Chapter 5

ELECTRICITY REFORM IN OTHER COUNTRIES

5.1 Introduction

In recent years, in order to promote a more competitive electricity industry, many countries have subscribed to the ideals of free market competition. The solution adopted by most countries is to promote structural change in the organisation of the industry, advocating the establishment of a level playing field where the market prices of electricity will be dictated by the forces of demand and supply. Naturally, this approach resulted in the reduction, and in some countries, termination of state dominance in the electricity industry. The once monopolistic vertically integrated industry is now often separated or unbundled into several individual businesses, with private participation playing a larger role. However, the specific manner in which countries have chosen to implement this unbundling depends to large extent on the peculiarities of their political and economical environment.

Some of the countries that are in the forefront in carrying out this type of change are Argentina, Australia (particularly the state of Victoria), Bolivia, Canada, Chile, Colombia, El Salvador, England, Guatemala, New Zealand, Norway, Peru, Spain and the United States (California and Northeast states), amongst others.[31]

In reviewing the reform in the electricity industry in other countries, this study has concentrated on Australia, United Kingdom and United States (California). These three countries are selected as they have undergone extensive electricity reforms and could be considered as "pioneers" in this field. Understanding the experience

[31] Secretaria de Energia, Mexico, "Policy proposal for structural reform of the Mexican electricity industry".

and the issues addressed in the deregulation process would be informative to those who desired to design its own approach to reform.

This chapter will focus on the electricity reform in United Kingdom and Australia. The failure of the California market design, and lessons to be learnt from the California power crisis will be covered in the next subsequent chapter. This chapter concludes by providing a snapshot of major developments in the deregulation and privatization in the electricity industry of the ASEAN Member Countries and future direction of reforms in this particular region.

5.2 Electricity Restructuring and Privatization in the United Kingdom

The United Kingdom was one of the first nations to embark upon widespread privatization of its electric utilities. There is general consensus that UK's electricity privatization reform efforts have been among the world's most ambitious and path breaking efforts. Therefore, it is of no surprise that many countries since then have based the UK experience as a policy guide in their restructuring, privatization and regulatory reform efforts.

Electricity privatization in the United Kingdom has occurred in the larger context of the privatization of much of the formerly state-owned UK industries and the diminution of the central government's role in the national economy. The inspiration for restructuring the electricity market was found in the Conservative Government's third-term platform (under the leadership of the "Iron Lady", Margaret Thatcher) of introducing private capital wherever possible to improve the overall efficiency of the British economy. There was also strong emphasis on the participation of private sectors in the belief that competition would follow the introduction of private capital. There was also the added incentive that the resources tied up in the electricity industry could be diverted to other areas that would required much needed public funds such as education and health care system.

The restructuring of the electricity industry in UK began in 1990. Prior to the reform, the Central Electricity Generating (CEGB) owned and operated over 90% of approximately generating capacity and had a virtual monopoly of public supply[32]. Distribution and sales were undertaken by twelve publicly owned regional electricity boards, each with local geographical monopoly. Subsequent to the reform exercise, generation, transmission, distribution and supply were unbundled into separately accounted and administered functions within seventeen newly established electricity companies. The CEGB itself was broken up into four separate companies; National Power, Power Gen, Nuclear Electric and the National Grid Company (NGC). The latter is responsible primary for the high voltage transmission network. The former 12 area distribution boards remained intact and were renamed Regional Electricity Companies (RECs). All of these companies have now been sold into the private sector and competition has been introduced in wholesale generation and supply.

The focal point of the reform in the electricity industry in UK is the creation of a wholesale spot market or commonly known as the power pool. The power pool is operated by the NGC and the structure and market-clearing mechanism of the pool is discussed in detail in Chapter 7.

5.3 Results of the Reform in UK

The restructuring effort in UK has been successful in reducing the real electricity prices as indicated below.

In addition, the reliability of the system has remained as good or better than before the changes. The following summarizes the performance against system security standards for the period 1990-1995[33].

[32] NH von der Fehr and D Harbord, Competition in Electricity Spot Markets - Economic Theory and International Experience

[33] Henley International, Competition in a Restructured Ontario Electricity Market

- Voltage: +/- 10% for 15minutes — 1incident
- frequency: +/- 1% for 1 minute — 2 incidents
- loss of supply due to lack of generation — 0 incident

Furthermore, the deregulation exercise has resulted in 15GW of new capacity being added to the existing system. Most of the new power facilities are low cost combined cycle gas turbines, which have replaced less efficient and more polluting coal and oil fired plants.

