

# The future of the Turkish electricity industry

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# 1 Introduction

Turkey is under intense pressure from the International Financial Institutions or IFIs (mainly the World Bank and the International Monetary Fund (IMF)) and from the European Commission to privatise and liberalise its electricity industry. The IFIs are making this a condition for their continued financial support for Turkey while complying with European Union (EU) law on electricity industries will be a condition for Turkey's entry to the EU. The objective of this paper will be to identify the consequences to date of the attempts to privatise and restructure the electricity industry. It will then examine the consequences of further attempts to privatise and liberalise the industry. Where the consequences might be adverse, the paper will try to identify strategies to mitigate them.

In the second section of this paper, we present the current structure and characteristics of the Turkish electricity industry including: demand structure and recent growth trends; breakdown by generation sources; and corporate structure. We also identify the main priorities for the Turkish electricity sector that any reforms would be expected to address.

In the third section we set out the form and rationale for the model of the electricity industry that the World Bank and the EU seek to impose. The model is based on the structure that the reforms to the British electricity industry of 1990 (the 'British Model') was intended to achieve.

In the fourth section we look at the policies that the IFIs have tried to impose on the electricity industries of recipient countries over the past two decades. We examine the specific conditions for granting loans that are currently being imposed on Turkey. We also explore the EU policy on electricity. We identify the requirements imposed on Member States by the Electricity Directives (EU laws) and assess their success in creating competition. In particular, we review investigations carried out in 2006 by the Commission's Directorate Generals on Energy and on Competition and the likely changes to EU law these will lead to.

In the fifth section we consider experience of electricity reforms in Brazil and in the Nordic market, two systems where, as in Turkey, hydro-electric resources are a major factor. Brazilian experience is particularly relevant because the Brazilian government, under the instruction of the IFIs, embarked on a process of privatisation and liberalisation of electricity industries in 1995, which resulted in major electricity shortages in 2001. The Lula government has attempted to deal with this issue by abandoning the previous privatisation and liberalisation programme and renegotiating IFI public spending restrictions for investments in profitable infrastructure such as power industry assets. The Nordic market (covering Norway, Sweden, Finland and Denmark) is seen as one of the most successful attempts to liberalise electricity markets. This has been achieved while the industry is still dominated by publicly owned companies. However, like Brazil, investment in new generation has been minimal since liberalisation and this remains the major question-mark against the success of the reforms.

In the sixth section we critically evaluate the 'British' model in particular its suitability for Turkey. We assess the various proposals that have been put forward for the Turkish electricity sector. We also identify policies Turkey might follow to mitigate any adverse effects.

## 2 The Turkish electricity industry

### 2.1 Supply and demand trends

**Table 1 Electricity demand and supply - 1970-2006**

| Year | Installed capacity MW | Consumption TWh |
|------|-----------------------|-----------------|
| 1970 | 2235                  | 8.6             |
| 1975 | 4187                  | 15.7            |
| 1980 | 5119                  | 24.6            |
| 1985 | 9119                  | 36.4            |
| 1990 | 16315                 | 56.8            |
| 1995 | 20952                 | 85.6            |
| 2000 | 27264                 | 128.3           |
| 2005 | 38819                 | 160.8           |
| 2006 | 40539                 | 174.2           |

Source: Basaran M (2007) 'Turkey: Moving towards the liberalisation in the electricity sector' Presentation to International Gas Congress 2007, April 30, 2007.

Table 1 shows the remarkable growth in electricity demand in Turkey since 1970, demand growing on average by more than 8% per annum with little sign of the saturation of demand that is evident in Northern European countries.

**Table 2 Generation by energy source – 1985-2006 (GWh)**

| Year | Coal & lignite | Oil     | Natural Gas | Renewable & waste | Hydro   | Geothermal & wind | Total    |
|------|----------------|---------|-------------|-------------------|---------|-------------------|----------|
| 1985 | 15207.8        | 7082.0  | 58.2        | 0.0               | 12044.9 | 6.0               | 34218.9  |
| 1990 | 20181.3        | 3941.7  | 10192.3     | 0.0               | 23147.6 | 80.1              | 57543.0  |
| 1995 | 28046.9        | 5772.0  | 16579.3     | 222.3             | 35540.9 | 86.0              | 86247.4  |
| 2000 | 38186.3        | 9310.8  | 46216.9     | 220.2             | 30878.5 | 108.9             | 124921.6 |
| 2001 | 38417.5        | 10366.2 | 49549.2     | 229.9             | 24009.9 | 152.0             | 122724.7 |
| 2002 | 32149.1        | 10743.8 | 52496.5     | 173.7             | 33683.8 | 152.6             | 129399.5 |
| 2003 | 32252.9        | 9196.2  | 63536.0     | 115.9             | 35329.5 | 150.0             | 140580.5 |
| 2004 | 34447.6        | 7670.3  | 62241.8     | 104.0             | 46083.7 | 150.9             | 150698.3 |
| 2005 | 43192.5        | 5482.5  | 73444.9     | 122.4             | 39560.5 | 153.4             | 161956.2 |
| 2006 | 46307.1        | 7697.5  | 77386.9     | 120.6             | 44157.7 | 223.5             | 175893.3 |

Source: TEIAS, Electricity Statistics

Note: 2006 figures are provisional

Table 2 shows the basic changes in the supply sources of the Turkish electricity generation in recent years. The main change is a shift to imported sources, particularly to gas (in 1990 17.7% of generation, in 2005 43.8%). There has also been a switch from locally produced lignite to imported coal.

The dependency on imported resources increased the share of energy in total imports from 9.8% in 1998 to 20% in 2005. This has had significant consequences as Turkey has a large balance of payments deficit and can only borrow by offering high interest rates. The dependency on foreign resources for energy increases Turkey's overall dependency on foreign capital and thus to IFI's.

The hydraulic contribution is variable partly due to weather conditions. How far weather conditions accounted for the decline in hydraulic generation in 2001 compared to 2000 and 1995 is not clear. GNP decreased in 1999 and 2001 with a consequent decrease in demand for electricity leading to excess generating capacity. The government was under an obligation to buy electricity produced by independent

power producers or IPPs (see below), and it may have been necessary to reduce the publicly owned hydraulic generation to make space for this take-or-pay power.

Table 3 shows that trade in electricity accounts for only a very small proportion of overall supply. Network losses have declined from about 20% to 15%, but remain high by international standards.

**Table 3 Capacity, production and consumption of electricity**

|                                | 2000   | 2004   | 2005   | 2006   |
|--------------------------------|--------|--------|--------|--------|
| <b>Installed capacity (MW)</b> | 27264  | 36824  | 38843  | 40539  |
| <b>Gross production (GWh)</b>  | 124922 | 150698 | 161956 | 175893 |
| <b>Net production (GWh)</b>    | 118698 | 145066 | 155469 | 168872 |
| <b>Import (GWh)</b>            | 3791   | 463    | 63     | 573    |
| <b>Export (GWh)</b>            | 437    | 1144   | 1798   | 2236   |
| <b>Network losses</b>          | 23756  | 23243  | 24044  | 26109  |
| <b>Net consumption</b>         | 98296  | 121142 | 130263 | 141100 |

Source: ‘Turkey’s statistical yearbook, 2005’ <http://www.die.gov.tr/ENGLISH/yillik.pdf> and TEIAS for 2005 and 2006 data

Table 4 shows that demand is concentrated in the West and South, with four of the 12 Statistical Regions, SRE, (Istanbul, Aegean, Mediterranean and East Marmara) accounting for nearly two thirds of demand. These regions are also the largest consumers on a per capita basis. For example, people in the East Marmara region consume about six times as much electricity per capita as some of the Eastern regions.

