ALICE Electricity Sector Country Study

UK

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IIASA

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Content

1 Introduction

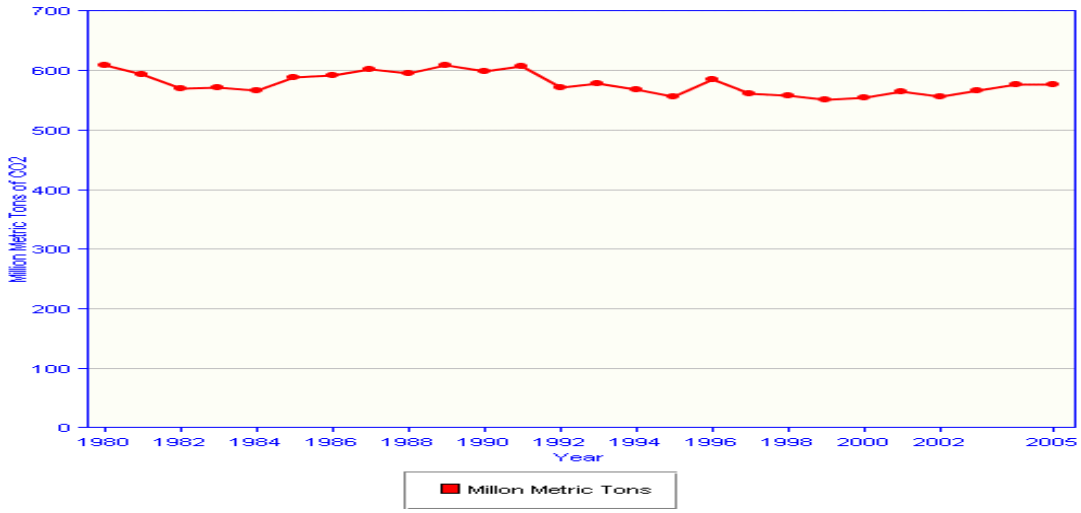
The UK has a diverse mix of fossil fuel and nuclear thermal power stations. However, RES-E only plays a minor role in the overall electricity mix. Coal and gas account for over one third each; nuclear about a fifth; and renewables around 4%. Contrary to most European countries, RES-E is supported by a Renewable Obligation (quota system).

Like in many other countries, companies will need to make substantial new investments over the next 20 years, as many of the conventional nuclear and coal power stations will close. Most of the existing nuclear power stations are due to close in the next 15 years, based on published lifetimes (BERR, 2008). Also the commitment to the EU renewables target will force the UK to increase its investments in power capacity which originates from renewable sources. The UK has the greatest potential in wind energy in Europe and according to the 2010 targets, the contribution from renewables to the total electricity generation should move from 4 % to 10 % by 2010 (EC, 2008).

The UK government published in its White Paper that Nuclear Power will most probably have to play a role in a future low carbon energy policy to meet the need of 20-25 GW additional power capacity by 2020 (BERR, 2007; 2008)

Figure 1 shows the development of CO2 emissions over the last 25 years. Although the overall energy consumption was increasing over that period, changes in fuel use and efficiency gains could compensate for that.

Figure 1: CO2 emissions in the UK



(EIA, 2007)

2 History

The UK has a long history in coal mining since the industrial revolution. Over decades the coal resources also provided the backbone for power generation. During the 1980s and 1990s the coal industry was faced with strong competition from cheap oil and gas from the North Sea and much of the extraction became uneconomical (Frondel et al.). The National Coal Board was privatized by selling off a large number of pits to private companies through the mid 1990s, and the mining industry diminished considerably which made the UK dependent on coal imports. For 4 decades oil and gas have been extracted from the North Sea. On the one hand proven reserves are declining (as shown in chapter *Resource Endowment*), on the other hand improved extraction technologies and higher oil prices make the extraction of previously uneconomical oil and gas fields economical.

The first nuclear power plant was connected to the grid at Calder Hall in Cumbria in 1956. This plant was also the first nuclear power plant globally that provided electricity commercially. 19 nuclear power reactors are currently operating at 10 power stations in the UK. In 1994, until now the last nuclear plant was connected to the grid. The nuclear industry was partly privatized in 1994 (BERR, 2008)

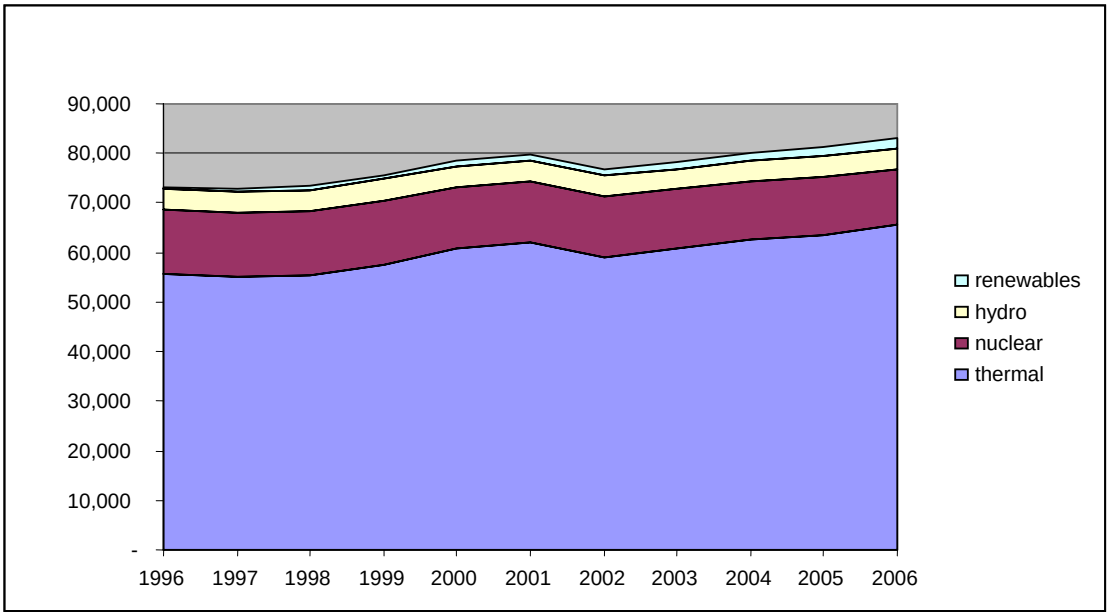
Efforts in providing UK policy on developing the potential of renewables can be traced to the oil crises of the 1970s. The country has some of the best renewable energy resources available in Europe. However, this wealth of renewable resources has had strong competition for market share with the UK's rich reserves of oil, coal and gas. Historically, renewables have also lost out badly to the nuclear industry in terms of financial support, both with regard to direct subsidy and R&D funding. Although the renewable resources are vast, market deployment has only been modest. The reasons for the rather low market deployment can be broken down into a number of categories, including problems with planning regulations, poorly thought out support mechanisms and a general lack of political will (Connor, 2003).

