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Final Report

Analysis of Options for the Structure of the Power Sector of Macedonia

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Executive Summary

The purpose of this report is to evaluate and present options for restructuring the power sector of Macedonia. This analysis will provide a basis for the Government of Macedonia (GOM) to decide on the future structure of the power sector and develop the appropriate implementation plan.

The restructuring models discussed in this report have been implemented in various countries only after careful consideration has been given to the electric industry in the context of the economic and institutional setting of the country. This process also needs to be followed in Macedonia while also taking into consideration the fact that GOM is currently formulating a master plan for the energy sector.

ENERGY SITUATION

Macedonia has limited domestic resources and consequently imports approximately 45 percent of its energy supplies, most of which is crude oil and petroleum products. The country does not have access to supplies of natural gas, although plans have been implemented to bring gas from Russia via a new pipeline through Bulgaria. Large volumes of natural gas will not be available until the year 2000.

The power sector is comprised of Elektrostopanstvo na Makedonija (ESM), the state-owned vertically integrated power company, a small amount of hydro capacity owned by the Water Resources Department, and about 70 MW of captive generation. ESM has approximately 1,400 MW of installed capacity, of which 70 percent is thermal and 30 percent is hydro. The thermal capacity is coal which is supplied by ESM's coal mines.

LEGAL AND REGULATORY FRAMEWORK

There are two key proposed laws affecting the power sector. They are the Energy Law and the Law on Public Enterprises. This legislation will provide the framework for the structure and organization of the power sector.

Energy Law

Under the proposed Energy Law, the energy sector and related activities will be regulated, including the management of the companies, the nature of the contracts, and the prices charged. It also requires GOM to develop a comprehensive energy plan that includes the development, financing, and construction of new facilities to meet projected energy needs. Electric power, natural gas, heat, and geothermal energy are designated activities of public interest and are therefore to be organized as state companies. In particular, electric power and natural gas companies will be owned by GOM, while the others will be municipally owned. Foreign investors will be allowed to own generation companies which will be obligated to sell the power to the Government-owned distribution companies.

Law on Public Enterprises

This law establishes the legal basis for the formation, management and organization of public enterprises. The GOM-owned public enterprises will be considered legal entities that will be financially independent with no government appropriation. According to the Energy Law, a public enterprise will not be subject to bankruptcy procedures but the continuation of the public enterprise will be the responsibility of the Ministry of Finance in the event that it becomes financially insolvent.

ECONOMIC CONDITIONS

Macedonia has significant economic problems, which have been aggravated by the Greek embargo and the UN sanctions on Serbia. For 1994, inflation was on the order of 45 percent per year, while GSP is estimated at \$1.5 billion, a decline of 10 percent from 1993. While GOM has embarked on a rigorous fiscal and monetary regime, these measures will take some time to have effect.

Accordingly, very modest economic growth is unlikely before 1996, at which point the annual level of inflation should decline to approximately 15 percent.

The country is also confronting a significant external debt problem which amounted to approximately \$18 billion in 1994. GOM is undertaking efforts to renegotiate and reschedule the debt with the principal lenders. The results of these negotiations will have a significant impact on the country's borrowing capacity as well as its financial stature.

RESTRUCTURING THE ELECTRIC INDUSTRY

On a worldwide basis there are several industry models that are dominating the restructuring approach. The model that is chosen by a country is deemed to fit within the social, political and economic context of that country. Two primary models come out of the strategic transformation of a country's electric industry: vertically integrated generation, transmission, and distribution companies; and disaggregated segments with multiple generation and distribution companies with some form of a common transmission grid. Either of these models can allow independent power producers (IPPs) to fill the needs for additional generation capacity. However, this IPP variation on the models requires a well thought out regulatory framework that will protect the interests of the consumers, the private investors and the owners. Depending on the objectives, there are arguments to be given for each model. The vertically integrated model with private ownership exists in the United States, Japan, Spain, and Malaysia. Italy appears to be leaning in that direction in its privatization. The disaggregated model was first developed in Chile and then it was implemented in the United Kingdom, Argentina, and Peru. However, it has been significantly modified to address the special requirements of the economies and social structures of South America.

In balancing the requirements of the international lending agencies, the economic goals of the GOM, and the social and political objectives associated with the electric power sector it is appropriate to have an overall long term vision of where the electric energy sector will be in the next 10 years. This would include realistic expectations for identifying the required capital needed for the expansion of the system, while maintaining tariffs that are socially and politically acceptable. These objectives may be in conflict with creating a viable commercially oriented electric company.

The purpose in evaluating alternative models is to establish a reference point based upon lessons learned and past success factors. The goal in applying criteria is to identify and select those components of these models which provide the most appropriate fit to the needs and requirements of the Macedonian power sector. The criteria used in this analysis include both macro-level and operational level.

Macro-Level Criteria

These criteria reflect the policy and institutional environment in the country. They explicitly recognize the evolutionary nature of power sector development as a function of the country's economy and its institutions. This includes:

- Capacity of the economy and the institutions in the country to support various restructuring approaches
- Policy objectives with respect to market reform in general
- Policy objectives with respect to power sector reform
- Capability of existing legislation to accommodate alternative structures

Operational Criteria

These criteria reflect the specific characteristics and needs of the power sector. Relevant criteria include:

- Technical – consideration of specific system requirements for efficient operation and reliability as well as ability to support a competitive environment
- Economic – consideration of the viability of competition, the impact efficient pricing mechanisms, and the proper allocation of resources
- Financial – consideration of the commercial operation of the company which includes maintaining its credit worthiness through adequate cash flow and prompt debt repayments

- Organizational – consideration of the effective governance, management capability, and management systems
- Institutional – consideration of the appropriate legal and regulatory framework

SUMMARY OF ANALYSIS FOR MACEDONIA

GOM’s objectives for economic growth and development cannot be disassociated from the disposition of the power sector. The economy of Macedonia is undergoing significant structural changes with its performance negatively impacted by exogenous factors.

Macedonia has not formally established specific objectives for the energy or the power sectors. However, through a series of meetings in Macedonia, the following principal objectives were identified for the energy and power sectors:

Energy Sector	Power Sector
<ul style="list-style-type: none"> ■ Maximize development of hydro resources ■ Diversify supply sources ■ Minimize environmental damage ■ Attract private investors 	<ul style="list-style-type: none"> ■ Institute competition through private power development ■ Attract private investment ■ Establish self-sustaining, efficient organization ■ Establish and operate technically proficient and reliable systems ■ Encourage competitive pricing ■ Maintain security of supplies ■ Join UCPTE

Understanding the objectives of the energy and power sectors and recognizing the macroeconomic impacts of current events, the principal influencing factors for GOM include:

- Low economic growth, dependent in part on exogenous factors
- Fledgling financial markets
- Inadequate commercial laws
- Limited institutional capacity which includes a limited legal and regulatory framework.
- Lack of financial markets
- Lack of a well-defined energy policy
- Inability of ESM to cash flow its operations
- The command-control governance system imposed by the Law on Public Enterprises which does not provide for operational autonomy.

These factors suggest that in the short term, the potential for attracting outside investors is limited. It also suggests that perhaps a staged development program for the power sector may be appropriate. This would include:

- Improve the performance of the existing system while the economy is still in transition
- Encourage greater diversity as the economy stabilizes
- Promote vigorous competition when the economy reaches full potential

RELEVANT LONG TERM OPTIONS

In light of these considerations, there have been several options identified that may be appropriate for the Macedonian power sector. The principal concerns in identifying these options were: 1) limited market potential; 2) need to attract capital; 3) viability of competition; and 4) institutional barriers.

Any restructuring plan must recognize these issues. It is important to note that these factors will not be as binding over time therefore opening up a wider range of options. It must be emphasized that this is a dynamic process. Accordingly, our focus was on identifying options that will realistically achieve significant incremental improvements and therefore set the stage for more considerations. The options include:

- Option 1: Vertically integrated utility
- Option 2: Generation and transmission company with separate distributors
- Option 3: Holding company or division-based entity

IMPORTANCE OF REGULATION

The restructuring of the electric power sector into various components of ownership can be most successful when consideration is given to the legal and regulatory framework that is required to successfully implement any structural change. The goal of transparent regulation is to take the regulation of the electric company out of the political environment to support and promote the operation of an efficient and effective energy sector. In the electric power sector, attention should be focused on substantive economic and procedural issues including:

- Industry structure (i.e., the desired degree of vertical integration and those segments of the subject industries that will be subject to regulation)
- Scope of regulatory jurisdiction, the composition of the regulatory body, services subject to regulation, franchise regulation, and service obligation of regulated entities

- Legal standard by which regulation must set rates (i.e., balancing the interests of ratepayers and investors) and the degree of flexibility necessary to permit the use of efficient pricing mechanisms (e.g., cost, performance, or market-based rates)
- Needs determinations, system planning, and certification of new facilities including environmental restrictions and impacts
- Jurisdiction over corporate transactions (e.g., issuance of securities, mergers, and the disposition of assets), financial reporting, and accounting standards
- Administrative and enforcement authority of regulators
- Due process for interested parties and appellate review of actions made by decision-making body

Any rules and regulations that are adopted are intended to reflect the authority conferred upon the regulatory body by the energy sector regulation.

CONCLUSIONS

The following conclusions emerge from our assessment of the options:

- Option 1 is the most immediate path to improving performance of the power sector under the current economic and political environments
- Options 2 and 3 would be more likely to introduce market principles and competition in the power sector, but additional study would be required to determine the timing and impact of these options
- Regulation will need to be explicitly addressed under any option addressed

All the options, in varying degrees, create an opportunity for improving performance, increasing competition, and stimulating private investment. The end result will make the industry more responsive to the needs of both customers and employees, while providing adequate electricity supply at the lowest cost, thereby benefiting both the consumer and the economy.

Section 1

Introduction

PURPOSE

The purpose of this report is to evaluate and present options for restructuring the power sector of Macedonia. In part, it is based on data and information obtained by the project team while in-country and on the team's experience with restructuring power systems in other countries. The results of the in-country activities were presented in an Interim Report, which is included herewith as Appendix A and considered an integral part of this report. In addition, comments received during a workshop held in Skopje in February 1995 to review the draft version of this report, as well as a list of attendees, is included in Appendix E.

The overall objectives of the project are to:

- Provide a basis for the Government of Macedonia (GOM) to decide on the future structure of the power sector
- Provide the basis for development and implementation of a detailed plan to carry out the government decision

This report provides such a basis by:

- Identifying the critical factors and issues which affect restructuring decisions
- Evaluating international restructuring models and recent experience in their implementation
- Presenting and discussing a range of appropriate options for the Macedonian power sector

RESTRUCTURING PROCESS

The restructuring models that we discuss below have been implemented in various countries only after careful consideration has been given to the electric industry in the context of the economic and institutional setting of the country. This strategic transformation process includes the following phases:

- **Master Plan** – This is the overall macroeconomic view of the strategic position of the electric industry within the country's economy. The questions that are answered in the master plan are, "What does the government want the industry to look like in 5 or 10 years?" and, "What role will it play in the economic development of the country?" The answers to these crucial questions will drive the industry restructuring process.
- **Industry Restructuring** – This process is the first step in implementing the master plan. It involves the development of the industry model (disintegration, vertical integration, etc.) plus the implementation of legal and regulatory frameworks to

protect consumers, private investors, and the government. Various restructuring models that are being adopted worldwide are discussed later in this text.

- **Corporatization** – This process established the state-owned enterprise (SOE) as an independent operating entity that is self funded and no longer a recipient of government subsidies. Includes establishing a corporate charter, appointing a board of directors, and transferring assets and liabilities to the new enterprise.
- **Commercialization** – The focus of this process is for the SOE to operate the enterprise based on business objectives instead of on social and political objectives. It involves shifting from a government bureaucracy to an efficient, profit-driven enterprise where social responsibilities are transferred back to the government. These new conditions hold the prospect that the national electric companies will become increasingly commercially focused, similar to their private-sector counterparts.
- **Privatization** – This process requires the transfer of ownership, as well as operational and administrative control, to the private sector. By exposing the electric companies to the discipline of the capital markets and by allowing owners and management to reap the financial rewards of improved levels of cost and service, it is presumed that they will be more effectively directed and will be motivated to reduce costs and increase efficiency. The techniques of privatization are numerous and include the following: coupon or voucher sale to citizens, sale of the company to private investors, capitalization of the company's shares in the international stock market, or partial privatization whereby the state maintains ownership of the vertically integrated electric company while creating a market for new entrants to add generating capacity.

Macedonia is in the process of formulating a master plan for the energy sector in general and the power sector in particular. Within this context we will explore the viable options that are available to Macedonia given its economic, institutional, and political structure.

The balance of this report is structured as follows:

- Section 2 – Background. Reviews key findings from the interim report
- Section 3 – Restructuring the Power Sector. Evaluates and identifies appropriate options
- Section 4 – Option Evaluations. Discusses the identified options
- Section 5 – Planning Considerations. Outlines a possible implementation plan

Section 2

Background

This section summarizes key economic, institutional, and political factors which will influence any plan to restructure the power sector. These are discussed in the Interim Report, which is included in its entirety in Appendix A.

ECONOMIC CONDITIONS

Macedonia has significant economic problems, which have been aggravated by the Greek embargo and the UN sanctions on Serbia. For 1994, inflation was on the order of 45 percent per year, while GSP is estimated at \$1.5 billion, a decline of 10 percent from 1993. While GOM has embarked on a rigorous fiscal and monetary regime, these measures will take some time to have effect. Accordingly, very modest economic growth is unlikely before 1996, at which point the annual level of inflation should decline to approximately 15 percent.

The country is also confronting a significant external debt problem which amounted to approximately \$18 billion in 1994. GOM is undertaking efforts to renegotiate and reschedule the debt with the principal lenders. The results of these negotiations will have a significant impact on the country's borrowing capacity as well as its financial stature.

INSTITUTIONAL SETTING

Macedonia has passed a privatization law and is embarking on an extensive privatization program. However the power sector, which is considered a strategic asset, is specifically excluded from the law. The power sector will be subject to the proposed Law on Public Enterprises which is discussed below. The financial sector is another major area of concern and is also undergoing major restructuring. Commercial finance as such is essentially nonexistent.

ENERGY SITUATION

Macedonia has limited domestic resources and consequently imports account for approximately 45 percent of its energy supplies, most of which is crude oil and petroleum products. The country does not have access to supplies of natural gas, although plans have been implemented to bring gas from Russia via a new pipeline through Bulgaria. Large volumes will not be available until 2000.

Electricity plays a significant role in the country's energy mix, accounting for over 40 percent of final consumption. Total electricity demand in 1994 is estimated to be 5,276 GWh, a decline of 1 percent from 1993. Prior to 1994, electricity demand had been growing at an annual average rate of approximately 2.5 percent per year. This decline is attributable to the adverse economic environment discussed above.

The power sector is comprised of Elektrostopanstvo na Makedonija (ESM), the state-owned vertically integrated power company, a small amount of hydro capacity owned by the Water Resources Department, and about 70 MW of captive generation. ESM has approximately

1,400 MW of installed capacity, of which 70 percent is thermal and the balance hydro. The thermal capacity is largely (over 75 percent) coal-based supplied by ESM-owned captive coal mines. The Interim Report (Appendix A) provides more detail on the energy and power sector.

POLICY FRAMEWORK

The key pieces of proposed legislation affecting the power sector are the Energy Law and the Law on Public Enterprises. Together, these two essential pieces of legislation will lay the groundwork for the structure of the power sector. Each is reviewed below.

Energy Law

While not a formalized statement of energy policy, the stated purpose of the proposed Energy Law is to:

- Regulate conditions and relationships in the area of energy
- Provide for common needs
- Ensure energy facilities meet technical standards
- Promote environmental protection

All types of energy and all related activities associated with their production and distribution are subject to this law. Electric power, natural gas, heat, and geothermal energy are designated activities of public interest and are therefore to be organized as state companies. In particular, electric power and natural gas companies will be established by the national government, while the others will be municipally owned.

The law sets forth the conditions for activities in the power sector and specifically allows for such activities in the power sector to be performed by companies, including foreign investors or foreign companies. However, the law requires an agreement between these entities and the state enterprise for connection to the main power system. The law specifically requires the responsible ministry of energy to prescribe the terms and conditions if an agreement can not be reached between the parties. Such agreements should specify the conditions, rights, and duties of the parties and provide for:

- Technical services
- Connection requirements
- Payments for delivered energy
- Requirements for captive use

The law also provides for the development of a comprehensive energy plan. Under the energy plan, state companies are required to establish a program for developing, constructing, and financing energy facilities required to meet projected energy needs.

The law also requires that energy suppliers sign agreements specifying the amount of energy to be delivered to consumers. These energy deliveries are in turn reflected in the overall energy balance established by GOM. The law also specifies the conditions under which a consumer can receive energy deliveries and services can be interrupted.

Tariffs are required for electricity, natural gas and heat. The law specifies that a tariff system which defines the elements of calculation and their application will be prepared by the Ministry of Energy.

Law on Public Enterprises

The proposed Law on Public Enterprises is a companion piece to the Energy Law in the sense that it establishes the legal basis for the formation and organization of public enterprises, which includes the power sector. The law also provides for:

- Management of the public enterprise
- Statutes of the public enterprise
- Financial reporting of the public enterprise
- Regulations regarding strikes
- State control over public enterprises

The law defines a public enterprise as one found to be exercising economic activities in the public interest. These are defined as activities essential to living and working. Importantly, the law provides that commercial entities such as joint stock companies may be established to perform these activities provided they are subject to competition.

Public enterprises shall be the property of the state. However, if private capital is invested in a public enterprise, it is to be organized as a limited liability or joint stock company. As such, the state must have at least 51 percent of the capital or, alternatively, must be provided a majority voting position in the company.

The law also requires that the public enterprise be a legal entity which may own assets and liabilities and have the right to take on new obligations. The public enterprise will be financially independent and not be funded from the government budget. Importantly, according to this law, a public enterprise is not subject to bankruptcy procedures. Accordingly, it is up to the “founder” to undertake measures to restore normal operations. The law is not clear as to what measures must be taken. All financial control will be vested in the Ministry of Finance.

The law spells out in detail how a public enterprise will be governed and managed. The workers council, largely comprised of company employees, will be replaced by a new governing structure. The principal elements of the governing structure are a managing board, a director, and a supervisory board. The government-appointed managing board, which includes government-approved enterprise employees and outside experts, is the chief governing and decision-making body of a public enterprise. The managing board is subject to direction from the competent minister in matters of national interest. The director is appointed by the GOM for a term of 4 years. The director may in turn appoint a board of directors with the sole purpose of implementing the decisions of the managing board. The supervisory board oversees the financial and economic operation of the enterprise and submits its findings to the minister of finance.

Section 3

Restructuring the Power Sector

The purpose of this section is to present and discuss the relevant concepts and issues which affect restructuring decisions in the power sector in general, with particular reference to Macedonia's power sector. Section 3 is structured as follows:

- Rationale for and issues affecting restructuring
- International restructuring models
- Central and Eastern European experience
- Defining what's appropriate for Macedonia
- Relevant options

RATIONALE FOR AND ISSUES AFFECTING THE DECISION TO RESTRUCTURE

Rationale for Restructuring

As discussed below, power sector restructuring has been implemented by governments throughout the world. There has been a gradual but definitive shift away from the historical structure of the power sector dominated by either state-owned or privately owned regional monopolies. The motivation for this change has been both internal political decisions as well as external pressure from major international lending agencies. Fundamental to this change in direction is the acceptance of the principle that certain aspects of the power sector, primarily generation, are no longer protected under the umbrella of natural monopoly and can benefit from competitive forces. There are also a number of additional, complementary factors involved:

- Need to improve efficiency and service
- Electricity prices
- Capital attraction
- Reduced government involvement

Need to Improve Efficiency and Service

A key reason for considering restructuring is the recognition that the power sector is not performing optimally. This recognition usually occurs over time, after utilities have established a track record. There are a number of factors which are indicators of poor efficiency. One indicator is technical performance, as evidenced by interrupted or unreliable service, and high system losses. Another related factor is poor operational performance as evidenced by inadequate or overstaffed positions, insufficient maintenance, and lengthy waiting periods imposed on customers seeking access to the system. Recognition that economic performance is less than optimal is evidenced by the fact that a utility is not seeking to achieve the best allocation of resources and thereby minimize long run costs. Lastly, all of the foregoing are reflected in poor financial performance, including

operating and net losses and levels of debt that cannot be adequately serviced. In some cases, this poor performance is exhibited through the requirement for continued subsidies from the state, thereby negatively affecting the national budget and consequently national economic performance. In other cases, the end result may be electricity prices that are too high.

Electricity Prices

Uneconomic electricity prices are those which do not reflect the best allocation of resources and are well above or below market clearing levels. They are symptomatic of a number of different conditions, including government policy, regulation, as well as industry structure. In developed countries, when prices are considered too high, competition serves to reduce the cost of generation and customer service over a period of time. In both developing and transitional economies this is usually not the case; instead, electricity prices may be too low relative to market levels usually due to direct or indirect government subsidies. In this case, restructuring provides a means whereby market forces set prices rather than government policy; as a consequence, prices become more realistic and reflect the real cost and economic value of providing service.

Capital Attraction

In developing and transitional economies, capital is scarce – yet the requirements for capital are substantial. Accordingly, national governments have increasingly recognized that it is more efficient and less costly to have private sources provide capital where possible rather than funding through government-incurred debt. This is particularly true for infrastructure projects, including electric power. As a means of encouraging private investment, restructuring may be necessary to enhance investor confidence and reduce the perception of risk. Additional steps to be taken include the need to:

- Enhance the marketability of a utility company by separating non-core businesses
- Increase the value of a company through improved management
- Separate those activities which will retain monopolistic characteristics and promote competition in all other areas
- Establish a transparent and independent regulatory process

Reduced Government Involvement

Another reason for restructuring, but one which can be the most difficult to accept, is the need to reduce the role of government in the power sector. The shift from a command control environment to a commercially focused environment is preferable principally because decisions are not politically motivated. When the link between government and business is kept at arm's length, economic and financial considerations are the driving forces. Accordingly, there is less

inclination on the part of the government to interfere in the sector, or to maintain the status-quo when change is required. The transition is difficult because it means the national government must relinquish a typically entrenched view of the power sector as a public investment which can be used to achieve social goals.