**Table 4 Electricity demand by region (2004)**

| Region                | Demand GWh (%) | 2000 Population (thousand) | Demand per capita |
|-----------------------|----------------|----------------------------|-------------------|
| Istanbul              | 20648 (17)     | 10019                      | 2061              |
| West Marmara          | 8901 (7)       | 2896                       | 3073              |
| Aegean                | 20090 (17)     | 8939                       | 2247              |
| East Marmara          | 21000 (17)     | 5741                       | 3658              |
| West Anatolia         | 10131 (8)      | 6443                       | 1572              |
| Mediterranean         | 15043 (12)     | 8706                       | 1728              |
| Central Anatolia      | 4672 (4)       | 4189                       | 1115              |
| West Black Sea        | 6145 (5)       | 4896                       | 1255              |
| East Black Sea        | 2139 (2)       | 3132                       | 683               |
| North East Anatolia   | 1332 (1)       | 2508                       | 531               |
| Central East Anatolia | 2349 (2)       | 3727                       | 630               |
| South East Anatolia   | 7521 (6)       | 6608                       | 1138              |
| Total                 | 121141         | 67804                      | 1787              |

Source: ‘Turkey’s statistical yearbook, 2005’ <http://www.die.gov.tr/ENGLISH/yillik.pdf>

In terms of demand by application, industry dominates, more than half of Turkey’s electricity going to industry and about a quarter going to households (see Table 5). There was relatively little change in this breakdown in the period 2000 to 2004. Within industry, no sector dominates and, again, there was relatively little change in the composition of demand between sectors from 2000 to 2004 (see Table 6).

## 2.2 New entrants

From 1970-94, Turkish electricity industry was concentrated in a single, nationally-owned company, the Turkish Electricity Authority (TEK). This company had a statutory monopoly until 1984. Since then, there have been various measures to encourage independent power producers (IPPs) to enter the market.

**Table 5 Demand by sector (2004)**

| GWh (%)                         |            |            |            |
|---------------------------------|------------|------------|------------|
| Sector                          | 2000       | 2004       | 2005       |
| Industrial and others           | 50090 (51) | 61845 (51) | 62294 (48) |
| Public admin & public utilities | 9329 (9)   | 10279 (8)  | 4663 (4)   |
| Commerce, services & handicraft | 8064 (8)   | 14215 (12) | 18454 (14) |
| Public illumination             | 4217 (4)   | 4387 (4)   | 4143 (3)   |
| Household                       | 23888 (24) | 27619 (23) | 30395 (23) |
| Others                          | 2094 (2)   | 2365 (2)   | 9684 (7)   |
| Total                           | 98296      | 121142     | 130263     |

Source: 'Turkey's statistical yearbook, 2005' <http://www.die.gov.tr/ENGLISH/yillik.pdf> and TEDAS for 2005 data.

**Table 6 Demand by industrial sector (2004)**

| GWh (%)                                  |           |            |            |
|--|-----------|------------|------------|
| Sector                                   | 2000      | 2004       | 2005       |
| Agriculture, forestry etc                | 3070 (6)  | 3895 (6)   | 4143 (6)   |
| Coal & lignite mining                    | 542 (1)   | 453 (1)    | 1067 (2)   |
| Food, beverage & tobacco                 | 3091 (6)  | 3485 (6)   | 3754 (6)   |
| Textiles, leather & clothing             | 9059 (18) | 11186 (18) | 12100 (19) |
| Wood, paper & allied                     | 2356 (5)  | 2055 (3)   | 2373 (4)   |
| Rubber & plastic                         | 1708 (3)  | 1604 (3)   | 1525 (2)   |
| Chemicals                                | 4673 (9)  | 5303 (9)   | 4913 (8)   |
| Earthenware & cement                     | 6873 (14) | 6407 (10)  | 6537 (10)  |
| Iron & steel                             | 8395 (17) | 10939 (18) | 11661 (18) |
| Non-ferrous metal                        | 2514 (5)  | 2699 (4)   | 2485 (4)   |
| Electric machinery & transport equipment | 2483 (5)  | 2418 (4)   | 2489 (4)   |
| Other manufacturing                      | 5326 (11) | 11401 (18) | 12127 (19) |
| Total                                    | 50090     | 61845      | 65173      |

Source: 'Turkey's statistical yearbook, 2005' <http://www.die.gov.tr/ENGLISH/yillik.pdf> and TEDAS for 2005 data

### 2.2.1 TOR plants

A law was passed in 1984 (no. 3096) introducing Transfer of Operating Rights (TOR) under which state-owned power plants could be transferred for a fee to the private sector for 20 years with an annual fixed price payment, but power purchase guarantees. In fact, only two plants have been transferred (see Table 7), a 620 MW coal plant (Çayırhan) and a small hydro plant (Hazar, 30MW).

### 2.2.2 BOT plants

This was followed in 1994 by a Build-Operate-Transfer (BOT) law (no 3996). The BOT plants were built with an operation period before transfer of up to 99 years, but usually 20-30 years, after which the plants were transferred to the Ministry of Energy & Natural Resources (MENR). The Power Purchase Agreement (PPA) allowed fixed prices for each year and a 100% purchase guarantee. By 2007, a total of 2449MW (25 plants) of BOT plants were in operation made up of 1450MW of combined cycle gas turbine (CCGT), 982MW of hydro and 17MW of wind (see Table 7).

### 2.2.3 BOO plants

In 1997, a further law (4283) allowing Build-Own-Operate (BOO) plant was passed. This resulted in 6102MW of capacity being built of which 4782MW was combined cycle gas (four stations) and the rest was accounted for by a single 1320MW coal

plant (see Table 7). These plants introduced a little more risk for the developers. The size, type and location of projects were specified and the contract was awarded on the basis of the lowest electricity price. Power purchase contracts of 20 years, including the construction period, are awarded and there is an 85% purchase guarantee.

These plants brought in foreign investors, notably Intergen, a joint venture company formed in 1995 by Bechtel and Shell, STEAG and Enron. The three plants built by Intergen (90%) and Enka (10%) sold their output to TEAS and purchased their gas from BOTAS. However, in 2005, Intergen was broken up and its shares in the Turkish plants were sold to its Turkish partner Enka.

The Enron plant, Trakya, was included with Enron's other non-US assets in a company called Prisma in the restructuring that followed Enron's collapse in 2001. Prisma was bought by a subsidiary of a UK private equity investor, Ashmore Energy International (AEI).

The Iskenderun coal-fired plant was built by a consortium of two German companies, STEAG and RWE and a Turkish company, OYAK, but in 2004, RWE sold its 25% stake to OYAK giving OYAK a stake of 49%.