The power industry was liberalized in 1990. The nationalized industry had followed an investment policy aimed at replacing older plants and ensuring a high degree of supply reliability. Investment decisions since privatization have been more complex.

3 Basic Data and Power Capacities

The UK, with a population of 60 million has an installed power capacity of 83,043 MW (2006). It increased from 73,269 MW in 1996. In 2006 79 % of the total capacity could be found in fossil fuel powered stations.

Figure 2: Electricity generation capacity in MW



(BERR, 2008)

Hydropower, biomass and wind power are the main renewables in the UK. Total hydroelectric capacity is approximately 4,244 megawatts (including 2,788 MW of pumped storage capacity).There are three main categories used to define the output from hydroelectric power:

- Large-scale capacity (systems producing more than 20 MW) in the UK is currently 907 MW
- Small-scale capacity (systems producing less than 20 MW) in the UK is currently 503 MW
- Micro-scale capacity (systems producing less than 1 MW) in the UK is currently 46 MW

While hydropower capacity has not been growing over the last decade, the cumulative installed wind power capacity increased from 406 MW in 2000 to 1,963 MW in 2006. In 2005, the UK became one of only eight countries worldwide to have over 1 000 MW of installed wind capacity. Solar PV has been mainly supported for demonstration projects. Its installed capacity is 14 MW. Nuclear power capacity is at 10,969 MW. Biofuels and waste capacity is at 1,527 MW in 2006 (BERR, 2008; IEA-PVPS 2007; GWEC, 2007).

In 2003 the electricity consumption per capita was at 6,200 kWh. In comparision: Europe: 5,700; Germany: 6,900 kWh; USA: 13,200 kWh, Global: 2,400 kWh) (World Resource Institute, 2008).

4 Electricity Generation in the UK

Figure 3: Electricity generation in GWh

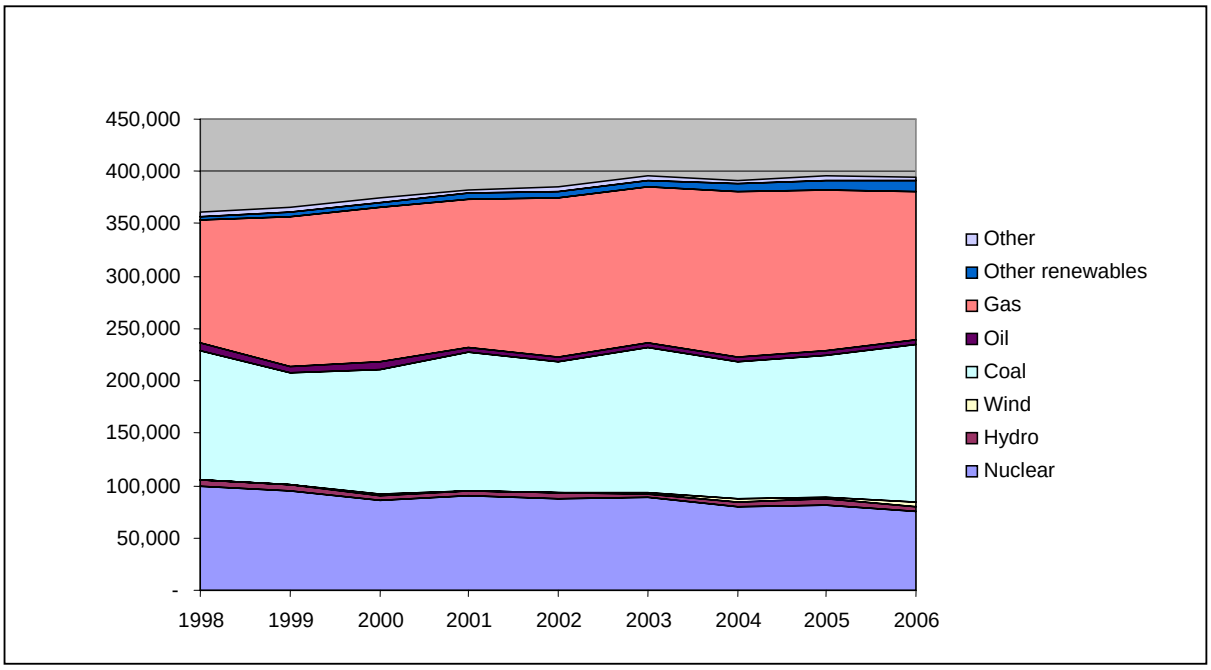


Table 1: Detailed generation value by fuel source in GWh

	1998	1999	2000	2001	2002	2003	2004	2005	2006
Nuclear	99,486	95,133	85,063	90,093	87,848	88,686	79,999	81,618	75,451
Hydro	5,117	5,336	5,085	4,055	4,788	3,228	4,844r	4,921	4,605
Wind	877	851	947	965	1,259	1,288	1,939	2,912r	4,232
Coal	122,971	106,180	119,950	131,461	124,279	138,305	131,788r	134,848r	150,283
Oil	7,355	6,549	6,524	5,253	4,799	4,594	4,644r	5,135r	4,999
Gas	117,798	142,902	148,077	141,905	152,277	148,881	157,064r	152,710r	141,342
Other renewables	3,237	3,987	4,328	5,048	5,625	6,692	7,878	9,615r	9,947
Other	4,237	4,312	4,401	3,577	3,719	3,800	3,062r	3,683r	3,615
Total production	**361,078**	**365,250**	**374,375**	**382,356**	**384,594**	**395,475**	**391,219r**	**395,442r**	**394,474**

(Eurostat, 2008)

The total gross electricity production increased from 361 TWh in 1998 to 394 TWh in 2006. 75 % is generated by fossil fuel powered plants (coal 38 %, gas 36 % and oil 1 %). 19 % is produced by nuclear power plants and only 1 % originates from hydro power plants. In the same year (2006) the share of wind power is at 1,1 % or 4,232 GWh. Other renewables (notably mainly biomass and waste) contribute with 2.5 % to the generation of electricity in the UK. Electricity from hydro has historically been the most important source of RES-E in the UK, although its relative share of RES-E production is decreasing as other forms of RES-E increase.