Issues Affecting Restructuring

While there may be clearcut and compelling reasons for restructuring, there are also a number of issues which will influence the nature and degree of restructuring. Among these are:

- Perception of the power sector by key stakeholders
- Viability of competition
- Legal and regulatory changes
- Ease of transition to new structure

Perception By Key Stakeholders

Stakeholders are consumers, associations, institutions (political or otherwise), or companies that have a vested interest in the outcome of a specific course of action. Depending on the nature and significance of the structural reform, there can be a few or many stakeholders. Typically, there will be a divergence of opinion among the stakeholders as to the appropriate solution. If these various points of view are ignored, it is likely that any proposed resolution of the action will meet with limited success. Accordingly, it is necessary to explicitly recognize these viewpoints, either through a legislative process, the regulatory process, or some other type of public forum. It then becomes necessary to develop strategies for balancing the various viewpoints so that all principal stakeholders support a proposed course of action. The end result of this process will be to:

- Ensure the success of the final action
- Attain an end result that reflect a consensus of key stakeholders
- Require more time to achieve the end result than if decisions were taken unilaterally

In the power sector, there can be a wide spectrum of stakeholders who have a vested interest in its future development, as shown in Table 3-1. The considerable divergence of stakeholder positions will have different implications for restructuring strategies. The resolution of these differences has been resolved in some cases through government fiat, but where democratic processes are present, there will be a means – regulatory or otherwise – where a balanced strategy is the goal.

Table 3-1 Illustrative Stakeholder Matrix

Stakeholder	Typical Position	Impact on Restructuring Strategy
Ministry of Economy/Industry	Views power sector as a public institution	Reluctant to change
Ministry of Finance	Wants self-sustaining company but may want to retain certain oversight activities	May be opposed to certain regulatory approaches
Ministry of Environment	Wants to minimize environmental impacts	Flexible, as long as it meets environmental requirements
Privatization/Anti-Monopoly Agencies	Want to maximize competition	Will favor most competitive structure with appropriate regulation
The power company	Desires to maintain status quo	Reluctant to change
Industrial customers	Want low-cost, reliable power	Will favor restructuring option that provides cheap power as needed
Lending agencies	Require financial obligations to be met	Will favor strategies that create sustainable growth
Public/consumers	Want reasonable prices, reliable service	Will tend to favor status quo if prices are subsidized

Viability of Competition

It is generally recognized that competition is the best way to encourage market-oriented management of enterprises. However, a key factor in any plan to restructure the power sector is the nature and degree of competition that can be expected. Without vigorous competition, there is less incentive to improve performance and achieve the most efficient use of resources. Consequently, greater control over the power sector is required – typically through more regulation.

The issue of competition arises because of the traditional view of the power sector as a natural monopoly. This means that one company can serve the market at lower average cost than several competing companies. The reason this occurs is due to economies of scale where, for certain types of facilities of varying size, average costs continue to fall as output increases.

Economies of scale typically occur in industries requiring significant fixed investment, such as electric power transmission and distribution. Accordingly, these components of the power sector are considered natural monopolies. However, while the transmission component has significant economies of scale and becomes more efficient as size increases, it is generally recognized that the distribution side of the power sector has more limited scale effects (companies of different sizes can be equally efficient). Consequently, there is the alternative of having either a single horizontally integrated monopoly or several regional monopolies.

Historically, power generation has been considered a natural monopoly, and in fact there are economies of scale in fossil steam units up to 1,000 MW. However, advances in combustion turbine technology have reduced the size of fixed investment required, thereby opening up the possibility of competition in smaller scale generation. In addition, technological developments in communications and control systems increase opportunities for pooling capacity and allow operations to be coordinated. They also enhance the ability of large customers to procure electricity directly from generators.

The traditional view that the only viable structure for the power sector is a vertically integrated organization – where activities performed sequentially are controlled under a single enterprise – is no longer valid. In addition to this structure, there can also be vertically disaggregated firms as well as competition between vertically integrated firms or disaggregated firms. However, alternative structures based on competition require that certain conditions be met. These include:

- Sufficient number of sellers with no single seller dominating the market
- Minimal barriers to entry so that potential competitors who are qualified can enter the market
- Sufficient number of buyers to prevent discrimination or alternatively the use of competitive procurement
- Restructured enterprises that are sized so as to take advantage of economies of scale
- Organizational structures designed to promote management and operational efficiencies
- Provision of appropriate regulation to ensure competitive practices and control those structural components that are monopolies

Legal and Regulatory Environment

Restructuring of the electric power sector also entails changes to the legal and regulatory framework. The main objectives of establishing the legal and regulatory framework are outlined below.

Establishing a Legal Framework. This framework is required to establish the rules and procedures that will protect the private investors from confiscation of property and ratepayers from excessive rates. Generally, the laws that are required to successfully attract private investors cover the following issues:

- **Commercial Law:** establishes the contract rules and rights of investors, both foreign and domestic. This generally includes procedures governing repatriation of profits for foreign investors.

- **Energy Law:** establishes an independent regulatory commission, defining its responsibilities with respect to price setting, issuance of concessions, and obligations to consumers and investors.
- **Bankruptcy Law:** establishes the procedures for dealing with insolvent commercial operations owned either solely by private investors or as joint stock companies with both private and government ownership. It also establishes the rights of the creditors and establishes the methodology for the dissolution of the company.
- **Corporate Taxation Law:** establishes the corporate tax structure for privately owned enterprises.
- **Property Ownership Law:** establishes the right of property ownership for both domestic and foreign persons.

Establishing Regulatory Framework – Energy Law. The overall approach to energy industry restructuring and the formation of economically efficient national systems of regulation is predicated on the understanding that there is no single, superior model of regulation; rather, it is a function of the indigenous legal framework, institutional structures, and patterns of ownership of assets. Regulation may be carried out by the national government, local authorities (e.g., municipalities and provincial governments), or a combination of both. It is our belief that, whatever system of regulation is adopted, it should be consistent with the following principles:

- The regulatory process must be transparent and consistent to ensure that market participants can make long-term capital and contractual commitments in an atmosphere of relative certainty.
- Consumer interests are protected with respect to product pricing and service quality.
- The process operates at a minimal cost, and on a timely basis.
- Sufficient incentives are provided to industry management to maximize technical and allocation efficiency.
- The financial viability and operating stability of regulated enterprises are promoted and maintained.
- Regulation results in economically efficient prices to consumers that are non-discriminatory in application and that minimize cross-subsidies.

Meaningful regulatory reform requires the creation of a legal framework that empowers regulators with the authority to promulgate economic and procedural rules and regulations to support the restructured industry. The enactment of any legislation should involve an open debate of all relevant issues by all affected constituents. To achieve this, the government must first define its objectives and identify substantive and administrative issues that must be addressed in new legislation. The following factors will need to be considered in this process:

- Industry structure (i.e., the desired degree of vertical integration and those segments of the industries that will be subject to regulation)
- The scope of regulatory jurisdiction, the composition of the regulatory body, services subject to regulation, franchise regulation, and service obligations of regulated entities
- The legal standard by which regulators must set rates (i.e., balancing the interests of ratepayers and investors) and the degree of flexibility needed to permit the use of efficient pricing mechanisms (e.g., cost-, performance-, or market-based)
- Needs determination, system planning, and certification of new facilities including environmental restrictions and impacts
- Jurisdiction over corporate transactions (e.g., issuance of securities, mergers and the disposition of assets), financial reporting, accounting standards
- Administrative and enforcement authority of regulators
- Due process for interested parties and appellate review of actions made by the decision-making body

With respect to energy efficiency, attention should be focused on the need and the desirability of developing mandatory efficiency standards versus providing regulators the flexibility to identify the need and develop policies and regulations based on formal investigations. Issues to be considered include appliance efficiency standards, thermal efficiency standards for electric generation, the role of renewable resources, alternative rate design, and demand-side management.

Ease of Transition

As discussed in the following subsection, there are numerous structural models available to the power sector. However, some of the more sophisticated models require complex commercial requirements and associated technologies to support them. Accordingly, one issue of concern in considering various restructuring options is the ability to smoothly transition from the existing structure to the new one. If not addressed, the successful implementation of the new structure could be delayed or halted altogether. Several elements are needed to accomplish the transition:

- A clear vision, embodied in a plan, as to the long-term position of the power sector in the context of national economic policy
- Coordination of the power sector program with other national programs so as not to overcommit resources
- An assessment of the capability of existing institutions to support the new structure
- An assessment of the technical capabilities required to support the new structure

RESTRUCTURING MODELS

We use the term restructuring models as a basic point of reference to demonstrate the range of industry structures that have been established in various countries. The Interim Report briefly reviewed the principal models. At the request of the Ministry of Economy, a more detailed review of these models is presented in Appendix B.

Two primary models come out of the strategic transformation of a country's electric industry: vertically integrated generation, transmission, and distribution companies and disaggregated segments with multiple generation and distribution companies with some form of a common transmission grid. Either of these models can allow independent power producers ("IPP") to fill the needs for additional generation capacity. However, this IPP variation on the models requires a well thought out regulatory framework that will protect the interests of the consumers, the private investors and the owners. Depending on the objectives, there are arguments to be given for each model. The vertically integrated model with private ownership exists in the United States, Japan, Spain, and Malaysia. Italy appears to be leaning in that direction in its privatization. The disaggregated model was first developed in the Chile and in a sense has been followed by Argentina, the United Kingdom, and Peru. However, it has been significantly modified to address the special requirements of the economies and social structures of South America.

Obviously each of these various models is unique in its own right and fit within the social, political and economic context of each country. In addition, principal stakeholders recognized and embraced the need for change in the power sector. Without such a commitment, the required changes would not succeed.

CENTRAL AND EASTERN EUROPEAN EXPERIENCE

The Ministry of Economy also expressed interest in the Eastern European experiences with the adaptation of these models. In this subsection, we have therefore summarized the recent experience of some of the countries in Eastern Europe which have been participating in USAID's Utility Partnership Program. (This information is presented in greater detail in Appendix C.) It is important to note that the power sector in this region is in a dynamic state. Conditions as of November 1994 may very likely be different in early 1995 – particularly in Hungary and Slovakia, where debate is currently in progress on various issues, including ownership, pricing, and strategic investors.

The most extensive electricity industry restructuring in Central Europe has taken place in Poland. In 1990, the single vertically integrated utility was broken up into 34 generating companies, a national grid, and 33 distribution companies. One goal of the restructuring was to introduce competition, and consultants to the government used the U.K. system as a model. Other goals are to attract investor capital and solve environmental problems. Following a transitional period from

1994-1998, a power pool concept will be introduced between 1999-2007. Ultimately, by 2008, there will be direct transactions between generators and distributors.

The next country with the most significant level of restructuring in Central Europe is the former Czechoslovakia. In 1989, the Czech and Slovak republics were each served by a single vertically integrated utility. As of June 30, 1990, the distribution functions were separated from both utility companies and eight distribution companies in the Czech Republic and three distribution companies in Slovakia were established.

From 1990 through most of 1994, there have been various proposals and discussions to further restructure the Czech Republic's generation and transmission company into a number of generating companies and a separate national grid. A higher priority, however, has been obtaining adequate capital to complete two 1,000 MW nuclear units and extensively upgrade coal burning facilities to solve some of the country's severe environmental problems. The government of the Czech Republic has thus far concluded that these objectives can be best realized by maintaining the existing single entity structure of the generation and transmission company.

In Slovakia, political conditions have inhibited further restructuring of the electricity sector. Throughout 1994, the Slovak government has struggled to find a workable approach to reorganizing the generating sector to obtain western investment to complete a nuclear plant and upgrade fossil plants. In November 1994, SEP, the state-owned utility, became a joint stock company.

Hungary has reorganized its vertically integrated utility by setting up joint-stock companies in the generation and distribution sectors, but has done no real restructuring. The existing joint-stock companies will enable Hungary to privatize the electricity industry and accomplish the main objective of the government – raising funds for the national budget.

Romania and Bulgaria have moved much slower toward market economy reforms and there has been no real reorganization or restructuring of the electricity sector. Lithuania's electricity sector is particularly unique as the country has two 1,500 MW nuclear units in a small country with a population of less than 4 million. These units were designed and built under the old planned economy to provide power to a much larger region than Lithuania itself.

IDENTIFYING APPROPRIATE OPTIONS FOR MACEDONIA'S POWER SECTOR

In the foregoing subsections, we discussed why and how restructuring is being implemented throughout the world. The purpose in examining these alternative models and their adaptation in Eastern Europe is to establish points of reference based on lessons learned and success factors. A key point that clearly emerges is that there are numerous structural options which are available to the power sector. The principal issues which underlie the adaptation of these models are:

- Whether to separate generation from transmission and distribution

- The number of companies to be created
- The regulation required to ensure efficiencies are achieved

The purpose of this subsection is to identify which structural options are appropriate for Macedonia's power sector based on a wide range of evaluative factors or criteria. As defined in the Interim Report (Appendix A), these evaluation criteria included both macro-level factors as well as operational level factors. Appendix D sets out a detailed evaluation matrix of all the relevant factors and the implications for the power sector. These data, in part, provided the basic guidance for identifying the appropriate options. In addition, we exercised our best professional judgment to factor in the concepts and issues discussed in the foregoing sections. In particular, we were sensitive to several critical issues relevant to Macedonia:

- The vision for the energy and power sector
- The transitional nature of Macedonia's economy (and hence the time dependency of adapting various models)
- The nature of the power sector in Macedonia

Our treatment of these issues along with other key considerations is discussed below.

The Vision for the Energy and Power Sector

A central, guiding element in attempting to define structural options is the vision for the energy sector and more specifically the power sector. In Macedonia, this vision is still emerging and, at this point in time, it can be characterized as a state-owned entity where private power is allowed to be sold to the state enterprise. There is a desire for competition but an apparent reluctance to yield control. The basis for this observation comes from three factors:

- Legislation
- Stakeholder positions
- Expressed objectives for the sector

GOM's comprehensive energy policy is still in its formative stages of development. As discussed in Section 2, the proposed energy law is the initial attempt by GOM to establish a legal basis for energy commerce. While there is clear provision in the proposed law for private entry into energy supply functions, it still appears that the government will play an important role in ensuring supply meets demand. The role of market forces is unclear.

In the power sector, both the proposed energy law and the proposed law on public enterprises view the supply of electricity as a strategic enterprise and require that it be state-controlled. As a consequence, it appears that the linkage between government ownership and control remains intact.

Further evidence is provided by the fact that the power sector is specifically excluded from the privatization law.

The key stakeholders at this time are the Ministry of Economy, Ministry of Finance, ESM, private power developers, and international financial institutions. Two fundamental positions have emerged: 1) maintain government control of the power sector and 2) encourage more commercially oriented enterprises. Underlying both positions is the recognition that private power has a role to play in the power sector. However, there is no clear consensus at this time on the need for, or the form of, a restructured power sector.

Macedonia has not formally established specific objectives for the energy or the power sectors. Accordingly, as discussed in the Interim Report, we had to develop the principal objectives through a synthesis of information received during our meetings in Macedonia. In essence, these reflect fundamental beliefs and expectations regarding the two sectors and should form the basis for evaluating restructuring options. The objectives are set out in Table 3-2.

Table 3-2 Energy and Power Sector Objectives

Energy Sector	Power Sector
<ul style="list-style-type: none"> ■ Maximize development of hydro resources ■ Diversify supply sources ■ Minimize environmental damage ■ Attract private investors 	<ul style="list-style-type: none"> ■ Institute competition through private power development ■ Attract private investment ■ Establish self-sustaining, efficient organization ■ Establish and operate technically proficient and reliable system ■ Encourage competitive pricing ■ Maintain security of supplies ■ Join UCPT

Transitional Nature of Economy

GOM's objectives for economic growth and development cannot be disassociated from the disposition of the power sector. Potential participants in the power sector will interact not only with ESM but will also be affected by the economy and the institutional environment. As reviewed above and discussed in the Interim Report, the economy of Macedonia is undergoing significant structural changes. Moreover the economy's performance is being negatively impacted by exogenous factors. The economy and the institutions are in a state of transition. As a consequence, a balance needs to be achieved between a longer term optimal structure and what is realistically possible in the current situation.

Appendix D sets out the economic and institutional considerations along with the implications for restructuring. The principal influencing factors can be summarized as follows:

- Low economic growth, dependent in part on exogenous factors
- Fledgling financial markets
- Inadequate commercial laws
- Limited institutional capacity

All of the above suggest that in the short term, and probably the intermediate term, the potential for attracting outside investors is limited. It also suggests that perhaps a staged development program for the power sector may be appropriate. Such a development process would:

- Seek to improve performance of the existing system while the economy is still in transition
- Encourage greater diversity as the economy stabilizes
- Promote vigorous competition when the economy reaches full potential

The Power Sector

The power sector as presently structured consists of ESM and a small amount (about 15 MW) of private power owned principally by the Water Management Authority. In addition, there is approximately 70 MW of captive power at various industrial sites. It is obvious that ESM is central to any restructuring option. Accordingly, we focus first on the implications of restructuring for ESM, then discuss the role of private power in any restructuring strategy.

ESM

The principal considerations are as follows:

- Size and technical factors
- Resource requirements
- Financial position

Size and Technical Factors – An important consideration for restructuring is size, as this has direct implications for the viability of competition. The Interim Report reviewed ESM's system in detail. ESM currently has approximately 1,400 MW of installed capacity. Table 3-3 compares ESM to other international generating systems.

As indicated in Table 3-3, the Macedonian system is very small. Consequently, workable competition may be difficult to achieve within this size. It is important to note that there are small

systems which operate in a competitive environment; however, this is achieved by competing with foreign generation through imports. At this time, ESM has essentially no access to imports, while the prospects in the near term are also limited. These conditions will improve as the Greek embargo and UN sanctions are removed. Most important, however, will be membership in UCPTTE, as this opens up more opportunities to import, as well as export.

Table 3-3 Comparative Power Sector Generating Capacity

System	Country	Capacity (GW)	GNP per capita (Dollars)	Population (Millions)
Electroperu	Peru	1.2	950	22.0
<i>ESM</i>	<i>Macedonia</i>	<i>1.4</i>	<i>700</i>	<i>2.0</i>
Endessa	Chile	1.9	2,730	13.5
Arkansas P&L	USA (Arkansas)	4.9	23,240	2.3
SEP	Slovakia	5.6	1,930	5.4
Statkraft	Norway	8.2	25,820	4.3
National Power	UK	26.6	17,790	57.8
EdF	France	95.8	22,260	57.3

The mix of generating capacity will also influence the nature of competition. Seventy percent of capacity, approximately 1,000 MW, is thermal-steam. The Bitola plant accounts for 60 percent of this capacity. Moreover, this plant also accounts for 70 percent of total generation. Given the size and mix of the thermal capacity suggests that the smaller plants would be placed at a disadvantage relative to the Bitola plant due to their inability to benefit from economies of scale. In fact, as the system is essentially isolated, ESM has not been able to minimize costs because of the inability to sell or exchange power from Bitola in offpeak periods.

The balance of installed capacity, approximately 30 percent, is hydro. This presents some unique issues for restructuring. The hydro capacity includes both ponded and run-of-river facilities which account for 300 MW and 122 MW respectively. The run-of-river hydro by design must run all the time, thus providing baseload supply. In contrast, the ponded hydro is utilized for peak load and is further constrained by other factors such as flood control or irrigation. Accordingly, both types of generation have limited potential to compete at the margin due to these technical constraints.

The Macedonian transmission grid (400 and 220 kv) is owned and operated by ESM. The system is characterized by relatively high losses (approximately 4 percent) and reliability problems in part caused by inadequate maintenance and obsolete equipment. This is also due to the fact that it was not designed to be an independent system. These problems are being remedied in part through the

addition of the second 400 kv line. The 220 kv system is limited in its geographic coverage which limits the ability to move bulk power from any location in the country. The original 400 kv line was part of the UCPTE network connecting Greece to the European network. However, the connection has been physically broken in Serbia and Croatia so there is no capability to import and export electricity. This system has been further isolated due to the Greek embargo. Other market opportunities with Bulgaria and Albania require these systems to be interconnected. These interconnections at this time are only in the planning stage.

The distribution system (110 kv and below), which is operated by ESM, also has reliability problems and high losses (8 to 11 percent), due to inadequate maintenance and obsolete equipment. The 110 kv network is limited and restricts the ability of industrial customers to connect to the system. The 10/0.4 kv network for residential consumers is generally recognized as being the weakest part of the system. The distribution network is divided into 28 so-called units, the largest of these is the Skopje distribution system. Peak demand on the Skopje system is approximately 400 MW. The level of demand suggests these systems may be too small and therefore unable to take advantage of economies of scale. Consequently, they may not be operating as efficiently as possible

Resource Requirements – Competitive dynamics will be influenced by prospective changes in supply and demand. Currently, according to ESM, the system is in balance with respect to supply and demand. This reflects the fact that the Negotino plant is on standby. The outlook for the next 5 years is for little or no growth. Even under the most optimistic conditions it is unlikely that demand would grow more than 2 percent per year. Accordingly the need for generating resources will be limited. In fact, if the exogenous factors impacting the country were removed it is likely the Negotino plant would be put back into service and this would be sufficient to meet any incremental increase in demand. However, as this is uncertain, ESM is adding 85 MW of hydro capacity, which will be available starting in 1998. The ability to finance this additional capacity is an area of concern.

Beyond 2000, incremental resource needs should not be significant. Even assuming an optimistic growth rate of 5 percent per year, demand by 2010 would be approximately 8.6 GWh. This would require approximately 300 MW of new capacity. This could be met from either hydro resources or from units fueled by natural gas, which should be available within this time frame. Again the ability to finance this growth is an issue, which is examined below. This situation also suggests competitive mechanisms may be the best way to provide the incremental capacity.

Financial Position – ESM's financial position has direct implications for its ability to expand and attract outside investment. A review of the financial statements presented in the Interim Report (Appendix A) provides the basis for this assessment. Based on current (1994) tariffs, ESM, by commercial standards is technically insolvent. It is currently unable to finance its operations. It is unable to finance additional capital investment or repay debt. The Republic of Macedonia will be required to continue to guarantee and support the repayment of debt unless there is:

- A reversal in ESM's financial position due to improvement in the economy and significant improvements in collection of receivables
- A significant real (i.e., adjusted for inflation) rate increase on an annual basis that provides sufficient revenue to meet operating expenses and debt service

ESM has planned capital expenditures of approximately \$700 million. However, given the current financial situation it is highly unlikely that any portion of this could be financed from the company's internal resources. Moreover, the company is also confronting existing long term debts of approximately \$80 million inherited from the former Republic of Yugoslavia, and a \$25 million loan provided by the EBRD.

ESM's ability to fund future development is dependent upon its ability to generate adequate revenues to cover operating costs, and provide an adequate return on its investment. Revenue generation is in turn dependent upon the level of tariffs. ESM's tariff history was reviewed in the Interim Report. Currently ESM's average tariff is 3.8¢/kwh, as compared to European levels of 5 to 6¢/kwh.