**Table 7 TOR, BOO and BOT plant**

| Power plant         | Type  | Capacity (MW) | Company          | Arrangement |
|---------------------|-------|---------------|------------------|-------------|
| Çayirhan            | Coal  | 620           | Park Termik      | TOR         |
| Hazar               | Hydro | 30            | Bilgin Elektrik  | TOR         |
| <b>TOR</b>          |       | <b>650</b>    |                  |             |
| Esenyurt            | CCGT  | 188           | Doğa Enerji      | BOT         |
| Ova                 | CCGT  | 258           | Ova Elektrik     | BOT         |
| Trakya              | CCGT  | 499           | Enron            | BOT         |
| Uni-Mar             | CCGT  | 504           | Uni-Mar          | BOT         |
| Birecik             | Hydro | 672           | GAMA             | BOT         |
| Yamula              | Hydro | 100           | Ayen Enerji      | BOT         |
| Çamlıca-1           | Hydro | 84            | GAMA             | BOT         |
| Small hydro (<30MW) | Hydro | 126           |                  | BOT         |
| Wind                | Wind  | 17            |                  | BOT         |
| <b>BOT</b>          |       | <b>2448</b>   |                  |             |
| Adapazari           | CCGT  | 798           | Intergen, Enka   | BOO         |
| Gebze               | CCGT  | 1595          | Intergen, Enka   | BOO         |
| Izmir               | CCGT  | 1591          | Intergen, Enka   | BOO         |
| Ankara              | CCGT  | 798           | Suez, Minag      | BOO         |
| İskenderun          | Coal  | 1320          | Steag, RWE, OYAK | BOO         |
| <b>BOO</b>          |       | <b>6102</b>   |                  |             |

Source: Basaran M (2007) 'Turkey: Moving towards the liberalisation in the electricity sector' Presentation to International Gas Congress 2007, April 30, 2007.

The BOT and the BOO projects proved expensive and by 2003 there were reports that the government would cancel the PPAs for the Trakya, Uni-Mar, Esenyurt and Ova gas-fired plants, as well as six hydro projects including the Birecik and Camlica plants. There were also reports that a State Inspection Board report had shown up irregularities and over-pricing. In the event, the contracts were not cancelled.

## 2.2.4 The overall generation market

Table 8 shows that the generation market is dominated by the public producer, EÜAS, although the PPAs that the BOT/BOO plants have mean that they take a much higher share of generation than of capacity. There is a total of 4100MW of autoproducer capacity using various fuels.

**Table 8 Market shares of generators**

|                             | 2000              |                     | 2006              |                     |
|-----------------------------|-------------------|---------------------|-------------------|---------------------|
|                             | Share of capacity | Share of generation | Share of capacity | Share of generation |
| <b>EÜAS</b>                 | 78                | 75                  | 58                | 46                  |
| <b>Autoproducers</b>        | 11                | 13                  | 10                | 9                   |
| <b>BOO/BOT</b>              | 7                 | 10                  | 21                | 33                  |
| <b>TOR</b>                  | 1                 | 1                   | 2                 | 2                   |
| <b>Concession companies</b> | 2                 | 2                   | 0                 | 0                   |
| <b>Free gen companies</b>   | 0                 | 0                   | 7                 | 7                   |

Source: Basaran M (2007) 'Turkey: Moving towards the liberalisation in the electricity sector' Presentation to International Gas Congress 2007, April 30, 2007.

### 2.3 The state-owned companies

In 1994, TEK was split into a generation and transmission company, TEAS, and a distribution company, TEDAS. In 2001, TEAS was further split into a generation company, EÜAS, a trading and contracting company, TETAS and a transmission company, TEIAS. All four companies remain fully nationally-owned.

**Table 9 Main thermal power plants operated by EÜAS**

| Plant            | Capacity (MW) | Fuel     |
|------------------|---------------|----------|
| Afsin Elbistan A | 1355          | Lignite  |
| Afsin Elbistan B | 1440          | Lignite  |
| Seyitomer        | 600           | Coal     |
| Kangal           | 457           | Lignite  |
| Tuncbilek        | 365           | Lignite  |
| Catalagzi        | 300           | Coal     |
| Orhaneli         | 210           | Coal     |
| 18 Mart Can      | 320           |          |
| Bursa            | 1432          | Gas      |
| Ambarli          | 1351          | Gas      |
| Ambarli          | 630           | Fuel oil |
| Hamitabat        | 1120          | Gas      |
| Soma A-B         | 1034          | Lignite  |
| Yatagan          | 630           | Lignite  |
| Yenikoy          | 420           | Lignite  |
| Kemerkey         | 630           | Lignite  |

Source: Basaran M (2007) 'Turkey: Moving towards the liberalisation in the electricity sector' Presentation to International Gas Congress 2007, April 30, 2007.

Notes

1. Includes plants larger than 200MW.
2. The Hamitabat, Soma A-B, Yataga, Yenikoy and Kemerkey plants were transferred to the government Privatisation Authority in preparation to be sold.

#### 2.3.1 EÜAS

EÜAS is the operator of the state-owned plants (see Tables 9 and 10) with a total of 23714MW of plants, including 18 thermal plants (12554MW) and 110 hydro plants (11159MW). Six of its thermal plants were transferred to the government's privatisation authority in 2002 in preparation for sale, but they remain in government hands, operated by EÜAS.

The latest plan (May 2007) for privatisation of generation is that some of the larger hydroelectric plants will remain in EÜAS. The remaining hydro and all the thermal plants will be divided into six groups and a consultant to oversee privatisation will be selected at the end of 2007. Bidding for the companies is expected to start in 2008. Whether this timetable is any more realistic than earlier plans remains to be seen.

**Table 10 Main hydraulic dams operated by EÜAS**

| Plant        | Capacity (MW) |
|--------------|---------------|
| Altinkaya    | 703           |
| Aslantas     | 138           |
| Ataturk      | 2405          |
| Batman       | 198           |
| Berke        | 510           |
| Borcka       | 300           |
| Catalan      | 169           |
| Dicle        | 110           |
| Gezende      | 159           |
| Gokcekaya    | 278           |
| Hasan Ugurlu | 500           |
| Hirfanli     | 128           |
| Karakaya     | 1800          |
| Karkamis     | 189           |
| Keban        | 1330          |
| Kilickaya    | 120           |
| Menzelet     | 124           |
| Muratli      | 115           |
| Ozluce       | 170           |
| Sariyar      | 160           |
| Sir          | 283           |

Source: Basaran M (2007) 'Turkey: Moving towards the liberalisation in the electricity sector' Presentation to International Gas Congress 2007, April 30, 2007.

Notes

1. Includes plants larger than 100MW.

**Table 11 International interconnections**

| Turkish substation | Connection to | Capacity (MVA) |
|--------------------|---------------|----------------|
| Babaeski           | Bulgaria      | 1000           |
| Hamitabat          | Bulgaria      | 1500           |
| Hopa               | Georgia       | 300            |
| Kars               | Armenia       | 300            |
| Silopi             | Iraq          | 500            |
| Igdir              | Azerbaijan    | 100            |
| Dogubeyazit        | Iran          | 100            |
| Baskale            | Iran          | 1500           |
| Birecik            | Syria         | 1000           |

Source: Basaran M (2007) 'Turkey: Moving towards the liberalisation in the electricity sector' Presentation to International Gas Congress 2007, April 30, 2007.

### 2.3.2 TEIAS

TEIAS operates and maintains the transmission system, carries out dispatching, balancing and settlement, and makes forecasts of capacity and demand. It also operates the international connections, which exist for all neighbouring countries except Greece (see Table 11). A connection to Greece with a capacity of 400kV is expected to be completed in 2008. This will form part of an ambitious plan to

interconnect all the countries of the Mediterranean (France, Spain, Morocco, Algeria, Turkey, Greece, Italy, Libya, Egypt and Jordan) through the 'Medring'. The connection with Greece will mean the Turkish grid will be synchronised to the Western European UCTE grid.