In 2004 the most important source of renewable electricity was generation from biogas, alone contributing to just over 30% of RES-E. Biomass in total contributed to just under 51% of RES-E in the UK in 2004, with solid biomass representing 13% of overall RES-E and biowaste 7%. Although installed capacitates for biomass are lower than for wind power, the relative high load factor for biomass plants result in higher generation compared to wind power (EC, 2008).

The total annual power production increased by 9 % since 1998. Especially gas powered plants and new renewables contributed to that increase. Nuclear was losing share during the last decade. It decreased from 27 % to 19 %.

The UK position concerning nuclear power has been driven by two main factors. First, the greater than expected increases in fossil fuel prices, and second, the introduction of a market price for carbon which requires investors to take account of the cost of carbon emissions in their investment decisions. Both of these factors have increased the relative costs of fossil fuel electricity generation.

Some energy companies expressing a strong interest in investing in new nuclear power stations. From now until 2020 7 GW of nuclear power stations will have to close according to their published lifetimes (BERR a, 2007)

The UK White paper on Energy in 2007 states: *"There would also be a risk of higher costs to the UK economy: by excluding nuclear as an option, our modelling indicates that meeting our carbon emissions reduction goal would be more expensive. We recognise that, as with all generation technologies, there are advantages and disadvantages with new nuclear power. But having reviewed the evidence and information available we believe that the advantages outweigh the disadvantages and that the disadvantages can be effectively managed." (BERR a, 2007)*

5 Plant loads and efficiencies

Table 2: Plant loads factors in %

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Combined cycle gas turbine stations	81.7	79.2	84.0	75.0	66.6	68.4	64.2	65.0	60.9	54.1
Nuclear stations	79.1	80.1	77.5	70.5	76.1	75.1	77.8	71.8	72.4	69.3
Hydro-electric stations:										
Natural flow	28.8	36.7	38.0	37.2	27.4	33.8	22.7	35.3	34.2	33.0
Pumped storage	5.9	6.4	11.5	10.7	9.6	10.5	10.8	10.6	11.4	15.4
Conventional thermal and other stations	37.3	38.9	35.3	39.2	41.9	42.1	47.7	46.0	46.1	50.2
of which coal-fired stations	48.4	50.6	43.8	50.8	56.0	55.9	65.0	62.3	63.0	66.0
All plant	**51.6**	**53.3**	**53.1**	**52.5**	**53.0**	**53.9**	**55.8**	**54.7**	**53.6r**	**52.8**

Table 3: Plant efficiencies in %

Thermal efficiency											
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Combined cycle gas turbine stations	45.3	45.2	46.6	46.6	46.6	46.7	46.8	46.4	47.0	49.0r	48.9
Coal fired stations	37.7r	36.5	35.5	35.8	36.2	35.8	36.3	36.5	36.2	35.6	36.3
Nuclear stations	36.9	36.7	36.5	36.8	37.3	37.3	37.6	38.1	37.9	38.2	37.9

(BERR, 2008)

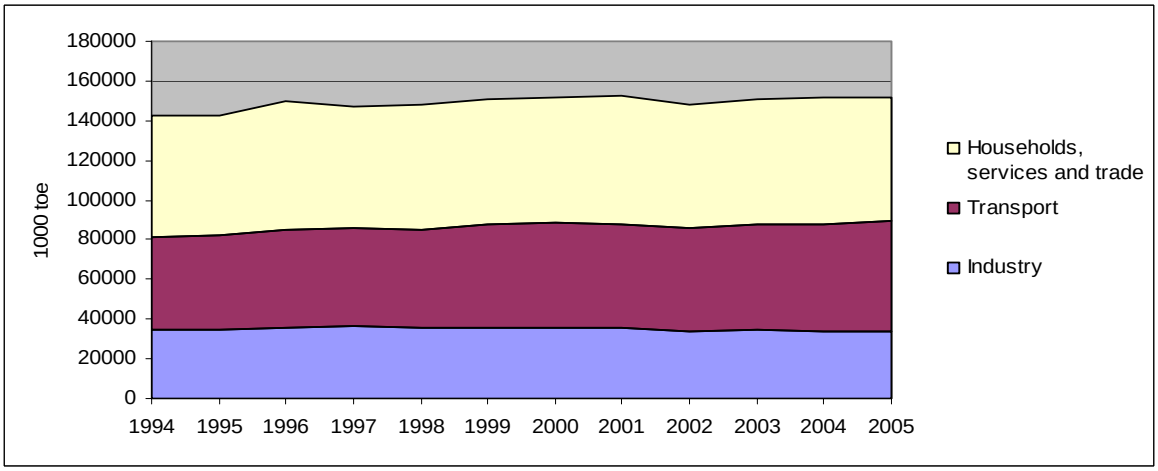
Table 2 provides figures for average plant loads for different types of power stations. Naturally nuclear power stations have the highest load factor. However, load factors for nuclear power stations have been decreasing over the last years. A similar trend can be observed for CCGTS. Pump storage plant are very much designed to deliver for peak demand times and therefore have a very low (however increasing) load factor.

Table 3 shows the efficiencies of thermal power plant (incl. nuclear). CCGTS have an average efficiency of 48.9 % in 2006. Their efficiency has been rising constantly over the last decade. Nuclear power and coal power stations do not show very significant changes in efficiency over time. Not stated in the above table is that modern hydro power plants have a conversion efficiency of well above 90 %.