Nevertheless, some view the results of the UK restructuring effort with skepticism. A major criticism of the power pool is the market power of the two dominating generating companies i.e. National Power and PowerGen. Given the dominance of these two companies, there is no reason to believe that the pool prices will actually reflect the marginal costs of the plants. Moreover, the price of the pool has been extremely volatile and unpredictable. Most purchasers have to rely on contract for differences to avoid price risk. Regulators have had to intervene in the market place by imposing price cap or forced divestment.

5.4 Electricity Restructuring and Privatization in Australia.

Although Australia reforms borrowed heavily from the UK experience, there have been several notable distinctions. In contrast to the reform in the United Kingdom, electricity reform in Australia was undertaken several years later and at both national and state levels. In general, several of the Australian State governments restructured their electricity industries in a fashion similar to the United Kingdom i.e. separating generation, transmission, distribution and supply into different operations. However, Australia appears to have avoided the outcry that has been plaguing the UK electricity market by creating more competition in the generation through the establishment of five generation companies. As in the United Kingdom, the Australian governments have also implemented the independent distribution and supply marketing function. Thus, the new reform

allows customer to bypass the traditional distribution companies and to choose the outlet with the most competitive price and service.

The Victoria State in Australia has pursued the most aggressive electricity reform measures and has most closely followed the UK model. Various other states have pursued various degrees of more limited reform. At the national level, the concept of a "National Electricity Market" (NEM) has been established as well. NEM refers to a single market encompassing the eastern state and southern states of Australia. The objectives of the NEM reforms are[34]

- To promote a more competitive industry which delivers more efficient and sustainable use of capital and energy resources, thereby improving Australia's domestic and international economic competitiveness and performance, particularly in the manufacturing sector. Competition is regarded as the main driver for industry efficiency.
- To increase efficiency in the electric industry by introducing competition into the generation and retail sectors and indirectly into network investment decisions.
- To introduce more direct competition into electricity networks where potential augmentation will have to compete directly with generation and demand side options in an open market at the point of sale.
- To eradicate monopolies and utilities with dominant market power
- To reduce reserve plant margins by the sharing of plants between States and provide for better capacity utilization of generation assets.
- To create incentives for retail innovation to meet customer needs such as tailored tariff structures and energy packages.

The Australian National Electricity Market is a fairly recent operation, having started operation since May 1997. Since only in Victoria (which started operation of the VicPool in July 1994) has there been any significant competitive

experience to date, the rest of the following section focuses on the operation of the Victorian pool.

5.5 The Victoria Model

In understanding the reforms undertaken in the state of Victoria, an overview of the economic climate in the early 1990s is necessary. Victoria is the most industrialized state in Australia and was experiencing an economic recession in the beginning of the 1990s. The employment rate exceeded 11% and remained at this undesirable level until the implementation of reforms beginning in 1993. At that time, the state had also accumulated an outstanding debt of more than $A30 billion, of which approximately one third was accounted by the state-owned vertically, integrated electricity system. It is of no surprise that the state authority decided to reform its government business enterprises, targeting the State Electricity Commission of Victoria (SECV) as the major "culprit" in terms of inefficiency and poor work practices.

In 1993 the SECV was restructured into three distinct groups – generation, transmission and distribution. The unbundling of the electricity structure is similar to the reform in United Kingdom. However, Victoria pursued a different approach to privatizing its electricity industry rather than that undertaken in the United Kingdom. In contrast to the United Kingdom (where electricity assets were sold at prices decided by the government), Victoria conducted a series of staggered auctions of its distribution and generation companies. No restrictions were imposed on foreign investors.

The wholesale electricity market established in Victoria (known as Victorian Power Exchange) is also similar to the power pool in the United Kingdom. However, the type of power pool employed is of the gross pool model which permits direct bilateral trading between generators and customers. Also retailers

[34] www.isr.gov.au, "Reform of the Australian Electricity Supply Industry".

were required to enter into hedging contracts with generators for the first five years, which is considered to be the transition period. These measures eliminate some of the risks associated with an unknown system and provided assurance to customers that were necessary to gain acceptance of the changes.

5.6 Results of the Reform in Victoria[35]

The reform in Victoria's electricity industry had helped to reduce the debt burden from $A30 billion to only $A5 billion in 1999. In terms of electricity prices, the average price per unit for residential consumers were reduced by 20% during 1989 – 1999whereas business customers benefited from savings up to 55%.

As for the impact on service quality, much improvement was experienced. Interruptions to supply reduced by 60% during 1989-1999, and the average minutes off supply reduced by 7% in 1998. The number of disconnection's for residential and business customers reduced by 55%, accounting for a rate of 0.5% of the total customers.

