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ECONOMIC AND SOCIAL COMMISSION FOR WESTERN ASIA

**ASSESSMENT OF
PRIVATIZATION OF THE ELECTRIC
POWER SECTOR
IN SELECTED ESCWA MEMBER COUNTRIES**

VOLUME I

AN OVERVIEW

UN ECONOMIC AND SOCIAL COMMISSION
FOR WESTERN ASIA
18 DECEMBER 1997
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Foreword

The importance of the role of electrical energy in socio-economic development cannot be overemphasized. Electrical energy can be easily converted to any other form of energy, transmitted long distances and distributed over large areas. It can cross countries without being subjected to any border-crossing formalities. It is therefore a tradable commodity as well as a service rendered to consumers.

However, the provision of electricity requires large investments in establishing, operating and maintaining electric power generation, transmission and distribution systems and the related facilities. A projected investment of about US\$ 1,500 billion will be needed between 1995 and 2010 to finance the electric power expansion projects in developing countries. The share of the ESCWA region¹ in this investment is estimated at US\$ 90 billion. It is clear that the required investment in the power sector is huge. The ability of the concerned Governments to provide this funding in the amount required is severely limited and the international funding institutions have neither the will nor the capability to provide soft loans for power projects. Therefore, the only viable option is to involve private investment in the power sector. Consequently, new financing modalities are needed to pool all available resources to ensure an acceptable level of risk. Different modalities are evolving worldwide, and countries should select carefully the modality most appropriate for their requirements.

In spite of the fact that there are growing efforts in most of the ESCWA member countries to promote more involvement of the private sector in various economic activities and infrastructure projects, the privatization of the power sector is still an evolving process and its logistics need to be more carefully studied.

Some ESCWA member States have already taken steps to privatize the electric power sector. The ESCWA secretariat has assumed the responsibility of studying the experiences in the region and of presenting a synthesis of these studies to the other member States so that each ESCWA member can benefit from the experience of the others. To that end, the ESCWA secretariat commissioned a group of experts to prepare four studies on the project. The experts have different backgrounds and work experience in both the public and private sectors. The first study is an overview of the whole issue of privatizing the electric power sector, including a summary of the present situation, projected future developments in the power sector and the approaches of the three selected countries to privatization of this sector. The other three studies commissioned are case-studies of three selected member countries: Egypt, Jordan and Yemen. The four experts and the ESCWA regional adviser on energy held a two-day round table discussion in Cairo on 28 and 29 November 1996, to exchange views in order to coordinate the content of the four studies and to discuss the conclusions of the studies.

The four studies have been revised by ESCWA secretariat staff and are presented in separate volumes:

1. **Volume I. *Assessment of Privatization of the Electric Power Sector in Selected ESCWA Member Countries, An Overview.*** This volume depends mainly on the contributions of Salah Afifi, the ex-Regional Director of Westinghouse Company and the present Chairman of the International Business Network (IBN) Egypt and Emad El-Sharkawi, the former Chairman of the Egypt Electricity Authority.

¹ The ESCWA members are Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, the Syrian Arab Republic, the United Arab Emirates and Yemen.

2. **Volume II.** *Assessment of Privatization of the Electric Power Sector in Selected ESCWA Member Countries, Case-study of Egypt.* This volume was prepared by Emad El-Sharkawi, the former Chairman of the Egypt Electricity Authority.
3. **Volume III.** *Assessment of Privatization of the Electric Power Sector in Selected ESCWA Member Countries, Case-study of Jordan.* This volume is based mainly on the study prepared by Mohammed Azzam, Director of Planning of the Jordanian Electricity Authority/National Electricity Power Company.
4. **Volume IV.** *Assessment of Privatization of the Electric Power Sector in Selected ESCWA Member Countries, Case-study of Yemen.* This volume is based mainly on the study prepared by Abdel Moati Al-Jonaid, Deputy Director of Technical Affairs of the Yemeni Public Electricity Cooperation.

Finally, on behalf of ESCWA, I am pleased to acknowledge the valuable contributions made by the four consultants and the ESCWA staff members to the present publication.



Hazem El-Beblawi
Executive Secretary

CONTENTS

Page

Foreword.....	iii
Introduction	1
<i>Chapter</i>	
I. TRENDS TOWARDS INCREASED PRIVATE INVESTMENT IN THE ELECTRIC POWER INDUSTRY	2
A. International trends.....	2
B. Trends in the ESCWA member countries	2
II. PRIVATE INVESTMENT IN POWER GENERATION	4
A. Forms and modalities	4
B. Agreements/contracts between power authorities and private investors	4
III. BENEFITS, CONSTRAINTS, OBSTACLES, AND SOLUTIONS TO PRIVATE SECTOR PARTICIPATION IN POWER GENERATION	9
A. Disadvantages of BO projects	9
B. Problems in implementation of BO projects	9
IV. PRESENT SITUATION AND FUTURE PROSPECTS FOR PRIVATIZING THE ELECTRIC POWER SECTOR IN SELECTED ESCWA MEMBER COUNTRIES ...	11
A. The approach of Egypt, Jordan and Yemen to power sector privatization	11
B. The situation of the electric power sector in selected ESCWA member countries	13
<i>Table.</i> Main features of the electric power sectors in Egypt, Jordan and Yemen	13
V. CONCLUSIONS.....	14

LIST OF CHARTS

1. Security package of a BOOT project	6
2. Contractual relations	7

ANNEXES

I. Privatization	15
II. Basic elements of the project	18
III. Main BOT/BOOT/BOO project agreements	21
<i>References</i>	23

INTRODUCTION

Initially, electricity supplies in most countries of the world were provided by private companies to serve a specific purpose. The need for electricity grew and the uses became more diversified with the different activities, such as manufacturing, agriculture, transportation and household needs. Consumption started to increase tremendously.