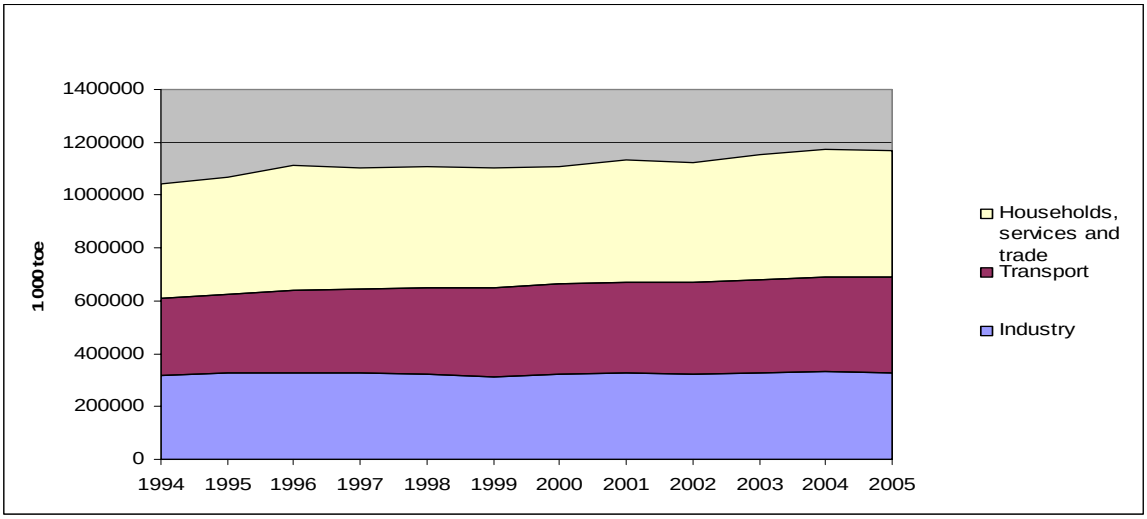
6 Consumption of electricity by sector

Figure 4: UK and EU-27 energy use by sector

UK



EU-27

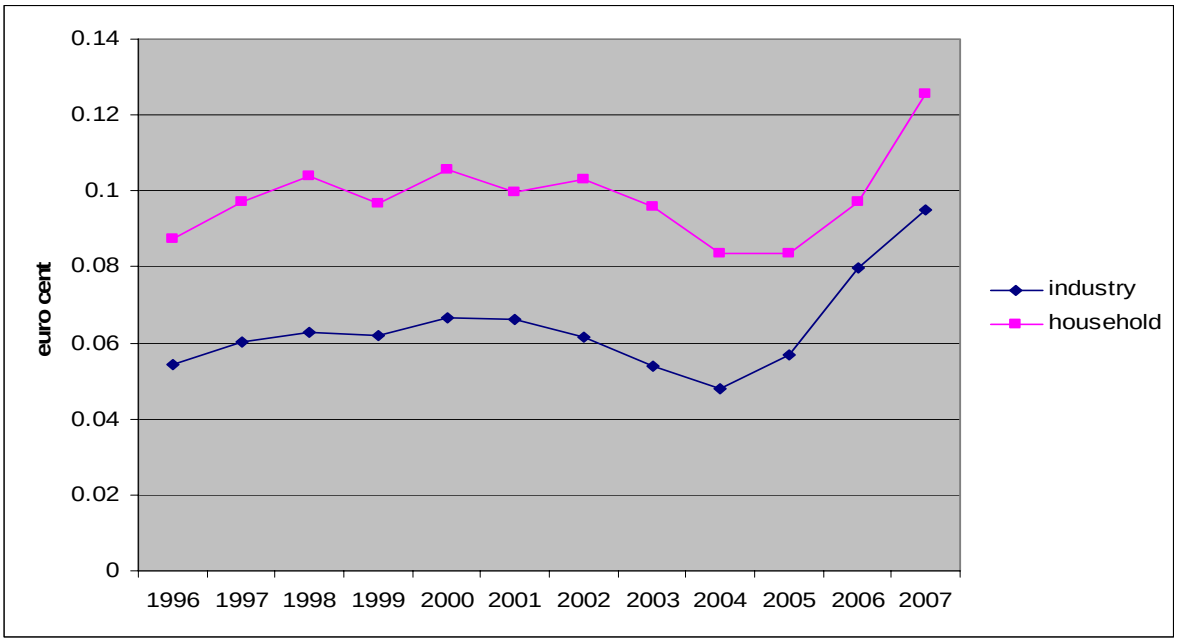


(Eurostat, 2008)

.Compared to the EU-27 the UK uses considerably less energy for its industry sector (EU-27 28 %, UK 22%). The share of energy consumption by the industry has been falling over the last decade. The relative energy use for transport is higher in the UK than in EU-27 (UK 36 %, EU-27 31 %). In comparison, approximately the same share is used for households, services and trade (41 % for the UK and EU-27).

7 Electricity prices for households and industries

Figure 5: Electricity prices for industry and households



* industrial consumers, which are defined as follows: annual consumption of 2 000 MWh, maximum demand of 500 kW and annual load of 4 000 hours. Prices are given in Euro (without taxes) per kWh corresponding to prices applicable on 1 January each year.

final domestic consumers, which are defined as follows: annual consumption of 3 500 kWh of which 1 300 kWh is overnight (standard dwelling of 90m²). Prices are given in Euro (without taxes) per kWh corresponding to prices applicable on 1 January each year.

(Eurostat, 2008)

From 2004 to 2007 electricity prices were rising by 99 % for industrial consumers and by 50 % for household consumers. The electricity price consists of the market price for electricity, taxes, levies and surcharges, and transmission and distribution expenses. Only the market price for electricity is subject to competition, all other charges are regulated or administered. The above figures do not include taxes.

