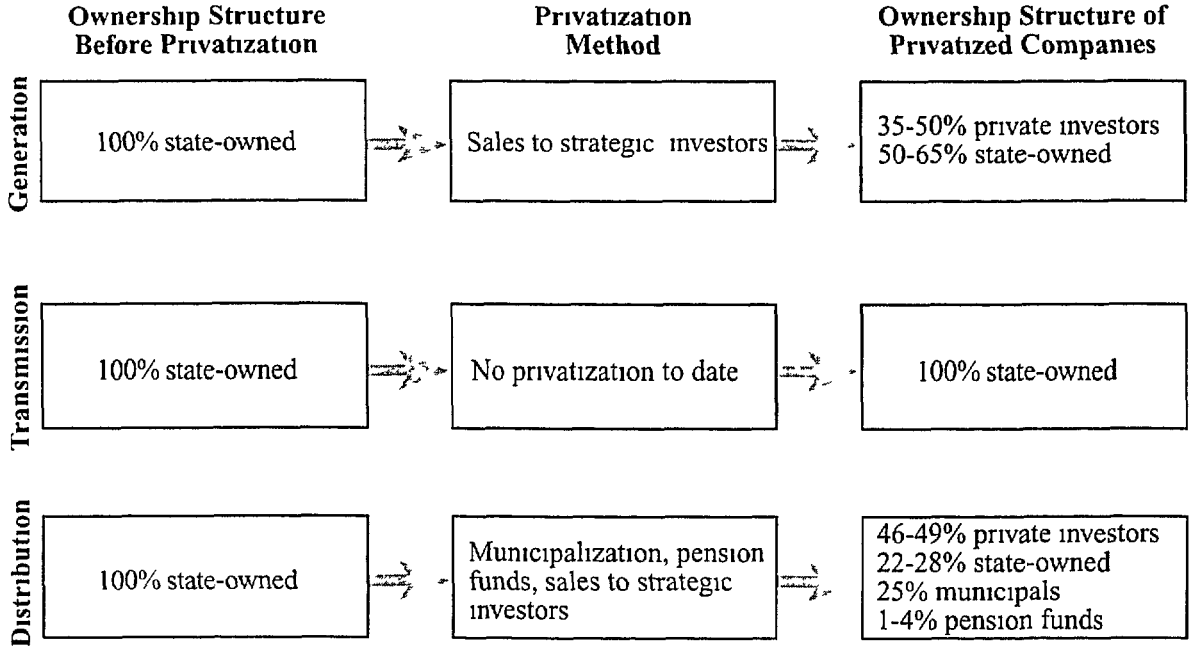
In 1992 MVM was reorganized into a two-tier joint stock company The first tier consisted of eight generating companies, organized by fuel type and region, plus six regional electricity distribution companies The second tier is a holding company for the group, and is the owner and operator of the transmission grid and the national dispatch center

Generation As part of the privatization program, the government decided to sell majority ownership in the non-nuclear generation and distribution companies During 1995 between 35-50% of two of the generation companies were sold to strategic foreign investors using tenders Bids for the other generating companies were rejected, but offers will be requested again in 1996 The private sector owners of the minority shareholdings in the two privatized companies will have an option to purchase additional shares in two years in order to give them majority ownership The state retains the remainder of the shares, but is considering future share sales

Transmission The government decided to retain majority ownership of the national grid company Bids were requested in 1995 for a minority share of the high-voltage transmission company, MVM, but no successful bids were received

Distribution Between 46 and 49% of the shares of the six distribution companies were also sold through tenders to strategic foreign investors in 1995 Again, the purchasers have the option to increase their shareholdings to majority ownership in two years Pension funds own 1-4% of the distribution companies, municipals hold 25%, and the state retains the remaining 22 to 28% On February 12th, the state offered another 8% of the distribution companies for privatization using compensation coupons These coupons were given to Czech citizens who lost property or suffered political persecution in the communist era

Hungary Power Sector Privatization



STRATEGIC INVESTORS IN HUNGARY

Belgium	Powerfin (a subsidiary of Tractebel)	***Germany***	Isaar-Amperwerke Bayernwerk RWE Energie
France	EdF		

8.7 POLAND

Poland's electricity sector, with a total capacity of 32,200 MW, is owned and operated by the Polish Power and Lignite Board Ninety-six percent of Poland's electricity generation is from coal 57% from hard coal and 39% from brown coal, or lignite Only 6% of generation is owned by industry for autogeneration The remainder of the country's generation is owned by the government Many of the generating plants produce heat for district heating systems as well as power

In 1989, the government launched a restructuring of the power industry The goals of the restructuring are to