In order to serve the needs of customers at a reasonable price, the electric power consumed should be provided by large-scale distribution networks that serve a region or the whole country. The production of electrical energy is better served by a single big powerplant which can supply a substantial market more economically. This requires larger generator units, which operate at lower cost than several smaller units.

In the light of the technical aspects of the production and distribution of electricity, in addition to its importance for economic growth, Governments intervened and assumed the responsibility of providing electricity to the different users. This was followed by government action to prohibit more than one generating entity from serving an area in order to ensure that the largest possible plants would serve customers at the lowest possible cost, benefiting from the economy of scale. This consideration led to monopolies in providing electrical power and to centralized planning and investment, rather than ensuring that the provided services were reliable and responsive to the growing demand. With time, providing electrical energy to consumers became a political issue for Governments; this resulted in subsidized pricing of public utilities. This led to over-demand and, in many cases, reduced the level of service. It was also harmful to the environment.

Public utilities usually tend to concentrate on investing in new projects and ignore or do not give enough attention to improvement of service and proper maintenance of the existing facilities. This can lead to a vicious circle of inadequate operations and maintenance, poor quality of service, low cost recovery, deterioration of existing assets and ever increasing investment needs solely for replacement purposes. In the public power sector, the tendency in past was to focus on the technical aspects of the sector; the present trend is to focus on commercial aspects.

A fundamental change in policy must be made in order to meet investment requirements and improve the quality of electric services offered.

I. TRENDS TOWARDS INCREASED PRIVATE INVESTMENT IN THE ELECTRIC POWER INDUSTRY

A. INTERNATIONAL TRENDS

The recent innovations, the development of the technology and the introduction of smaller, newer types of power generators that produce electricity more cheaply than the existing plants shook the foundations of the electric generation monopoly and made it easy to establish new institutional arrangements for production and sales.

There is a growing realization of the need to attract the private sector in order to increase the total amount of capital available for electric power generation and to ensure a sufficient supply. To make this possible, it is necessary to maintain and increase investors' confidence by offering an improved regulatory regime, transparent market practices, fair pricing for consumers, and efficient clearing and settlement arrangements. This trend will lead to increased private sector participation and a reduction in government provision of electric services. These changes are occurring in parallel with an even more profound structural change in the electric power sector.

Many countries therefore have introduced a market orientation into the provision of electricity by actually promoting competition where feasible and attempting to establish sound regulatory frameworks and institutions in order to avoid market failures.

More and more countries are questioning the need for vertical integration of the power industry. They prefer to separate the power sector into four major segments: generation, transmission, distribution and commercialization. These countries are separating the sector on a functional basis and at the same time moving towards competitive generation of electricity with unrestricted access to transmission. This trend leads to fixed prices and quality regulation of transmission, with generation and sales left to the market-place.

The privatization of the power sector is still an evolving process in most of these countries. Its logistics vary with the economic and social environment in each country. However, the rapidly expanding requirements of electric energy in many countries and the shortages of necessary funds available to their Governments creates a big potential for private investment in the power sector. On the other hand, the Governments will benefit from:

- (a) Inviting competitive service;
- (b) Reducing the load on the government budget;
- (c) Reducing time and cost to build and run a plant;
- (d) Adding a new source of capital;
- (e) Improving operational efficiency.

B. TRENDS IN THE ESCWA MEMBER COUNTRIES

In the ESCWA member States, in most cases, providing electrical power is considered one of the State's obligations. Accordingly, the power sector is usually owned by the Government and the public sector, and in most cases electricity rates are subsidized. Given the increasing needs for electricity, the population growth, the shortage of oil revenues, and the trend towards a free market, Governments cannot shoulder the additional financial burden of subsidizing electricity rates. There is therefore a marked trend towards allowing the private sector to participate in investing in power generation, as the best means of meeting the growing demand for electricity.

The contribution of the private sector to development efforts is essential to the ongoing drive for economic growth in ESCWA member countries. The private sector is a key element to achieving economic goals in a world of rapidly increasing global competition. The private sector is more efficient, more productive and more flexible in undertaking a large variety of investments in production, distribution and services in related activities.

There is a growing trend towards policy reform spreading across the countries in the region which directly or indirectly encourages the development of the private sector and increases its role in economic activities. Until recently, in many countries in the region the private sector was considered unable to play a leading role in the development process, which was therefore dominated by the public sector. In many of the ESCWA member countries, Governments are working on creating the climate required to encourage and attract investors to participate in the privatization of the power sector. The role of Government is now changing from that of sole provider in the generation, production and distribution of electric power. The private sector is becoming increasingly involved in these activities. Investors are being encouraged by the current deregulatory climate in most ESCWA member countries.

Oman has already established a privately owned powerplant in El-Manah and is planning for another one. Yemen is installing its first private sector powerplant, and the Government declared that this approach will be used to expand the country's capacity for power generation. Jordan privatized its established utility by transforming it into a shareholding company. Egypt has announced a tender for its first private sector powerplant, and is planning to have about 30 per cent of its installed generating capacity owned by the private sector within the coming two decades.

II. PRIVATE INVESTMENT IN POWER GENERATION*

A. FORMS AND MODALITIES

The three most common approaches to achieving private sector participation in electric power generation are:

- (a) Privatization of existing assets through the sale or transfer of ownership (commonly involving the sale of stock shares through local stock exchanges);
- (b) Long-term lease of public electric power facilities for operation and maintenance by the private sector;
- (c) Development, ownership, and operation of new electric power facilities by the private sector.

To date, most private sector participation has been in the third category. However, the first category has been tried successfully in a few countries, such as Australia.