ESM currently has regulated rates which allows it to recover operating costs (but does not include any allowance for uncollectible accounts receivable or any portion of additional profit). These current rates do not provide for the repayment of any principal or interest payments on the inherited debt (approximately \$80 million) from the former Republic of Yugoslavia or the new EBRD debt for the 400 kv lines from Bitola to Skopje (approximately US \$25.6 million). Additionally, the construction of the Kozjak Dam is to be paid out of internal cash flows.

It is clear that any type of capital expansion program would not be sustainable under current rate levels. Furthermore, the possibility of attracting private investors to fund some of these requirements will also be dependent on providing adequate tariff levels. This is a fundamental issue which must be addressed regardless of what decisions are made with respect to any restructuring options. A related issue is the need for ESM to formulate and develop a comprehensive financial plan with clearly defined goals.

Organizational Structure

As mentioned previously one of the underlying reasons for restructuring is the need to improve performance. In Macedonia, this need is explicitly recognized and reflected in the objectives for the power sector. An important aspect in improving performance is that associated with changing the internal organization structure.

In fact, efforts are being made to improve organizational performance. ESM has developed its own so called consolidation plan which was discussed in the Interim Report (Appendix A). The

plan explicitly recognizes operational and technical weaknesses and suggests ways that they can be remedied.

Another factor affecting ESM organizational performance is the method of governance (the Interim Report reviewed the situation). Currently, this is through a workers council, which has proven to be inappropriate in a commercial environment. Accordingly, under the proposed Law on Public Enterprises, the workers council will be replaced with a managing board which will be made up of 11 members, 7 of which will be from outside the company. The law also provides for a five-member supervising board. In addition, the director general may appoint his own internal management board.

While the foregoing suggests that some measures are being taken to effect change, there still remain several issues which will impact commercial performance:

- The Law on Public Enterprises maintains a command-control governance system
- The lack of a comprehensive strategic and business plan for ESM is a very serious shortcoming that is undermining its ability to operate successfully
- Measures for gauging performance are lacking and need to be developed
- The means by which performance is achieved and monitored is unclear
- There is no real operational autonomy

Private Power

It is generally recognized by all stakeholders in Macedonia that private power has a role to play in the power sector. However, the viability of this role depends on several factors such as:

- Availability
- Market requirements
- Fuel options
- Institutional factors

There is currently 15 MW of so-called private power in Macedonia. This is all hydro and is owned and operated by the Water Management Authority, which also utilizes the projects for irrigation purposes. There is also another 70 MW of captive capacity at various industrial user sites; however, under normal economic conditions these industrials are net energy consumers.

There is a level of interest in the potential development of private power. Limited interest has been expressed by foreign investors in developing some larger hydro projects. In addition, some 400 small hydro projects averaging 500 kW each have been proposed by domestic private investors.

There has also been at least one proposal from an industrial facility to supply approximately 26 MW of formerly captive capacity, through a CHP scheme.

The options for private power developers are limited in the mid-term to hydro capacity as no other fuel options are available. As mentioned above, there are technical constraints on hydro with respect to competing at the margin. Natural gas will not be available in any large volumes until 2000. Furthermore, as the gas will be coming from Russia it will not be a riskless fuel option for developers.

The need for capacity will also constrain vigorous competition by private power developers and capacity additions will grow slowly at best over the next 10-15 years.

Lastly, there are institutional considerations which will affect development potential. On the positive side, the proposed Energy Law explicitly allows for the supply of electricity by private developers, who would be required to sell their output directly to the state power enterprise (ESM). However, on the negative side, the process by which power is procured and sales agreements established is quite vague. Moreover, oversight is left with the government as the final arbitrator if there are problems. Other institutional limitations include:

- Lack of financial markets
- Inadequate code of commercial law
- Lack of regulation
- Lack of a well-defined energy policy
- Lack of appropriate and transparent tariff setting mechanisms

Relevant Options

In light of the above considerations and taking into account the objectives for the power sector, we have identified several options which we believe are appropriate for Macedonian power sector. Our principal concerns in identifying these options were: 1) limited market potential; 2) need to attract capital; 3) viability of competition; and 4) institutional barriers.

Any restructuring plan must recognize these issues. It is important to note that these factors will not be as binding over time therefore opening up a wider range of options. It must be emphasized that this is a dynamic process. Accordingly, our focus was on identifying options which will realistically achieve significant incremental improvements and therefore set the stage for more demonstrative change when appropriate as determined by economic and institutional considerations. The options are as follows:

- Option 1: Vertically integrated utility
- Option 2: Generation and transmission company with separate distributors

- Option 3: Holding company or division-based entity

These options are discussed in detail in Section 4.

Section 4

Option Evaluations

In this section each of the options identified in Section 3 is discussed by defining the option, identifying the rationale for selecting the option, and addressing pros and cons associated with each option.

OPTION 1: VERTICALLY INTEGRATED UTILITY

Definition

Under Option 1, operational control and ownership would reside with a single entity. Initially it would be a state-owned enterprise. To maximize efficiency in the supply of electricity, a significant emphasis will be placed on the adoption of commercial business principles. This will be accomplished by performance contracts between government and management. Eventually regulation by an independent regulatory authority would be established and have oversight responsibility but no control over the day-to-day operation of the system. The regulatory authority would also be responsible for overseeing tariffs. Performance contracts would be negotiated between GOM as owner and ESM as manager of the utility, and would be set for a fixed term. The contract would be an explicit and transparent document which would include the following:

- Obligations and responsibilities of the parties
- Objectives
- Principal strategies and business plan
- Resource requirements
- Performance evaluation process and areas to be measured
- Performance targets

Incremental load growth would be met through a competitive bidding process under the auspices of regulators in which domestic and foreign independent power producers (IPP), and the state-owned utility would compete. IPP's would be required to sell the bulk power to the utility. The role of the regulators in this process should safeguard against potential anti-competitive conduct of the state-owned utility. Figure 4-1 illustrates the organizational structure for Option 1.

Rationale

Option 1 is appropriate given the current institutional capabilities and external environment. It directly reflects the current objectives and vision of the power sector among the principal stakeholders. It differs from the existing structure by specifically allowing more operational autonomy through the introduction of operating contracts, and the eventual introduction of independent regulation. It explicitly reflects the need to improve performance at ESM and change

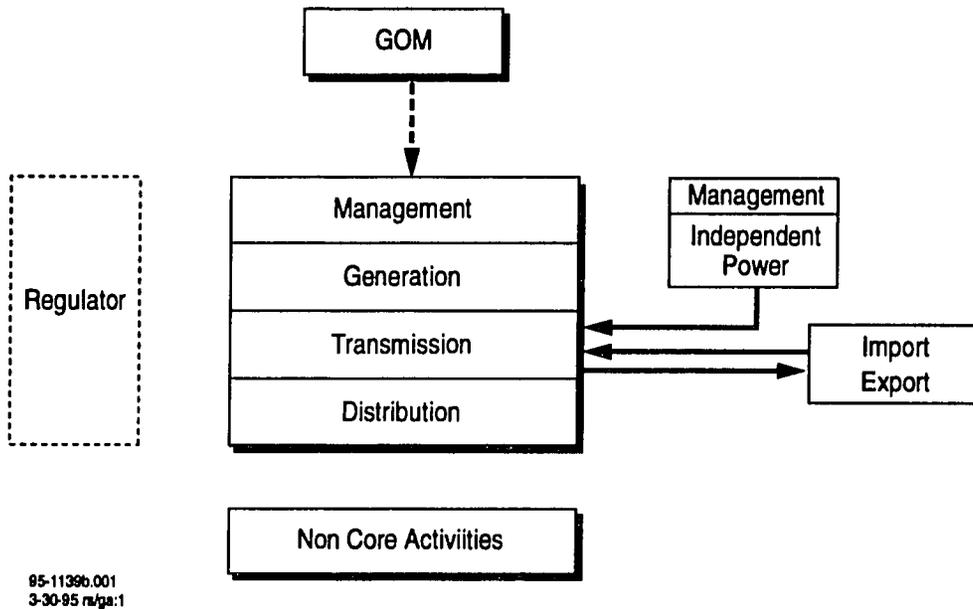


Figure 4-1 Vertically Integrated Utility

its focus from a strictly production oriented enterprise to one which operates in a commercial manner. It also introduces competition for new load growth thereby allowing the utility the opportunity to optimize performance of the existing asset base. Moreover, it allows for the mobilization of alternative sources of finance to develop the IPPs. The option assumes limited economic growth and electricity demand. If growth were to materialize faster than expected with a strong revitalization of the industrial sector, then a more robust variation of this option would be to allow sales by IPPs directly to industrial consumers. This would require changes to both the energy law and the public enterprise law to allow greater operational autonomy of the enterprise.

Pros and Cons Associated with Option 1

Pros:

- 1) Potentially least administrative cost and easiest to implement
- 2) Greater benefits from economies of scale
- 3) Large degree of management control in coordination of planning and operations
- 4) Pooling of financial resources
- 5) Meets GOM objectives

Cons:

- 1) Performance contract may still leave ambiguous roles for government and utility

- 2) Incentives for efficiency from competition may be limited
- 3) Will require most extensive regulatory intervention to control monopolistic behavior
- 4) Limited cost and price transparency, with potential for cross subsidization
- 5) May inhibit selective privatization of assets
- 6) Still leaves perception of centralized planning

OPTION 2: SEPARATION OF GENERATION AND TRANSMISSION FROM DISTRIBUTION

Definition

Under Option 2, the existing vertically integrated, state-owned enterprise would be divested of its distribution assets. The distribution system would be reorganized as two or possibly three regional distribution companies (RDCs) with roughly equal customer bases. All of the enterprises would initially be state-owned. Under this option the government could elect to franchise the management of the RDCs to outside professional managers. Commercial business principles would be adopted and management of the entities would be subject to performance contracts, similar to those discussed in Option 1. Each RDC and the generation and transmission (G&T) company would be subject to the jurisdiction of an independent regulatory agency as all of these entities would still be monopolies.

Competition would be introduced through IPPs which would play a key role in serving incremental load. The need and basis for competition would be delegated to an independent regulatory authority. The process would be similar to Option 1. The key policy question that will have to be addressed is whether IPPs would be limited to competing to supplying the G&T at wholesale, or whether IPPs and the G&T will be permitted to compete to serve the incremental requirements of the RDCs. The latter scenario can only occur if all competitors have equal and non-discriminatory access to the transmission grid. This would entail more complex pricing and contractual arrangements. More specifically, it would require the unbundling of transmission service and establishing pricing and contractual arrangements that ensure the G&T cannot exercise market power over transmission. Figure 4-2 illustrates the organizational structure for Option 2.

Rationale

The principle underlying Option 2 is the increased scope of competition provided by this configuration compared to both the existing structure and Option 1. It also meets the objectives of the government without extremely radical changes. There is also greater decentralization, hence the potential for improved performance is greater. Given the size and structure of the existing system this option would allow the G&T entity to benefit from economies of scale. The option assumes that distributors would retain control over the 110 kv system thus allowing the RDCs to purchase

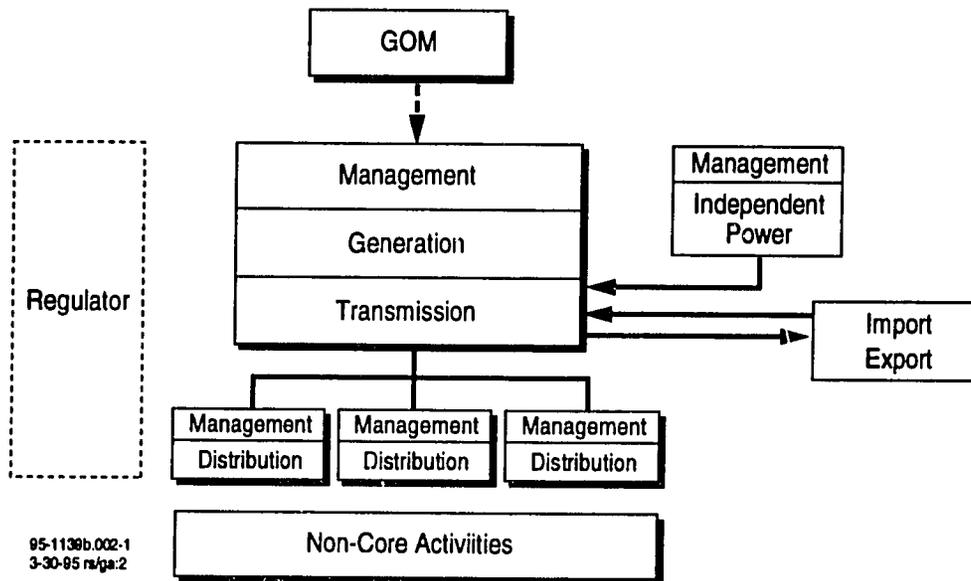


Figure 4-2 Vertically Integrated Utility with Separate Distribution

power from IPPs and also retain large industrial customers. If this is not the case then competition would be limited to bulk power sales only. Modification to the energy law and public enterprise law would be necessary to allow greater operational autonomy of the enterprises. However, It would take time to implement this option given the current institutional conditions, the external environment, and technical constraints with respect to the transmission grid.

Pros and Cons Associated with Option 2

Pros:

- 1) Increased potential for competition at generation level
- 2) G&T can benefit from economies of scale
- 3) May be more attractive for private capital
- 4) Increased potential for empowerment of managers and employees
- 5) Greater cost and price transparency
- 6) Allows better matching of costs to service different customers
- 7) May facilitate eventual privatization of the distribution assets and the G&T company

Cons:

- 1) May require sophisticated costing to develop access pricing for power purchases

- 2) Requires complex contractual relationships
- 3) Technical constraints may limit the execution of the option
- 4) Distributors may be too small and therefore not operating optimally due to limited economies of scale

OPTION 3: STATE-OWNED HOLDING COMPANY OR DIVISION-BASED ENTITY

Definition

This option more directly resembles the U.K. model, and could be the first step in the evolution to that industry structure. Holding companies also facilitate the attraction of capital by segregating risk and pooling the assets of the operating companies. Initially, all segments of the business would be state-owned wherein separate operating companies would be created by function (e.g., generation, transmission and distribution) under the control of a holding company. In this regard, the generation assets could be structured into more than one subsidiary based on technical and economic considerations. The same is true of the distribution assets assuming they have not already been divested as in Option 2. Each of these functional entities would be a profit center with its own management. As a basis for developing commercially oriented operating experience, cost-based contracts would be established between the generation subsidiaries and the transmission subsidiary, and between the transmission subsidiary and the distributors.

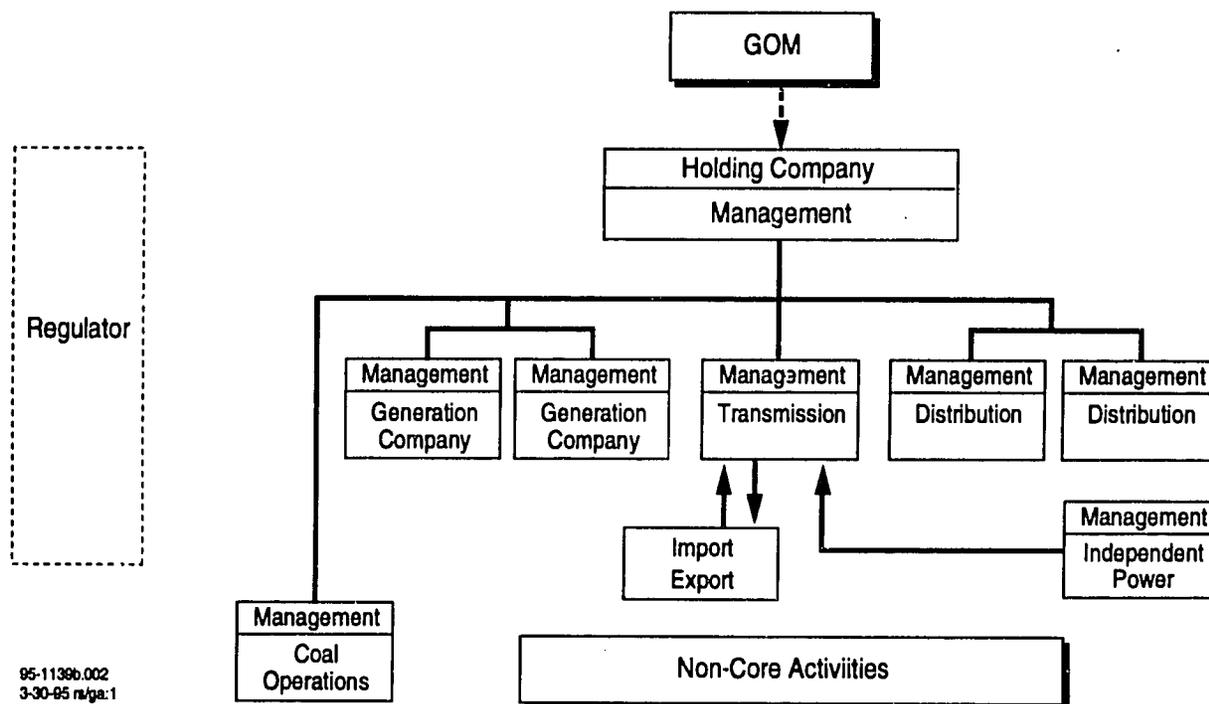
The role of the holding company would be to:

- Appoint managers of the subsidiaries
- Approve strategy (including investment plans) and financial targets for the subsidiaries
- Establish trading rules, transfer prices, and where appropriate, contracts between the subsidiaries
- Establish control over functions that require coordination, such as real time dispatch, fuel procurement, scheduling of maintenance, long-term resource planning, and financing

Competition, initially, would be between the generating subsidiary and IPPs bidding to supply incremental load growth. The mechanism would be similar to the other options. Regulation would be required to oversee this process as well as to set tariffs to final customers.

Eventually, as conditions warrant, the subsidiaries would be divested from the holding company and would become commercial entities in their own right. For the unbundled services that do not exhibit monopoly characteristics, such as generation, market forces would be relied upon to establish price, subject to minimal regulation designed to police anti-competitive conduct. Services

that continue to exhibit monopoly characteristics (i.e., transmission and distribution) are subject to more traditional regulation. However, in an effort to achieve the efficiency gains associated with competitive markets, monopoly services are priced under performance-based mechanisms. Figure 4-3 illustrates the organizational structure of this option.



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Figure 4-3 Holding Company Structure

Rationale

This option is a more direct path to eventual disaggregation of the power sector. It assumes that the benefits of disaggregation outweigh the transaction costs. It is predicated on significant growth in the system as well as an active import/export market, and membership in UCPT. If this is not the case, given the size of the system then this option may not be viable. It is radically different from the existing structure and the current vision of the power sector held by the principal stakeholders. Accordingly, major changes in energy and public enterprise legislation would be required.

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Pros and Cons Associated with Option 3

Pros:

- 1) More aggressive move to eventual competition
- 2) Greater empowerment of management and employees
- 3) Greatest cost and price transparency
- 4) Greater potential to attract private capital
- 5) Facilitates selective privatization
- 6) Potentially least regulation required

Cons:

- 1) Potentially higher administrative costs due to multiple layers of management
- 2) Greater management skill and systems required
- 3) Potential for discriminatory use of transmission by generators
- 4) System may be too small and therefore lead to a loss of economies of scale

REGULATION

The restructuring of the electric power sector into various components of ownership can be most successful when consideration is given to the legal and regulatory framework that is required to successfully implement any structural change. The goal of transparent regulation is to take the regulation of the electric company out of the political environment to support and promote the operation of an efficient and effective energy sector.

Meaningful regulatory reform requires a legal framework to guide the evolution of the desired institutional or market structure of the various energy industries, and the substantive economic and procedural parameters of the desired system of regulation. The enactment of such legislation should be based on an open debate of all issues that permits input from all affected constituent groups. First, it will be necessary to identify the government's objectives and define substantive and administrative issues that must be addressed in new legislation. In the electric power sector, attention should be focused on substantive economic and procedural issues including:

- Industry structure (i.e., the desired degree of vertical integration and those segments of the subject industries that will be subject to regulation)
- Scope of regulatory jurisdiction, the composition of the regulatory body, services subject to regulation, franchise regulation, and service obligation of regulated entities

- Legal standard by which regulators must set rates (i.e., balancing the interests of rate payers and investors) and the degree of flexibility necessary to permit the use of efficient pricing mechanisms (e.g., cost-, performance-, or market-based)
- Needs determinations, system planning, and certification of new facilities including environmental restrictions and impacts
- Jurisdiction over corporate transactions (e.g., issuance of securities, mergers and the disposition of assets), financial reporting, and accounting standards
- Administrative and enforcement authority of regulators
- Due process for interested parties and appellate review of actions made by the decision-making body

With respect to energy efficiency, it would be best to decide early on whether *mandatory* or *voluntary* (case-by-case) efficiency standards are more desirable. Issues to be considered include appliance efficiency standards, thermal efficiency standards for electric generation, the role of renewable resources, alternative rate design, and demand-side management.

Legislation governing the regulation of energy sector industries should establish a regulatory authority empowered to establish policies and regulations. To the maximum extent practical, the energy sector legislation should be the product of a process that provides all interested parties the opportunity to express their views and preferences on key government policy objectives. To reach this objective, the government should develop and recommend a process that will facilitate an open dialogue between government policy makers, regulators, regulated entities, consumer interests and other affected parties. The following procedures describe this process:

- The issuance of government white papers or existing draft legislation for public comment and review
- Submission of written comments by affected constituent groups
- Public conferences in which the government will facilitate a dialogue between those responsible for drafting the law and affected constituent groups
- Preparation of formal reports on conference proceedings for public dissemination

Analyze Current Role of Government Agencies Related to the Energy Sector

Utilities subject to economic regulation typically have other aspects of their business subject to government oversight or regulation in areas such as the environment, labor relations, securities, and occupational health and safety. With the opportunity to enact new energy sector legislation, it is appropriate to review the existing statutory authority and role of government agencies having jurisdiction over regulated entities. The goal should be to rationalize and consolidate regulation into a single agency to the maximum extent possible. For instance, if the regulatory body is granted

authority to issue a certificate for the construction of new generating plants, it should be determined whether the Ministry of Environment ought to assert jurisdiction over environmental matters directly or whether the regulatory body should incorporate the requirements of applicable environmental laws in its certification procedures.

All government agencies having concurrent jurisdiction over the energy sector should be identified, as should potential conflicts or competing interagency interests that may frustrate the implementation of energy sector policies.

Assuming that the newly constituted regulatory body is to be an independent agency, day-to-day oversight of the power sector should be its principal responsibility. The Ministry of Economy should have primary responsibility for the development and implementation of energy policy.