- create a competitive generation market
- introduce private ownership
- increase sector efficiency
- facilitate necessary sector investment
- ease pollution problems caused by burning coal

In 1989, 32 separate generating companies were formed and local distribution was divided into 33 separate enterprises In 1990 the Polish Power Grid Company (PSA) was created to control the national transmission grid, to operate the dispatch system, and to manage international connections

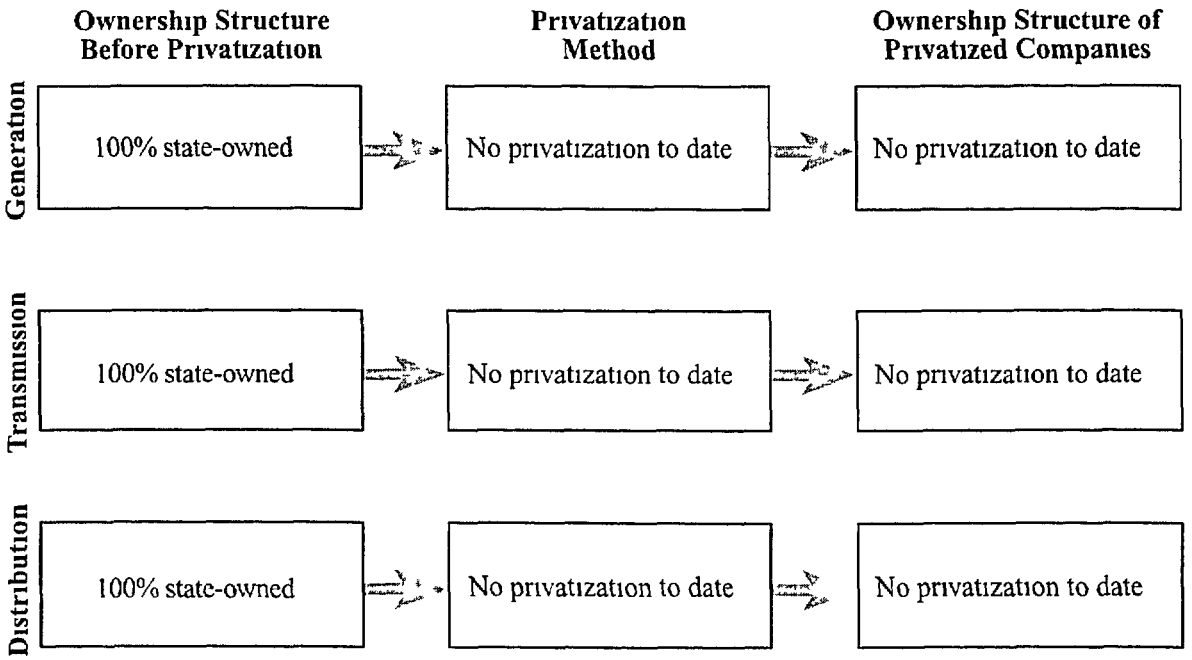
In 1992 the government created the Energy Restructuring Group to facilitate the reform of the electricity sector (and the other energy sectors) But considerable debate over the appropriate Energy Law has led to prolonged delays Opposition from both the management and employees of power sector enterprises has also caused delays in the reform of Poland's power sector Significant opposition from the Solidarity trade union has delayed the break-up of Poland's large mining and power generation complexes Further resistance has come from other institutions that have had difficulty in adjusting to the new market orientation of the industry

Despite the delays, some progress has been made The 33 distribution companies were incorporated as joint stock companies, and the large hydroelectric plants, and the combined heat and power plants have also been established as separate joint stock companies In 1993 the ownership of transmission systems over 110 kV was transferred to PSA PSA also become the main shareholder in the newly created joint stock company that owns all of the pumped storage plants Currently, there are no plans to privatize PSA The government plans to transfer ownership and management of the generating companies to seven different holding companies

The state would continue to maintain ownership for the present time, with privatization a possibility for the future

The Polish Ministry of Industry and Trade (MoIT) has been responsible for energy policy since 1987, and since the formation of the joint stock companies it has acted on behalf of the single shareholder, the State Treasury The MoIT is also responsible for power sector expansion planning The Ministry of Finance is responsible for setting electricity prices to final consumers

Poland Power Sector Privatization



8.8 RUSSIA

The Integrated Power System (IPS) of Russia was developed, owned, and operated as a vertically integrated national monopoly by the Russian Government The total capacity of the system is 213,000 MW from more than 430 power plants Approximately one-third of these plants are combined heat and power plants The IPS is composed of seven regional power systems, and within the regions, 65 local electricity administrations operate in parallel Another seven systems are in remote regions that are not interconnected The IPS provided centralized management for all planning, investment and operation of the power sector throughout the country through a vertical state ministry-run enterprise