A variety of schemes have been used to formulate private projects. These vary in structure and format depending on the conditions and requirements under which the projects are executed. The most common arrangements are as follows:

- (a) Build-Own-Operate (BOO)
- (b) Build-Own-Operate-Transfer (BOOT)
- (c) Build-Lease-Transfer (BLT)

These arrangements involve the formation of a private company or a joint venture being set up to plan, finance on a limited-recourse basis, design, build, construct (or lease), and operate the power facilities. Many national utilities prefer to adopt a BOOT approach so that the plant will eventually be transferred to them after an agreed duration of time.

B. AGREEMENTS/CONTRACTS BETWEEN POWER AUTHORITIES AND PRIVATE INVESTORS

Traditional powerplant models account for the various contractual relations between State-owned or private utilities and their suppliers and engineering companies. These models range from the general turnkey supply or engineering contract to the "multi-package" model. The fundamental elements of these contracts are normally applied, as standardized by the Fédération Internationale des Ingénieurs-Conseils (International Federation of Consulting Engineers) (FIDIC) but adapted to local conditions by national legislation. New conditions with respect to financing, taxation, and risk insurance may be regarded as updates of the traditional model.

1. *Characteristics of BOT arrangements*

BOT schemes differ from traditional contract arrangements in that the main project risk is assumed by the private project company and not the utility. Such a company may:

- (a) Undertake the technical, project and commercial management during the design, construction, and commissioning of the plant;

* More details on privatization are provided in annexes I-III to this volume.

(b) Purchase, own, and operate the plant;

(c) Secure the financing of the project and also act as the borrower in the loan portion of the financing scheme.

Usually, with BOT schemes, the project companies' involvement is limited to a duration of 15 to 20 years, after which the plant is transferred to the utility on mutually agreed terms. The duration is determined by the length of time needed for the project company to repay its debt under the chosen loan commitments and by the return on investments for the company's shareholders. However, the transfer of the ownership of the plant is not mandatory, and it is possible for the project company to retain ownership for an indefinite period of time (BO scheme). Such an arrangement does not change the essential operation, but it does affect the financial terms of agreement.

2. *The principal parties*

The principal parties participating in a project where a traditional contract is to be formulated are typically:

- (a) Government authorities/utilities;
- (b) Financing agencies;
- (c) Suppliers and engineering firms.

With a BO project arrangement, there is usually a greater number of individual parties. However, the leading partner establishes and owns the project company. The leading partner not only makes a significant investment in a private company acting in the public domain of energy supply, but has to be prepared to risk its equity contribution, including return on investments, in case the project company fails to meet the requirements for plant availability or power output. Because of this element of risk, the investor is often a consortium made up of a number of partners who are able to cover all risks of the project adequately. They typically include:

- (a) Project developer;
- (b) Investor with financial capabilities;
- (c) Sponsor with local connections;
- (d) Main supplier;
- (e) Power plant operator;
- (f) Fuel supplier;
- (g) Others.

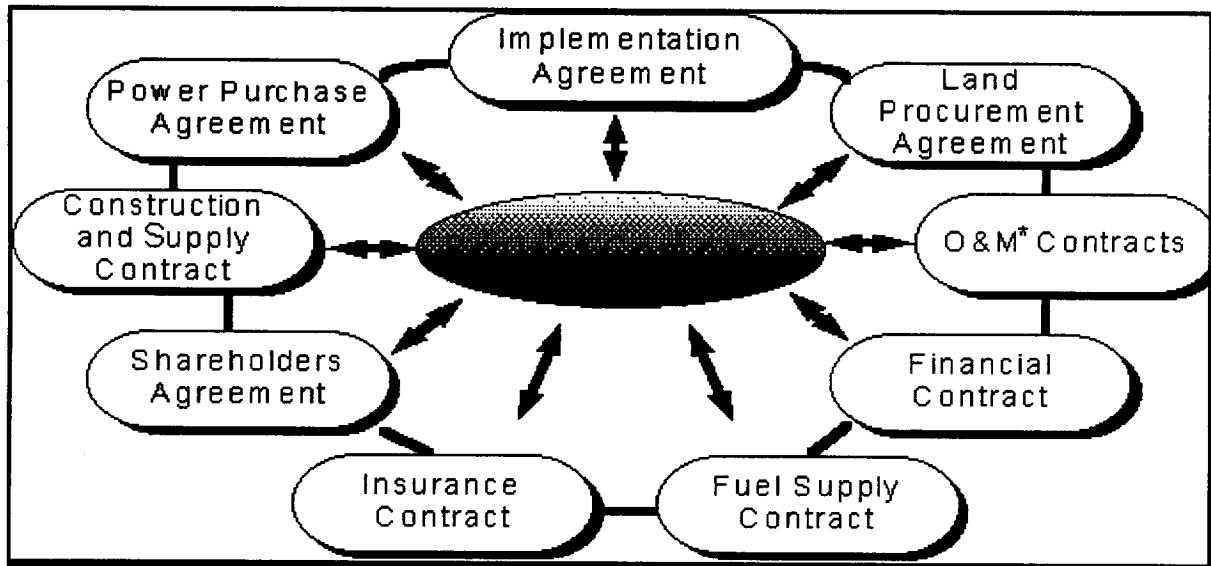
Although it is mandatory to have partners with interests in project development, investment and sponsoring, the equity contribution of the suppliers of equipment and services can also be covered by other contractual means.

3. *Security concept and risk management*

The domains of activity of the various parties involved with BOT arrangements are diverse, with each party seeking to minimize risk within the contractual framework of the project. However, with a consortium the risks can be spread to be more manageable. The most logical arrangement is for the risk to be allocated to the party best suited to control that risk. For example, the risk of not completing a project on time would fall to the construction and supply contractor, and the risk of not obtaining a regular supply of fuel would fall to the fuel supplier.

