

Chapter 1

INTRODUCTION

1.1 Background

Deregulation of the electricity industry, which is encouraged by the policies of the World Bank, the European Union and other institutions for the past decade has introduced the brand-new concept of competition into the electricity market. In a deregulated market, generation, transmission and distribution systems are separated (or sometimes called "unbundled"). Price setting mechanism is freed-up and electricity exchanges or spot markets are opened to provide a foundation for building an open access system. The main objective of deregulation is thus, to ensure the lowering of electricity prices for every customer through free market competition.

Deregulation of the industry is perceived as a means of encouraging efficiency through competition by allowing market forces to operate more effectively. Competition implies the presence of more than one player in the market and inevitably, the entry of private sector participants. Recently, the global trend towards restructuring and ultimately privatization has demonstrated that the electric utility can be managed and operated in a more efficient manner by the private sector. In addition, the private sector can own and control all or part of an electric utility (and other types of "natural monopolies") without harming consumer or national interests.

A crucial element of the deregulation process is the setting up of a wholesale market known as power pool. A Power Pool is not only the focus place for power trade among generators and buyers but also a pool of information related to competition. Therefore, establishing a Power Pool will enhance real competition

and contribute to potential cost reduction in power trade, especially in the case where there are a large number of sellers and buyers.

Malaysia is now facing fierce competition from neighboring countries such as Thailand, Singapore, Indonesia, Vietnam and China in attracting foreign investments. As electricity is one of the world's strongest forces of development, a highly competitive electricity prices with adequate supply and acceptable quality is extremely vital for promoting an industrial development in a particular country. Therefore, it is of no surprise that electricity supply is one of the largest industries in Malaysia. The market capitalization of TNB is 26,815 million¹. Furthermore, the electricity industry employs more than 100,000 people².

The present average tariff for electricity in Malaysia is 23.5 sen/kwh for Peninsular Malaysia, 24.4 sen/kwh in Sabah and 27.1 sen/kwh in Sarawak. Approval of the electricity prices by the government were based on the following factors:

- Electricity prices reflect the economic cost or true cost of supply
- Generate enough revenue for developing future power sector
- Create competitiveness of Malaysian industries and services
- Diversify energy resources into greater indigenous resources
- Meeting social economic objective

Although current tariff has taken all the above factors into consideration, the general public and consumers are of the opinion that the electricity tariff could be lowered if restructuring and privatization of the power industry is carried out more effectively. It is believed that with profit driven motive, the participation of private sectors would yield better results than state owned monopolies.

¹ The Edge, "Does Tenaga Electrify you? Pros and Cons of a Difficult Investment Decision", 14th. May 2001

² International Private Power Quarterly Report (2001), " Malaysia's Private Power Status," Second Quarter, pp84-92.

Malaysian government's decision to initiate restructuring and privatization was to enhance the efficiency of the power industry especially after the national blackouts in Malaysia in 1992 and 1996. However, the emphasis was never on lowering the electricity tariff but has instead concentrated solely on efficiency. TNB has applied recently to the government for increasing tariff due to losses in foreign currency exchange and higher operating costs. TNB's request was obviously not "popular" among the general public and industries' consumers, which had long anticipated that the restructuring exercise would result in a price reduction.

The recent power crisis in California has also resulted in TNB halting and re-evaluating its earlier deregulation plans. The proposed power pool market for Malaysia has been aborted, and a new model (known as the Managed Market Model or 3M Model), with very limited form of competition, has been proposed as follows:³

1. TNB should maintain about 60% market share in Malaysia's electricity supply, with the remainder sources from IPPs.
2. 60% of Malaysia's electricity should be bought based on long-term power purchase agreements and the remainder on short-term competitive sales by energy providers.
3. Long-term power purchase agreement with IPPs based on bidding basis to create competitive market forces. The bidding process should be opened to any player, including TNB and the existing IPPs, so that consumers can get the cheapest electricity prices.

TNB's adoption of the new model indicates that it has no intention of moving towards full restructuring and privatization of Malaysia's power industry. The new model being adopted is actually a "single buyer" approach in disguise, which

³ Extract from The Sun Newspaper (2001), "Tenaga Decides against Power Pooling," (June 7).

requires all generation suppliers be procured by only TNB, which is the only seller of bulk power to distributors and large users of power.

However the "single buyer " practice is not effective in achieving the main objective of deregulation, which is the lowering of electricity prices for the benefits of consumers through free market competition. The "single buyer" model is often described as the "toe in the water" approach of introducing competition because in principle, it is the most limited form of competition. It allows only "one time" competition during procurement stage but remains non-competitive in the retail market. Consumers will have no choice but to procure from TNB. There is also the danger of TNB, being 70% state owned, being forced to sign a high priced or poorly designed Power Purchase Agreement (PPA) through political or commercial pressure exerted by the government. Furthermore, political and commercial parties that will benefit from this "single buyer" approach will block further reform by ensuring that this limited form of competitive model remains in force.