Political changes in the country in the early 1990s threatened the IPS's continued reliable operation as a result of the following developments

- the regulation of electricity and heat prices (40% of heat power is supplied in Russia by combined heat and power plants) was delegated to the regional governments
- authority to control power plant generation began shifting from the federal level to the regions
- significant price disparities began to appear between regions
- movements toward regional autonomy emerged
- movements toward privatization emerged
- requirements for non-government financing became acute

Generation, Transmission, and Distribution In 1992, the restructuring and privatization of the power sector began A new joint stock holding company, RAO EES Rossi, was formed to be responsible for the reliability of power supply and for the management of power sector enterprises The assets of the IPS were split between various power sector enterprises RAO EES Rossi maintained ownership of high-voltage transmission lines as well as thermal plants over 1,000 MW and hydroelectric plants over 300 MW These plants, which were previously operated by the local electricity administrations, were scheduled to form a national wholesale electricity market RAO EES Rossi also retained ownership and control of the Central Dispatch Office in Moscow and the seven regional dispatch offices

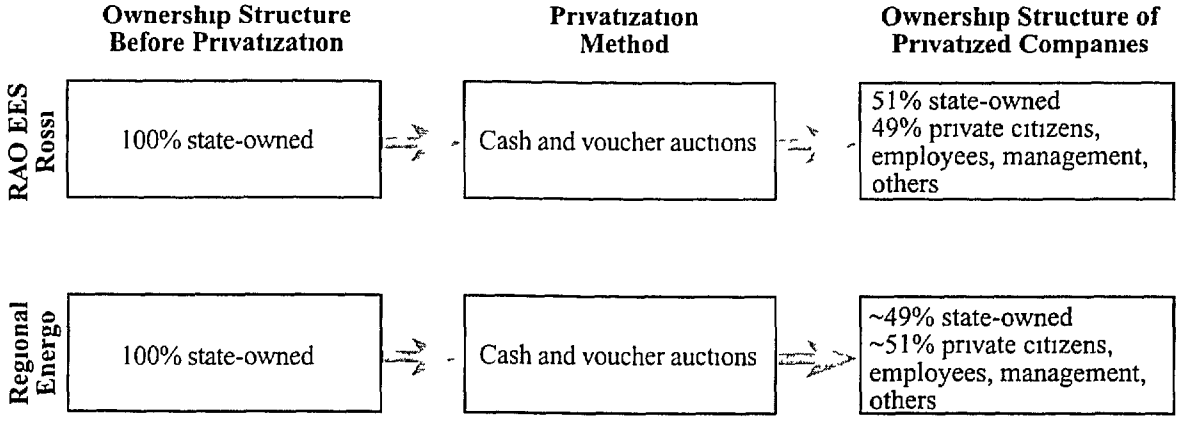
Small electricity generators stayed within the 72 joint stock companies that were formed from the former local electricity administrations (Energos) The Energos also retained the local electricity and heat distribution networks and low-voltage transmission facilities The Energos operate as vertically integrated utilities within their regions RAO EES Rossi owns 49% of each of the

Energos, with much of the remaining stock sold through voucher privatizations, or distributed to employees and management The charter capital of RAO EES Rossi included, on average, a 49% interest in the Energos

The first steps in the privatization of the power industry have been taken RAO EES Rossi has sold 49% of its shares to employees, management, and the public through a combination of cash and voucher auctions Many of the Energos have gone through similar privatizations The shares of RAO EES Rossi and a number of the Energos are now traded on the Moscow stock exchange

The next step in the privatization program calls for RAO EES Rossi and the Energos to sell their ownership in the generators to private investors This step is necessary in order to remove the potential interference of RAO EES Rossi and the Energos when competition begins among generators in the wholesale market However, given the political instabilities in the country, the timing of this step is uncertain

Russia Power Sector Privatization



8 9 UNITED KINGDOM

The power sector in the United Kingdom is divided into three systems for England and Wales, Scotland, and Northern Ireland All three have recently been restructured and privatized This summary focuses on England and Wales, which is the largest segment of the UK system and the first to be restructured and privatized

The total capacity in England and Wales at the time of restructuring was approximately 65,000 MW The state-owned Central Electricity Generating Board (CEGB) carried out all generation and transmission activities, and twelve Area Boards distributed the electricity to local consumers A government agency, the Electricity Council, provided oversight to the industry, coordinating planning, setting standards, and pricing bulk supplies