The formal assignment of responsibility and risk is achieved via a number of “security packages” relating to the specific parties involved. The term “security” in this respect applies to the security offered by the binding agreements, in which responsibility and risk are clearly defined.

Chart 1. Security package of a BOOT project



* Operation and maintenance.

It should be noted that there are a number of risks associated with BO projects which, if not fully accounted for, could be damaging to the investing partners. It is therefore essential that independent expert advice be obtained early in contract negotiations. It is fundamental to the financial and operational success of the project that security for the investing parties be provided through expert and careful review of the respective contracts.

The burden of risk involved in a project is assumed by the party accepting that risk. The cost of meeting insurance premiums will be shared by the project participants in accordance with the degree of risk assumed.

4. Contractual structure and relations

The transfer of project risk from the utility to the project company and its shareholders leads to a rather complex network of contractual relations which are described diagrammatically as shown below:

An Implementation Agreement is made between the Government/utility and the project company and is intended to serve as an umbrella agreement defining the basis of cooperation between the partners involved in the project. It generally covers the following aspects:

- (a) Definition of the project (purpose, scheme, utility generation, and expansion plan);
- (b) Description of the contractual structure;
- (c) Rules and basic requirements governing project implementation;

(d) Details of the organization and operation of the project company (including the transfer of ownership where applicable);

(e) Agreement on the terms and conditions under which the Government may buy shares of the project company held by foreign investors (for example, *force majeure*);

(f) Assurance of support and assistance necessary to start full implementation of the project (for example, support by the Government/utility).

Chart 2. Contractual relations

	Implementation Agreement	Power Purchase Agreement	Construction and Supply Contract	Shareholders Agreement	Insurance Contract	Fuel Supply Contract or Agreement	Financial Contract	O&M Contract	Land Procurement Agreement
Government	●								
Power Utility	●	●							
Project Company	●	●	●	●	●	●	●	●	●
Sponsor				●					
Investor				●					
Fuel						●			
Insurance Company					●				
O&M Operator		●						●	
Contractor			●						
Banks	●	●	●	●			●		
Land Owner									●

The Power Purchase Agreement (PPA) concluded between the project company and the power utility secures the long-term income of the project by fixing the tariff rates for the power and energy produced. The power tariff consists of two components: a fixed rate and a variable rate. The fixed rate will be paid for the agreed or achieved availability of power, even if the power has not been requested by the utility. This fixed rate normally will cover all fixed costs of the project company such as debt service, return of and on initial investments and all other fixed operation costs. The variable rate will reflect the payments for fuel supplies and a number of other costs dependent upon energy actually produced and supplied to the utility.

In the case of competitive bidding for a BO project, even with all the preliminary contracts established, a bidder group still may lose the project in spite of the substantial effort and cost involved. Once a bidder is selected on a competitive basis, the contract negotiations with the authorities and utility begin. In parallel, all supporting contracts must be reviewed and negotiated (supply and construction contracts, fuel supply contract or arrangement, operation and maintenance [O and M] contract, additional contracts and licences, and shareholders and finance agreements).

An efficient and successful BO project depends on the factors listed below:

(a) Project management know-how, which can reduce development costs and time during the engineering and construction phases;

(b) Established techniques, which make the negotiations process more efficient, such as the availability of a financial model for simulation and visualization of effects of costs, financing and operating schedules based on the required tariff, or the availability of the standard contract package including base contents and clauses for the main sections of the security package;

(c) Experienced developers' groups, including strong investors and major international operators, which together with experienced technical, financial and legal advisers, can form a highly efficient project team, thus minimizing the time and costs for contracting of supplies and for arranging finance. Strong investors' groups, through their strong market position and contracting of many projects worldwide, can negotiate favourable prices with suppliers;

(d) Standard design of plant and equipment, which minimizes development time (minimum tender specifications) and costs. Repetition of design can lead to advantage being gained by specialization;

(e) Operating and maintenance expertise of an experienced international power plant operator, which will maximize plant availability and minimize repair costs;

(f) Efficient operation, maintenance planning and plant staffing which can be implemented through a fixed operation schedule set forth in the power purchase agreement;

(g) General risk minimization which is supported by a proven framework of insurance, suppliers' guarantees, and maintenance schedules.

III. BENEFITS, CONSTRAINTS, OBSTACLES, AND SOLUTIONS TO PRIVATE SECTOR PARTICIPATION IN POWER GENERATION

The benefits of private sector participation in power generation can be summarized in the following ways:

- (a) Some countries, in achieving planned levels of rapid development, may view with alarm the prospect of large-scale borrowing for highly capital-intensive power generation projects. Yet there is an urgent requirement for power to meet development needs. BO arrangements conveniently meet and satisfy these objectives;
- (b) In implementing large programmes of power generation expansion, the utility may not have a core of highly trained staff to handle the work. BO arrangements can overcome this limitation, to some extent;
- (c) It is widely accepted that BO arrangements, particularly in view of their commercial nature, often offer significantly higher levels of efficiency, which positively affects the power purchase price;
- (d) Competition is introduced in the national power supply market-place, and this tends to lower prices for the benefit of the consumers;
- (e) BO arrangements conveniently fit with the deregulation objectives of the power industry in many countries;
- (f) The unit cost of power may be cheaper depending upon the circumstances;
- (g) A contractually binding availability of supply is established;
- (h) Long-term size and involvement of utility companies can be contained within the limits desired.

A. DISADVANTAGES OF BO PROJECTS

The disadvantages are as follows:

- (a) There is always some (limited) risk to the investor;
- (b) The unit cost of power may be more expensive depending upon the circumstances;
- (c) The influence of foreign investors in some countries may be deemed undesirable (or desirable) depending upon the political climate;
- (d) BO projects are complicated to implement.