Development of Institutional Capability to Implement Sector Regulation

Any rules and regulations that are adopted are intended to reflect the authority conferred upon the regulatory body by the energy sector regulation. The regulatory body will need to establish regulations that define:

- Franchise application and approval processes and service obligations
- Certification procedures to expand or construct new facilities, including need determinations, public notice, and safety, and environmental standards
- Filing requirements for new rate services and changes in existing rate services, including cost-support data and notice requirements
- Financial reporting requirements and uniform accounting standards necessary for the regulatory body to fulfill its mission
- Procedural regulations for customer complaints, and the establishment of administrative procedures for processing contested rate applications
- Ethics standards applicable to agency decision-makers as well as to agency staff having delegated decision making authority
- Procedural regulations for establishing new regulations that provide for public participation

CONCLUDING OBSERVATIONS

The following conclusions emerge from our assessment of the options:

- Since all stakeholders seek to improve performance of the power sector, Option 1 is the most immediate path to this goal.

- Improved performance depends, in part, on operational autonomy, and commercialized procedures. All options can accomplish this.
- Options 2 and 3 will take longer to implement but may yield larger benefits to the economy; additional study is required to substantiate these benefits.
- Regulation, in some form, will need to be explicitly addressed under any option.

All of the options, in varying degrees, create an opportunity for improving performance, increasing competition, and stimulating private investment. The end result will make the industry more responsive to the needs of both customers and employees, while providing adequate electricity supplies at lowest cost, thereby benefiting both consumer and the entire economy.

Section 5

Planning Considerations

The purpose of this section is to outline relevant considerations in the development and implementation of a plan for restructuring. As mentioned in the previous section, it will take time and careful planning to implement any of the options. The principal elements in establishing a planning framework are as follows:

- Development of strategy and business plan
- Develop appropriate policy and legislative requirements
- Install appropriate business systems
- Make organizational changes
- Develop contractual relationships
- Develop regulatory framework

DEVELOPMENT PROGRAM

Develop Strategy and Business Plan

This is a fundamental activity which is required no matter which option is pursued, in order to set the stage for future development and growth. ESM has made some very preliminary steps in this activity. However, what is required is a comprehensive strategic planning effort which among other things sets out:

- Objectives of ESM
- A vision of the company over the next five years
- Establishes possible development scenarios for the electricity market
- Evaluates how it will be structured and operate under these scenarios
- Identifies core competencies required
- Develops estimates of resource needs
- Estimates financial performance under these conditions

Associated with the development of the strategic plan will be the business plan. It sets out in detail the policy, organizational changes, activities, resources, and systems required to carry out the strategy. The plan also would establish a budget and develop detailed financial statements. The plan should set out this information year by year over the planning timeframe with the first year set out on a monthly basis.

Develop Appropriate Policy and Legislative Requirements

As a result of the company planning activities, there will arise specific issues related to GOM policy and legislation which will directly affect the operation of the company as well as other possible participants. Accordingly, it will be necessary for the responsible ministry to coordinate closely with ESM to understand how the existing legislation affects the industry and what changes are appropriate.

Install Appropriate Business Systems

Subject to the business plan and as a precursor to implementing the strategy, commercial business systems will need to be in place to support the organizational changes. Based on our discussions with ESM, these systems would, among other things, include:

- Planning and control
- Management information
- Accounting, financial, and tariff setting
- Operational – such as dispatch and possibly grid code
- Personnel

With the above systems in place the company will be better able to identify and allocate costs for different functions, conduct least cost planning, develop an appropriate capital budget, and estimate and design the requisite tariffs.

Make Organizational Changes

This element is fundamental to the success of the strategic and business plan. The proposed organizational changes would encompass:

- Disposition of non-core activities
- Establishment of strategic business units
- Establish management structure within business units

Develop Contractual Relationships

Contracts will become an integral part of conducting business in the power sector. Accordingly, it is important that both the legal and commercial bases exist for their development. The development of model a contract can be a first step which will meet the requirements for a transparent process. The most critical contracts would be the performance contracts and those to be

used for independent power producers. In addition to these, depending on the option, cost based contracts would need to be put in place among the divisions, subsidiaries, or new entities.

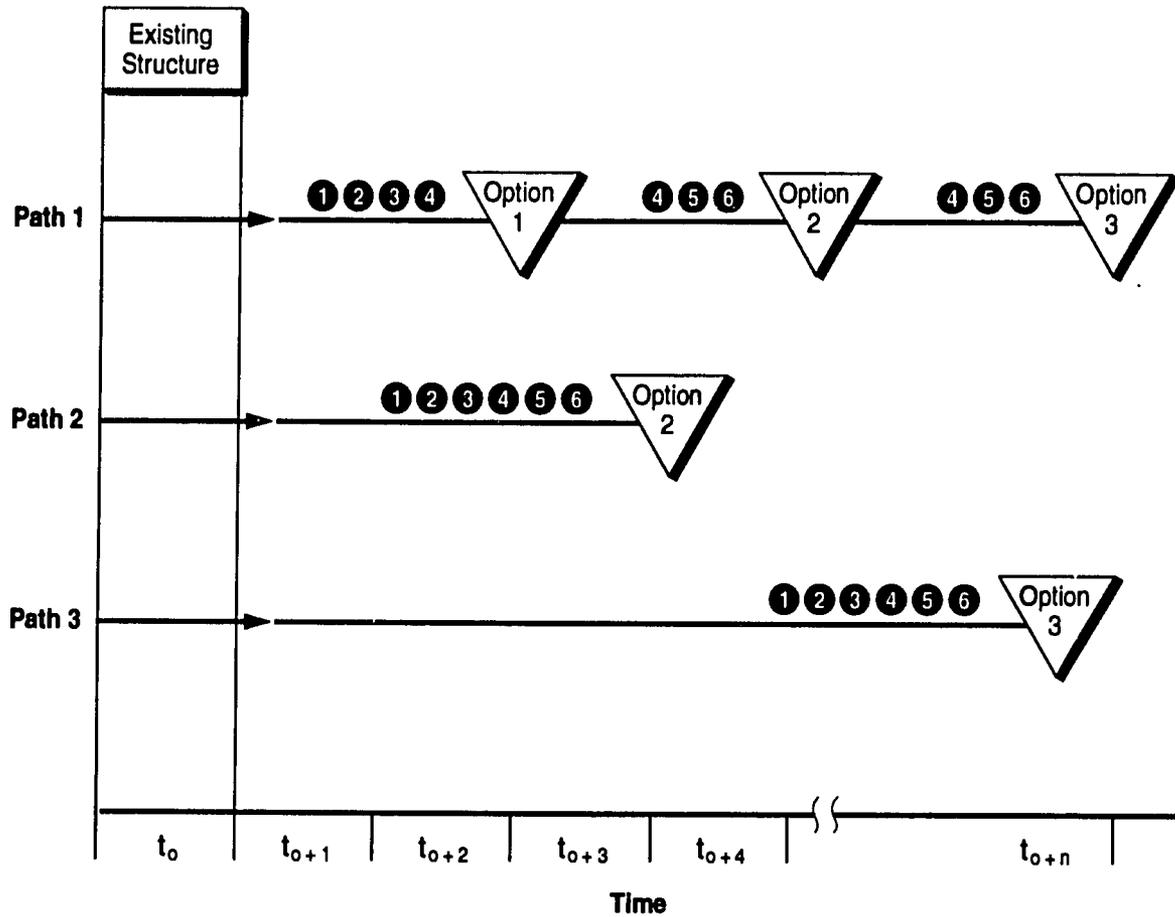
Develop Regulatory Framework

Regulation will also play an important role in the future of the power sector. The requirements for establishing a regulatory framework were discussed in Section 4. The most critical issue, initially, will be what role the ministry will play in terms of regulation. In our view, combining the roles of policy setting, ownership, and regulation in one ministry does not create an environment that favors decision-making based on economic and financial merit. Accordingly, the establishment of an independent regulatory function appears appropriate. While this may not be able to be achieved immediately, it may be more feasible to establish a transition mechanism where the regulatory functions reside in a different ministries such as Finance for tariffs and Energy for licensing and permitting. Generation resource requirements could be handled by the Ministry of Development. Ultimately, these would be transferred to the regulatory authority.

IMPLEMENTATION

Execution of the above activities will require extensive coordination among all principal stakeholders, plus the possible use of outside technical assistance. In this regard it would be appropriate to establish a task force, made up of key stakeholders, empowered to oversee the restructuring process. The task force would be given the mandate by the GOM to present policy options, revise and/or develop new legislation, review and approve the restructuring plan and timetable. In addition to the task force, there would also be a number of working groups each focused on a specific area such as: strategic planning, legal, business systems, organization, tariffs, and regulation. Each working group would be responsible for executing specific tasks and developing a working document which would include actions necessary to accomplish the task and schedule to be reviewed by the task force.

Once a decision has been made to restructure, timing becomes important in terms of sending a clear message to all stakeholders as well as the international financial community that a definitive restructuring program will be implemented. Accordingly, as part of the implementation process a timetable should be developed which explicitly identifies when key milestones will be achieved. Figure 5-1 illustrates alternative restructuring timetables. Path 1 presents an incremental approach to restructuring options, where more sophisticated options are adopted after experience is gained with a more basic approach. Paths 2 and 3 represent what was referred to previously as "big bang" approaches where the more complex options are adopted in a single, devoted effort (as determined by internal and external conditions).



Activities

- ① Develop strategic and business plan
- ② Develop enabling legislation
- ③ Install business systems
- ④ Make organizational changes
- ⑤ Develop contractual relationships
- ⑥ Develop regulatory framework

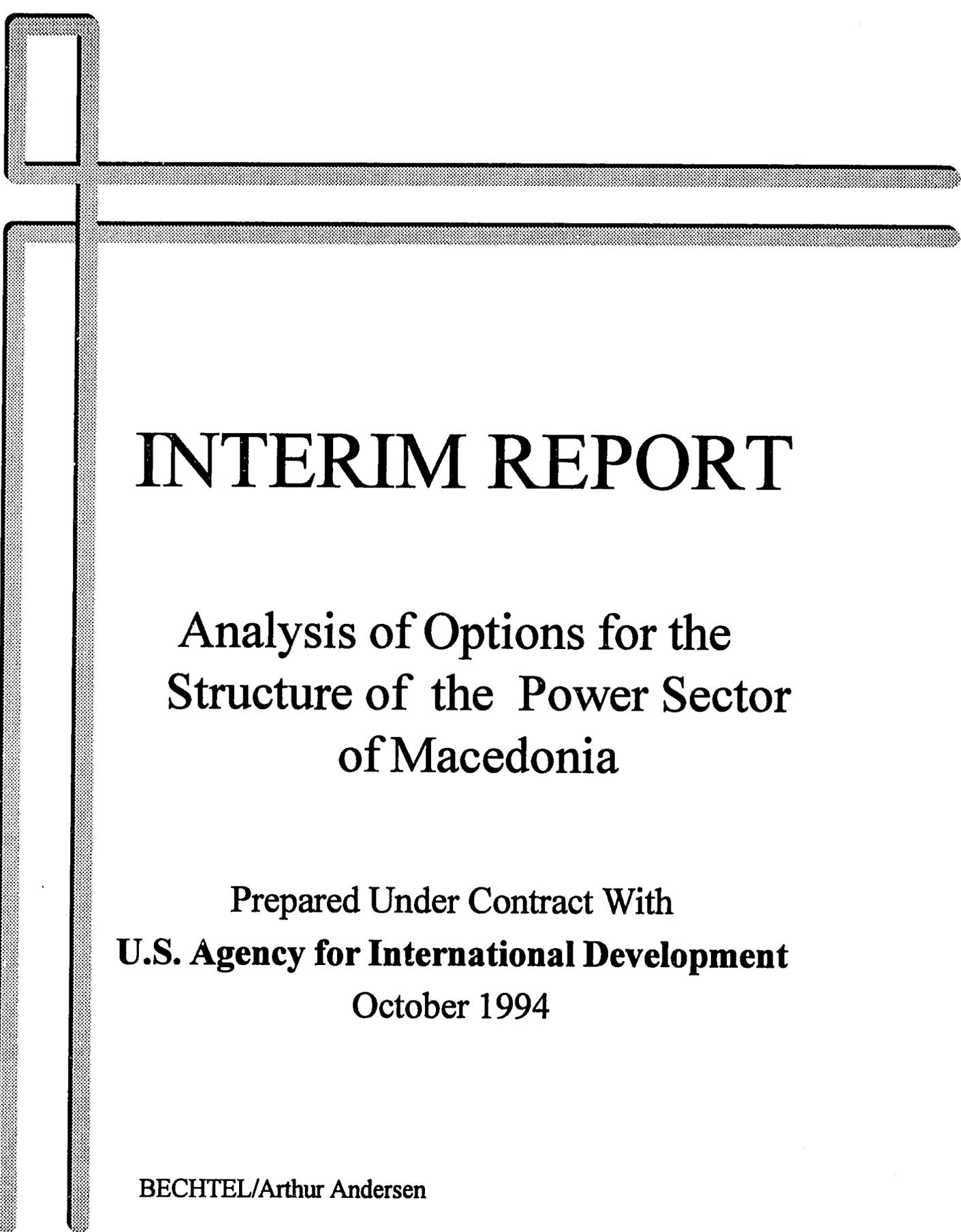
Figure 5-1 Alternative Paths to Restructuring the Power Sector

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Appendix A

Interim Report



INTERIM REPORT

Analysis of Options for the Structure of the Power Sector of Macedonia

Prepared Under Contract With
U.S. Agency for International Development
October 1994

BECHTEL/Arthur Andersen

**INTERIM REPORT
ANALYSIS OF OPTIONS FOR THE STRUCTURE OF THE POWER SECTOR OF
MACEDONIA**

Section 1. Introduction

This section sets out the background and purpose of the study and its objectives, introduces the project team, and discusses the overall approach.

Background and Objective

The basis for this technical assistance is the result of meetings held between USAID and the Ministry of Economy ("MOE") and Elektrostopanstvo na Makedonija ("ESM") earlier this year. As a result of those meetings it was mutually agreed that technical specialists in the area of electric power sector restructuring would be provided by USAID to work cooperatively with the MOE and ESM as well as other institutions to better understand the structure of the power sector and to subsequently develop options for restructuring the sector.

The objectives of the technical assistance are as follows:

- Provide a basis for the government to decide on the future structure of the power sector.
- Provide the basis for the development and implementation of a detailed plan to carry out the government decision.

Workplan and Project Team

The technical assistance is to be performed in three phases. In Phase I, the project team will work in-country to establish a basis for cooperation among the MOE and ESM and will also collect critical data and information. The end result of Phase I is the development of the Interim Report, which sets out the project team's findings with respect to the current structure and organizational arrangements and identifies the restructuring options to be evaluated. Phase II will focus on evaluation and analysis and will result in the preparation of a draft final report which sets out the restructuring options and supporting rationale, as well as associated impacts on ESM's organizational structure. In Phase III, a workshop will be held in Macedonia with utility and government executives to discuss in detail the draft final report in order to allow them to reach decisions regarding the future structure, ownership and operation of the power sector and to establish a basis for further action.

Technical assistance is provided under the direction of the USAID Bureau for Europe and New Independent States, Energy and Infrastructure Division, Washington D.C., with in-country coordination provided by the Office of the USAID.

The technical project team is provided by USAID contractor Bechtel in conjunction with its subcontractor Arthur Andersen. The team consists of two principal consultants:

- Wane G. Mikutowicz, Bechtel, is the project manager and also a specialist in restructuring and privatization, including electric power.

- Diana M. DePinto, Arthur Andersen, is a specialist in electric utility restructuring and privatization.

Approach

Restructuring encompasses a number of different activities. Moreover, it can occur either before or after privatization depending on the policy orientation of a government. In Macedonia, for example, there appears to be an orientation to restructure the larger companies before privatization. In order to provide some guidance as to the overall approach to restructuring. Figure 1 sets out the principal components.

As seen in this figure there are three major components to restructuring:

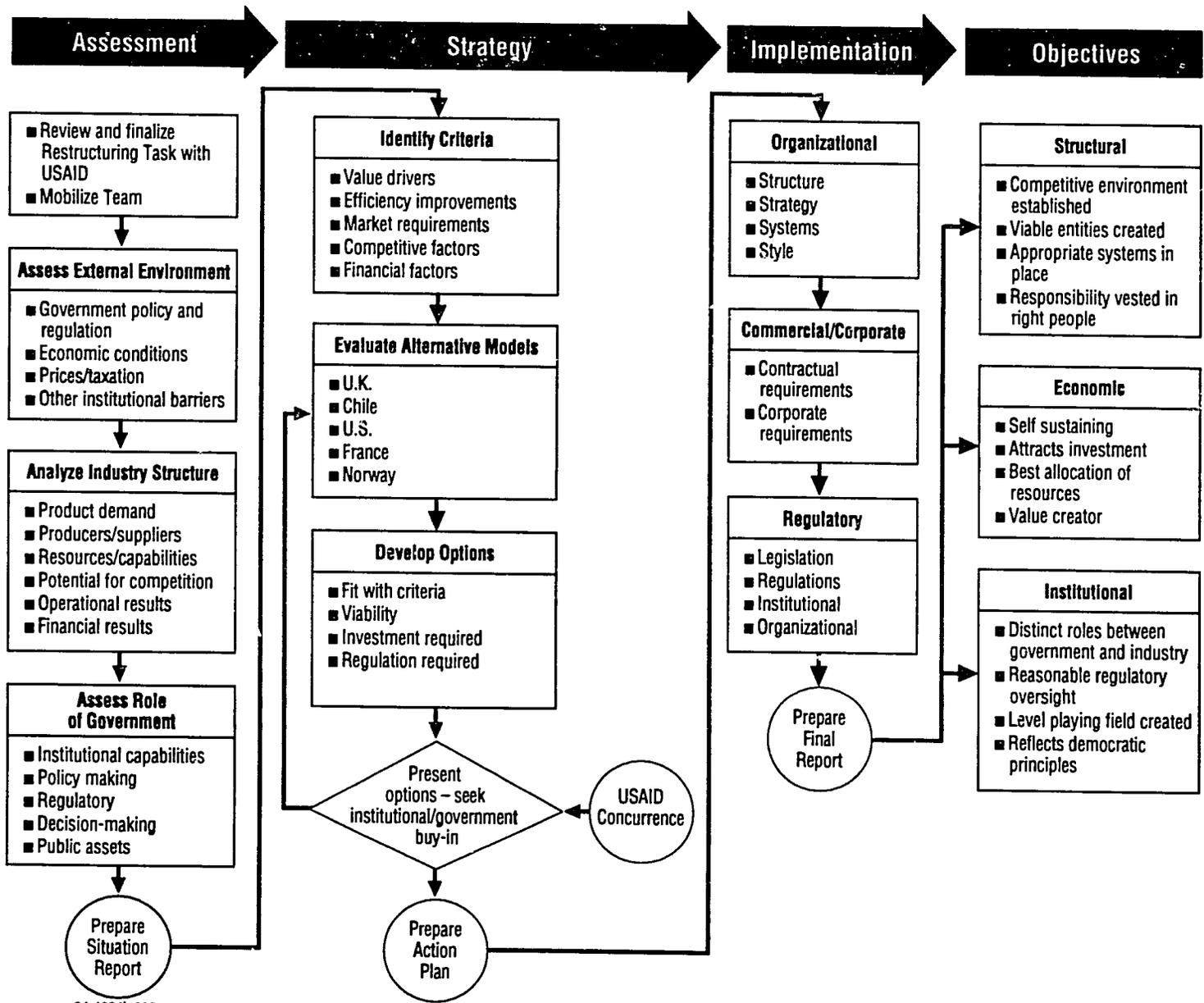
- Assessment
- Strategy Development
- Implementation Support

In the assessment component, the focus is on understanding the existing situation. This consists of understanding the environment in which the industry operates including the economic conditions and institutional arrangements, the industry structure and the role government plays in controlling and regulating the industry. The primary means of investigation is through interviews and data collection, coupled with professional judgment of the investigators.

In the strategy development phase, the focus is on evaluation of the appropriate options for restructuring the industry. This is accomplished through the comparison with various alternative models in existence throughout the world. It is important to note here that in general, there is no perfect correlation between the comparative models and a country's electric power sector rather there is a need for flexibility in the design and implementation of power sector reforms as each country has different economic and social objectives. Accordingly, a set of screening criteria are devised specific to the country in question to assist in the selection of the most appropriate options.

In the implementation support component, the focus is on building a commercially viable enterprise(s) to operate in the restructured industry. This is usually referred to as commercialization and can also include corporatization activities as well. The activities are centered on improving the performance of the resultant enterprises as well as developing the necessary regulatory institutions.

Successful execution of the restructuring process results in the attainment of the objectives identified in Figure 1 and should allow for a relatively smooth transition to privatization.



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The focus of this technical assistance is on the first two components; assessment and strategy development. This interim report presents the results of the assessment component. The balance of this report presents the results of the assessment components. The balance of this report is structured as follows:

- Section 2 addresses the current situation
- Section 3 addresses the current structure of the power sector
- Section 4 addresses the structural options to be analyzed
- Section 5 identifies the evaluation criteria to be used in the assessment process
- Section 6 lists the next steps that will be provided through this engagement
- Attachment A lists the meetings conducted during this phase of the assignment

Section 2: Current Environment

This section describes the environment in which the power sector currently operates. This includes the economic, energy and institutional setting.

Economic Setting

Macedonia's economy is dominated by industry and mining which account for approximately 40 percent of Gross Social Product ("GSP"). Trade is also significant accounting for 70 percent of GSP. Since independence, the economy has been struggling. This was the result of the generally poor performance of the former Socialist Federal Republic of Yugoslavia which directly effected the country as well as the result of the loss of markets caused by the collapse of the former Soviet Block countries. Enterprises were severely constrained in their ability to respond to these changes due to the socialist style of self management which distorts rationale economic decision-making and gives priority to employment and wage protection.

Compounding this already difficult situation were the impact of several recent significant external shocks:

- Closure of its traditional market with Serbia due to UN sanctions against the Federal Republic of Yugoslavia
- Loss of access to the port of Thessaloniki due to the embargo imposed by Greece in February 1994.

The cumulative effects of these factors has been to severely contract economic growth, causing GSP to decline by 50% from 1989 to 1993 according to World Bank estimates. Unemployment has exceeded 30 percent. Moreover, the country has also been burdened with approximately \$1 billion in debt which was formerly the responsibility of the Republic of Yugoslavia.