1.2 Scope and Objective of the Study

The objective of this study is to determine how a competitive electricity market can be established in Malaysia.

This study is presented in ten chapters:

Chapter 1 is an introductory chapter, providing an overview of this study as a whole. This chapter also contains a glossary of all the technical terms used in this study.

Chapter 2 covers briefly the evolution of electricity supply industry, regulatory framework and policy formulation and reviews the current power industry structure in Malaysia.

Chapter 3 assesses current power industry structure in Malaysia by external environment analysis, which covers global, economic, political/legal, technology and environmental segments. It also discusses about the opportunities and threats of restructuring in the industry.

Chapter 4 contains the objectives and current progress of the restructuring of the power industry in Malaysia. It also discusses about TNB's doubt on power pooling system and why TNB decided to use Market Managed Model (3M Model). This chapter also debates on whether the new model will be accepted by general public, who has constantly hope for lowering of tariff.

Chapter 5 reviews the electricity reform in western countries and an overview of the deregulation and privatisation in the electric power industry of the ASEAN member countries.

Chapter 6 highlights the pitfalls in the restructuring exercise in California and the lessons to be learned for developing countries to avoid the power crisis as had happened in California.

Chapter 7 introduces the concept of power pool and illustrates the advantages and disadvantages of the different type of power pool models.

Chapter 8 presents the basic market design issues that need to be considered in implementing a competitive electricity market for Malaysia. It also discusses on the fundamental requirements for a competitive electricity market.

Chapter 9 explains the usage of risk management and derivatives markets for reaping the benefits of a competitive electricity market.

Chapter 10 presents the conclusion of this study.

1.3 Research Methodology

This study relies primary on secondary data obtained from books, power industry's periodicals, journals, Internet (TNB web-site and many others), publications, published papers and media sources.

In order to have better understanding of the recent development in the power industry, we have also conducted interviews with few key players from TNB, independent power producers (IPPs) and contractors from the private sector. However, information collected from the interviews are subjective and limited due to confidentiality and unwillingness of the managers concerned to debate about the government's policy in awarding power contracts to selected companies and terms and conditions of the power purchase agreement (which is generally not to the advantage of TNB).

1.4 Terminology

Terms Associated with the Energy Industry

Aggregator: Company that groups end user loads and fights for most competitive electric price from power generators.

Black out: A complete loss of power.

Bilateral Contract: A power purchase contract between a seller (usually a generator and a buyer (e.g., end-use consumer, retailer)

Broker: Company or individual that matches the electricity sellers and buyers. A broker does not take title to the power.

Brown out: A sustained drop in voltage, which causes lights to dim.

Distribution: -Process of delivering the power from the wholesale purchaser to the retail consumer.

Exempt Wholesale Generator (EWG): An entity that sells power exclusively to other power generators in the wholesale market.

Generation: Process by which fuels or renewable sources of energy are converted into electricity energy.

Independent Power Producer: Company that generates power but does not have transmission and distribution facilities.

Independent System Operator (ISO): A neutral operator that maintains the workings of the electric grid ensuring the loads match resources that available to the system.

Marketer: Company that buys electricity from power generators or utilities, and then resells these services to end-user. A marketer takes title to the power.

Power Pool: An independent organization that serves as short-term spot market, where electricity buyers and sellers conduct transactions. It integrates coordinates and balance power and consumption by competitive bid.

Power Exchange (PX): Entities that establishes competitive spot market prices for electricity through day and hour ahead auction of demand bids and generation.

Transmission: Process by which the generated electricity is moved in bulk from the generation plant to the wholesale purchase.

3M Model: Managed Market Model, implemented by TNB to replace Power Pool

CFD: Contract for Differences

PPA: Power Purchase Agreement

PPP: Pool Purchase Price

SMP: System Marginal Price

Organization / Department / Utilities

DES: Department of Electricity Supply

EID: Electrical Inspectorate Department

EPU: Economic Planning Unit

IAGP: Inter Agency Planning Group

MECM: Ministry of Energy, Communications and Multimedia

MOF: Ministry of Finance

NGC: National Grid Company

PEC: Pool Executive Committee

PG&E: Pacific Gas and Electric, Electricity Utility in US.

SCE: Southern California Edison, Electricity Utility in US.

SEB: Sabah Electricity Board

SESCO: Sarawak Electricity Supply Corporation

TNB: Tenaga Nasional Berhad

TNG: Tenaga Nasional Generation