B. PROBLEMS IN IMPLEMENTATION OF BO PROJECTS

Problems in implementing BO projects have been mainly related to the power sector environment, to overspecification of the project design, and to mismanagement of allocation of risks between the project players.

1. *Lack of credible reform*

A lack of commitment, ambiguous policy signals, and unwillingness to address the underlying lack of creditworthiness of the power purchasers have frustrated projects. At a minimum, arrangements should be in place that allow for adequate and secure fuel delivery, a power purchase agreement (PPA), and freedom to convert currency and repatriate profits.

2. *Lack of equal opportunities locally*

A lack of a "level playing field" can also be a problem: Independent Power Producers (IPPs) cannot compete fairly unless, for example, the players (the IPPs and the national utility) have equal access to sites and fuel markets, equal access to system operation procedures, and equal treatment under the tax regime.

3. *Public procurement problem*

Overspecification, usually by the utility, of the project plans (the so-called public procurement problem) has resulted in highly restrictive technology and pricing parameters in countries (Jamaica and India, for example) that limit competition among investors. However, some specifications may be required to focus the development of a project. This may mean specification of a fuel type, plant capacity, or mode of operation to ensure system compatibility. The level of detail to be specified is a matter of judgement and will vary with each project.

4. *Risk allocation differences*

Each of the parties involved in a project—the sponsors, contractors, the Government/utility, and the financiers—face risks that need to be evaluated, allocated and managed if a project is to succeed. Risks should be borne by the party that controls them, since that party can bear the risk at least cost. Differences over the allocation of project risks can delay project negotiations, and private investors may ultimately back out of financing and managing a power project if they feel that the risks are not allocated fairly. For example, the Batangas co-generation project in the Philippines and some recent projects in China have failed because of the parties' inability to agree on risk allocation.

The means to mitigate risk are to be provided in the project contracts (the PPA, fuel purchase contract or agreement, O and M agreement, engineering contract and construction and supplier contract). In addition, residual risks, such as political *force majeure* and regulatory risks, are mitigated through guarantees and insurance. Risks not mitigated need to be borne by the consumer in the form of higher tariffs.

IV. PRESENT SITUATION AND FUTURE PROSPECTS FOR PRIVATIZING THE ELECTRIC POWER SECTOR IN SELECTED ESCWA MEMBER COUNTRIES

According to World Energy Council projections, the electricity demand in the Arab countries, including ESCWA member countries, will grow annually by 7 per cent up to the year 2000. These projections estimate a yearly growth of 5 per cent during the first decade of the twenty-first century. This percentage is based on population growth rate and the expected improvement in living standards. These factors, in addition to the increased demand of the industrial sector, will boost per capita consumption of electricity.

Substantial capital investment is required to meet the future energy demand. Taking into consideration the average cost for each additional kilowatt of installed capacity—around US\$ 700—and adding transmission costs, each kilowatt installed will cost around US\$ 1,000. Therefore, the estimated amount of the required investment in the power sectors in ESCWA member States for the coming two decades is about US\$ 132 billion. It is clear that the required investment in the power sector is huge. The ability of the public sector to finance electricity projects from internal sources is severely limited, owing to the increasing budget deficits, resulting mainly from the declining oil revenues. In addition, the international funding institutions are not willing to lend money for power projects. Therefore, the current trend is to depend on the private sector to provide the required funds.

A number of ESCWA member countries have already initiated programmes to encourage privatization of electric power generation. Egypt, Jordan, Oman and Yemen have already taken steps to involve the private investors in power generation.

A. THE APPROACH OF EGYPT, JORDAN AND YEMEN TO POWER SECTOR PRIVATIZATION

Egypt, Jordan and Yemen have already taken measures to encourage the private sector to participate in their privatization programmes for the power sector. Each country has approached privatization differently depending on its own internal conditions and environment. The approaches are summarized below.

1. *Egypt*

The Government has initiated measures towards privatization as part of its economic reform and structural adjustment programme and has enacted the following laws:

- (a) Law No. 203 of 1991 to restructure the public enterprises;
- (b) Law No. 95 of 1992 for the capital market;
- (c) Law No. 100 of 1996 to amend the existing law of the Egyptian Electricity Authority in order to allow the establishment of private sector powerplants.

In 1991, the electric distribution and construction companies were transferred to the Ministry of Public Enterprises Sector as a step towards the privatization of their activities.

The Egypt Electricity Authority has already taken steps to implement the first private powerplant on the basis of build-own-operate and -transfer after an agreed upon period. The schedule for the first plant is as follows:

Selection of the consultant	April 1996
Selection of contractors	June 1996
Short list of qualified contractors	December 1996
Bid evaluation and selection of the contractor	July 1997
Completion of construction and commissioning of the first project	2001-2004

2. Jordan

The Government has already initiated the privatization process in the power sector and has enacted the following laws:

- (a) Investment Law No. 16 of 1995 to encourage private investment;
- (b) Law No. 10 of 1996 for electricity (the by-laws are under study);
- (c) Details of the organization and operation of the project company (including the transfer of ownership where applicable);
- (d) Agreement on the terms and conditions under which the Government may buy shares of the project company held by foreign investors (for example, force majeure);
- (e) Assurance of support and assistance necessary to start full implementation of the project (for example, support by the Government/utility).

The Government's approach to privatization of the electric power sector began with institutional restructuring. A decree was issued to transform the Jordan Electricity Authority into a shareholding company, the National Electric Power Company, owned by the Government, with the intention of selling the shares to the public at a later date.