### **2.3.3 TETAS**

TETAS purchases power from EÜAS's power plants and from the BOT, BOO and TOR plants, selling the output to the distribution companies.

### **2.3.4 TEDAS**

TEDAS has been divided into 21 distribution companies in preparation for privatisation. The distribution companies are planned to be the first part of the electricity sector to be privatised. Some of the areas, particularly where demand is high and the population is concentrated might attract interest from private buyers, but other areas, requiring substantial investment to strengthen the network will be less attractive. In addition, if Turkey does join the EU, these distribution companies may have to be further sub-divided into monopoly distribution and competitive retail companies. This will make the outlook for buyers even more uncertain.

Targets for privatising these companies have been consistently missed since 1997 and all remain within TEDAS. Most recently, PA Consulting was selected in August 2004 to give advice on the privatisation of the distribution sector with a view to privatising some of the companies by the end of June 2006. The bidding process was started for three distribution companies including Istanbul, but abandoned in December 2006 until after the Turkish general elections of 2007. A total of 37 companies had applied to pre-qualify to bid for the companies. Amongst the main expected bidders were: EnBW, an integrated electricity company based in Germany but controlled by the French company, EDF; ENEL (Italy); Iberdrola (Spain); Endesa (Spain), Siemens (Germany), RWE (Germany) E.ON (Germany); AES (USA) and Tractebel/Suez (France). ENEL had set up a joint venture with a Turkish construction firm, Enka, which already had interests in generation through its partnership with Intergen for its BOO plants.

2.3.1. and 2.3.4 may be expanded with more information on the reasons why the privatisation targets both for generation and distribution unit were "missed". This part then shall connect to 2.2.

## **2.4 Regulation**

The Electricity Market Regulatory Authority (EMRA) was set up 2001 under the terms of the Electricity Market Law (no 4628). It subsequently became the Energy Market Regulatory Authority when the natural gas (2001) petroleum (2003) and LPG markets (2005) came under its jurisdiction. Decisions are taken by a nine-person board comprising a president and eight members. Its main duties are to: issue licenses; monitor and supervise the market; approve, amend and enforce performance standards; set pricing principles and regulations for tariffs; and settle disputes.

## **2.5 Competition**

There is no formal wholesale market with most wholesale power being bought by TEIAS, although bilateral contracts are allowed. However, under the Electricity

Market Law, no generation company can have more than 20% of the market and no wholesaler can have a market share greater than 10%. Autoproducers can sell no more than 20% of their output to the market unless they have a generation license.

Retail competition was introduced following the passing of the Electricity Market Law (no 4628) in 2001. Consumers directly connected to the transmission network (electric intensive industry) and consumers using more than 9GWh per year were no longer required to buy from the incumbent retailer. In January 2004, the limit was reduced to 7.8TWh, in January 2005 to 6GWh and January 2007, to 3GWh. EMRA expects these limits to be further reduced.

## **2.6 Priorities for the Turkish electricity sector**

Today for many the number one priority for the Turkish electricity sector is concern about security of supply. It is now a common perception that if there are no new investments, Turkey will suffer from electricity shortages in a few years. As well as the need for additional capacity there is also a specific shortage of peaking capacity. Critics of the privatisation/liberalisation policy point to this potential shortage as evidence of the failure of this policy.

However, some of the defenders of privatisation also base their agenda on the supply gap being a priority in the sector. Privatisation has always been presented as the only way to ensure new investment. It was argued that the government and government-owned companies could not be relied upon undertake this investment because of the budget deficit and shortage of funds. Neo-liberals also argued that due to the inefficiency of public administration the high percentage of losses and theft could not be prevented while the sector was in public ownership. With privatisation there would be more investment and better management and the danger of electricity shortage would be prevented. The alleged greater efficiency of the private sector compared to the public sector and the benefits of competition over monopoly were not the primary justifications but were seen as supporting arguments.

Some of the protagonists of liberalisation have a different concept of the priorities for the sector stressing much more the pursuit of a 'perfect' market. Atiyas (2006) argues that: "In the short term two important objectives can be underlined. The first implementing steps that can start operationalizing the envisaged market model. The second is to restructure the policy making and regulatory process itself so as to make it more transparent and accountable." They criticise revenue oriented privatisation and policies to render assets more attractive to potential buyers (especially by vesting them with monopoly rights), argue that liberalisation of generation through (public) portfolio generation companies is possible and criticize the elimination of limitations on vertical integration. They are also suspicious of the AKP government and the Ministry and think that with their revenue oriented and populist policies the market is further distorted.

For the supply gap they say: "One way to encourage investments in the medium term is to reduce regulatory uncertainty and enhance credibility of the regulatory framework. Care needs to be taken to ensure that any additional emergency measures that may be adopted in the short term are not inconsistent with the model adopted by the EML and does not further delay its implementation." (Atiyas 2006) (See also Sevaioglu).

### 3 The British Model

Electricity industries were aiming to replicate the model that the 1990 changes to the UK electricity industry were meant to accomplish, which, themselves, drew on experience in Chile in the early 1980s. The fundamental objective is, wherever possible, to replace (public) monopoly with (private) competition. To achieve this, the sector is divided into four separate activities:

- **Wholesale:** Electricity generation;
- **Retail:** Retail to final consumers;
- **Transmission:** The national (or regional) transmission networks that takes electricity at high voltage from point of production to centres of demand; and
- **Distribution:** The local distribution networks that take electricity from the transmission networks to final consumers.

According to theory, the rationale for this separation is that wholesale and retail can be made 'competitive' with prices set by markets. It is assumed that sectors run on competitive lines are invariably more efficient than those run as monopolies and as a result, consumers will benefit through lower prices. Transmission and distribution are natural monopolies and prices will be set by an independent regulator.

The most important element of the model is the creation of a wholesale market as this is the largest element of an electricity bill, typically making up more than 50% of the overall charge for electricity. Reductions in the cost of generation can make a significant difference to consumers' bills. Transmission (5-10%) and distribution (25-35%) remain regulated monopolies so re-organisation here would not make a significant difference to their cost. Retail is only about 5% of the cost to consumers, so retail competition should not, in theory, be able to make much impact on overall prices unless the wholesale market was so imperfect that some retailers are able to buy much more cheaply from the wholesale market than others. A wholesale market with such serious flaws is unlikely to be efficient.

For this model to work, the following conditions are generally seen as necessary:

- An hourly or half hourly wholesale market should exist buying and selling electricity and would provide reliable price signals for purchases made outside this market and for investment decisions in new generating capacity;
- A retail market should exist, in which all consumers are able to switch readily between retailers. This would place competitive pressure on suppliers to purchase wholesale power as cheaply as possible and inefficient or high-priced suppliers would be squeezed out of the market;
- Access to the networks should be available to all wholesalers and retailers on equal terms. This would require some form of 'unbundling' of the network businesses from the retail and wholesale businesses; and
- A regulatory body should exist to ensure that competition is fair, access to networks is impartial, competitive fields of companies exist in both wholesale and retail activities, and consumers are protected from exploitation by companies.

One policy measure adopted by some countries was to unbundle or separate generation and retail. This would appear to be a necessary step if wholesale markets are to be 'liquid', in other words, a significant proportion of sales pass through the market. If the market is dominated by integrated generator/retailers, there will be no

'liquidity' in the wholesale markets and the main justification for the changes will be lost because price signals will not be reliable enough for buyers and sellers to trust. As a result, in some countries that followed the British model, such as Brazil and Colombia, integration of generation and retail was made illegal.