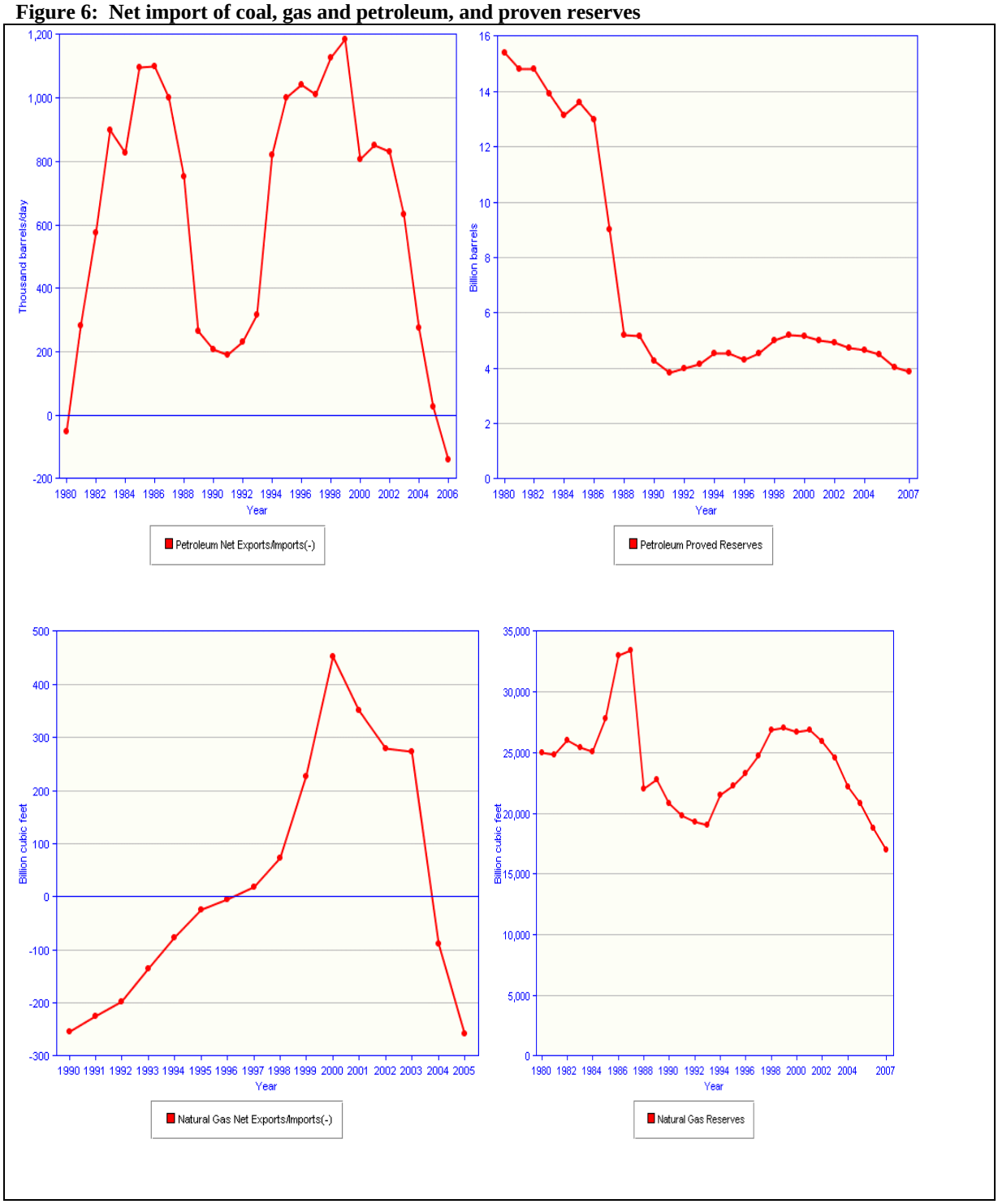
Electricity prices in the UK were traditionally rather low compared to the average EU-27. However, recently the rise in prices resulted that UK prices are now approximately at the EU average, for industrial users even above EU average. Electricity prices within the UK vary according to the electricity provider, consumer category, the grid owner and market prices.

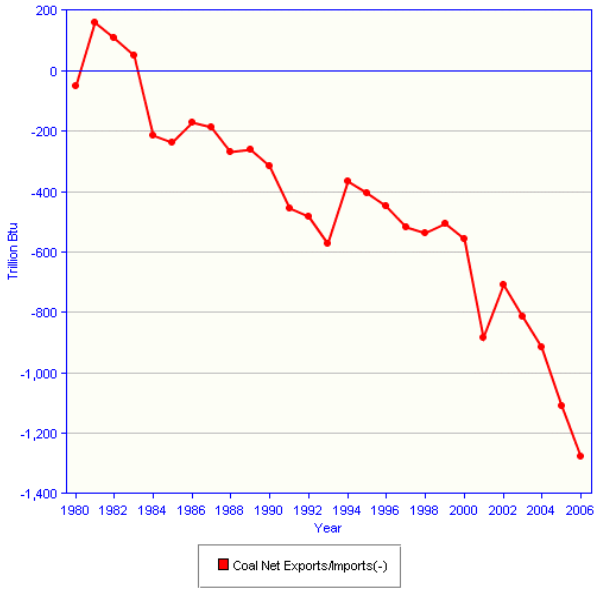
OFGEM (The Office of Gas and Electricity Markets) is regulating the electricity market in the UK by promoting competition and regulating monopoly companies which run the networks. It strongly supports the EC drive to liberalize the European electricity market (OFGEM, 2008)

8 Resource endowment

Available fossil resources/reserves

Figure 6: Net import of coal, gas and petroleum, and proven reserves





Data for coal reserves is not available

(EIA, 2007

The above figures show a clear pattern of domestic resource depletion and increasing import dependency. The UK has changed from a net exporter to a net importer of petroleum, gas and coal. Proven reserves are diminishing. Although the UK is only using half as much coal as it did in the late 1970ies, due to an uneconomical domestic production environment (mainly due to disadvantages in geology and a lack of subsidies) the dependency on coal imports has become considerable during the last 2 decades. Today coal is often imported from overseas. It is estimated in the Energy White Paper (2007) that by 2020 75 % of the oil demand, 80 % of the gas demand and 75 % of the coal demand will need to be imported.