The Government is proceeding with the privatization, and has opted for the concept of build-own-operate. A general policy has been established to deal with independent power production. The Government has already issued the terms of reference and received proposals, and it is in the process of evaluating these proposals to select a consultant. The schedule for the first plant is as follows:

Selection of the consultant	December 1996
Issuance of the request for proposal	June 1997
Completion	2001

3. Yemen

The Government of Yemen took the following steps to encourage the private sector to invest in the electrical power projects:

- (a) It issued an investment code (Law No. 22 of 1991) stipulating that foreign investments should be treated like national investments, and should be given investment incentives;
- (b) It established a general investment authority under the investment code;

(c) It issued Republic Decree No. 14 of 1995 to amend the investment code in order to include more sectors, including privatization of power generation;

(d) It drafted a new law for electricity, and this law is now being processed for final approval.

Any investment in the electric power sector by law requires Yemeni participation in the equity in the order of 25 to 30 per cent.

The Government has signed a contract with a developer, a joint Yemeni-foreign company, to establish the first powerplant in Sana'a. The implementation of this project was expected to start before the end of 1996.¹

Yemen is considered a pioneer among the three countries in implementing privatization in the electric power generation sector.

B. THE SITUATION OF THE ELECTRIC POWER SECTOR IN SELECTED ESCWA MEMBER COUNTRIES (EGYPT, JORDAN AND YEMEN)

Based on the three case-studies presented in volumes II, III and IV of this series, the main features of the power sectors in Egypt, Jordan and Yemen in 1996 are illustrated in the following table.

TABLE. MAIN FEATURES OF THE ELECTRIC POWER SECTORS IN EGYPT, JORDAN AND YEMEN

		Egypt	Jordan	Yemen
Generation				
Year 1995 (installed)	MW	13 500	1 145	700
Year 2000 (planned)	MW	15 100	1 230	1 000
Year 2005 (planned)	MW	18 500	1 600	1 300
Energy generated/year	GWh	54 477	5 200	2 404
Peak load	MW	8 491	894	502
Largest unit size	MW	345	130	40
Length of transmission lines	km	11 551	2 773	1 145
Transmission voltages	kV	500; 220; 132	400; 132	132
Distribution voltages	kV	66; 33; 22	33	33
	kV	11; 6.6; 0.4	11; 6.6; 0.4	11; 6.6; 0.4
Population covered by electric power grids	%	98	99	25
Consumption/capita*	kWh	750	1 310	110
Institutional framework		Government authority	Government-owned shareholding company	Government authority
Regulatory body		Established, waiting to issue by-laws	Established, waiting to issue by-laws	Council of Ministers

* The populations of Egypt, Jordan and Yemen are about 60 million, 4 million and 16 million respectively.

Notes: MW = megawatt; GWh = gigawatt-hour; km = kilometre; kV = kilovolt; kWh = kilowatt-hour.

¹ At the time this publication went to press, however, some problems between the project partners had arisen.

V. CONCLUSIONS

The three countries which are the subject of the present study realize the importance of involving private investors in the power sector, and each country took different measures to achieve the goal.

Taking into consideration the political, social, technical and financial situations in ESCWA member States, and in order to enhance the steps taken towards more involvement of private investment in the power sector and to obtain the maximum possible benefits from this process, it is recommended that ESCWA member States intending to privatize their power industries should consider the following:

- (a) Exchanging experiences gained in the ESCWA region among the different member States;
- (b) Restructuring the existing utilities to cope with the new privatization arrangements;
- (c) Phasing in privatization of the sector depending on the environment of each country;
- (d) Establishing regional references for privatization of the electric power sector among the ESCWA member countries, including different types of agreements;
- (e) Improving the security of the electrical supply;
- (f) Creating awareness among financial institutions and investors in the region to encourage them to take an active role in owning and financing the privatization of the power sector;
- (g) Encouraging the development funds in the ESCWA region to reconsider their mandates in order to include their participation in the privatization of electric power generation;
- (h) Preparing the local human resources to participate as part of a team in the operation and maintenance of new private projects;
- (i) Establishing regulatory bodies;
- (j) Establishing a comprehensive legal framework on electric power;
- (k) Establishing local competitive markets for electricity provided that the distribution of electric power is privatized;
- (l) Establishing a regional electricity exchange market for the countries interconnected to the common electric power grid.

Annex I

PRIVATIZATION

Objectives

The main objectives of privatization are:

1. To scale down government involvement in economic activities and correspondingly its administrative load in addition to reducing government budget costs;
2. To raise foreign exchange required for expansion programmes or debt reduction;
3. To solve the problem of lack of capital funds;
4. To mobilize capital income and to raise cash;
5. To promote growth of the capital market;
6. To encourage wide ownership of shares;
7. To promote competition and improve efficiency;
8. To improve the service to the customer.

Factors influencing privatization

The main factors influencing the privatization process are:

1. Average per capita income;
2. Distribution of income;
3. State of industrial development;
4. State of the private sector, its size, nature and efficiency;
5. Foreign capital prospects;
6. Policy statements on privatization.

Strategy

The Government should be clear in its overall strategy of reducing public sector participation system in the economy. Economic policies should be designed to strengthen or create the institutional framework for the proper functioning of a market economy. This includes the following:

1. Strengthening the rights of private property;
2. Corporate structures;
3. Legal instruments and financial institutions;
4. Attracting equity capital for expansion or modernization;
5. Transfer of non-government loans of the public sector into equity;
6. Promoting fresh investment;
7. Adopting a policy of liberalization that facilitates privatization;
8. Adopting policies designed to encourage the development of the private sector.

The time frame for privatization should be carefully designed so as to allow a gradual change towards more involvement of private investment.