However, integration of generation and retail is highly desirable, and probably necessary for generation companies because it means that, instead of selling their power into an unpredictable wholesale market where they cannot know from one 30-minute period to the next how much power they will sell and at what price, if they integrate generation and retail, they sell directly to final consumers with price and volumes that are much more predictable.

In the Chilean and British electricity models, a key goal was to change from national public ownership to private. For some organisations promoting changes to the electricity sector, such as the World Bank, privatisation is still the main objective and the introduction of competition is a much lower priority. However, the European Union (EU) has no jurisdiction over ownership of member states' industries so change of ownership is not, and cannot be, any part of the EU's attempts, through its Electricity Directives, to create a single European market in electricity. But it is forcing open markets, meaning that private owners must be allowed into the sector.

The Scandinavian countries of Norway, Finland and Sweden did open their markets with some success, but the industry remains mainly in public hands, much of it owned by local authorities, and change of ownership has not been part of the changes.

An important difference between the World Bank and the Commission is that the World Bank's priority appears to be privatisation. Under World Bank inspired reforms, unbundling is usually carried out but the competitive elements of the model are seldom enforced and wholesale and retail competition is illusory. The EU has no jurisdiction over ownership and while the consequence of its policies is often privatisation, the EU has no power to require Member States to sell its assets.

## 4 The World Bank and the EU policies on electricity

### 4.1 *The World Bank*

#### 4.1.1 Policies towards the electricity sector

The World Bank has a poor record on the policies it enforces in the electricity sector. By the mid-to late-1980s, the World Bank had become impatient at what it perceived as the failure of its loans to bring about efficiency improvements in publicly-owned electric utilities. It saw corruption and inefficiency in these companies as barriers. As a result, it began to promote the use of Independent Power Producers (IPPs), giving loans for new entrants, often foreign companies, to build plants that would be given long-term PPAs to supply the incumbent utility.

IPPs were seen as having several advantages. They were thought to overcome the problems of corruption and it was expected that the international companies would be more efficient than the local companies. Ideally, the plant builder would be selected on the basis of a competitive bidding process with the contract awarded to the company that would provide the cheapest power. How far the World Bank had a tacit policy against public ownership is hard to tell, but there is little evidence of them trying to nurture publicly owned companies in recent years.

For some governments, IPPs were also often attractive. They seemed to relieve the government of the responsibility of managing national companies and reduced the burden on public spending. However, the disadvantages rapidly became apparent.

To protect the profits of the investing companies, financiers required that PPAs were usually denominated in US dollars and were given long-term take-or-pay contracts at pre-determined prices. If the value of local currencies declined and demand did not grow as rapidly as expected, the profits of the investor were fully protected. So while the investors bore some of the technical risk, for example, if construction costs or time overran, they would bear the cost, they took no commercial risk.

The East Asian currency crisis of 1997 brought home the extent of these problems. Bayliss and Hall (2000) clearly identify the main problems with IPPs. Local utilities were often nearly bankrupted paying for expensive power they did not need. The World Bank (Albouy & Bousba) was forced to acknowledge some of these problems.

Albouy and Bousba (1998) found that seven countries accounted for 87% of investment in IPPs. These were China (32%), Indonesia (14%), Philippines (10%), India (8%), Pakistan (7%), Malaysia (7%), Turkey (5%) and Thailand (4%). The World Bank is forced to acknowledge that IPPS have been more problematic than expected. Albouy and Bousba (1998) ask four questions:

- ‘Has risk been transferred to the private sector?’ It found: ‘On balance, IPPs make a significant difference in many countries by covering construction, operating, and fuel availability risks; less so in the few cases where state-owned utilities have a good track record, as in Thailand, or have already transferred construction and operating risks through turnkey procurement and leases or through concession contracts.’
- ‘Have IPPs contributed to an increase in foreign exchange exposure?’ It found ‘In general, the sector’s exposure to foreign exchange risks has stayed the same or increased with IPPs. But in a few countries the power sector’s foreign exposure is likely to be higher with IPPs than under expansion plans centered on state-owned utilities. That exposure can be risky if the IPP program is large, as is the case in Pakistan.’

- ‘Are pricing and investment decisions efficient?’ It found: ‘In the final analysis it appears that IPPs have often inflated supply prices for utilities. In the Philippines the average generating cost for IPPs in 1996 was US\$76 per MWh, compared with US\$57 for the state-owned utility.’
- Have IPPs contributed to sector modernization?’ It found: ‘In the long run PPA prices and contractual rigidities may prove costly whenever IPPs lose competitiveness following technical progress and access to cheap gas or hydro. The resulting stranded assets may complicate unbundling and reduce revenues from privatization unless these obstacles are removed in due course, as they were in the United States. The main challenge is in Asia, the host of most IPPs, where sector reforms have yet to be made.

IPPs did not even efficiently deal with capacity problems. Albouy and Bousba found:

‘But too much was signed too soon in at least three countries, with the result that some IPPs did not reduce outages and merely inflated reserve margins.’

Independent commentators and other bank staff were more scathing. Alexander’s Gas & Oil Connections reported<sup>1</sup>

‘For the last decade, the World Bank has encouraged independent power producer deals between its client-utilities and private investors and, in so doing, has generated far more political and economic chaos than cheap kW for consumers. Even the World Bank’s energy experts now admit that independent power producer, or IPP, contracts -- whereby governments offer guaranteed revenues to private investors to build power plants and sell their output to a state-owned monopoly -- were designed to protect private investors at public expense. According to World Bank energy specialist Laszlo Lovei, IPP deals have not only imposed huge liabilities on governments, they have invited corruption wherever they were tried in Asia, Africa and Eastern Europe.’

However, by then, the World Bank already had a new policy that it portrayed as the ‘first best solution’<sup>2</sup> Since the mid-90s, its policy has been privatisation and imposing the British Model. As with the IPP policy, this was based on an assumption that private sector companies would invariably be more efficient than local nationally owned companies, that there would be less scope for local corruption and that foreign companies would be more likely to be able to meet the investment needs.

There was little if any evidence to back up these assertions. At least in the electricity sector, a thorough independent study found no evidence that private owners were more efficient than public<sup>3</sup>. The private sector had already shown itself liable to corruption and investment was dependent, not on need, but on the extent of the financial ‘carrots’ that were available.

However, what gave the World Bank’s new policy a ‘fig-leaf’ of intellectual respectability was the promise of market discipline. The British Model was then widely perceived to have been a success in Britain despite the fact that any independent analysis of the operation of the model would have shown that in all important respects, the model was unproven (Surrey, 1996). All that could be reasonably claimed by 1994, when the World Bank began to promote the British Model was that it had not led to a catastrophic failure in the UK. Despite this, the

<sup>1</sup> Alexander’s Gas & Oil Connections, vol 7 issue 12, June 13, 2002

<sup>2</sup> See, for example, Albouy Y & Bousba R (1998) ‘The Impact of IPPs in Developing Countries—Out of the Crisis and into the Future’ Public policy for the private sector, note no 162, World Bank, Washington. <http://rru.worldbank.org/Documents/PublicPolicyJournal/162albou.pdf>

<sup>3</sup> Pollitt, M., (1995) ‘Ownership and Performance in Electric Utilities.’ Oxford University Press/Oxford Institute for Energy Studies, Oxford.