The Electricity Act of 1989 led to the restructuring and privatization of the industry
As part of the restructuring, generation, transmission, and distribution were unbundled The CEGB was separated into three generating companies and a transmission company, the National Grid Company (NGC) A national power pool, operated by NGC, was created to promote competition among the new generation companies Access to the transmission system was opened to all generators to promote competition through electricity wheeling The twelve Area Boards, which were the local distribution entities, were corporatized as Regional Electric Companies An independent regulatory body, the Office of Electricity Regulation, was created to monitor the operation of the sector, enhance competition, establish standards for performance, grant licenses, and set tariffs

Following the restructuring, the government moved forward with a privatization program for the power sector, which was part of a larger privatization program under the conservative Thatcher government of the 1980s The objectives of the power sector privatizations include

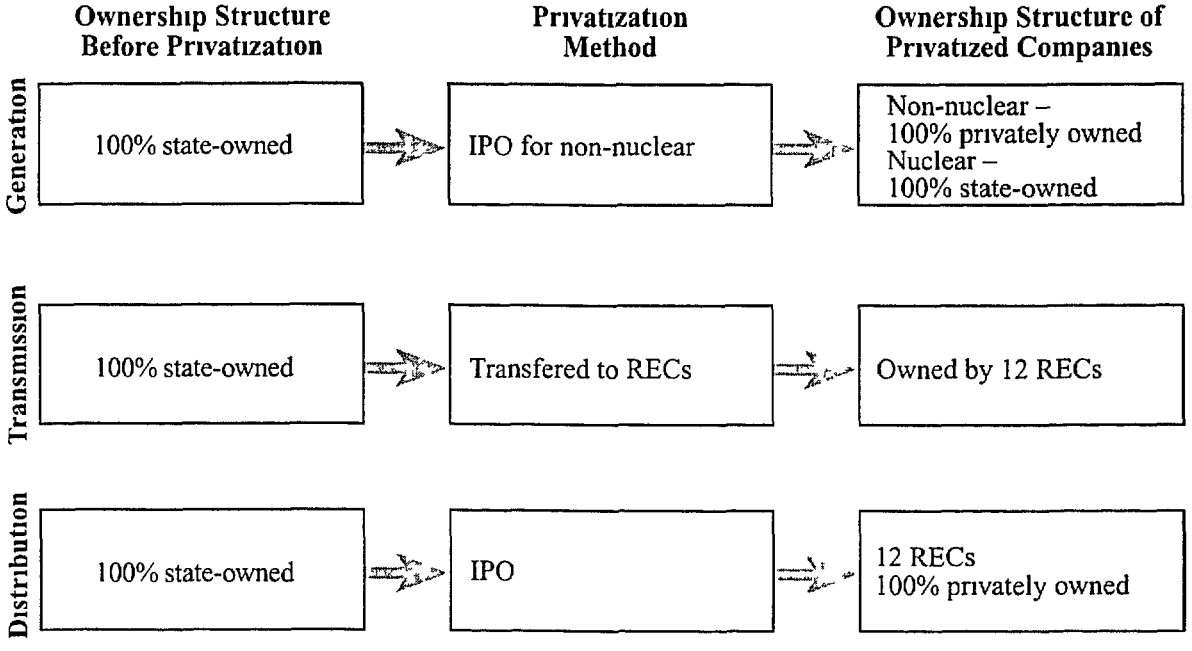
- promoting private sector ownership and free market principles
- reducing the role of the government in the economy
- raising revenues for the state budget

Generation The two non-nuclear generating companies, National Power and PowerGen, were privatized in two steps using IPOs In 1990 60% of the shares in each company were sold The remaining 40% was sold through a second public offering in 1995 Ownership of the nuclear plants was retained by the government through the Nuclear Electric Company, but the government also plans to privatize these in the near future

Transmission The NGC is owned by the RECs in proportion to their pro rata share of energy sales at the time of their privatization The RECs plan to spin off the NGC as a separate company in 1996

Distribution The RECs were completely sold in a single step through an IPO in 1990

United Kingdom Power Sector Privatization



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APPENDIX
FIRMS CONTACTED FOR PRIVATIZATION SURVEY

Strategic Investors	AES
	CEA
	CINERGY
	CMS
	Cogentrix Energy
	Electricite de France (France)
	Enron
	Houston Industries
	IVO (Finland)
	KMR Power
	Leucadia National Corporation
	National Power PLC (UK)
	New England Electric System
	Pennsylvania Power & Light
	Ontario Hydro (Canada)
	Otter Tail Power
	Tractebel (Belgium)
Institutional Investors	CS First Boston
	Industrial Bank of Japan
	Merrill Lynch
Other	Arthur Anderson
	Bechtel
	Deloitte & Touche
	Piper & Marbury
	Price Waterhouse
	Latham & Watkins