Privatization methods

1. Public selling

The most common method of privatization is to attract shareholders into the process of partnership and co-ownership of the public sector industries. A public offer for sale is made, depending on whether the Government wants to retain overall control or transfer control to the private sector. The offer may include the majority or minority of the shares.

One of the marketing techniques may be to reserve a small portion of shares for foreign investment. This approach spreads the burden of purchase of large assets in relation to the size of the local stock market and gives the privatized company an international profile.

Reserved shares could also be available for purchase by managers and employees of the company to increase their motivation by involving them directly in the success of the privatized company. One of the important elements in the marketing plan is to explore how to attract many people who never owned shares before. This may need an advertising campaign to highlight the company's image and to explain to the shareholders their rights and responsibilities. Some shares may be sold directly to large financial institutions.

It is also possible that the Government will offer shares in tranches, selling a given number of shares at specified intervals. Governments should be careful about the timing and phasing of sales when the amount of money involved is large and can materially affect the money supply and liquidity of the banking system. The decision to sell to a minority or majority of shareholders may be a matter of public policy or market timing.

Public selling is a complicated process. Usually the preparatory work for this process takes as long as three years: the necessary legislation must be enacted and policy decisions made; in addition, the accounts and legal formalities must be completed.

2. Direct selling

Direct selling is an approach often used for the sale of small companies or assets that do not have a successful record. The company or the set of assets may have reasonable value to a private sector competitor or a private sector group wishing to diversify or expand its business.

The preparation in this case will require less effort than for public sales. There are several approaches to this process before the final negotiation of the price. A report should be prepared and widely disseminated and advertised. Public statements can also encourage interest in the sale. Bidders can be invited to a public auction and given a date by which they have to submit their bids, which will be evaluated on a competitive basis. Sometimes the auctions are completed with a single round of bidding, but more frequently there is more than one round. In the first round, the potential purchasers are given a limited amount of information and are asked to propose a preliminary price. A limited number of qualified bidders are selected for the second round, after which the potential purchasers (one or two) will undertake negotiations to complete a deal.

3. *Joint ventures*

This approach became popular, mainly in the power sector, where there are requirements to expand in a government-owned industry and where the required investment is substantial. In order to alleviate some of the cost burden and to encourage competitive checks on quality and cost, many Governments are now developing techniques to stimulate private sector competition through project and venture financing. It is a common approach to assemble a private project team capable of financing, building—and perhaps owning as well as operating—an asset which previously would have been managed by the public sector. Given the scale of the investment required, the Government allows the private sector to bid; the winning bidder is given a controlled monopoly to raise funds and build the facility. The Government retains some interest in and control of the safety and maintenance of the facility. In order to raise the necessary funds, a consortium made up of a group of lenders is formed to raise the equity capital. The consortium can raise large amounts of money against the projected assets from the banking system. It is relatively easy to finance a project where a controlled monopoly is being granted directly. The main risks for the consortium are the increase in construction costs and possible delays. Techniques of project financing are selected following an evaluation of the future stream of revenues expected by those backing the project. These revenues are compared with the costs, with discount factors applied resulting in the calculation of internal rates of return or net present values. If the projected rates of return are high enough, the project financier will be prepared to secure a large amount of loan capital against the assets to provide these revenues.

4. *Tender for a contract*

The tender for a contract usually begins with an open or controlled option. The Government specifies in a draft contract its requirement for provision of services. The contract may specify that the contractor will employ some or all the staff of the existing organization and may make available some or all of the equipment for lease, sale or transfer to the prospective contractor. A period of time is designated for the preparation of tenders. Those businesses interested in competing specify in their bids how they would meet the quality targets, which assets they would be using and whether they want to take any of the existing assets. The draft contract would also detail penalties, contract duration and inspection methods. Experience has shown that initial costs savings are substantial. When quality does not meet the specifications, action can be taken rapidly to call in the contractor to request improvements in performance. Unsatisfactory contractors can be removed and replaced.

Annex II

BASIC ELEMENTS OF THE PROJECT

The key players

The key players in a private power project are:

- (a) The owner (can be a group of financiers or a company);
- (b) The purchaser (which may be a utility, a large user or a group of large users buying directly).

There are other players who have different relationships with the key players.

The owner will have contractual relationships with other parties, including private and governmental sectors and third parties, for design engineering and procurement, namely:

- (a) The equipment manufacturer for the plant components (such as turbine and boiler);
- (b) The fuel supplier (sometimes the fuel supplier will be a State-owned company);
- (c) The operation and maintenance contractors to run and maintain the plant during its lifetime;
- (d) The financier and insurance company;
- (e) The Government and a regulatory body for licences or concessions.

The purchasers will have relationships with the following:

- (a) The regulatory body for the tariff;
- (b) The customers who are the end-users.

The relations between the owner and purchaser are defined in the Power Purchase Agreement (PPA), which governs their relations and reflects their objectives and obligations.

Objectives of the key players

The owner's main objective is financial, specifically to make a profit. This requires maintaining control of the cost and revenues, that is, limiting any circumstances involving costs not to be passed on to the purchaser or causing delays or loss of revenues.

The purchaser's objective is to have a reliable source of generation at the originally projected cost. This requires that the powerplant be built on time and to specifications and that it be ready to dispatch power whenever it is needed. The powerplant should be operated and maintained in accordance with the operational criteria originally specified by the purchaser.

Obligations of the key players

The owner's obligation is to design and build the powerplant in accordance with the current specifications and within the agreed upon schedule, and to operate the plant in a professional way in order to provide the appropriate level of power whenever it is required during the period covered by the agreement. The specifications, as a key component of the owner's obligations, are in many cases functional specifications mainly covering the operating capabilities of the powerplant. The operational criteria will typically include start-up times, loading and reloading, active power capability, dynamic response and minimum sustainable load. In general, the purchaser has an interest in ensuring that the plant is engineered

for sustained performance during the period covered by the agreement and that the areas of safety and protection are also covered by the agreement.