World Bank recommended Brazil, Colombia and Ukraine, countries with very different needs and which had little in common with the UK, to engage Coopers & Lybrand to advise on a new structure for their electricity industries. In all cases, they recommended a model that was almost indistinguishable from the still-unproven model introduced in the UK.

By 2004, the World Bank had to acknowledge the problems with the British Model but continues to press for privatisation. The reforms in the UK had diverged so far from the desired model that the structure had become a mockery of what was intended (Thomas, 2006a). Wholesale markets had minimal liquidity because government had allowed integration of generation and retail. This meant that most power was bought and sold through 'self-dealing' or confidential long-term contracts. Retail competition strongly favoured industrial consumers who could use their muscle and expertise to negotiate far better deals than residential consumers. The government had allowed take-overs and mergers leaving the structure dangerously close to an oligopoly. The high barriers to entry that this concentration and the integration of generation and retail imposed meant that market solutions to this concentration were implausible.

On the World Bank, Thomas (2006b) found:

The World Bank has finally begun to admit its 'one-size-fits-all' policy of privatisation and liberalisation of electricity industries is not the perfect solution it was claimed to be. In June 2004, the World Bank's chief economist, Francois Bourguignon, admitted 'there was probably some 'irrational exuberance' in recent years on the potential benefits of privatization'. The President, James Wolfensohn, also said that 'the Washington Consensus [the 1989 international agreement that paved the way for privatisation and liberalisation of utility industries] has been dead for years'.

Thomas (2006b) identified three factors why the British Model not only had not worked, but never could work:

- Companies need a regulatory bargain to deal with the risks inherent in the electricity industry. In a sector like electricity, dominated by capital costs, long lead-times and with a standard product, companies cannot rely on market forces to provide a reliable rate of return. No bank will finance the investment of a billion dollars in a power station without strong contractual assurances on the volume and price of the power they sell;
- Competition is not a free lunch. Much of policy seems to be driven by a belief that competition is the economists' mythical 'free lunch'. For many products, the costs of competition may indeed be low compared to the benefits of having a field of suppliers competing to survive to supply a product, but for electricity the balance is very different. Costs of competition are various and often very high. Perhaps the clearest cost is the risk premium on investment. Other costs include the software needed to set up and operate markets. These systems have cost British consumers several billion Euro and continue to impose heavy costs because of their running costs and the need to frequently adapt and update them
- Electricity is different from other commodities. These differences mean that the characteristics that allow other commodities markets to function do not apply to electricity. They include: inability to store power; need for supply and demand to match at all times; lack of substitutes; vital role in modern society; electricity is a standard product; and environmental impacts.

From a practical point of view, the field of electricity companies willing to invest outside their home market, especially for the non-network parts of the business, had largely collapsed. The only exception has been Europe, where the 'Seven Brothers', the large companies that have increasingly come to dominate the European electricity

market, have continued to expand (Thomas, 2003). The ‘Seven Brothers’ are EDF and Suez/Electrabel from France, E.ON and RWE from Germany, ENEL from Italy, Iberdrola from Spain and Vattenfall from Sweden. It is no coincidence that these companies are prominent in the list of expected bidders for the Turkish distribution companies.

Despite these acknowledged failures, the World Bank and IMF are still making loans contingent on privatisation policies.

#### **4.1.2 World Bank Projects for the Turkish electricity sector**

##### **Electricity Generation Rehabilitation and Restructuring Project**

According to the World Bank<sup>4</sup>, Electricity Generation Rehabilitation and Restructuring Project for Turkey ‘will improve supply security during the reform transition and restructure the state-owned generation business into corporatized entities.’ The project components are:

- rehabilitation of Afsin-Elbistan A Power Plant. The Afsin Elbistan generation complex which includes Afsin Elbistan A and the newly commissioned Afsin Elbistan B, is the largest thermal generation complex in Turkey.
- component 2 will focus on supporting Electricity Generation Corporation (EÜAS) in restructuring its generation business into financially and operationally viable portfolio generation companies and a hydro corporation. This work will create the basis for undertaking the future privatization of these generation entities.

##### **Electricity Distribution Rehabilitation Project**

According to the World Bank<sup>5</sup>, the objective of the Electricity Distribution Rehabilitation Project of Turkey is to help improve the reliability of power supply to consumers in Turkey by supporting the implementation of the electricity distribution network rehabilitation and expansion program. The Project has two components:

- Distribution Network Rehabilitation and Expansion which includes investment projects for distribution network rehabilitation and expansion in the Turkish Electricity Distribution Corporation (TEDAS) regional companies of Ayedav, Uludag, Meram, Gediz, Toroslar, Menderes, Osmangazi and Akdeniz. The investment components financed by the Loan include rehabilitation and upgrading of medium and low voltage distribution equipment and facilities, by: (i) replacing existing run-down and aged medium and low voltage overhead lines in densely populated areas with underground cables; and (ii) constructing new distribution substations and feeders; and
- Technical Assistance for supervision consultants which will also finance supervision consultants to assist TEDAS and the regional companies in managing and supervising the implementation of the investment projects. These consultants will support TEDAS and regional staff in the following: a) provide monitoring support to the regional companies for the implementation

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<http://web.worldbank.org/external/projects/main?pagePK=64283627&piPK=73230&theSitePK=40941&menuPK=228424&Projectid=P085561>

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<http://web.worldbank.org/external/projects/main?pagePK=64283627&piPK=73230&theSitePK=40941&menuPK=228424&Projectid=P096801>

of the investments; b) ensure that the project activities are well coordinated between the TEDAS, regional companies and the contractors as well as with other relevant agencies; and c) ensure that the supplied equipment and civil and installation works are in compliance with the Project design and work schedule.

## **4.2 The European Union**

The European Union has been trying to impose reforms on national electricity industries for nearly 20 years under a policy of trying to create a 'single European electricity market' (Thomas, 2005, 2006c, 2007a). The policy was vague and muddled until the mid-90s but, as with the World Bank, it was the British Model that provided a structure to emulate. The rhetoric of the changes has been strongly oriented towards creating competition. However, as with the World Bank, the motives for its policy seem to go beyond this pro-competition agenda. Other motives appear to be:

- A political agenda to wrest control over national electricity industries from national governments and put it in the hands of the European Commission;
- A dislike and distrust of nationally-owned companies because of their power;
- To create European companies that are strong enough to prevent entry by non-EU-based companies and can be an important presence in World markets.

The Council of Ministers adopted a Directive concerning common rules of the internal market in electricity in December 1996, 96/92/EC. Opposition to liberalisation and competition from the electricity industry and from some governments was placated by the introduction of a range of options, for example on access to networks, which appeared to allow the large utilities, the 'national champions', to continue to dominate their national systems. However, these less liberal options were not widely adopted and in 2003, the first Directive was superseded by Directive 2003/54/EC of June 2003, in which these less liberal options were removed.

While the Directives are complex and place numerous requirements on Member States, at their heart is an objective to transform the electricity industry from a monopoly basis to one operated on competitive principles by making wholesale and retail competitive markets.

The 2003 Directives acknowledged there was a risk that relying on market signals might not be enough to ensure there was sufficient generating capacity. Paragraph 23 of the preamble of both Directives states:

'In the interest of security of supply, the supply/demand balance in individual Member States should be monitored, and monitoring should be followed by a report on the situation at Community level, taking account of interconnection capacity between areas. Such monitoring should be carried out sufficiently early to enable appropriate measures to be taken if security of supply is compromised.'