The Government of Macedonia, in order to overcome this severe economic environment has embarked on a strong stabilization program focused on stabilizing prices through a serious fiscal and monetary policy programs, aggressively pursuing structural reforms in the enterprise and banking sector, providing for a social safety net to minimize the social cost of restructuring, and reestablishing access to external sources of finance. Although formidable challenges remain, the program is meeting with some success. The economy is starting to stabilize and inflation has been reduced significantly. The Government has also paid down some of the outstanding debt (approximately \$115 million in 1994) in arrears to the World Bank and is aggressively negotiating a work out arrangement on old debt with the Paris Club. Additionally, the Government is in the process of negotiating a stand-by agreement for 1995 with the International Monetary Fund (IMF) of approximately \$60 million.

The economic outlook, according to World Bank estimates, is for GSP to decline by 10 percent in 1994, stabilize in 1995, and show moderate growth of 2-3 percent in 1996 and 1997. Attendant declines in inflation are also expected with levels reaching 15 percent annually by 1996.

Energy Situation

Despite the serious economic conditions in the country, the current energy situation can be generally described as stable. Prices of energy have been allowed to increase to reduce losses and improve the performance of the energy enterprises. Prices of petroleum and electricity, however, remain under government control. There have been no major imbalances between supply and demand after the country adjusted to the external shocks mentioned above.

Macedonia is energy resource limited. Energy resources consist principally of low quality coal and hydro. Recoverable coal reserves are estimated at approximately 150 million tons while hydro potential is approximately 1600 MW. Crude oil feedstocks must be imported, which amounted to approximately 1 million tons per year. These have been traditionally imported through the port of Thessaloniki, which is now under embargo. In order to compensate for this petroleum products are now imported from Bulgaria on an exchange basis. Imports, according to the Ministry of Development, account for 45 percent of energy supply.

The country has not formulated a formal energy policy at this time. However, an Energy Law is likely to be passed in 1995, which should establish the basis for the development of energy policy and regulation. Notwithstanding this fact there is an implied set of objectives which came out of our discussions with various ministries. These objectives are as follows:

- Maximize development of hydro resources
- Diversify supply sources
- Minimize environmental damage
- Attract private investors

The government is undertaking steps to diversify energy supplies. At present there is no natural gas available to the country, however, a gas pipeline is under construction from Bulgaria and will rely on Russian gas supplies. The pipeline is a joint venture between the Government and Makpetrol, a state-owned enterprise. Initial volumes to be delivered will amount to 200 million cubic meters in 1995, increasing to 800 million cubic meters by 2000 as

the line is extended west and south. The initial market for this gas will be some 18 large industrial users.

In order to gain some insight into the structure of energy consumption. Table 2-1 was prepared based on data available from Government statistics for 1992.

Table 2-1
Structure of Energy Consumption (Non-Transportation Uses)
Percent Share
1992 Data

	<u>Residential/ Commercial</u>	<u>Industrial</u>	<u>Other</u>	<u>Total</u>
Electricity	73%	44%	100%	54%
Heat	20%	8%	-	12%
Coal	7%	14%	-	12%
Fuel Oil	-	33%	-	22%
Total	100%	100%	100%	100%

It can be seen from the above table that electricity plays a pivotal role in the economy of Macedonia. Fuel oil and coal are factors only in the industrial market. In the future, natural gas will play an increasingly important role with respect to inter-fuel competition in all of these markets. However, because of the significance of electricity it is important that the industry operate in a manner which will promote reasonable profitability, encourage investment, and contribute to the economic growth of the country in an efficient and environmentally sound manner.

Institutional Setting

The power sector should be viewed in light of the current structural reforms being pursued in the country. Enterprises in the country have historically operated as self managed enterprises. However, since 1990, some of these enterprises have been partially privatized under the "Markovicz Program" while others have continued to operate as socially owned enterprises. Typically these enterprises have lacked financial discipline and have been unable to control wage increases which in turn was one of the key factors contributing to the inflationary conditions in the country.

In June 1993, the Government passed the Law on Transformation of Enterprises with Social Capital with the goal of privatizing some 1400 enterprises in five years. This program is administered under the supervision of the Privatization Agency. However, specifically excluded from this law were the public enterprises and monopolies. Accordingly, the power sector has been one of the enterprises excluded from the program.

The privatization program is focused on restructuring the enterprises before actual privatization. The objectives of the program are to increase efficiency and attract investment capital both domestic and foreign. The Privatization Agency indicated that at such point in time when the power sector would be privatized it would be subject to similar criteria.

In addition to enterprise reform the banking sector is also undergoing restructuring. Banks are currently burdened by a large share of non-performing loans and lack of autonomy from the State's sectoral objectives. Capital markets are in the very earliest stages of development in the country. At this time no commercial infrastructure exists to support commercial financing.

The power sector along with other public utilities are also undergoing certain changes. First, the Government has proposed to develop a transparent price structure to allow the enterprises to become profitable while maintaining financial discipline. Second, public enterprises will be governed by new Law on Public Enterprises. The proposed law will allow these enterprises to operate as commercial entities but apparently still under state control. However, it is not clear whether there will be a provision in the law for separating government ownership from the management of the company, or the establishment of a separate regulatory function that is independent from the company and the government. Without these provisions there would appear to be little change in the manner in which the industry currently functions. Furthermore, the ability to attract foreign capital would not be facilitated through the retention of strong government control.

Section 3 Current Structure of the Power Sector

The purpose of this section is to discuss the results of our meetings with ESM and the various ministries regarding the current status of the power sector and related issues. This section is structured as follows:

- current industry structure
- system overview and operations
- organizational structure
- investment planning
- financing
- pricing (tariffs)

3.A. Industry Structure

The power sector currently operates as a monopoly, with ESM as the principle entity. As such it is classified as public enterprise and falls under state control. The extent of state control is principally in the areas of investment planning and pricing. These "regulatory activities" are spread over a number of ministries. The key institutional relationships are as follows:

- Ministry of Economy - Energy Secretariat has principal oversight responsibility for the power sector as well as responsibility for reviewing and approving investment plans and provides an opinion on the tariffs.

- Ministry of Economy - Pricing Division has direct responsibility for reviewing tariff proposals and setting final tariffs
- Ministry of Development - reviews and comments on power sector investment plans and can also review and comment on tariff proposals
- Ministry of Finance - can review and comment on tariff proposals and reviews and comments on investments when Government guarantees are required for debt financing.
- Council of Ministers - decision making authority for tariffs and major investment plans as well as appointment of power sector director general and managing board

At the present time there does not appear to be a strong desire on the part of the Government to privatize the power sector, although there is high interest in restructuring. Four reasons were given. First, there are more immediate privatization targets to be dealt with. Second, the high asset value (estimated US\$ 3 billion based on book value) would make it difficult to sell. Third, there are technical and economic barriers, and fourth, the current law prohibits it.

Despite this reluctance to privatize, there are two key pieces of legislation which will significantly impact the sector - the proposed Energy Law and the proposed Law on Public Enterprises. While we have not conducted a detailed review at this time, it appears that the proposed Energy Law will allow private power development and establish some type of regulatory mechanism, while the Law on Public Enterprise will establish some type of quasi-private enterprise but still under state control and regulation. An important issue which arises here is how compatible the two pieces of legislation are as one appears to promote competition while the other appears to maintain many characteristics of the existing system. Related to this issue is whether the Law on Public Enterprise will create the conditions for clearly defined ownership and effective governance which will be necessary to attract investment, stimulate economic efficiency, and improve financial performance.

Given this situation, it would be useful to understand what key objectives should guide the future development of the power sector. Based on our meetings the following objectives were variously expressed:

- competition through the development of private power
- attraction of private capital
- self sustainable, efficient low-cost organization
- technically proficient system
- supply security

The existing regulatory framework allows private investment in generation by independent power producers. ESM has the right to purchase power from the IPPs at a price, which is determined by ESM under the General Conditions for Power Supply. The reconstruction of the power plant in the Steel Mills (which is included in the Ministry of Development's investment plan) would make it possible to establish a joint use facility with an installed capacity of approximately 26 MW and 217 kV of heat but the price that ESM would be willing to pay for

the electricity is less than the cost of production from the rehabilitated plants, and therefore, this pricing mechanism does not support private project financing. Additionally, there are several small hydro plants with a total installed capacity of approximately 70 MW that are being planned (or have been constructed by the Water Company) that sells excess capacity to ESM's grid and is prepared to accept the internal transfer price calculated by the Government.

3.B. Technical System Overview and Operations

The electric power system was originally built as part of the Republic of Yugoslavia and was not designed as a stand alone system. The system is currently interconnected to the former Socialist Republic of Yugoslavia via 400 and 220 kV transmission line, to Greece via a 400 and 150 kV line and to Bulgaria via two 100 kV lines. The system has a total installed capacity of 1400 MW. It is predominantly thermal based capacity which accounts for 70% of the installed capacity and hydro accounts for the balance. Table 3-1 provides the installed capacity by plant.

**Table 3-1
Total Installed Capacity**

Name of Plant	Type of Production	Installed Capacity
Mavrovo-Vrutou	Hydro	159 MW
Mavkovo-Raven	Hydro	18 MW
Movkovo-Vrben	Hydro	12 MW
Globocica	Hydro	44 MW
Spilje	Hydro	68 MW
TikVes	Hydro	<u>96 MW</u>
Total Hydro		397 MW
Bitola (1)	Thermal (Lignite)	675 MW
Oslomej (1)	Thermal (Lignite)	125 MW
Negotino (2)	Thermal (Fuel Oil)	<u>210 MW</u>
Total Thermal		1010 MW
Total Installed Capacity		1407 MW

(1) Bitola and Oslomej are both mine mouth plants and were built between 1980 and 1988.

(2) Negotino uses diesel fuel and is expensive to operate (approximate US\$.07 @ kWh). It is the stand by unit when imported power is not available.

The transmission network consists of a 400 kV system (4 lines) which traverses the country in a north-south direction. There is also a 220 kV system (three lines) and a 110 kV system (95 lines). At the present time the system is centrally dispatched from a manual system. Transmission losses average 3% while distribution losses average 10%. There are several problems with the current system:

- There is no alternative to the 400 kV line now connecting Skopje to Bitola accordingly it cannot be taken down for maintenance, and there is a lack of redundancy for the stability of the system.
- There are no 400 kV lines serving the eastern part of the country which affects system reliability.

- There is no 400 kV sub-station at Stip
- Sections of the 110 kV system are overloaded and require extensive maintenance
- There is a general concern about security of supply

ESM is undertaking or planning the following projects in transmission and distribution to alleviate some of these problems:

- 400 kV line between Skopje and Bitola (US\$ 31.5 million)
- 22 kV line interconnecting Macedonia and Albania (US\$18 million with US\$9 million for Macedonia)
- Evaluating the feasibility of the interconnection with Bulgaria (currently connected to the Russian system) for a 400 kV interconnection
- Replacing the manual dispatch center with an automated dispatch (SCADA) system (US\$24 million).

Overall there is a balance between demand and supply, although with Negotino on reserve, this means that power must be imported at times of peak demand. Power is currently imported from Bulgaria on an exchange basis to an isolated portion of the grid and from Serbia

Currently power consumption is approximately 4.87 billion kWh. This represents a decline of 18% from the 1991 level of 6 billion kWh. The decline in industrial production is the main reason for this decline. However, this situation has ameliorated somewhat the impact of not having Negotino capacity available.

Apparently ESM believes that power consumption has now stabilized. ESM projects consumption to increase 16% in 1995 to 5.7 billion kWh and then grow by 1.4% per year from 1995 to 2000 to a level of 6.1 billion kWh. This growth is projected to come from small industrial and distribution customers.

In order to meet the anticipated growth ESM has embarked on an expansion plan which will add 78 MW by 1999. The cornerstone of this plan is the Kozjak hydro joint use project which will have a total capacity of 82 MW. The cost of the project is estimated to be US\$110 million and the construction of the project has started with no specific project financing in place. This project is discussed in more detail in the investment planning and tariff section of this report.

ESM under a cooperative agreement with the Russians upgraded the Bitola units by 15 MW each, increasing the capacity of the plant by 45 MW. Total cost of this project was \$4.5 million.

3.C. Company Organization

ESM is currently organized as a socially owned enterprise, as such it is governed by a workers council while the director general is appointed by the government. As with all socially owned enterprises this has not provided the most effective form of governance nor allowed management to operate effectively with the result that ESM has been one of the major loss incurring enterprises prior to the recent rate increase. The Government will be authorized to replace the Workers Council with a Managing Board in 1995, once the Law on Public Enterprises is passed. The Managing Board will have eleven members, with seven members appointed by the Government and four from ESM. The Ministry of Economy will continue to have oversight responsibility for ESM.

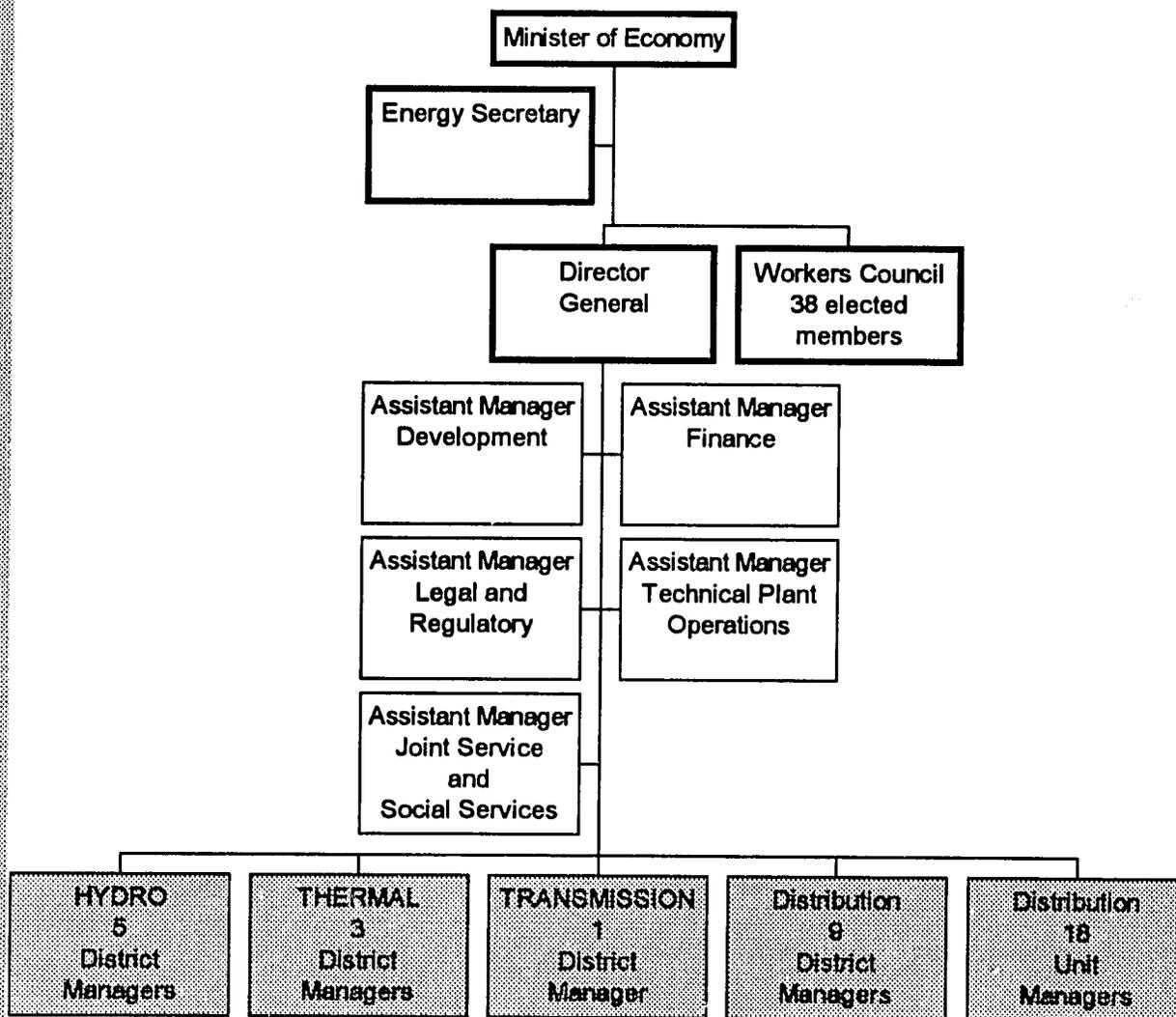
The organizational structure includes 8,626 employees and the following table identifies the number of employees by function:

<i>Function</i>	<i>Number of Employees</i>	<i>Percentage of Total</i>
Headquarters	219	2.6%
Production	3,017	36.0%
Coal	1,631	19.0%
Transmission	291	2.0%
Distribution	3,308	39.0%
Total Electric	8,466	100.0%
Other activities	160	
Total employees	8,626	

ELEKTROSTOPANSTVO NA MAKEDONIJA

Existing Organization Chart

Current Organization Chart
Elektrostopanstvo na Makedonija ("ESM")



Elektraostopanstvo na Makedonjija was originally formed under the Yugoslav Enterprises Law (1990) which established the Workers Council through which the workers will manage the enterprise. The responsibilities of the Workers Council include the following:

- Prepare by-laws and drafts of other self-management actions that are voted on by the employees
- Determine the organization structure
- Prepare the long term development plan
- Determine the business policy
- Appoint and recall business-management and executive bodies and direct and supervise their work
- Determine the distribution of profits
- Evaluate proposals by trade unions concerning the implementation of workers' self management rights and their economic position
- Conduct other affairs as specified by the by-laws

There are 38 elected members of the workers council which must make decisions by passing a majority vote on any of the above matters.

The day-to-day business management of the enterprise is the responsibility of the Director General who is appointed by the Council of Ministers. The Director General has 36 direct reports which include 5 staff assistants and 36 District Managers for each business unit as defined by function (the functions are described in the organization chart).

There are five assistant general managers have the following responsibilities:

1. Development - Responsible for supervising the preparation of the investment program for ESM in the context of the power policy of the Republic of Macedonia.
2. Finance - Responsible for supervising and preparing ESM's consolidated financial statements, regulatory filings, short-term and long-term financial planning, and the collection of accounts receivable.
3. Legal and Regulatory - Responsible for the oversight of all legal, labor and regulatory matters.
4. Technical Plant Operation - Responsible for the oversight of all technical and maintenance matters, which includes the coordination of power generation, transmission and distribution through the power system
5. Joint Services and Social Standards - Responsible for the oversight of the non-electric company activities (i.e., hotel, food service, etc). He is also responsible for providing the employees of ESM with information, environmental protection and the collective bargaining with the labor unions.

ESM is undertaking specific actions to improve its performance. ESM established working groups that are responsible for identifying ways of improving the performance of the overall enterprise. These actions have been proposed in a consolidation plan. A copy of the plan was provided to the team and will be examined in more detail in Phase II. In general, the following actions are being pursued.

- Improve financial performance through pricing measures
- Reduce technical losses by 2 percentage points
- Reduction of the labor force by 1% per year
- Automate systems
- Spin off unprofitable activities-principally hotel and restaurants
- Establish a task force to identify ways to improve operation

The Proposed Act on Public Enterprises proposes that the Workers Council will be replaced by the Business Management Board, the supervisory board and the director.

The responsibilities of the Managing Board will be:

- adopt the statute of the public enterprise;
- decide on statutory changes and founding of the enterprises and companies in accordance with the law;
- decide on increases of capital assets;
- adopt the program of work and the plans for development of the public enterprise;
- determine the business policy
- adopt annual balance of accounts and the reports for the business operation of the public enterprises;
- decide on the share of profit;
- adopt decisions for investments;
- perform other activities regulated by the act

The director will be appointed by the Government of the Republic of Macedonia and is responsible for managing the public enterprise. The director will be appointed for a four year term following a competition for the position.

A supervisory board, consisting of at least five members, will be established to supervise the business operation of the public enterprise and will be responsible for the financial and economic operation of the public enterprise.

The proposed management structure under the proposed Law for Public Enterprises is establishing a complex management system subsumed in the political process. As such it is not designed to produce an effective management team supported by a transparent regulatory system. In other countries where management is empowered to independently operate the electric company in a monopoly environment, there is a regulatory framework disconnected from the political process that protects the interests of the consumer and weighs it against the financial strength of the company.

3.D. Investment Program/ Planning and Financing

The planning function for the development of the electric energy sector appears to be the responsibility of the Minister of Development who reviews all the requests for addition of capacity (either base load or co-generators) from all interested parties. On June 6, 1994, the Government submitted the following proposed investment plan to the International Lending Agencies. The report begins by saying " there is not enough domestic funds in the public

enterprises and in the central budget to complete the Public Investment Program for the Republic of Macedonia. Therefore, in order to complete the Public Investment Program, it is necessary to provide foreign investment funds, Especially through joint ventures with foreign partners, and by giving concessions. Simultaneously, within the framework of the availability of the balance of payments, the public shall be financed by foreign credits. It is projected that the preparation of the technical documentation for the investments, and that certain investments in the public sector shall be financed by the technical and non-refundable assistance from abroad."

The following investment plan for the energy sector was proposed and is included in Table 3-2

Table 3-2
Republic of Macedonia
The Program for Public Investment
Energy Sector

Project Description	Total Estimated in US\$ million
1. 400 kV line (Bitola-Skopje) (1)	31.5
2. 220 kV line (Vrutok-Bureli)	9.0
3. gas pipeline - phase I	60.0
4. gas pipeline reconstruction (2)	11.0
5. gas pipeline - phase II	50.0
6. 400 kV line (T.Veles-Blagoevgrad)	65.0
7. HPP "Kozjak" (3)	110.0
8. HPP "Chebran"	300.0
9. HPP "Boshkov Most"	49.0
10. HPP "Gradec"	139.0
11. Expansion of Oil Refining -Skopje	180.0
12. Reconstruction of Steel co-generation (4)	7.2
13. Completion of " HPP"Jugohrom:	<u>42.0</u>
Total Required Investment	\$1,053.7

(1) US\$ 25.6 million has been committed by the EBRD

(2) 52% of funds will be provided by State

(3) This project is a multipurpose project that will provide irrigation, flood control and electrical energy. The estimate value of the "Kozjak" project (stage 1) and "Matka II" including the water supply system (stage 2) is US\$110 million and will be completed within 4 years. Stage 2, "Skopsko Pole" is estimated to be US\$160 million with a total project value of \$270 million.

(4) The reconstruction of the Steel Mills co-generation plant will have an installed capacity of 26 MW and 217 kV of heat. It is estimated that it will cost approximately US\$.07 @ kWh.

The Government's objective of obtaining private financing, either through credits or investment can only be met if the electric power sector is operating as a commercially viable entity, the Republic of Macedonia has established a credit rating, and the projects that need to be financed are what Western investors consider "bankable". Based on our understanding of the current tariff structure and financial position, ESM cannot currently fund or finance additional investment programs.