Available RES-E potential

The UK has the greatest wind resource of any European nation, most notably in Scotland. Its long coastline also offers considerable opportunities for the development of wave, tidal and tidal stream technology. With one of the most efficient farming industries in the world; significant potential for exploitation of biomass also exists (Connor, 2003). As stated above, the domestic fuel resources are diminishing and CO2 cost are clearly taken into account. Therefore, also the UK has a strong driver for an exploitation of domestic renewable energy sources.

Hydro power

Most of the large hydro power plants can be found in the Scottish Highlands. Further development of hydro power in the UK is limited as most economically suitable sites have been exploited or are under protection. For small scale hydro power the situation is somewhat better and a number of projects are currently being built. Those projects

include old watermills which are reused to produce energy. If all running water from the rivers could be used, it would lead to an electricity production of 10,000 GWh (3 % of the electricity demand in the UK) (BERR, 2008).

The wind potential

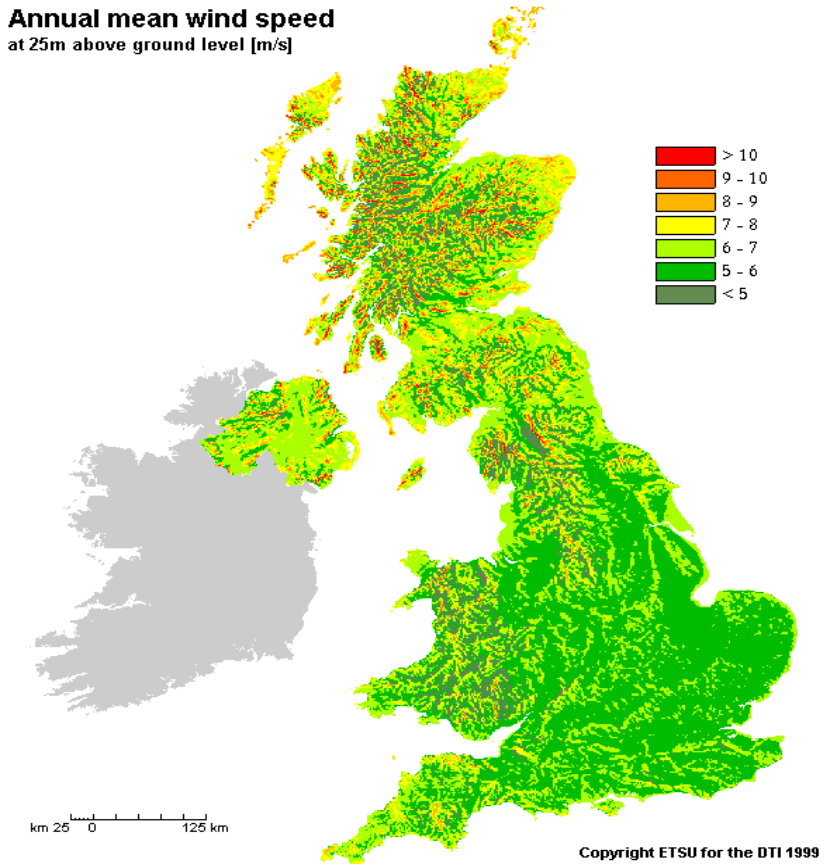
Wind energy is expected to be the main contributor to the UK RES-E 2010 target. Projections show that a total of up to 8,000 MW of capacity could be installed by the end of the decade. This would meet more than three-quarters of the national target. The UK has the best wind regime of any country in Europe, but the growth of its market has been limited in the past due to opposition at a local level and a lack of clear government policy. Both those elements have improved over the last few years, encouraged by clearer guidelines to local authorities and the introduction of a green certificate based market incentive providing some security to investors, however problems remain in progressing projects through the planning system. Although the introduction of the green certificate system has led to an increase in wind farms, compared to Germany or Spain where Feed in Tariffs are used as market support, the growth has only been modest (GWEC, 2007).

2006 was so far the best year for construction of wind farms in the UK. A total capacity of 630.8 MW was installed, summing up to a total of almost 1,963 MW. A further 985 MW is under construction, and much of this capacity should have been completed by the end of 2007, with the largest project being a 322 MW wind farm south of Glasgow, Scotland. There are many further projects on and off-shore approved and due to start construction, however a particular problem lies with the large amount of capacity in the planning system awaiting a decision, which must be decided promptly if the UK's renewable energy targets are to be met. Roughly 3,965 MW of capacity on and off-shore is approved, but has not yet gone forward to construction and a very large capacity onshore – equivalent to approximately 6 % of the UK total electricity supply is awaiting determination. In Scotland alone, a total of 5,492 MW is waiting for a decision to be made. Most of that run under a separate procedure for handling projects of more than 50 MW installed capacity. Developer confidence has been maintained with a significant number of applications continuing to be submitted into the planning system on and off-shore, and whilst onshore applications in Scotland appeared to have peaked, there was an increased number of applications in England compared to 2005 (BERR, 2008; GWEC, 2007).

The primary source of wind comes from polar maritime air masses that travel over the Atlantic. Therefore wind speeds are highest in the west, higher in winter than in summer and also higher during the day than during the night. It is theoretically possible to obtain 1000 TWh of wind every year which is more than the double of the current total electricity consumption in the UK. Taking into account only the most economic places for exploitation the wind potential is stated at 50 TWh (certainly with rising oil prices the economics of wind will improve further and this potential will move upwards) (ESRU, 2008).

The electricity network will be able to handle additional wind farms which are likely to be built in the near future. However, substantial long term wind power investment will also mean that the network will have to be adjusted by increasing the carrying capacity between regions (eg. England and Scotland) and changing the operational system. Technological solutions are available but it certainly involves costs.