Article 22 of the Electricity Directive states:

'However, Member States should ensure the possibility to contribute to security of supply through the launching of a tendering procedure or an equivalent procedure in the event that sufficient electricity generation capacity is not built on the basis of the authorisation procedure.'

So the Commission does not have enough faith in markets to allow them to work.

The Commission acknowledges that the objectives of creating a single market in electricity are far from being achieved (Thomas, 2005). In September 2006, the Competition Commissioner, Neelie Kroes stated<sup>6</sup>:

‘It is clear that no-one in their right mind could say that a competitive single European energy market is already in place today.’

While the President of the Commission, Manuel Barroso said in September 2006<sup>7</sup>:

‘In energy terms I can tell you that I am more convinced than ever that we need new legislation concerning regulation. What we know is that the status quo isn't working. What we have to do is decide how we can most effectively reform the system to the benefit of business and consumers’

On energy prices, the Commission is also acknowledging, for the first time, that the Directives are not producing the desired results<sup>8</sup>:

‘Liberalisation has clearly led to some efficiency improvements in energy supply and delivered savings to customers, particularly in the initial phase. However, recent increases in wholesale electricity and gas prices have, to a greater or lesser extent, fed through into the bills of end-users and now offset some of the earlier reductions, particularly for the very largest industrial energy users. It would therefore appear that efficiency improvements are not being passed on to consumers quickly enough. It is highly questionable that gas and electricity prices are the result of a truly competitive process rather than being the direct result of decision of companies with market power.’

The sector has seen very strong corporate concentration leaving much of Europe in the hands of an oligopoly of the large international companies, the ‘Seven Brothers’. The EU has done nothing to prevent this. Wholesale markets lack liquidity and are not reliable places to buy and sell power, much less do prices provide price signals for new investment. Retail competition for residential consumers has either been ineffective, with few consumers exercising the right to switch, or, as in the UK, most consumers that switch fail to identify the cheapest supplier.

The Directives were under review from the start of 2006, as required in the 2003 Directive. However, instead of trying to tackle the fundamental problems that have emerged, on corporate concentration, integration of generation and retail and lack of competitive wholesale or retail markets, the Commission is concentrating on measures that are hardly central to the overt objectives of the Directive. In particular, it is pressing for a new Directive that will require full ownership unbundling of networks, greater powers for regulators and more control over the electricity industry at Commission level (Thomas, 2007b). More complete unbundling and stricter regulation should be no more than enabling measures for competition to take place.

From a broader perspective, an important priority for energy industries is dealing with the threat of climate change. The European Union (EU) headlines its energy policy, an ‘integrated climate and energy policy’, implying that policy has been developed to simultaneously satisfy the objectives of reducing greenhouse gas emissions and maximising economic efficiency. Blatantly, this is not what has happened in the EU. Policy has been derived with the objective of economic efficiency only in mind with climate change measures grafted on at the end. This will only be an efficient way to

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<sup>6</sup> N Kroes (2006) ‘The need for a renewed European energy policy’ Speech to OFGEM seminar on Powering the Energy Debate: Europe - Competition and Regulation. 28 September 2006 <http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/06/541&format=HTML&aged=1&language=EN&guiLanguage=en>

<sup>7</sup> Financial Times, 12 September 2006, p 12.

<sup>8</sup> European Commission (2007) ‘Prospects for the internal gas and electricity market’ {SEC(2007) 12}, Brussels,

meet the twin objectives if competition/liberalisation measures are, at worst, neutral to meeting climate change objectives.

This is clearly not the case. In a monopoly market, generators can be instructed ('command and control' policies) as to what technologies to deploy and measures can be taken to ensure that the profits of retailers are not dependent on how much power they sell. This means they have no incentive to sell more electricity. Retailers can be used as a vehicle for implementing energy efficiency measures through 'least cost planning' policies. These are based on the assumption that consumers want an energy service, not kWh *per se*. It may be cheaper to buy energy efficient equipment and pay a small amount extra per kWh than to meet the demand that would have arisen if energy efficiency measures had not been undertaken.

All the evidence suggests if companies are left to choose, they will buy fossil fuel plant and they are highly unlikely to choose low carbon sources such as renewables and nuclear power. With a field of competing retailers, companies will make more money the more power they sell, and implementing energy efficiency measures with a consumer who could opt to switch retailer at short notice would make no commercial sense. So, meeting environmental objectives can only be at the expense of compromising competition. The 'market-based' mechanisms, such as the EU's carbon trading scheme, are a poor substitute for a real market and companies generally find ways to exploit these mechanisms for their own advantage rather than meeting the explicit objective.

## **5 Brazil and the Nordic market**

### **5.1 Brazil**

Brazil is large country in terms of population (190,000) and geographical size (8.5m km<sup>2</sup>). In 2004, installed electricity generation capacity was more than 80GW and electricity demand was about 350TWh and, about 90% of which was produced from hydro-electric sources. Typically, demand grew at 6% per year throughout the 1990s.

Brazil began liberalisation of its electricity industry under pressure from the World Bank in 1995 and by 2000, most of the distribution companies (previously most of which were owned by state governments) had been sold to US, Brazilian and European companies. The government was not able to privatise the generation sector (mostly owned by subsidiaries of the Federal holding company, Eletrobras). There was no investment in new generating capacity because Eletrobras was not allowed to invest and foreign investors were unwilling to invest. The inevitable crisis happened in 2000 and required that demand be cut by 25% to prevent blackouts. This was achieved due to remarkable conservation efforts by the public. Lula abandoned privatisation, many of the foreign owners of the distribution companies withdrew in various states of disarray and a new way to stimulate new generating capacity was introduced based largely on the Single Buyer model. Brazil negotiated higher limits on public spending for infrastructure investment and this allowed Eletrobras to make a significant contribution to the investment needs.

This seems to be the situation in Turkey. Turkey does have the possibility to remain dominated by public ownership since distribution has not yet been privatised and a large share of generation assets is still under the control of a single dominant public enterprise. The difference is in the level of the primary surplus which in Turkey is 6.5% and in Brazil 4.3% for 2006 and 2007. So if there is political will Turkey can follow Brazil's example.

Brazil's hydro-electric stations are a unique resource, typically with 2-3 years of water stored. In a market, this makes it difficult to stimulate thermal plant because in a wet year, the demand for power from thermal plants will be much lower than in a dry year, so a series of wet years would be likely to bankrupt thermal power plant owners.

### **5.2 The Nordic Market**

A single electricity market covering the whole of the Nordic region was progressively created starting with Norway (1991) and incorporating Sweden, Finland and Denmark from 1996 onwards. Each of the four countries' systems is roughly comparable in size. It is based on the stored hydro-electric capacity in Norway (100% hydro) and balanced in dry years by increased thermal power contributions from the other countries in dry years.

The wholesale market is the only wholesale market in Europe that is adequately liquid and retail consumers do switch reasonably often in Norway and to a lesser extent Sweden. But there has been little investment in new generation since liberalisation and most of this is subsidised renewables not competing in the market. In 2002, a dry winter led to the wholesale price of electricity increasing by a factor of 6. Electric-intensive consumers in Norway were not exposed to this because in 1991, the government signed long-term contracts for power supply with them that took them out of the market for 15-20 years. In 2006, a dry period again led to a six-fold increase in

power prices but a very wet autumn saved the situation. However, it seems a matter of time before the Nordic system hits a major crisis. The system is dominated by four 'national champion' companies Vattenfall (Sweden), Statkraft (Norway), DONG (Denmark) and Fortum (Finland). All four companies are wholly owned by central government (except Fortum, Finland, which is 60% government owned). Much of the rest of the system is owned by companies owned by local authorities.