Procedures for approval of investment plans

There does not appear to be an existing formal planning process that includes least cost resource planning resident in the organization of ESM or in the Government. Currently, the Assistant for Development utilizes a cost production model (WASP III) but the detailed output of those models was not available for our review. In our discussion with Mr. Ratko Mizo, this cost production model was utilized to determine the production cost of the system when the new hydro units were completed. (NOTE: the investment plan is being translated); however, Mr. Mizo indicated that no alternative types of production were analyzed to determine if the addition of the hydro units were the least cost and most efficient production plants to add. He also indicated that no consideration was given to the completion of the natural gas pipeline that is anticipated to be completed to Skopje in 1995.

It appears that the investment plan was been drafted by ESM in conjunction with the Ministry of Economy, the Ministry of Development, and the Ministry of Finance with a strong focus on building the Kozjak dam (82 MW) and the 400 KV transmission line between Bitola-Skopje. We have not been able to identify a demand forecast or other standard economic forecasting models that would justify the building of this dam. Additionally, the construction of the dam has been started without any allowance in the rate structure or project financing in place.

The Ministry of Development has taken on the overall responsibility (apparently on an informal basis) to determine what projects will be undertaken in the energy sector. The overall sector investment plan was presented to International Lending Agencies on June 6, 1994 in the "Program for Public Investment in the Republic of Macedonia". A summary of the proposed investment program is included in Table 3-1.

The shortcomings of the existing regulatory system primarily evolve around the informal political process created which does not empower ESM to operate as a commercially viable company in either increasing rates or investing in additional plant. A formalized regulatory process that is transparent and independent of the political process would allow standards to be implemented for the calculation of tariffs and prudent investment decisions, along with an appeal process for regulatory decisions that the electric company would consider unreasonable.

3.E. Pricing

Prices of electricity were increased by 50% in April, 1994. another 50% increase was requested in September 1994 but rejected, however ESM was allowed to keep its winter rates for six months during the summer. This was a one time adjustment to allow ESM to improve its financial position. The average price of electricity is \$.038 / kWh. A level of \$.055 / kWh, which is close to the European market levels, is considered necessary to improve ESM's financial performance and support the proposed capital investments. Table 3-3 sets out the revenue requirements proposed by ESM and Table 3-4 sets out the current tariff structure

ESM currently has regulated rates which allows it to recover operating costs (but it does not include any allowance for uncollectible accounts receivable) or any portion of additional profit. These rates do not currently contemplate the repayment of any principle or interest payments on either the inherited debt (approximately \$80 million) from the former Republic of

Yugoslavia or the new EBRD debt for the 400 kV lines from Bitola to Skopje (approximately \$36 million). ESM by standards applied to commercially viable operations is technically bankrupt and is currently not able to finance its operations in addition to financing additional capital investment or debt repayments. The Republic of Macedonia will be required to continue to guarantee and support the repayment of debt.

Procedures for the approval of tariffs:

The revenue requirements are prepared using a historical cost of service model that does not include a component for rate of return or profit not the repayment of debt. The Electricity Law (1987) that ESM is allowed to set its tariffs to recover its operating costs, including depreciation. Yet the 1994 budget projected a deficit of expenses exceeding revenues. There are several unanswered questions about the revenue calculation model that include:

1. Is there a bad debt expense allowance in the operating expenses for uncollectible receivables?
2. Can ESM cash flow its operations and investment given the existing rate level?
3. Are the collections of commercial accounts receivable a significant problem?

Based on the review of the proposed Act on Public Enterprises, the intent of the Government is to have all public enterprises financially independent. However, the regulatory process does not necessarily support that supposition because of the informal nature of the process, which appears to be highly politicized with strong informal veto powers extending across the various Ministries and workers groups through the Workers Council.

The proposed rate increase, which was rejected in September, 1994, would have included a 10% increase for the development expenses or 5% for Kozjak and 5% for the 400 KV line. The concept of the development amount is to incorporate the projects into rates prior to completion of the capital projects, and therefore require an accounting reserve be established and theoretically cash flow the investment amount, either through the repayment of debt of providing ESM's funding.

Table 3-3
ESM's REVENUE REQUIREMENTS CALCULATIONS
(information filed for a rate request increase that was rejected - September 1994)
assuming constant Denars

REVENUE		1994	1995	1996	1997	1998
1	Sales of Electricity	7,489,122	16,103,618	16,384,954	16,675,464	16,975,148
2	Other Revenue	1,123,442	1,229,126	1,229,126	1,229,126	1,229,126
A	Total Revenue	8,592,564	17,332,744	17,614,080	17,904,590	18,204,274
EXPENDITURES						
1	Power Debt	132,338				
2	Electric supply power costs	343,160				
3	Depreciation	2,168,804	2,875,834	2,875,834	2,875,834	2,875,834
4	Investment costs	491,080	651,172	818,773	818,773	818,773
5	Power production fuel	64,515	2,818,268	2,965,794	3,289,898	3,662,124
6	Excavation of waste/tailings	317,511	421,020	737,760	737,760	737,760
7	Other Material costs	2,967,343	3,934,697	2,981,639	2,981,639	2,981,639
8	Amortization reevaluation	459,562	609,379	905,915	905,915	905,915
9	Insurance premium	560,493	743,214	943,589	943,589	943,589
10	Interest on credits and suppliers	489,965	816,549	924,784	884,780	764,994
11	Gross salaries	1,845,841	2,447,585	2,820,959	2,820,959	2,820,959
12	Welfare services/joint spending	63,397	84,064	28,952	28,952	28,952
13	Taxes independent of performance	45,507	60,342	28,801	28,801	28,801
B	Total Expenditures	9,949,518	15,462,124	16,012,800	16,276,900	16,549,340
14	Accumulated for development (a)		1,575,704	1,601,280	1,627,690	1,654,934
15	Total Required Funding	9,949,516	17,037,828	17,614,080	17,904,590	18,204,274
	Net Income (Loss)	(1,356,952)	1,870,620	1,601,280	1,627,690	1,654,934
	Power sold in mWh	4,871,000	5,668,000	5,760,000	5,855,000	5,930,000
	Production per kWh w/o deve - US\$.05107	.08125	.06255	.06255	.06255
	Production per kWh w/o deve - (denars)	2.043	2.450	2.502	2.502	2.512
	Sales price per kWh (US\$)	.03832	.08125	.06255	.06255	.06255
	Sales price per kWh ((denars))	1.533	2.841	2.845	2.848	2.863
	Production per kWh with deve (US\$)	.05107	.07645	.07645	.07656	.07656
	Production per kWh with deve ((denars))	2.043	3.008	3.058	3.058	3.070

(a) This account is used for the accumulation of the required amounts for the construction of the Kozjak Dam and the Bitola-Skopje 400 kV transmission line and is not applicable in 1994.

Table 3-4

TARIFF SCHEDULE

CUSTOMER CLASS	DAY/kWh	US\$/kWh
Direct Consumers - 110 kW	1,1465	.0288
Direct Consumers - 35 kW	1,7229	.0434
Direct Consumers - 10 kW	1,8635	.0469
Households		
Single tariff	1,6824	.0423
Two tariff (day/night)	1,3612	.0343
I tariff grade	2,0616	.0519
II tariff grade	2,7169	.0684
Street lights	1,8682	.0470
Average for all customers	1,53	.0385

Section 4 : Structural Options To Be Evaluated

Countries on every continent, in conjunction with the international lending agencies, are exploring how they can reform and restructure the energy sector. There are many options to explore, including the disaggregation of the vertically owned monopolies in order to introduce competition, the commercialization of state-owned enterprises, or opening the energy sector to private investment leaving the state-owned enterprise intact. There is no off-the-shelf solution that fits every need, but the chain of transformation generally involves these processes: (1) industry restructuring to change the investment and pricing policies and laws, which includes allowing private control over energy assets; (2) commercialization of state-owned enterprises moving towards profit motivated objectives in addition to political and social goals; and, finally (3) privatization of the companies to shift ownership from the government to the private sector and provide new investment capital.

The objectives that must be considered in determining the various options available for the restructuring of the electric energy sector will include implementing:

- Legal and regulatory frameworks
- Efficiency-oriented mechanisms, including competition
- Commercial organization and private ownership of key infrastructure assets

It is important to recognize that the evolutionary status of the power sector in developing countries is a function of country-specific economic, political, and institutional factors. Therefore, power sector development policies vary from basic sector formulation, institution building, and training in the low electricity-use countries to legislative, regulatory, and autonomy issues in more advanced countries. It is commonly understood that there can be no standard approach to power sector development for all countries.

In the absence of a standard approach, there are a number of principles that have been established that many of the international lending agencies look at in providing assistance to various countries. These principles include:

- *Independent Regulation.* The government would retain the responsibility for setting objectives, articulating overall policies, and planning and coordinating sector development. This would include establishing regulatory authorities that are autonomous from the government and have the responsibility for balancing the public interest with the need for enterprise autonomy.
- *Importation of Services.* In countries with weak public and private sectors, undeveloped capital markets, and a relative lack of market forces, the Bank would support utility management contracts that would bring international utility industrial experience into the country. Potential services for importation might include plant maintenance, billing, revenue collection, vehicle maintenance, line stringing, and pole and tower fabrication.
- *Commercialization and Corporatization.* Governments should operate the power sector based on commercial principles used by investor-owned utilities. The Bank is prepared to provide transition funding for this process of commercialization. This includes establishing separate corporate entities that would pay interest and taxes, earning commercially competitive rates of return on equity, and having autonomy in day-to-day operations.

- *Private Investment.* Governments should create an environment to attract private investment. This will include changing the tariff structure to move toward a rate of return that is attractive to private investors, both local and foreign.

Successful power sector reforms have taken many approaches with no one generic model, but all the approaches have the goal of achieving these objectives:

- Improve operational efficiency
- Eliminate subsidies
- Attract private investment
- Expand the domestic capital markets
- Reduce fiscal deficits and national debt
- Reduce the role of government

Improving Operational Efficiency

Improving operational efficiency can be accomplished in the power sector through the commercialization of the utility and the implementation of a performance contract as demonstrated by Electricite de France ("EdF") in France or through restructuring without privatization which is currently being done in Norway and or through privatization which has been done in the United Kingdom.

The world's lending institutions tend to favor privatization as one of the most effective methods for obtaining operational efficiency. The disciplines of the financial marketplace and the need to provide returns on capital that will satisfy investors are strong incentives for running an efficient company. From the point of view of the company, the combination of access to private sector funding and the need to achieve adequate returns is likely to make managers focus on cost control and responsibility to the customer to maintain the commercial advantage. The private sector is more likely to have a sensible and efficient personnel policy, with senior managers paid whatever is necessary to achieve the best results, unencumbered by inappropriate comparisons against civil service salaries.¹

Eliminating Subsidies

The negative cash flow for the government in providing subsidies of the tariff system generally is a drag on the economic performance of the state-owned enterprise. It limits the ability to pursue capital investment programs and restrains the growth of the energy sector to the money available through government funding. The goal of restructuring options should be to realign the tariff pricing and adjustment mechanisms to reflect the actual cost of operations with an additional amount allocated to an investment program for the electric sector. This generally requires, at a minimum, that there be transparent regulation separate from the operation of the company with the state-owned enterprise commercialized to operate more as a private company than a state-owned enterprise.

¹Privatising The World - A Study of International Privatisation in Theory and Practice, Oliver Letwin; Chapter 2; Cassell Educational LTD; 1988.

Attracting Private Investment

The expansion of the world's power sector will require not only the resources of the international lending agencies but will require significant amounts of private investment. The inability of the government-owned power sectors to finance the construction of needed additional capacity is forcing the power sector to restructure to remove subsidies and increase rates in order to attract investors.

Expanding the Domestic Capital Markets

Privatization processes and the capital market are interconnected apart from the obvious fact that the divestiture of assets is a capital transaction. Capitalization and the mode of divestiture employed may be instrumental in strengthening the capital market. On the other hand, specific characteristics of the capital market may support or hinder the divestiture process.

Reducing Fiscal Deficits and National Debt

Privatization has become a tool to improve the fiscal health of the country through a reduction in the national debt. Proceeds of a sale of government ownership can be used to reduce debt. For example, a number of the transactions in the developing countries have included debt for equity swaps. The country's debt is purchased in the open market (at below face value) and traded at face value for the assets. The value of these exchanges to the government is a reduction in its often nonperforming debt.

Reducing the Role of Government

In most countries, the government has operated the power sector as an extension of the government to implement social policies, such as providing employment, subsidizing rates, using the tariff structure to collect taxes, and facilitate other social programs.

In balancing the requirements of the international lending agencies, the economic goals of the Macedonian Government, and the social and political objectives associated with the electric power sector it will be necessary to have an overall long term vision of where the electric energy sector should be in the next 10 years. This should include the realistic expectations for identifying the required capital needed for the expansion of the system, while maintaining tariffs that are socially and politically acceptable. These objectives may be in conflict with creating a viable commercially oriented electric company.

The worldwide trend is to improve the operation and performance of the power sector through sector reform and restructuring. Numerous countries have completed, or are in the process of completing, radical power sector restructuring programs. Throughout the world, vertical integration of the power sector continues to be the predominant form of delivery because of the monopolistic nature of this sector. As countries recognize the globalization of their economies and the importance of obtaining more efficient power sectors, various forms of the electric industry structure have emerged.

1. Disaggregation of generation, transmission and distribution, with competition being introduced in generation (i.e., United Kingdom, Chile, Argentina, and Peru)
2. Common government ownership of transmission and distribution companies with separate generating companies also owned by government. (i.e., Norway)
3. A mixture of vertically integrated companies; separate distribution and generation companies; and independent power producers (United States).

4. Vertical integration of generation, transmission and distribution owned by the government. This is the traditional monopoly model (France).
5. Vertical integration of generation, transmission and distribution (jointly owned by the government and private investors) with new capacity added through independent power producers. (Malaysia)

The need for flexibility in the design and implementation of power sector reform has been demonstrated throughout the world as each country has different economic and social objectives. The following discussion highlights the various models.

Exhibit 4-1
Summary of Selected World Power Sector Structures

	Malaysia	United States	United Kingdom	Norway	France
Country and Sector Economic and Institutional Characteristics	Developing industrial country where the power sector was owned by the government prior to partial privatization and introduction of IPP's.	Developed industrial country which has 50% of the world's generation; private and government-owned utilities.	Developed industrial country where the power sector was owned by the government prior to privatization.	Developed industrial country where the power sector is owned and operated by the government.	Developed industrial country where the power sector is owned and operated by the government.
Main Reform Objectives	Improve supply efficiency and mobilize alternative sources of finance to meet the growing demand for electricity and support the economic growth.	Introduce competition in the generation to improve supply efficiency.	Improve supply efficiency and end-use efficiency; mobilize alternative sources of finance; reduce country debt and involvement in the power sector.	Improve supply efficiency and end-use efficiency; maintain the government-owned utility.	Maintain the vertically integrated government-owned utility (EdF).
Reform Strategy					
Industry Structure Reform	Retain the 3 vertically integrated government owned companies with 27% of the largest company sold on the Kuala Lumpur stock exchange. IPPs provide additional capacity financed by private investors.	Energy Policy Act of 1992 opened up the transmission grid to mandatory wholesale wheeling; created exempt nonutility generators. Qualifying facilities established under 1978 Public Utility Regulatory Policy Act.	Disaggregation of the power sector in providing services by generation, transmission, distribution, and end-use supply.	Create a power market across traditional supply areas with the aim of introducing competition in the generation and end use; maintain transmission and distribution as monopolies.	EdF is a fully integrated generation, transmission, and distribution company that provides over 90% of the country's electricity to 27 million customers.
Private Sector Participation	27% of Tenaga Nasional Berhad was sold on the stock exchange and the government retains 73% ownership and 100% ownership of Sarawak Electricity Supply Corporation and Lemaga Letrik Sabah . Private investment is encouraged through IPPs	Investor-owned utilities; cooperatives; cogeneration; municipalities; and independent producers.	The distribution companies are joint stock companies; Nuclear Electric is government-owned; the transmission company is owned by the distribution companies. Generation is investor- and government-owned.	None.	None.

Exhibit 4-1 (Cont.)
Summary of Selected World Power Sector Structures

	Malaysia	United States	United Kingdom	Norway	France
Regulatory Approach	Minister of Energy coordinated energy policy and reporting activities of the electric companies. The Ministry will focus on reviewing tariffs and quality of service; limits its actions to those that influence private activity; and avoid intervening in the commercial decisions of private companies.	Federal Energy Regulatory Commission ("FERC") regulates wholesale interstate transactions; 50 state public utility commissions ("PUC") regulate commercial, retail, and residential sales through traditional embedded cost-of-service and ROR rate making	Transparent regulatory structure establishing an independent tariff commission; promote market pricing for generation through power pools; transmission and distribution are monopolies and price regulated; open transmission grid.	Introduced regulatory reform to commercialize the power sector and create a power pool for pricing of generation; open access to transmission and distribution; establish independent regulatory commissions.	Rates are set by the government upon EdF's proposal; EdF operates the utility for the government under a "Contrat de Plan" which stresses client service, reliability of the system, and environmentally sound practices.
Policy Reform Priorities	Stimulate private entrepreneurship and investment and thereby accelerate the rate of growth of the economy. Partial privatization of state owned enterprises and introduction of competition on the generation level.	Deregulate and introduce competition at the generation level for wholesale transactions through opening the transmission grid. Distribution is considered a monopoly with a designated franchise area.	Commercialize the power sector; reduce the country debt; reform legislation for the financial, commercial, and power sectors; attract private investment.	Rationalize a patchwork system and introduce competition in generation to improve efficiency; commercialize the power sector under government ownership; prepare to compete in the European economic area.	Regulation is based on EdF's state monopoly with a performance contract. State representatives are on the board of directors.

Section 5: Evaluation Criteria

The purpose of this section is to outline the types of criteria which will be used to evaluate the restructuring options discussed in Section 4. The purpose in evaluating alternative models is to establish a reference point based upon lessons learned and past success factors. The goal in applying criteria is to identify and select those components of these models which provide the most appropriate fit to the needs and requirements of the Macedonian power sector. The list of criteria presented below is not meant to be exhaustive but indicative of the types of factors we will be considering.

The criteria can be divided into two main classifications

- Macro-level criteria
- Operational level criteria

Macro-level criteria

These criteria reflect policy and institutional environment in the country. They explicitly recognize the evolutionary nature of power sector development as function of a country's economy and its institutions. These would include the following

- Capacity of the economy and the institutions in the country to support various restructuring approaches
- Policy objectives with respect to market reform in general
- Policy objectives with respect to power sector reform
- Capability of existing legislation to accommodate alternative structures

Operational Criteria

These criteria reflect the specific characteristics and needs of the power sector. Relevant criteria would include the following:

- Technical- consideration of specific system requirements for efficient operation and reliability as well as technical ability to support a competitive environment
- Economic - the principle elements to be considered would include viability of competition, and efficient pricing mechanisms, and resource impacts-human, capital, and environmental
- Financial-the principle factors include the ability to become a self sustaining company, credit worthiness and adequate cash flow to service debt
- Organizational-consideration will be given to effective governance, management capability, and management systems
- Institutional- the principle focus here would be on the appropriate role and scope for regulation

Section 6: Next Steps

The following steps are planned for the balance of the project:

1. Complete review of all documents received and seek input on this report
2. Conduct analysis of alternative models and identify appropriate options
3. Identify potential impacts on organizational and commercial aspects
4. Prepare draft final report
5. Present findings and discuss report at workshop in Skopje during week of December 4.
6. Incorporate comments into final report and identify any further action required

**Attachment A
LIST OF MEETINGS**

The following is a list of meetings and interviews conducted by the team during the period October 4 to October 21.