The purchaser's obligation is mainly to pay for the amount of the electricity supplied according to an agreed pricing formula. This structure recognizes that the demand factor involves a risk which cannot be transferred to the owner. For this reason, the PPA usually provides separate energy and capacity charges. The capacity charges usually cover the owner's fixed costs and are to be paid whether or not the purchaser decides to dispatch power. The energy charges cover variable costs which are essentially the fuel costs.

Host country support

The host country commitment to privatization is indispensable as it directly influences the climate for investment. The factors that help to ensure host country support include the following:

(a) A stable political regime;

(b) A macroeconomic environment in compliance with international loan commitments (International Monetary Fund, World Bank and bilateral financing institutions);

(c) The existence of a legal system to allow privatization and legal institutions capable of resolving disputes.

Political stability and the risks assumed by international investors should be considered. In other words, the project should be sound enough to attract and retain financing.

The host country should also contribute to the financing of the project, either directly or by marshalling investment sources within the country.

The Government of the host country should provide assurances in respect of some risks, as well as some guarantees. One of the areas in which the host country Government can help is fuel supply. In most cases, the Government controls the production and marketing of fuel. Therefore, the Government can supply the fuel directly or through a fuel purchase contract. The host country Government should change the laws in order to allow and encourage the private sector to own, maintain, operate and sell the output to the purchaser.

The Government should also provide the following:

- (a) Guarantee of performance and assurance of payment by the purchaser of electricity;
- (b) Support in obtaining any required government approval;
- (c) Securing the availability of foreign exchange;
- (d) Protection against change in the laws concerning the project;
- (e) Protection against non-insurable political events such as war;
- (f) Protection against any limitation on foreign ownership;
- (g) Maintaining the fuel supply and transportation for any alternative fuel arrangement;
- (h) Assuming the risk of depreciation of currency;
- (i) Help by granting of tax benefits and reduction in customs duties;
- (j) Relaxation of import controls.

Sponsors' support

The sponsors are those who are behind the project, typically those who are directly or indirectly interested in the equity of the projects. The lending banks expect the sponsors to have a financial interest in the project and to assume part of the risk.

The sponsors of a project want to be sure that their participation will bring the maximum rate of return on equity over time. Usually the banks do not lend unlimited amounts of money; they put a cap on their contribution to the estimated cost of the project. The rest must be funded by the sponsors, either by subscribing for shares or providing loans. The bank loan will vary depending on the nature of the project. It depends on the extent of the risk which the lending banks are willing to assume. The most important element of successful financing is the high level of commitment and involvement of a sponsor.

Annex III

MAIN BOT/BOOT/BOO PROJECT AGREEMENTS

Several agreements must be signed between two or more players involved in any private powerplant project. The main agreements and the different provisions that should be included in each of them are briefly reviewed in this annex.

Power Purchase Agreement

The Power Purchase Agreement (PPA) is the most important agreement between the owner and purchaser as it sets out the obligations of each of them. In the PPA, the purchaser guarantees the payment for the owner. The PPA will reflect the tariff structure, capacity charge and energy charge. It is in most cases endorsed by the Government, which guarantees payment and other obligations of the purchaser. The PPA is important because it assures the lenders that the money they loaned will be repaid. The key provisions of the PPA are as follows:

- Definitions
- Equity
- Minimum period that shareholders must retain their shares before selling them in order to protect their equity
- Sufficiency of return on equity to attract investment
- Sale and purchase of energy and capacity
- Preparation period
- Terms and termination clause
- Representation and warranties
- Control and operation of facilities
- Interconnection/infrastructure facilities
- Metering
- Compensation, payment and billing
- Testing
- Insurance
- Liability
- *Force majeure*
- Taxes and claims
- Choice of law and resolution of disputes
- Notices
- Change in law
- Options to purchase
- Liquidation of damages
- Bonuses and penalties
- Miscellaneous

Land agreement

In this agreement, land ownership is transferred to the owner. This agreement should take effect at the beginning of the construction and should last for the duration of the contract's validity. It determines the conditions for access to the project site and provides mechanisms to be used for resolution of disputes.

Construction contract

The owner should enter into a contract with the construction contractor or construction consortium. This contract should stipulate the construction costs, the completion date for the project, and a guarantee of performance. This ensures that the project will be bankable.

Ownership agreement

This agreement reflects the obligations of the different owners of the projects, usually one company with a separate entity. This contract is a means of protecting equity ownership.

Operation and maintenance agreement

This agreement should reflect the obligations of the developer company to operate and maintain the powerplant. The price component should be tied to the tariff under the Power Purchase Agreement. It should contain provisions with regard to spare parts and consumers' responsibilities and requirements and also cover future improvements and additions to the plant. It should specify that operations and maintenance should be consistent with the standards set in the specifications as required by the purchaser. It also should stipulate the standards for plant availability and performance efficiency, and the requirements for maintenance, outage management, and any necessary equipment overhaul.

Fuel supply agreement

This agreement should reflect the requirements for a long-term fuel supply. The lenders and investors will require an independent evaluation of the existence and dedicated use of the fuel reserves. There should be a guarantee from the Government with regard to the obligations of the fuel supplier. The agreement should allow fuel costs to be passed on to the purchaser with an adjustment for the heat rate and for inefficient treatment of fuel. It should contain an obligation for the supplier to sell the owner the required specified quantities. A guarantee of adequate proven reserve in sufficient quantities should be provided. It is very important to show commitment of fuel reserves for the life of the project. Initial fuel costs and a proposed cost index should be clearly specified.

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