It is an irony that, arguably the most successful electricity liberalisation programme in the world, albeit its ability to stimulate investment is still unproven, took place in a system dominated by public ownership.

## **6 Options for Turkey**

The British Model was designed for a mature system with limited demand growth. Most analysts of electricity reforms acknowledge that a wholesale market to work well, there must be a surplus of generating capacity and an oversized transmission system to prevent gaming by generators. These are conditions that do not exist in Turkey and substantial investment in generating capacity and the network would have to be undertaken. If this could be done under the current ownership structure, it begs two questions: if the investment needs can be fulfilled under the current structure, what is the point of privatising and liberalising; and will investment be self-sustaining under the new structure or will the government have to step in again to provide new capacity to meet growing demand, because in a competitive market, major investments are too risky.

Retail competition is especially problematic for small consumers who do not have the resources, skills or incentive to negotiate as hard for power, as, say, an aluminium smelter. It is hard to see how retail competition could work where there are a significant number of poor consumers that find it difficult to pay their bills. Part opening the market is especially dangerous, unless the regulator is vigilant prepared to take steps to protect small consumers, as companies will give low prices to consumers that can choose and high prices to captive consumers. In the UK, the retail market was part open from 1990-98 with small consumers still captive to their local retail company. It became clear in 1998 that the price reductions received by large consumers were largely at the expense of small consumers. The Regulator published data showing that retailers were systematically allocating their expensive wholesale purchases to the captive market and their cheap purchases to the competitive market (Thomas, 2006a).

The British Model in anything like its pure form is therefore neither suitable for Turkey nor is it achievable. The compromised versions that could be introduced, for example with limited wholesale and retail competition and a concentrated corporate structure are unlikely to be preferable to the existing structure.

### **6.1 The World Bank**

The World Bank's priority, judged on its actions if not its words, is privatisation and foreign ownership, not competition. However, it is on weak ground partly because of the high general level of dissatisfaction with what are seen as policies that are for the benefit of the West and Western companies. Specifically in the electricity sector, the acknowledged failure of its policies over the past two decades puts the onus on the World Bank to explain how its policies on electricity will work in Turkey when they have already failed in Turkey with the IPPs and elsewhere with the British Model.

As Brazil has demonstrated, a strong, influential country can force the World Bank to retreat on its demands for privatisation and on public spending limits.

### **6.2 The European Commission**

The position with the European Commission is more problematic. Unless the main members of the Union, especially France and Germany, force the withdrawal of the Directive, the Commission has invested so much of its credibility in its electricity liberalisation measures that it will never acknowledge they have failed no matter how far the model is compromised keeping the electricity industry viable. For other new members, the advantages of joining the EU were seen to be so overwhelming that the

countries complied with the EU's demands largely without question. Thus, Malta signed up for the Electricity Directive despite the fact that it only has one power station, making the cope for competition negligible.

Turkey is in a stronger position than most of the recent accession states and if Turkey decides its overall interest is best served by joining the EU, it should recognise the strength of its position. It not only provides a large new market for existing EU members, it strengthens a major new route for gas supplies to Western Europe from the Middle East. This can be used to lever concessions on energy markets. In theory, the Commission has no jurisdiction over the ownership of companies and Turkey can choose to maintain much of the electricity sector in public ownership without contravening EU legislation. In practice, it implicitly endorses privatisation, for example, in its 2006 report on Turkey's accession negotiations<sup>9</sup>, the EU noted that: 'Turkey had progressed well in terms of macroeconomic stability and privatisation.' This was compared to the situation in 2004, when the Commission found: 'The 2004 report nevertheless noted that progress on privatisation had remained rather limited.' Maintaining EÜAS, TEIAS and TETAS in the public sector should not therefore mean that Turkey would break EU regulations on the electricity sector, although the Commission clearly has its own pro-privatisation agenda albeit with no political mandate for this.

Where concessions might be needed is on retail competition for small consumers. This makes little sense in mature markets but makes no sense in a country like Turkey where many consumers use only small amounts of power and where the prospects of producing a competitive field of suppliers in any but the richest regions are minimal. A well regulated monopoly, which did not allow suppliers to use small consumers to cross-subsidise industrial consumers (as happened in the UK) would be a much more sensible solution.

Unbundling is the other problematic area. For transmission, the sector in Turkey is already unbundled in TEIAS. Unless the Commission chooses to take the perverse position that under its unbundling rules, the state cannot own a generation and a network company, no action would be needed there. However, for distribution, especially if the 21 regional companies are created from TEDAS, further dividing them into network and retail companies, especially if retail competition was not introduced for residential consumers, would be a costly and pointless exercise. However, ownership unbundling is being strongly resisted in the rest of the EU and may not be imposed.

The main issue is therefore investment in new capacity. Article 22 of the 2003 Electricity Directive states:

'However, Member States should ensure the possibility to contribute to security of supply through the launching of a tendering procedure or an equivalent procedure in the event that sufficient electricity generation capacity is not built on the basis of the authorisation procedure.'

If, as is likely, not enough new generating capacity is built, Turkey would therefore be allowed, perhaps via TETAS, to commission the construction of new plants via competitive tender, a process that EÜAS would be well placed to win.

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<sup>9</sup> <http://europa.eu/scadplus/leg/en/lvb/e01113.htm>

## 7 Conclusions

After 15 years of efforts in Turkey to privatise and open up the electricity sector to competition, there is little positive to show for these efforts. No companies have been privatised and there is no significant competition in either the wholesale or retail parts of the electricity sector. Private sector generators have been introduced through the TOR, BOT and BOO provisions, but far from contributing to competition, these have provided power that is inflexible and often expensive. The Power Purchase Agreements mean these plants have to be operated even when cheaper capacity is available from the publicly owned plants operated by EÜAS. Large amounts of money have been spent reorganising and splitting up the previous integrated company, TEK, with few clear benefits to counterbalance the costs incurred. Large amounts of money have also been wasted as fees to consultants on abortive attempts to privatise the companies.

The World Bank is morally and intellectually bankrupt in the electricity sector. Worldwide, its policies over the past two decades have failed with the costs being borne by the electricity consumers of the recipients of their loans. Morally, its policy of making its loans conditional on the recipient government privatising its industries appears morally wrong. Whilst it is understandable that a bank would seek to impose conditions to safeguard its loans, the ownership of key national industries should rightly be decided only by democratically elected bodies, not an unelected financial institution. Given the failure of its prescribed policies, the World Bank should be circumspect in imposing such policies, at least until its policies have a rather better track record of success.

While the main explicit driving force of the World Bank's policy has been privatisation, the main explicit driving force of the European Commission's policy has been creation of competition. However, the World Bank and The European Commission must be judged on their actions, not their words. As with the World Bank, the European Commission has a rather wider agenda including privatisation, growth of European transnational energy companies and taking control of the energy away from national governments. The policy has been no more successful than that of the World Bank in its fundamental intellectual justification of transforming the electricity industry from a monopoly industry to one run as a competitive market.

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