- | | |
|--------------------------------|---|
| Ministry of Economy | <ul style="list-style-type: none">- Minister of Economy Petrus Stefanov- Assistant Minister of Energy- Nikola Cerepnalkovski- Assistant Secretary Pricing- |
| Mircevski | |
| Ministry of Finance | <ul style="list-style-type: none">-Deputy Minister - Harry Kostov |
| Ministry of Development | <ul style="list-style-type: none">- Deputy Minister Spase Lazarevski |
| Privatization Agency | <ul style="list-style-type: none">-Deputy Director Mr. Zografski |
| Electrostopanstvo- | <ul style="list-style-type: none">-General Director Kole Spasovski-Director Development Ratko Mizo-Assistant to the General Director for Economic and Financial Matters M. A. Kosta Georgiev-Assistant to the Director for Legal, Personnel and Structural Matters Kiril Georgieski-Director of Skopje Distribution Plant Nikola Martinski-Director of Transmission Dimitar Chapov |
| Skopje Steel Plant | <ul style="list-style-type: none">- Director Slavco Slaveski-Director Energy Sector- Aleksandar Tomoski |



Appendix B

Power Sector Restructuring Models

Power Sector Restructuring Models

Country	United Kingdom	Peru
Country and Sector Economic and Institutional Characteristics	<p>The current structure of the U.K. electric industry resulted from the industry restructuring completed in 1990-1991. The electric industry in England and Wales is divided into a tripartite structure with companies specializing in generation, transmission, or distribution. In Scotland, by contrast, two of the three companies are vertically integrated from generation through transmission and distribution. The third Scottish company owns all of the nuclear power facilities in Scotland.</p> <p>In England and Wales, generation is dominated by National Power plc and PowerGen plc, with approximately 43% and 28% of the market, respectively; and all nuclear facilities are owned by Nuclear Electric Company (state-owned enterprise). IPFs and imports account for only 10 percent of electricity generated. At the time of restructuring, a significant amount of surplus capacity existed and continues to exist. Transmission services are provided by the National Grid Company ("NGC"), which is owned by the 12 Regional Electric Companies (RECs), which provide distribution services in their geographic franchise territories.</p>	<p>Peru's electrical industry is dominated ElectroPeru, which owns and operates eight generating plants, including the country's largest Mantaro y Restitucion, with a total installed capacity of 1584 MW. The industry is comprised of 10 integrated regional companies in addition to several other independently-owned power plants. ElectroLima, the largest of the regional companies, serves over half the nation's consumers, located primarily in the Lima metropolitan area. ElectroPeru and ElectroLima are both part of the Central-North Interconnected System and owner of two distribution companies. Electricity generated on this system represents 85 percent of the nation's total output.</p> <p>Currently, approximately 90 percent of Peru's electricity is generated by hydroelectric plants and 10 percent by thermoelectric plants. The thermal units are fired by diesel fuel. Hydropower, which supplies nearly two thirds of total electricity in Latin America, provides an indigenous source of electricity generation with very low operating costs.</p>
Main Reform Objectives	<p>As described by Cecil Parkinson, Secretary of State for Energy for the UK:</p> <ol style="list-style-type: none"> 1. "Decisions about the supply of electricity should be driven by the needs of customers. 2. Competition is the best guarantee of the customers' interests 3. Regulation should be designed to promote competition, oversee prices and protect the customers' interests in areas where natural monopoly will remain. 4. Security and safety of supply must be maintained 5. Customers should be given new rights, not just safeguards 6. All who work in the industry should be offered a direct stake in their future, new career opportunities and the freedom to manage their commercial affairs without interference from Government" 	<p>The objectives of the Government of Peru are to:</p> <ul style="list-style-type: none"> ■ Introduce competition ■ Create the opportunity for capital to flow into the national economy through the sale of state-owned assets ■ Develop a regulatory structure to ensure the effective integration of private activities ■ Foster an environment which will attract additional capital into the utility sector

Country	United Kingdom	Peru
Industry Restructure Reform	<p>The Central Electricity Generating Board (CEGB), a large bureaucratic governmental agency, was originally responsible for generation and transmission. Distribution was controlled by 12 government-owned Area Boards. CEGB was divided into three generation companies: National Power, Power Gen and the National Grid Company. The nuclear generation was maintained as an SOE and kept in a separate company. The twelve Regional Electricity Companies ("RECs") assumed the role of the distributors. Ownership of the transmission system was transferred from the generating side to the distributors.</p> <p>The generating companies no longer have the statutory obligation to supply sufficient electricity to meet current demand and to plan to meet future demand. This duty was assumed by the RECs. All large users have the choice of buying direct from a generator, and those near regional borders have the choice of which REC to buy from.</p>	<p>In November 1992, the Peruvian government enacted the Electrical Concession Law No. 25844 ("Law"), providing the framework for the private sector to participate in electricity provision. The Law requires a separation of the three primary electricity supply services: generation, transmission and distribution. The Law and the regulations implementing it require that regulated tariffs be based on marginal costs, with market forces eventually determining the prices charged by generators.</p>
Regulation	<p>The purpose of the regulatory model is to oversee prices, promote competition and protect the customers' interests in areas where natural monopolies remain (i.e. distribution and transmission)</p> <p>The role of the Director General of Electric Supply ("DGES") with respect to generation and supply is limited because it is expected that competitive forces will force productive and allocative efficiency. Contracted supply by bodies other than RECs to non-tariff industrial or commercial customers is not subject to price control because of market competition. The supply of electricity by RECs, as well as the monopoly activities of transmission and distribution, is regulated.</p> <p>Price control for the distribution and transmission grid is based on a RPI-X formula. The rates charged by a REC for distribution services are set equal to the base year revenue requirements</p>	<p>The Law established two committees to oversee the regulatory requirements, the Committee for the Economic Dispatch of the System (COES) and the Electric Tariff Commission ("Commission"). COES consists of the owners of the generating plants and the transmission company on each interconnected system. COES is responsible for the dispatch of the system; calculation of the short-term marginal costs; and for the efficient operation of the system. Composed of five members, the Commission has responsibility for setting regulated rates for distribution, generation and transmission.</p>

Country	United Kingdom	Peru
	<p>(calculated on the historical cost) times RPI-X. "RPI" equals the inflation rate, while "X" equals an efficiency factor which is calculated by the regulatory body. The theory is that the distribution company should be allowed to recover the total costs of operation adjusted for inflation, while the efficiency improvements should be the responsibility of the distribution company. Any resultant savings are then shared by both the company and the consumer.</p> <p>The National Grid Company(NGC) is owned by the RECs and the government. NGC is charged with promoting competition in generation by permitting non-discriminatory access to all parties and charging non-discriminatory prices to similarly situated customers. NGC's transmission prices vary by geographic zones which reflects the relative cost of transmission within that zone. Overall rate increases for transmission are based on a variation of the RPI-X formula used to set RECs' distribution prices.</p>	
Policy Reform Priorities	<ul style="list-style-type: none"> ■ Strong desire to introduce competition into the electric sector because of the economic concept that the market mechanism will solve all supply problems and provide the mechanism for the efficient allocation of resources. ■ Effective legal and regulatory frameworks that clearly outline the responsibilities and obligations of the disaggregated entities, the private investors and the Government. ■ Reliable high voltage transmission grid to provide open access to the Grid and the customers for all the generating companies. ■ Privatize the assets and reduce the country debt. ■ Eliminate subsidized prices 	<ul style="list-style-type: none"> ■ Strong desire to introduce competition into the electric sector because of the economic concept that the market mechanism will solve all supply problems and provide the mechanism for the efficient allocation of resources. ■ Effective legal and regulatory frameworks that clearly outline the responsibilities and obligations of the disaggregated entities, the private investors and the government. ■ Privatize the assets and reduce the country debt. ■ Eliminate subsidized prices

Country	Malaysia	France
Country and Sector Economic and Institutional Characteristics	<p>Since independence, Malaysia has developed into one of the most politically and economically stable countries in the region. Malaysia is quickly moving towards a high technology industrial economy, while its heavy industrial sector remains relatively small. Development is concentrated largely along the west coast of Peninsular Malaysia. Manufactured goods, crude oil, liquefied natural gas, natural rubber, palm oil and timber products are major exports. Power sector was owned by the national government.</p>	<p>The electricity industry is dominated by the government-owned utility Electricite de France (EdF), which provides over 90% of the country's electricity to over 27 million customers.</p> <p>EdF is a fully integrated, generation, transmission, and distribution company that, with the exception of a few industrial autoproducers, owns all the power stations, the transmission network and local distribution to all but a handful of municipalities. EdF manages all aspects of planning, design and operation of the electricity sector. EdF is by far the largest electricity utility in Europe, with over 118,000 employees and annual sales in excess of 375 billion kilowatt hours.</p>
Main Reform Objectives	<p>To encourage continued economic growth, Malaysia has embarked on a major program of privatization and has developed a Privatization Master Plan (PMP) with the following objectives:</p> <ul style="list-style-type: none"> ■ Promote competition, improve efficiency and increase productivity. ■ Stimulate private entrepreneurship and investment thereby accelerating the rate of growth of the economy (consistent with Malaysia's Vision 2020, in which the government envisages the private sector to be the prime engine for growth in the future). ■ Improve power supply efficiency ■ Mobilize alternative sources of finance to fund growth of electricity demand 	<p>The Government of France wanted to provide electricity service and expansion through a state-owned enterprise, but also wanted a more competitive enterprise.</p>

Country	Malaysia	France
Industry Restructure Reform	<p>Electricity supply in Malaysia is provided by three autonomous public utilities. The largest of these is Tenaga Nasional Berhad (TNB), the successor organization of the National Electricity Board, which was incorporated in 1990. The Sarawak Electricity Supply Corporation (SESCO) is a statutory body owned by the State Government of Sarawak. The Lembaga Letrik Sabah or Sabah Electricity Board (LLS) is a statutory body owned by the Federal Government. Besides these, several private licensees generate and supply power to isolated areas and mines.</p> <p>The EPU has responsibility for overseeing the privatization initiative as well as in the coordination of capital plans in the Malaysian Five-Year Plans. The Ministry of Energy, Telecommunications and Posts (METP) coordinates energy policy and reporting activities of TNB, SESCO and LLS. It also appoints a Director General of Electricity Supply with broad powers, under the Electricity Supply Act of 1990 (ESA), to issue licenses and regulate the operations of the utilities and other licensees.</p>	<p>The development of the French electric industry and of EdF was a direct result of the Nationalization Law of 1946. EdF was organized as a State-Owned Enterprise that was formed by the utilities that were nationalized.</p>
Regulation	<p>As a "flagship" privatization under the Privatization Master Plan, the flotation of TNB created the largest capitalized company on the Kuala Lumpur Stock Exchange. TNB's size and importance in national economic development has raised many concerns. Among these are how a natural monopoly could operate efficiently and supply electricity at the right price and quality. The Privatization Master Plan includes a regulatory framework for industries or sectors of the economy where workable competition is not viable.</p> <p>The regulatory framework establishes that the government will:</p> <ul style="list-style-type: none"> ■ Focus its activities on reviewing price (or tariffs) and quality of service, 	<p>The framework for the regulation of EdF is the Performance Contract called "Contrat de Plan". The purpose of this contract is to provide the regulatory mechanism and give the utility autonomous management control while remaining a government owned utility. The rates are calculated by EdF and submitted to the government for approval under the stipulations in the "Contrat de Plan". The trend in the rates over the last ten years is a downward trend as a result of this process.</p> <p>The main objectives of the "Contrat de Plan" are:</p> <ul style="list-style-type: none"> ■ Focus on client service and quality, ■ Continued debt reduction (reduction of 40 billions in four years, starting from about 200 billion FF), ■ Continuous reduction of electricity tariffs (approximately 1.25% each year),

Country	Malaysia	France
	<ul style="list-style-type: none"> ■ limit its actions to those that influence private activity rather than attempting to direct it; and ■ avoid the use of its discretionary powers to intervene in the commercial decisions of private companies. <p>As a first step towards implementing the new regulatory framework for the electricity supply industry, the Electricity Act of 1949 was replaced by the Electricity Supply Act. The Act defines the roles and responsibilities of the regulator, the Minister of Energy, Telecommunications and Post and the Jabatan Bekalan Elektrik (JBE), the utilities and other licensees. In addition, the Act provides for the issue of licenses by the regulator for the generation, transmission and/or distribution of electricity. TNB has been issued a license to operate an integrated facility for the supply of electricity while the other utilities continue to operate under their original charter under federal or state law. In April 1993, YTL Corporation (YTL) was issued the first license as an independent power producer (IPP) to build and operate an independent power generating facility.</p> <p>The Act's scope is currently limited to Peninsular Malaysia and Sabah. The electricity supply industry in Sarawak and SESCO are governed by the Sarawak Electricity Supply Corporation Ordinance of 1962 (SEO). Unlike TNB and LLS, SESCO does not come under the purview of the Act.</p>	<ul style="list-style-type: none"> ■ Maintenance of nuclear safety standards, ■ Expansion of the operations through external development and diversification (including international affairs), ■ Focus on continuous environmental efforts (underground lines, SO₂ and NO_x depollution programs for thermal-non nuclear units). <p>As a result of the success of the performance contract, there has been no significant change in the regulatory environment for the last ten years.</p>
Policy Reform Priorities	<p>The current policy of the Government of Malaysia is designed to provide opportunities for the private sector to participate in the development of new generation plants and to move the electricity sector towards market-driven results. The objective is to continue to meet the mandate that the three utilities currently operate more efficiently. That is, to continue to provide low-cost, reliable and adequate supplies of electricity.</p>	<p>The power sector remains highly regulated and government controlled with no private sector participation.</p>

Country	Norway	United States
<p>Country and Sector Economic and Institutional Characteristics</p>	<p>Norway is a unitary country but with active local authorities, many of whom are involved in electricity supply either individually or in association with authorities. At national level energy policy is the responsibility of the Royal Ministry of Industry and Energy. The Norwegian electricity supply is characterized by a large number of small undertakings in state, municipal and private ownership, and almost complete dependence on water as a source for electricity generation. Norway is Europe's largest producer of hydro electricity and the highest consumer of electricity in the world at an average 25,100 kWh per household.</p> <p>The largest electricity producer is the state-owned power company, Statkraft, that was formerly a Directorate of the Ministry of Energy and Petroleum, produces about one-third of Norway's electricity. The remaining two-thirds are generated by regional producing utilities and producing companies, or by industries (especially the aluminum industry) for their own use. Statkraft also owns about 85% of the main transmission grid and has a monopoly on the import and export of electricity. There are about 250 local distribution utilities, most of which have a very small customer base of between 1,000 and 10,000 subscribers. The distribution companies buy wholesale electricity from the regional utilities and companies. A clearinghouse auctions surplus ("occasional") power at spot prices to regional and local utilities and industrial buyers in years of high rainfall when there is excess power production.</p>	<p>From the 1950's to the early 1970's, U.S. consumption of electricity grew at a average rate of 8% annually. The 1973-74 oil price shock, however, challenged the industry. Energy conservation measures have reduced the growth rate, which is now approximately 3% annually. The U.S. per capita usage of electricity is 30% higher today than it was 15 years ago.</p> <p>The principal fuel source of the generation of electricity in the United States is coal, accounting for over 55% of generation. The second most important fuel source is nuclear accounting for approximately 20% of generation, followed by hydro with 10%. Natural gas accounts for 9.4% of all generation but this source is growing due to availability, price, and environmental factors. Oil accounts for 4% of total U.S. generation.</p>

Country	Norway	United States
<p>Main Reform Objectives</p>	<p>Energy policy is closely linked with the general development of the country and with government financial management. However, high priority is also given to environmental protection. The main objectives of Norwegian energy policy are to:</p> <ul style="list-style-type: none"> ■ Secure a steady pace of exploration and development of the continental shelf in a way consistent with the country's long-term economic interest; ■ Secure rational and economic utilization of power resources and secure the delivery of power and level out prices to consumers; ■ Rationalize electricity production and distribution through a more economically efficient energy market and consolidation of small utilities; ■ Reduce atmospheric emissions particularly through the more efficient use of energy. <p>One of the main objectives of the Energy Act is to promote a transition from a state-administrated negotiation economy with a monopoly function, to market liberalization, but still under government ownership. Basic market assumptions in this context are that the price of power should reflect the price sensitivity of the consumers and the market, and that the end consumer should have a realistic choice between electricity retailers to ensure suppliers on best possible terms.</p> <p>Other objectives of the implementation of the new Energy Act were the equalization of power prices nationwide, the establishment of new power development based on genuine demand, and the promotion of the cheapest development solutions</p>	<p>The U.S. regulatory and industry model is based on four pervasive principles:</p> <ol style="list-style-type: none"> 1. Franchised monopoly 2. Obligation to serve 3. Fair price to customer 4. Fair profit to investor <p>Increased competition in generation commenced through legislative mandates at the Federal level with passage of Public Utility Regulatory Policy Act in 1978 which allowed independent power and the Energy Policy Act of 1992 which further reduced restrictions on IPPs and also set stage for open access on the transmission grid.</p>

Country	Norway	United States
<p>Industry Restructure Reform</p>	<p>In June 1990 the Parliament approved a new Energy Act ("Act"). This law was intended to create a power market across traditional supply areas with the aim of introducing competition in the production and sale of electricity. However, these changes do not affect the transmission or distribution of electricity, which are considered natural monopolies. The organization of the power sector is intended to separate generation, transmission and distribution functions</p> <p>The deregulation of the power market came into full effect in 1992. The result was stronger than predicted due to the imbalance in the market with a production surplus. The increased access to the power exchange and the presence of brokers and agents as new players in the market led to keener competition and pressure on prices.</p> <p>Sufficient power is available between regions in Norway and between the Nordic countries. The problem is no longer one of supply; it is now one of price. The owners of the grid get compensation based on their invested capital (historical cost principle) and rate of interest and operating expenses. The tariffs are regulated by the authorities.</p>	<p>The U.S. industry is dominated by privately owned fully-integrated electric companies. There are over 220 such privately owned companies accounting for over 75% of all generation in the United States. These companies generate, transmit and distribute power to ultimate consumers. The territories they serve follow no particular geographic pattern other than the great majority of them have a service territory within a given state. This tendency to be within one's state is a result of a burdensome federal regulation that makes it much more costly to operate in a multi-state environment. The remaining 25% of the industry is owned by federal and local governments.</p> <p>Independent power producers are playing a key role in the transformation of the U.S. electric industry. Until 1978, all electric generation in the United States was owned directly by public utilities except for south generators owned by large industrial companies. The loosening of restrictions on the construction of generation capacity has fostered the development of an entire new industry. It has grown steadily and currently has the capacity of 50,000 megawatts, equivalent to about 6% of the total generation capacity in the United States. Most importantly, about half of all new generation being built in the U.S. is being built by independent power producers. It should be noted that some of the largest of the independent power producers are non regulated affiliates of utilities.</p> <p>It is important to note that IPP's can only sell to the electric companies and not to ultimate consumers. The franchise monopolies in the United States still maintain the monopoly on 100% of their customers within their franchise territory. However, as these franchise monopolies need additional capacity, they are either inviting or in some cases required by the regulatory bodies to seek competitive bids for new generation. This condition will change under the Energy Policy Act.</p>

Country	Norway	United States
Regulation	<p>The Storting (Parliament) is actively involved in energy policy and the main policies and programs have to be submitted for its approval. The Ministry is supported by two other technical bodies:</p> <ul style="list-style-type: none"> ■ Norwegian Water Resources and Energy Administration (NVE) who are responsible for the supervision and regulation of the electricity industry; ■ Norwegian Petroleum Directorate who are responsible for the day-to-day regulation of oil and gas activities. <p>The Act also abolished the utilities' former obligation to supply and introduced supply-side competition and mandated open transmission access. Customers, from households to large factories, can shop around for the best supply deal from any utility.</p> <p>There are three established markets for supplies of electricity: the spot market, the weekly market, and the regulated market. Somewhat similar to the United Kingdom, in the spot market, generators bid daily the prices at which they are willing to supply power during six periods of the following day. The resulting price equates expected supply and demand. In the weekly market, prices are set weekly from the following three to seven weeks and for the ensuing four five--week periods. The regulating market ensures that, given the prices established in the spot market, supply and demand for electricity balance out.</p>	<p>The State Public Utility Commission sets the "retail" or "end-user rates" and the Federal Energy Regulatory Commission (FERC) at the Federal level sets "wholesale" or "resale" rates. The states represent approximately 90% of the transactions regulated. These State Public Utility Commissions develop similar approaches to such issues as how to determine allowed rates of return; how to set rates for different classes of customers (residential, commercial and industrial); who- customers or investors- should bear the cost of excess capacity; and how much competition should be mixed into a system until very recently characterized primarily by monopoly suppliers.</p> <p>The Federal Energy Regulatory Commission has been established at the federal level. There are five members with five year terms that are appointed by the President of the United States and approved by the U.S. Senate. FERC is responsible for the regulation of the electric wholesale contracts, hydro facilities, oil and gas pipelines.</p> <p>Each commission is supported by a staff of professional personnel with civil service status. (i.e. accounting, engineering, legal, and environmental).</p> <p>There are four components of this regulation exercised by the state and federal regulatory agencies that in combination distinguish the public utility from other sectors of the economy: control of entry, price setting, prescription of quality and conditions of service, and the imposition of an obligation to serve all applicants under reasonable conditions. These fundamental components of regulation were developed in response to two basic considerations. The first is that electricity, unlike most other goods and services, is essential to consumers' well-being. The other basic consideration underlying the regulation of electric utilities is its monopoly character.</p>

Country	Norway	United States
Policy Reform Priorities	Norway's restructuring was not to involve privatization but was meant only to make the SOEs more efficient. The Act was meant to rationalize a patchwork system and introduce market-based trading and competition in electricity supply.	The U.S. has a long tradition of a privately owned government regulated industry. Now it intends to introduce competition at the generation level for wholesale transactions through opening the transmission grid. Currently distribution is considered a monopoly with a designated franchise area.

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Appendix C

Central and Eastern European Power Sector Restructuring Experience

Country	Lithuania	Poland
Installed Capacity, MW:	6,329 (However, only 5,453 can practically be used)	29,000
Ownership	Lithuanian State Power System (LSPS) is 100% owned by the state.	The electricity industry is 100% state-owned.
Structure	LSPS operates as a single vertically integrated utility. In 1992 the distribution activities of LSPS were separated and several months later were re-integrated into the company. LSPS's nuclear power plant (3 000 MW) is organized as a separate entity.	In mid-1990 the single vertically integrated electricity company was separated into 34 generating companies, a national transmission grid and 33 distribution companies.
Restructuring Objectives	Since 1991, construction type companies have been separated from LSPS. The following are further objectives of restructuring: - transfer of heating companies to municipalities' ownership - possibly in the future, transfer electricity distributing companies to municipalities' ownership - merge LSPS and the nuclear power plant	Ensuring a reliable supply of electricity through a competitive electricity market while minimizing negative impacts of the industry on the environment. A three-phase model to have a fully competitive electricity sector by 2008 has been proposed.
Energy Legislation	There has been no new energy legislation subsequent to 1989.	A new Energy Law has been drafted and the draft continues to be revised.
Regulatory Approach	In May 1994 the Board of Energy Prices was established headed by the Minister of Finance which regulates the prices for utilities. LSPS submits proposed price changes to the Board of Energy Prices for their review and approval.	A May draft of the Energy Law proposes an Energy Regulatory Authority, which would be an integral part of the government.
Electricity Prices, in USD per kwh:		
Residential	0.04	0.05 + 0.53 monthly fee
Industrial	0.04 in average, depending on the installed capacity at a particular company.	24 hour tariff: 0.03 - 0.07

Country	Romania	Slovakia
Installed Capacity, MW	22,700	5,400
Ownership	The Romanian Electricity Authority (RENEL) is 100% owned by the state.	The electricity industry is 100% state-owned.
Structure	RENEL operates as a single vertically integrated utility.	The generation and transmission functions are included in a single utility, Slovenský energetický podnik (SEP) which, effective 1 November 1994, became a joint-stock company Slovenské Elektrárne (SE). The distribution activities were separated from SEP as of 1 July 1990 and set-up as three separate state-owned companies.
Restructuring Objectives	There have been no actions taken to restructure the electricity industry. The World Bank is prepared to fund a project (approximately USD 440 million) to restructure, upgrade and rehabilitate the national energy sector.	The objective of the restructuring in 1990 was to break up large state monopolies and introduce competition. In September, 1994, the four electricity companies were removed from the second wave of coupon privatization. In November, the government indicated the industry would remain government owned.
Energy Legislation	There has been no new energy legislation subsequent to 1989.	There has been no new energy legislation subsequent to 1989.
Regulatory Approach	There is no "independent regulation" of energy prices.	There is no "independent regulation" of energy prices.
Electricity Prices, in USD per kwh:		
Residential	0.02	0.03 + 2.20 monthly fee
Industrial	0.05	

Country	Bulgaria	Czech Republic	Hungary
Installed Capacity, MW:	10,500	10,700	7,000
Ownership	The National Electric Company of Bulgaria (NEC) is owned 100% by the state.	The generation transmission sector is owned 70% by the state and 30% has been privatised through the country's coupon privatisation program. The distribution sector is 100% state owned and is in the process of being privatised, 15% through coupon privatisation and 20% to be sold to a western utility investor.	The state owns 100% of MVM Rt a holding company which accounts for 97% of Hungary's electricity. The principal shareholder in MVM is the State Asset Holding company, the AV Rt, which has responsibility pursuant to a government decree for retaining 50% plus one share in MVM. The AV Rt has interpreted this provision as meaning that it only needs to maintain 50% ownership of the whole industry as held by MVM Rt and based on the nominal capital structure. Accordingly, by retaining the national distribution and transmission network and the nuclear power generation station within state ownership, this interpretation would then allow the AV Rt to sell up to a 100% interest of any of the generation or distribution companies (subject always to any minority stakes held by local municipalities).
Structure	NEC operates as a single vertically integrated utility. The various generating plants and customer service locations, however, are highly decentralised.	The generation and transmission functions are included in a single utility, ČEZ, a.s. The distribution activities were separated from ČEZ as of 1 July 1990 and set up as eight separate state owned companies.	The MVM holding includes eight power plant companies and six distribution companies which are all joint-stock companies. The generation and distribution companies are 50% owned by the holding company (MVM) and 50% (less a small percentage for local governments) owned directly by the state (AV Rt). The transmission company is fully owned by the holding company.
Restructuring Objectives	In 1993 various structures were considered for NEC and the electricity sector, with the objective of introducing competition. No restructuring has been completed to date.	The objective of the restructuring from 1 July 1990 through 1 May 1992 when ČEZ was established as a joint-stock company was to break up large state monopolies and introduce competition. District heating and activities not related to electricity generation were also separated from ČEZ.	Hungary's primary objective in selling electricity assets is to raise revenue for the state because of significant budget deficits. A privatization bill is being debated in Parliament as of late November 1994.
Energy Legislation	There has been no new energy legislation subsequent to 1989.	Energy legislation had been in process for some time and on 3 November 1994 an energy bill was approved by parliament.	An electricity act was passed in mid-1994 which was designed to ensure a stable supply of energy at prices which protect the interests of consumers, producers and distributors.