Figure 7: Wind resources in the UK

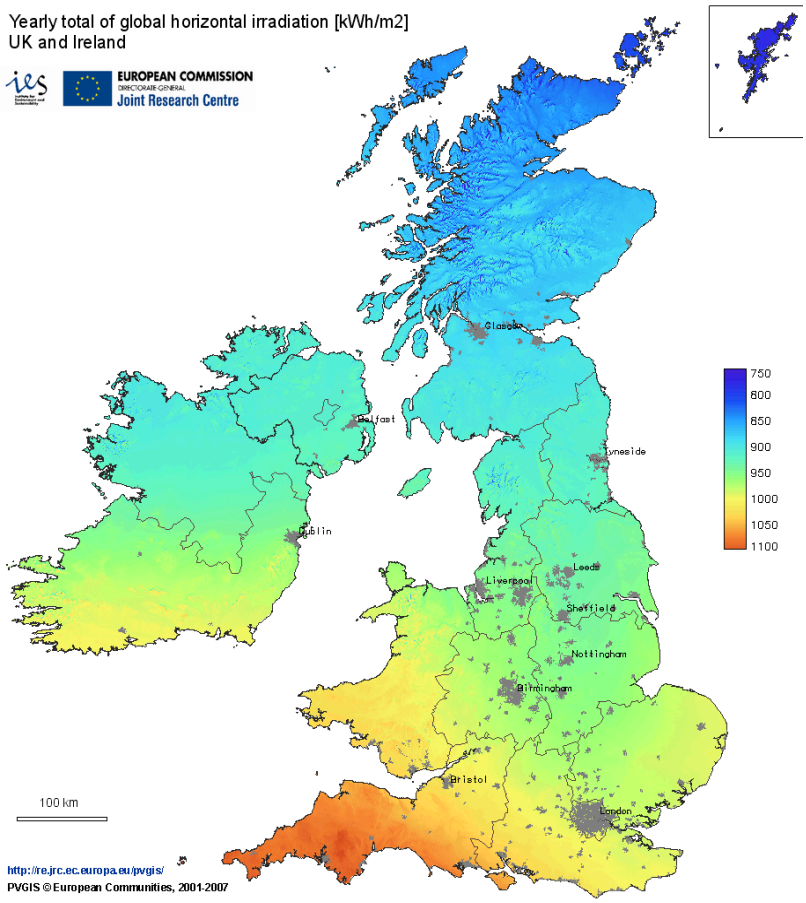


(ESRU, 2008)

Solar PV

The newly installed PV capacity in 2006 was 3,4 MW. This compares to 2,7 MW in 2005. Compared to the leading European PV countries the UK PV share is small (Germany installed 850 MW in 2006). The cumulative installed capacity is reaching a total of 14 MW (in comparison: Germany 2500 MW). Government support through the Major Demonstration Programme and the new Low Carbon Building Programme supported approximately 75 % of the total new capacity (IEA-PVPS, 2007).

Figure 8: Solar Resources in the UK



(JRC, 2008)

The total global horizonatal irradiation varies between 980 – 1270 kWh/m2/year.The power generation potential per kW installed can be found between 760 and 990 kWh per year (decreasing from north to south).

9 Regulatory Environment for RES-E

Support programmes for fossil fuels

Contrary to Germany and some other EU countries the remaining UK coal industry has to operate without significant public support. It is argued that the production in the UK is close to market prices and therefore no subsidies are given. It remains a strong argument that the UK has to compete with the subsidized coal industries from other EU countries making the competition unfair (Frondel, 2007).

In order to decrease increasing dependency on fossil fuel imports, the UK is supporting the national Gas and Oil Industry in different programs. The “Stewardship Programme”, the “Promote License” and “Fallow exercise” are examples for initiatives where the government encourages investors for exploiting domestic fuel resources and exploring new oil and gas fields (BERR, 2007).

After the evaluation the 1994 Energy White paper, the government decided to privatize many of its newer nuclear power plants. Only the older plants remained public. In the past nuclear power has been supported publicly, however according to latest news (Guardian, 2008) the UK government is not intending to support financially new investments in nuclear power. Developers will need to make sure that enough funds are available to take care of waste disposal and decommissioning of the power plant.

Main supporting policies for RES-E

The RES-E target to be achieved by the UK is 10 % of gross electricity consumption in 2010. An indicative target for RES-E of 20% has been set for 2020.

In the United Kingdom, renewable energies are part of the climate change strategy and are supported by a green certificate system (with an obligation on suppliers to purchase a certain percentage of electricity from renewable energy sources) and several grants programs. Progress towards meeting the target has been moderate (electricity generation from renewable energies has increased by around 70% between 2000-2005), and there is still some way to go to meet the 2010 target. Growth has been mainly driven by the development of significant wind energy capacity, including offshore wind farms and biogas plants.

In addition to creating the right financial framework, there is a need to lower important practical barriers to renewables investment. The United Kingdom’s policy regarding renewable electricity sources consists of the following key schemes (BERR, 2007 a; BERR, 2007 b; IEA-PVPS, 2007; Probert, 2007):

- *Obligatory targets* with tradable green certificate system (Renewables Obligation on all electricity suppliers in Great Britain to supply a specific proportion of RES-E). On shore wind power will receive between £ 34 -60/MWh and off shore certificates will be worth 1.5 ROC.

- VAT tax reduction to 5% rate for most micro generation technologies (micro-wind, solar thermal, solar PV, ground source heat pumps, micro-hydro).

- *Climate Change Levy*: RES-E is exempted from the climate change levy on electricity of £4.3/MWh (approx. 6.3 EUR/MWh)

- *Grants schemes*: funds are reserved from the New Opportunities Fund for new capital grants for investments in energy crops/biomass power generation (at least £33 million (EUR 53 million) over three years. A £50 million (EUR 72.5 million) fund is available for the development of wave and tidal power, the Marine Renewables Deployment Fund.

- A £20 million budget was allocated in 2002 to provide grants for the Major PV Demonstration Programme with the objective of preparing a secure platform for long-term and sustained growth of PV. The funding level was increased several times throughout the years. The additional funding allowed the programme to run until March 2006. Two types of grants have been made available: Stream 1 Grants are small-scale individual applications (between 0.5kWp and 5 kWp) that target households, small and medium-sized businesses and public and community groups such as schools. Different grant amounts apply to building mounted and integrated PV systems: Building mounted systems grants were provided for the lesser of £3 000/kWp or 50% of total eligible costs. Integrated systems grants were provided for the lesser of £4 250/kWp or 50% of total eligible costs. Stream 2 Grants attracted applications from housing groups, private developers, local authorities, large companies etc and were operated through a quarterly competitive call where criteria such as cost, level of integration, innovation and geographical location were taken into account. The grants were for medium to large scale applications (between 5kWp and 100 kWp). Grants covered: up to 55% of eligible costs for public bodies, up to 50% of eligible costs for small to medium sized enterprises and up to 40% of eligible costs for large companies.