The data from the Energy Policy Unit, Victoria, September 1999, indicated that the typical Australian household bill reduced from an average of A$868 in 1993 to A$737 in 1998 – a reduction of 15%. Furthermore, the report by the Electricity Supply Association of Australia (ESAA), 1999, has revealed that market research in Australia suggests more than 80% of consumers are satisfied with retail services after the electricity supply industry reform.

It is prudent to note that the problems associated with "market power" have been successfully tackled by the Victorian authority through the establishment of five independent generators of similar capacity.

[35] Extract from the presentation by the Treasurer of Victoria, the Honorable Alan R. Stockdale in Manila on 15th. July 1999 , "Outcomes of Reform in Victoria's Electricity Industry".

5.7 A Review of the Deregulation and Privatization in the Electric Power Industry of the ASEAN Member Countries[36]

Electricity consumption in Southeast Asian Countries is expected to increase by an average rate of 7.6% within the period over 1995 –2020. The cumulative generating capacity of ASEAN Member Countries is projected to reach the level 154,592MW by the year 2010.

All of the ten ASEAN Member Countries are proceeding with deregulation and privatization plans. The approach adopted is to subscribe to the ideals of free market competition, putting an end to state dominance. In addition, customers will have a freedom of choice of their own suppliers. Nevertheless, the recent crisis in California has resulted in many countries reviewing their deregulation plans. The current status of each of the Member Countries restructuring initiatives, excluding Malaysia, are indicated below:

5.7.1 Brunei

The electricity industry in Brunei is dominated by two power utilities, operating their own generation, transmission and distribution functions. The Department of Electricity owns and operates about 63% of the total installed capacity whereas Berekas Management Power Company serves the remainder market. The latter is a private company allowed by the government to participate in the power industry since 1992 on a franchise area basis.

There are current plans in Brunei to allow private sector in the development of power generation. A New Electricity Bill is under deliberation in Congress to allow further deregulation and privatization of the country's electricity industry.

[36] Guillermo, R.B. and Tjarinto, C.G.Z, "Deregulation and Privatization in the Electric Power Industry of the ASEAN Member Countries: An Overview".

5.7.2 Cambodia

In 1996, the Royal Government of Cambodia has issued a Royal Decree that put the electricity reform in motion by separating the Electricite du Cambodge (EDC) from the Ministry of Industry, Mines and Energy (MIME). However, the EDC is still a state owned limited liability company that is responsible for generation, transmission and distribution functions.

"Continuing with the reform process, the government hopes to establish an independent regulatory body that provides enabling environment for effective development and operation of the power sector". The draft Electricity Law is expected to be signed by this year and thus, enabling the establishment of the Electricity Authority of Cambodia as an independent regulatory body.

5.7.3 Indonesia

The deregulation and privatization efforts in Indonesia had certainly been curtailed by the recent economic and political crisis. Many private projects have been shelved or cancelled due to the recent turmoil in the country.

Prior to the economic crisis, the Government of Indonesia had introduced the concept of deregulation and privatization of the electricity industry in 1992. An outcome of the reform is the conversion of the state-owned Perusahaan Listrik Negara (PLN) to a public company in 1994.As a first step towards creating an independent regulatory body, the Government established the Directorate of Electricity Business Unit. In addition, a policy paper known as the "Power Restructuring Programme" was launched in 1998 to introduce competition, transparency and more efficient private sector participation.

Much of the progress in the reformation of the electricity industry is now dependent on the rate of economic recovery. Currently, a New Electricity Law is

under review by Congress that provides the legal basis for the electrical industry to move to a single buyer model[37]. It is envisaged that the model will then gradually evolved to a multi buyer and multi seller approach by 2006/2007.

5.7.4 Lao PDR and Myanmar

The reform in the electricity industry in both countries is generally non-existent. The structure of the electricity industry in both countries is vertically integrated with tight regulatory regime. The privatization of the electricity industry is not a priority as the "necessary" conditions are far from available.

5.7.5 Philippines

Among the ASEAN Member Countries, the Philippines was the first to introduce private sector involvement in the electric power industry in 1987. It began with the implementation of Executive Order No. 215, which allowed the private sector to engage in the generation of power and thus, dismantling the National Power Corporation (NPC) monopoly of power generation. Presently, independent power producers (IPPs) account for almost 50% of the country's total installed capacity.