Regulatory Approach

There is no "independent regulation" of energy prices.

The new energy law gives the Ministry of Industry and Trade broad "regulatory" / supervisory power over the electricity industry. The Ministry of Finance retains control over end user electricity prices.

A new Energy Office has been created which will license electricity suppliers, protect customers and establish prices (price authority is effective 1 January 1997).

Electricity Prices, in USD per kwh (Source: Business Central Europe, September 19, 1994 except for Lithuania which was LSPS):

Residential 0.016 day, 0.008 night

0.03 + 1.32 monthly

0.04 (0 - 600 kwh yearly), 0.05 (601 - 9,600 kwh yearly), 0.08 (over 9,600 kwh yearly)

Industrial 0.04 day, 0.02 night

0.11 + 2.61 monthly

0.03 + 22.20 yearly fee, to 0.04 + 23.40 yearly fee



Appendix D

Evaluation Matrix – Macedonia

**Part I – Macroeconomic Criteria
Macedonian Power Sector Evaluation Matrix**

Criteria	Rationale	Conditions	Restructuring Implications
Economic factors	Capacity of economy to support option	Depends on medium- to long-term outlook	Will facilitate or retard movement towards more sophisticated models
1) GDP growth	Key driver of electricity demand, incomes and revenues	Situation dependent not only on internal conditions but also external conditions (Greece and Serbia). Two scenarios: 1) No immediate resolution of external factors: no growth 1995 and 1996, with minimal growth (<2%) to 2000. No growth in industrial sector 2) Resolution of external factors in 1995: no growth in 1995 and 2-3% growth to 2000	Not conducive to more sophisticated models Provides basis for consideration of more sophisticated models
2) External debt position	Affects credit worthiness	Situation dependent on negotiations with Paris Club and others (currently over \$150 million). Resolution will require several years	Limits scope for foreign private investors; potential for debt-equity swaps
3) National budget	Ability to achieve viable budget affects financial position and perceived country risk	Budget will be prepared under severe fiscal measures; will still incur significant deficit in next 3 to 5 years depending on resolution of external factors. Foreign support required to conserve limited reserves	Limits scope for foreign private investors
4) Inflation/ interest rates	Affects project financial performance through impact on pricing and debt service on local debt	Very restrictive monetary policy has reduced inflation significantly – levels of 1.5-2.0%/month likely, but will be very sensitive to external conditions and foreign assistance	Impacts power purchase agreements, fuel supply agreements and foreign exchange through increased risk
5) Energy economy	Affects competitive environment	Country has limited domestic resources with exception of hydro	Limited near- and intermediate-term potential for interfuel competition

Part I – Macroeconomic Criteria (Cont'd)

Criteria	Rationale	Conditions	Restructuring Implications
Institutional factors	Establishes environment conducive to restructuring and competition	Dependent on new government	Will facilitate or impede restructuring alternatives
1) Privatization policy	An aggressive policy towards privatization promotes competition and attracts investors	Country has passed an aggressive privatization law – however utilities are specifically excluded	Negative with respect to the power sector
2) Power sector policy	Directly affects restructuring and the extent of competition	Country currently considering two proposed laws: a) Public Enterprise Law – will maintain state control of power sector and prescribes means of governance b) Energy Law – will allow private power	Limits restructuring options and does not necessarily facilitate private power. No formal statement of vision or objectives; No provision for regulatory oversight
3) Financial institutions	Directly affects investment considerations	Banking sector undergoing significant restructuring; financial markets essentially nonexistent	Severe limitation on private power investments and ability of utility to finance growth
4) Commercial law	Impacts ability of foreign investors to participate – increases level of risk	In early stages of development	Limits private power development
5) Foreign investment	Directly impacts scope and role of investors	Country has passed a liberal foreign investment law	Will facilitate investment in the country
6) Regulation	Ensures level playing field and prevents unfair competitive practices	No action has been taken yet; Energy Law leaves resolution to Ministry of Energy	Limits applicability of more advanced models in near term (next 2 to 3 years)

**Part II – Power Sector Criteria
Macedonian Power Sector Evaluation Matrix**

Criteria	Rationale	Conditions	Restructuring Implications
Technical factors	Impacts ability to maintain system integrity and provision of reliable service at lowest cost	Dependent on specific factors identified below	Affects the degree and scope of restructuring options
1) Generation	Impacts viability of competition	Thermal generation accounts for over 80% of generation. Bitola plant accounts for over 40% of capacity and approximately 70% of thermal generation. Limited potential for new thermal in mid-term	Limited potential for viable competition in near- to mid-term
2) System reliability	Degree of restructuring will depend on how reliable the system is	System is currently isolated due to external factors – alternatives being pursued but still several years away. New Skopje-Bitola line will improve reliability within country	Current state of system impedes ability to move power around country. Does not support more advanced models
3) System operation	Ability to compete and provide lowest cost of electricity will be affected by the ability to operate the system in an optimal manner	Current state of system prevents optimal dispatch of units; and import/export capability	Limits competition in near- to mid-term

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Part II – Power Sector Criteria (Cont'd)

Criteria	Rationale	Conditions	Restructuring Implications
Economic factors	Impact the nature and scope of competition	Dependent on specific factors identified below	Key determinant of appropriate model
1) Market conditions	Determines the nature of competition	Currently there is a supply/demand balance with limited demand growth projected under either macroeconomic scenario. Supply will be adequate to meet demand. Little potential for imports at this time due to external factors	In mid-term, potential for competition very limited. Prospects may be better in longer term – after 2000
2) Pricing	Impacts efficient allocation of resources – affects market entry	Pricing currently reflects an average historical cost model; Prices below market levels	Does not send appropriate signals with regard to supply requirements or demand. Inappropriate for facilitating entry of private generation
3) Resource requirements	Ability to provide and use most efficiently – influences scope of competition	Currently unlikely that resources are being utilized in most efficient manner. Limited resource requirements but limited ability to provide. ESM embarking on plan to correct these problems	Power sector needs to focus on needed changes; however, also suggests need for competition as a means to promote efficiency

Part II – Power Sector Criteria (Cont'd)

Criteria	Rationale	Conditions	Restructuring Implications
Financial factors	Indicates need for restructuring; ability to compete effectively	Depends on specific factors identified below	Potential for private power to provide alternative source of capital
1) Capital requirements	Impacts ability to restructure power sector and indicates need for new entrants	Based on existing plans, projected capital requirements over next 5 years are approximately \$700 million	Funding is inadequate. Program needs to be reevaluated
2) Financial position	Impacts ability to attract capital fund growth and compete	Based on current tariffs losses are projected over next several years	Current performance suggests need for internal restructuring and limits adoption of more complex models
3) Financing capacity	Impacts ability to fund investment program	Currently given current debt load and cash flow position unlikely that capital program could be funded internally; external financing will also be limited	Need for external sources of capital – presents basis for allowing private investment

Part II – Power Sector Criteria (Cont'd)

Criteria	Rationale	Conditions	Restructuring Implications
Organizational factors	Directly affects competitive capability	Depends on specific factors identified below	Limits adaptation of more complex models
1) Structure	Impacts scope of restructuring and competition	Currently sector operates in command-control mode – Public Enterprise law seeks to change this in principle but little change expected in actuality	Legal barrier to transition to more appropriate structure – limits scope of competition
2) Decision-making	Affects competitive viability	Very centralized system in effect; no plans to change the system. Public Enterprise law would add layer of decision-making	Limits competitive viability and adoption of basic models
3) Management systems	Affects competitive viability	Rudimentary process in existence – but no type of strategic or business planning in effect including resource planning. Financial systems are also rudimentary as are personnel management systems	Fundamental changes required in order to become commercially and competitively viable; Suggests need for mechanism to ensure changes are made and implemented

Part II – Power Sector Criteria (Cont'd)

Criteria	Rationale	Conditions	Restructuring Implications
Institutional factors	Ensures the viability of the adopted structural model	Depends on specific factors identified below	Requirement for any model adopted
1) Tariff setting/regulation	Necessary condition for implementation of all models	Prices currently approved by Ministry of Economy. No provision to move to a more independent structure	Limits adoption of any option
2) Licensing/permitting	Necessary condition for implementation of all models	Currently decided by government – no provision for more procedural and independent process	Limits adoption of any option
3) Antimonopoly oversight	Eliminates/minimizes noncompetitive practices	None in existence or proposed	Limits adoption of any option

Appendix E

Workshop Summary

- **Trip Report**
- **Views and Conclusions –
Ministry of Economy**
- **List of Attendees**

USAID Regional Energy Efficiency Project - Electric Power Systems
Contract No. EUR-0030-C-00-2055-00
Bechtel Corporation

TRIP REPORT

Dates: February 20-24, 1995

Location: Skopje, Macedonia

Purpose: Workshop on Analysis of Options for the Structure of the Power Sector of Macedonia

Prepared by: Roger F. Griffin

Summary

The purpose of the trip was to hold a workshop to summarize and discuss the results of the study performed by a Bechtel-Arthur Andersen team to review the Macedonian power sector and evaluate options for future restructuring. The workshop, held on February 23 at the Ministry of Economy in Skopje, included a two-hour summary presentation by the Bechtel-Arthur Andersen team followed by questions and answers and discussion among the participants. The approximately 50 participants included representatives of the Ministry of Economy, Ministry of Development, the national power company Elektrostopanstvo na Makedonia (ESM), other power producers, large energy users, the Macedonian Chamber of Commerce, the Macedonian Academy of Sciences and Arts, and university faculties. Assistant Minister of Energy Nikola Čerepnalkovski introduced and closed the workshop and provided a written summary of his views and conclusions (translation attached).

Participants

The following members of the Bechtel-Arthur Andersen team participated in the workshop and related meetings during the week:

Roger F. Griffin - Bechtel Project Director
Diana M. DePinto - Arthur Andersen Restructuring Specialist
H. Kendall Hobbs - Arthur Andersen Utility Partner for Central Europe

A partial list of Macedonian participants in the workshop is attached.

Meetings with Ministry of Economy

Several meetings were held with Mr. Nikola Čerepnalkovski, Assistant Minister of Energy, to coordinate arrangements for the workshop. As the responsible person for the study he had arranged for translation of the draft final report, distributed it to a wide range of interested

parties, issued the invitations to the workshop, and opened and closed the workshop. Because he had received several inquiries about the study from professors and other interested parties who had not been involved in earlier discussions, he had expanded the list of invitees to the workshop and warned us that there might be some critical comments during the discussion.

The Bechtel-Arthur Andersen team and USAID Representative Linda Gregory met with the new Minister of Economy Risto Ivanov immediately following the workshop to brief him on the presentation and outline possible next steps. Mr. Ivanov was appointed to his position following the recent elections and was not very familiar with the study or its background. However, according to Mr. Čerepnalkovski, he is a strong supporter of restructuring and is anxious to move ahead. He informed us that they have already committed to some internal restructuring of Elektrostopanstvo (ESM) as a result of World Bank recommendations to improve the 25 largest money losing enterprises in Macedonia.

Meeting of Energy Association of Macedonia

The team was invited to attend the annual meeting of the Energy Association of Macedonia on February 22. The workshop was postponed one day to avoid a conflict with the Association meeting since many of the Association members planned to attend the workshop, including some energy users and professors who had not previously been involved in the study. The Association publishes a magazine and sponsors various technical seminars, including an international symposium on Energy Systems in Southeastern Europe to be held September 21-23, 1995, in Ohrid, Macedonia.

Meetings with USAID Representative

The team met initially with USAID Representative Linda Rae Gregory to discuss plans for the workshop, and had a final briefing with her to review the results of the week. Ms. Gregory also attended part of the workshop and led the meeting with the Minister of Economy.

Summary of Comments During Workshop Discussions

A major purpose of the workshop was to stimulate discussion among the various interested parties about the issues addressed during the study. The following key points were made:

- A few participants expressed concern that not all interested parties had been consulted during the study and that the results might have been different if they had been.

It was pointed out that during the three-week data gathering period last October discussions were held with as many people as possible, including representatives of the responsible government agencies, ESM, the steel mill, and others suggested by the Ministry of Economy. However, it was not the intent of the study to make specific recommendations but only to identify and evaluate options for Macedonia based on the experience of other countries and our independent judgment, to provide a basis for further discussion among the various Macedonian interests, i.e., the "stakeholders" indicated on viewgraph 5. That is, the study was intended to start the discussion, not

to end it, and based on the discussions at the workshop it appears to have been successful.

- Representatives of two independent power producers (a water supply system including some small hydro power units, and an industrial cogeneration plant) felt that more attention should be given to IPPs and expressed concern that the current tariff structure does not encourage IPPs. The representative of the water company urged the Ministry to act quickly to permit financing of several planned new small hydro units.

It was pointed out that all restructuring options identified in the study called for IPPs to be permitted on a non-discriminatory basis to provide a degree of competition in generation. While we could not discuss the specific situation raised, we reiterated the suggestion for an energy and power sector master plan to address long-term needs and policy, and implementation of the plan through appropriate laws and a regulatory framework which allows for IPPs. In response to a request we agreed to provide an example of a typical power sales agreement between an independent power producer and a utility in the U.S.

- There were several comments concerning the need for regulation for all of the options discussed and a desire for more information on the subject of power sector regulation.

During the presentation the need for some form of regulation, in differing degrees, for all options was emphasized. This appeared to be understood and accepted. However, the subject of power sector regulation is very complex and it was not possible to address it in detail in the report. It was pointed out that USAID sponsors various activities to provide specific training in regulation and it is expected that Macedonian representatives will be able to participate in some of them.

- Some participants emphasized the importance of environmental issues in Macedonia since most of the power is produced from lignite, and suggested that this subject was not adequately addressed in the report.

We agreed that meeting environmental objectives is an important requirement for the power sector and an important function of regulation, as indicated in viewgraph 38 (Role of Regulation), but specific discussion of this subject was beyond the scope of our study. We agreed to include in the report additional reference to the importance of environmental regulation.

- After some urging several participants expressed opinions on the appropriateness of the three restructuring options presented. Examples:
 - Not surprisingly, two different ESM representatives thought that Option 1 (vertically integrated utility) was preferable and implementable, that it was possible to privatize some small generation, and that a modern regulatory system was necessary. One said he thought it would take some time to fully implement. (We agreed that even Option 1 would take time to do properly based on the experience of other countries.)

- The small hydro advocate also agreed that the vertically integrated system was most appropriate provided that a regulatory system is present "to allow the freedom of independent producers while the state controls what they should control."
- A Ministry of Development representative stated that for their present situation they have limited opportunities for restructuring so he thought Option 1 is most appropriate. It allows for both state and private development to meet the current limited growth, and for more rapid growth in the future it also allows for the sub-option of independent producers supplying power directly to large consumers. He also said they needed a long-term energy plan to replace one developed in the mid-1980s which is no longer valid.
- A professor indicated that Macedonia had experienced all of the options in some form over the past 50 years so none were really new to them, just the current situation. Another participant expressed the view that Macedonia's power sector was unique and that the experiences of other countries could not be applied directly without considering overall energy development.

General Conclusions of Study and Workshop

Although the purpose of the study was to identify and analyze possible power sector restructuring options and not to make specific recommendations, a number of conclusions can be drawn from the study and the discussions at the workshop, including the following:

- The study provides a useful basis for further discussions concerning the future direction of the Macedonian power sector. The next step is to form a working group representing various Macedonian interests to discuss these issues and to develop a master plan for the industry. All interested parties ("stakeholders") should be represented in the early discussions to minimize difficulties in implementing the master plan.
- Some form of regulation will be required for any of the power sector restructuring options identified for possible application in Macedonia. The purposes of regulation include: promoting economic efficiency of energy production and use through proper pricing, promoting reliability of energy production, balancing the interests of consumers and producers, and supporting environmental protection objectives.
- While it does not appear that meaningful competition in generation can be achieved by disaggregating the current utility generating structure, any power sector structure should allow for the introduction of independent power plants on a non-discriminatory basis to provide a degree of competition in meeting future power demands.
- Of the three options evaluated, the vertically integrated utility structure could be implemented the soonest, but significant changes from the current structure are required to achieve improved performance. These include: separation (by law or contract) of utility management from direct control by the government, internal reorganization to provide direct management control over operating units, and improved management procedures to operate the company on a commercial basis.

Adoption of a vertically integrated commercial structure would not preclude future transition to a disaggregated structure as conditions warrant.

- The current task will be completed with the update and issuance of the final report to reflect comments made during the workshop. However, additional support from USAID-funded consultants would be helpful in developing a master plan for the Macedonian energy and power sectors and to assist in other related activities such as: integrated resource planning, electricity tariff studies, and power company organization and management procedures.

Attachments:

1. Views and Conclusions of Mr. Nikola Čerepnalkowski, Assistant Minister of Energy, Ministry of Economy (translation)
2. Partial list of participants in workshop

Attachment 1

(TRANSLATION)

REPUBLIC OF MACEDONIA
MINISTRY OF ECONOMY

Ref#: 13-2567
2/24/1995
Skopje

VIEWS AND CONCLUSIONS
on the Seminar regarding the options for
restructuring the power sector of Macedonia

1. Restructuring of the power sector in Macedonia is being considered as part of the current phase of transformation of various national institutions and enterprises.
2. The evaluation performed by the U.S. companies Bechtel and Arthur Andersen describes the current conditions and organizational framework of the power sector of Macedonia and identifies options for restructuring. It also describes the structure of the power sectors in developed countries and those in transition to indicate possible approaches for initiating a similar course in Macedonia.
3. The report compares several current restructuring models and identifies those models which are suitable for implementation in Macedonia, thereby initiating the process of restructuring in Macedonia. As such, the study is considered successful.
4. For the purpose of defining and optimizing the appropriate model for restructuring the power sector of Macedonia, additional assessments must be made of the various models applied to Macedonian conditions considering technical, economic, financial, and other aspects. Based on these assessments, the specific actions required to implement a restructuring plan can be determined. All elements determining the relationships between the state and the various entities involved must be considered, including relations between the government, utility, and other participants; energy policy and the regulation of energy prices; and the sale of electric power among various entities and the integrated system. This assessment of the role of the power system should be made as part of an overall national energy development plan. Therefore, a plan defining specific activities and programs for development of energy as a whole, and the power system as one of the most important sectors, should be prepared as soon as possible.
5. The results of the Bechtel-Arthur Andersen analysis, these discussions, and future activities will be transformed into specific actions through the development of energy legislation which will create the conditions for successful restructuring of the power sector of Macedonia.

6. In order to produce results leading to appropriate restructuring solutions for Macedonia, it is necessary to form a working group comprised of experts from Macedonia working with consultants from the U.S. to effectively address energy matters in Macedonia.
7. Comments and suggestions made during this workshop will be incorporated into the final report of the study. The report will be submitted to the Ministry of Economy and distributed to interested entities in Macedonia.

Nikola Čerepnalkovski
Assistant Minister of Energy
Ministry of Economy
Skopje
February 23, 1995

Attachment 2

MINISTRY OF ECONOMY

(PARTIAL LIST)

LIST OF PARTICIPANTS ATTENDING THE SEMINAR
ANALYZING THE POSSIBILITIES OF RESTRUCTURING
THE POWER SECTOR IN MACEDONIA

1. Joshko Spasovski	Ministry of Economy
2. Jordan Pop-Jordanov	Macedonian Academy of Sciences and Arts
3. Todor Jakimov	Electrical-Technical Faculty, Skopje
4. Orce Churkoski	Water company "Vodovod", Struga
5. Zorica Gorcheska	Water company "Vodovod", Struga
6. Pero Vejkush	Water company "Vodovod", Struga
7. Aleksandar Delov	Irrigation System "Strezevo", Bitola
8. Tome Delov	Irrigation System "Strezevo", Bitola
9. Jovan Adamovski	Irrigation System "Strezevo", Bitola
10. Vladimir Peshevski	Macedonian Academy of Sciences and Arts
11. Dimitar Dimitrov	Macedonian Academy of Sciences and Arts
12. Vladimir Dinkovski	Macedonian Academy of Sciences and Arts
13. Ivan Micevski	Electric Utility Company of Macedonia
14. Kosta Georgiev	Electric Utility Company of Macedonia
15. Mirjana Georgieva	Electric Utility Company of Macedonia
16. Mihajlo Trpkoski	Electric Utility Company of Macedonia
17. Slobodan Sofeski	Macedonian Chamber of Commerce
18. Arsen Arsenov	Electrical-Technical Faculty, Skopje
19. Krsto Todorovski	Institute for Urban Planning
20. Mihajlo Tolevski	OHIS-Energetika (Chemical Factory)
21. Savo Radisavljevic	Water Utility Company, Kumanovo
22. Nikola Boshalevski	Ministry of Economy
23. Tahir Shakiri	Ministry of Development
24. Ljupcho Blazevski	Ministry of Development
25. Todor Mitkov	Water Utility Company
26. Dimitar Hadzi-Mishev	District Heating
27. Tome Boshevski	Electrical-Technical Faculty
28. Silvera Padori	Daily Newspaper "Veher"
29. Ruzdi	Ministry of Economy
30. Svetlana Janevska	Ministry of Economy
31. Nikola Cerepnalkovski	Ministry of Economy
32. Lepa Talevska	Legal adviser