10 Top manufactures and RES industries

The UK is not among the top nations in Europe in terms of producers of renewable energy components. Countries like Germany, Denmark and Spain are home to leading producers. However, a great number of small and medium sized companies are located in the UK.

Solarcentury: is specialized in the design and supply of solar electric and thermal technology. The company currently operates in the United Kingdom, France, Spain and Italy. Since 1999 Solarcentury has designed and installed over 600 on-site renewable energy solutions. Solarcentury is a growing company of over one hundred people and our turnover continues to increase at 30-50% per annum.

IT Power: IT Power's core business is expert consulting for institutional and private clients, for example the World Bank, UNDP, WHO, development banks, governments and most of the world's PV companies. Other ventures have been incubated and spun-off as subsidiaries or associates, eg: - Sustainable Energy Installations Ltd. (SEI), leading PV, wind and hydro integrator and installer - Marine Current Turbines

Ltd., the world's leader in tidal stream energy - Three other wave and tidal technologies at the R&D stage, with commercial partners.

Crystalox: is a world leading producer of multi-crystalline silicon for the PV industry. The Company was founded in 1982 and is based in the UK. It is part of the PV Crystalox Solar Group. In 1990 Crystalox began its pioneering development of the directional solidification process for the industrial production of multi-crystalline silicon. During the following decade it delivered major advances in both ingot size and high throughput systems which facilitated the increased worldwide use of multi-crystalline silicon in solar cell fabrication.

DeWind: was established in 1995 and since that time has delivered over 550 Wind Turbines with a total nominal output of more than 500 MW.

BP Alternative Energies: BP is traditionally a UK based company. However, it has become global player for investments in renewables and manufactures and invests globally in solar power, wind power, hydrogen power and natural gas.

11 Market Structure

Suppliers - the companies who supply and sell electricity and gas. From a customer perspective the suppliers are the most important group as these are the real contacts the customer will have with the energy industry.

Distributors (Network Operators) - the distribution companies are responsible for getting the energy to the consumer. This means that they are responsible for the pipes or cables in the road and the meters. The suppliers effectively have contracts with the distributors to provide these services and all of these costs are already included in whatever price the supplier asks the final consumer to pay for the electricity.

Generators - the generators are responsible for generating the energy.

Energy Strategies and Redpoint (2007) describe the history and market structure of the electricity sector in the UK. Since the liberalization in 1990 market structures and market behavior has changed as market forces play the key role for investments.

The first wave of investment was driven by the Regional Electricity Companies who wanted to gain some independence from the generators. The chosen technology was combined cycle gas turbines (CCGTS) because of the low capital costs. Gas became cheaper during the 1990s. The existing coal-fired generators tended, in the relatively uncompetitive conditions that then applied, to price above new entry cost, a second wave of CCGTS investment took place. It was possible for new entrants to invest on the basis that they could produce power more cheaply than existing plants were able to sell it.

Also, at the time the short run marginal cost of a new CCGTS was significantly lower than the short run cost of coal generation, ensuring a high load factor since coal rather than the new gas plant would likely be displaced in the event of over-supply. This situation stopped with the gas moratorium in 1998. By the time the stricter consents policy was lifted in 2000, the market no longer looked so welcoming to new CCGT investments. This was the result of a combination of different events:

The introduction of the New Electricity Trading Arrangements (NETA) in 2001 which forced all market players to participate in the competitive process, forced divestment of price-setting plant by the large generators, and rising UK gas prices. Since then, investment in new gas stations has been sporadic, normally driven by particular situations affecting specific locations or players. The main transactions have involved existing assets changing hands.

In the absence of a clear cost advantage of new technologies over existing technologies, new investment must be driven largely by investors' expectations of future scarcity. The dynamics of the market have not been tested under these conditions until now. Some recent announcements of intentions to invest in new generation assets have been made.

Network operators and suppliers

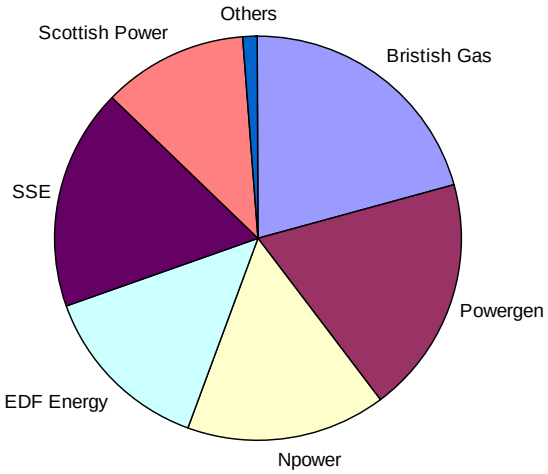
Figure 9: Network Operators

(Enerlynx, 2008)

At the time of privatization of the electricity industry there were fourteen Public Electricity Suppliers (PESs) in UK. Today, whilst the geographical areas of these former PESs remain unchanged the industry itself is somewhat different. Whilst

distribution has been separated altogether from supply, the former PES areas are used as the basis of current day distribution areas. Distribution remains a monopoly business and under the Utilities Act 2000 it is now a licensed activity. Licences are granted by OFGEM (The Office of Gas and Electricity Markets) and as these are effectively monopolies they are regulated through a price control mechanism which is reset every four or five years (OFGEM, 2008).

Figure 10: Shares of electricity suppliers (March 2007)



(OFGEM, 2007)
Most of the domestic energy market is served by six suppliers. These brands are British Gas, Powergen, Scottish and Southern Energy (SSE), Npower, EDF Energy and ScottishPower. Smaller suppliers include Countrywide Farmers, who provide only gas, and Good Energy and Ecotricity, who both supply only electricit

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