Presently, the electricity industry in the Philippines is characterized by competition in power generation, national monopoly in transmission network and geographical function in the distribution sector. The current structure however prevents competitive entry into the industry and offers little incentive for industry participants to operate in an efficient manner. To rectify this setback, the Philippine Department of Energy is pushing for the passage of a law that will ultimately create a new industry structure. The Law advocates major reforms. There are: First, an industry with four distinct sectors: generation, transmission, distribution and retail supply; Second, competition in the generation and supply sectors. Third, regulated transmission and distribution sectors. Fourth, privatized

[37] Refer to Chapter 6 for the definition and concept of Single Buyer Model.

National Power Corporation. Fifth, an open and non-discriminatory access in transmission and distribution facilites.

The Philippines government hopes to complete the stages of restructuring by the end of 2004.

5.7.6 Singapore

Among the ASEAN Member Countries, Singapore is in the forefront in restructuring the electricity industry. Wholesale competition was introduced in April 1998 via the Singapore Electricity Pool. The Pool is similar to the model adopted by the United Kingdom. However, the only purchaser in the pool is a monopoly retailer whose monopoly will be terminated in stages between mid 2001and 2003.

In the first wave of reform, the Government in 1995 corporatized the Public Utilities Board and established Singapore Power Limited, which is 100% owned by Temasek Holdings, the Government's umbrella trust for most state-owned enterprise.

At present, Singapore Power has eleven separate subsidiaries, performing the different functions of the industry. These include: two power generation companies (PowerSenoko Ltd and PowerSeraya Ltd), one transmission and distribution company (PowerGrid Ltd), one electricity retail company (Power Supply Ltd), two investment companies (SP International and SP Capital) and two engineering consultancy and services companies (development Resources and Power Automation). In addition, a separate power generation entity, Tuas Power is owned directly by Temasek Holdings and is not a Singapoe subsidiary.

As part of the reform exercise, the Government also opened the market to independent power produces and co-generators. The IPPs include SembCorp Cogen, Island Power and ExxinMobil.

The Government announced further comprehensive changes to the industry in March 2000. Singapore Power will divest its ownership in PowerSenoko and PowerSeraya, ultimately privatizing the two companies. Furthermore, foreign ownership of independent power producers will not be restricted. Moreover, the Pool Administrator (which was operated by PowerGrid) will be replaced by an Independent System Operator (ISO) for a greater degree of transparency to investors. The second wave of reform will also result in the retail competition being opened to full market competition. This will be adopted in stages beginning in2001 for larger users and by 2003 for all customers, including residential users.

A legislative process is now underway for a new Electricity Act to enable the above reform to be effective by April 2001.

5.7.7 Thailand

In Thailand, the deregulation process had not been "smooth sailing". Many of the employees of Electricity Generating Authority of Thailand (EGAT) objected to the privatization of power generation plants for the fear of losing their jobs. Despite that, the Government proceeded with the separation of generation, transmission and distribution functions. This was followed by a cabinet resolution on 1 September 1998 approving the Master Plan for State Enterprise Sector Reform. Within the framework of the Master Plan, the "Thailand Power Pool and ESI Reform" was endorsed by the cabinet on 25 July 2000.

The Reform Plan sets out the detailed market and industry structure as well as implementation steps to achieve the desired future Electricity Supply Industry

structure. The Reform Plan consists of three stages, accumulating with the setting up of a wholesale and retail competition by 2003.

5.7.8 Vietnam

The Electricity supply industry (ESI) of Vietnam is vertically integrated with the management of public sector systems put under the responsibility of the Electricity of Vietnam (EVN), a state-owned power corporation established in 1995.

The reform strategy adopted by Vietnam is spelt out on the Policy Papers as approved by the Ministry of Industry. The restructuring program consists of multiple stages that will be undertaken for a period of 10years starting from 2000. At the end of the program, a power pool would have been established.

5.8 Summary

The implementation of the electricity supply industry reform in other countries had resulted in substantial changes to the existing structure of the industry. It is noted that in many of these countries, the reform of the electricity supply is a continuous process. Though different models and different approaches are adopted, the common factors in ensuring the success of each reform can be summarized as follows:

1. A regulatory body needs to be established as a truly independent entity to ensure fairness for both service providers and service consumers, and its decision-making must be "depoliticized".
2. There must be a distinct separation between the generation and transmission functions so as to create a level playing field.
3. There should be adequate and real competition in the Power Pool.

4. The Independent System Operator is to be formed, having no affiliation with any generation companies.
5. Promotion of several retailers to ensure that consumers could opt to receive services from several companies, which will enhance real competition in both price and service quality.