

This question was set in 1998 – the following is an answer which would have achieved a first class mark

6. Critically review the changes that have taken place in the Energy Supply Industries in the last 15 years. Include in your answer a discussion of the changes which have, or will, take place in the Domestic Sector. To what extent have these helped or hindered energy conservation?

The UK has seen more changes in the Energy Supply Industries over the last 15 years and by early next year with the completion of deregulation in the domestic market will be the most deregulated country as far as energy is concerned. The changes began with the Electricity Act of 1983 which saw a change in welcome change in the straight jacket definition of the 1947 Act. For the first time Combined Heat and Power was included in the requirements which allowed for surplus electricity to be bought by Grid, and important conservation matter.

While there have been significant changes in the structure of the coal industry over the period, there has been relatively little effect on the domestic consumer for this fuel as it had already been replaced by gas, oil and electricity by 1983. The miner's strike in 1984-5 demonstrated the vulnerability having a low diversify strategy in the generation of electricity, and combined with increasing environmental concerns in the late 1980's, the potential major shortfall in generating capacity in the mid 1990's, and the relaxation of EU rules towards the use of gas for electricity generation meant that the fate of the coal industry was sealed even before privatisation, despite the substantial resources which are still present in the UK.

The major changes in the Energy Supply industries have, however, been in gas and electricity, not only through privatisation, but also through deregulation. Some of the structures now in place are certainly assisting in conservation, whereas the continued drop in price is sending the wrong message to consumers, particularly when conservation has been taxed with VAT at 17.5% while energy consumption is taxed at only 5%

The year 1986 saw privatisation of British Gas as a single unit responsible for all sections of industry from exploration through processing and distribution to sale. Prices are regulated by OFGAS by a formula $RPI-X + E$ where RPI is retail price index, X is a factor determined by OFGAS and E is an efficiency factor. X has been set at various levels from around 5 - 8% in early years reducing subsequently, and has had the effect of reducing gas prices consistently below inflation since privatisation. In only one year was there a rise when 8% VAT was imposed for the first time in 1994. Prices are now 20% below pre-privatisation prices in real terms.

The E factor relates to a charge that British Gas can make to promote energy efficiency, although the previous regulator Claire Spottiswoode believed it was not in her remit to consider this (effectively making $E = 0$). Nevertheless, E was used to build up a fund to finance the Energy Saving Trust to promote energy conservation. Thus all people installing a condensing boiler could get a rebate of £200 by applying to this trust. However, the existence of this Trust is not well known.

It was realised that the monolithic structure of gas did not promote competition (which was always present in the electricity industry from privatisation in 1990), and with a view to full deregulation in 1998, organisations using more than 25000 therms were allowed to choose their supplier from 1992, while the level was reduced to 2500 therms in 1994. These suppliers use the same infra-structure as in existence and pay a levy to BG for use of the system. To avoid unfair competition, British Gas was demerged into component parts in 1996 with Transco being responsible for distribution and Centrica (British Gas Trading) responsible for sales etc. Transco have to charge all users (whether BG) or others the same for use of the system. Different suppliers can negotiate their own charges with the oil companies, and can thus under price BG. In addition, some of these companies have been trying to gain a foothold by identifying niche markets (e.g. low consumers etc).

The original intention was to ensure that all customers would have the choice of supplier as from April 1998, but with 18 million such customers, it was necessary to test this deregulation with a trial area (the South West) which was started in 1996. Up to 20+% of customers chose to switch from BG. During 1997, other areas were added - Kent, Somerset and Avon in the next phase, with the rest of the country phased in 6 week periods during 1998 for completion in June of that year. Prices for those customers who have switched are up to 20% less than for BG.

For some low consumers, the standing charge for gas was a substantial part of the overall bill, and some of the new companies have abolished this standing charge, but have a higher unit charge to compensate. For people who consume little this can be advantageous. Other strategies include high standing charges, but low unit charges which are designed specifically for higher consumers in mind. The market has also seen novel tariff structure from some companies where the first set number of units are at one rate, thereafter the units are charged at a cheaper rate. Because of the complexity introduced by deregulation of gas, British Gas will act as agents for the other companies to read the meters. However, as some companies become established in a particular area, they may take over this role, or there even may develop specialist meter reading companies.

Many of the new companies are subsidiaries of the Regional Electricity Companies - e.g. Eastern Natural Gas is a subsidiary of Energy Group which is the new name of Eastern Electricity, while Beacon Gas is a subsidiary of Southern Electricity. British Gas prices are still regulated, and will be until 2000 under the formula above, but after that time they will also be able to compete.

Privatisation in the Electricity Supply Industry took place on 1st April 1990, and from the start, its structure in England and Wales was divided between the 12 Regional Electricity Companies (RECS) who retained the monopoly to supply domestic consumers in their area, the generation side which was initially split between National Power (Big G), PowerGen (little G) and Nuclear Electric while the transmission was controlled by the National Grid Company. At that time, both Nuclear Electric and National Grid were retained in the public sector. In Scotland a somewhat different structure was adopted. Since privatisation the National Grid Company has been privatised and it has also sold its control of the pumped storage facilities to First Hydro of Canada. At the same time, Nuclear Electric has been split with one part becoming privately owned and retaining its name as part of British Energy, while the other part is still in public hands and now known as Magnox Electric. With the advent of cheaper gas fired combined cycle gas turbines, many independent power producers (IPPs) have also entered the generation market.

This structure was much more competitive than the gas market, and indeed a novel structure was set for the generators who have to bid for each half hour of each day to supply electricity to the Pool managed by the National Grid Company. In this way, the cheapest electricity is supplied, but on occasions, the big 2 (National Power and PowerGen) did manipulate the Pool adversely. The regulator (OFFER) stepped in and required sale of part of their generation facility to the Energy Group, thereby diversifying the market further.

As with gas, the price of electricity to the customer is regulated by a formula $RPI-X+E+F$, where RPI, X, and E are the same as for gas, while F represents the fossil fuel levy, which was initially set at over 10%, but is now around 2%, and although this was initially used to subsidise nuclear power, this subsidy has been phased out, and the residue is used to promote renewable energy resources. As a result of the F factor, the prices of electricity immediately after privatisation rose slightly, but now they are cheaper in real terms than pre-1990 despite the addition of VAT in 1994.

The E factor has been used, once again, to fund the Energy Saving trust, the most obvious conservation measure here being the subsidy of £5 per low energy light bulb.

Initially, all consumers with loads greater than 1 MW could purchase their electricity from any company, and in 1994, this limit was reduced to 100 kW. In 1990 it was initially intended that full deregulation to all domestic consumers would be in place by April 1998, but because of infra-structure and software difficulties, the start has been delayed until September 1998, and will, like gas, be phased across the country, except that this time it will be by postcode, with the NR postcode being one of the first 5 areas to experience deregulation.

Most companies are still 'testing the water' with regard to their electricity tariffs, but already British Gas has fired a warning shot across the Electricity Utilities bows, by offering electricity at a price some 20% cheaper than other companies. Ultimately, it is very likely that combined utility companies will emerge supplying both electricity and gas to the same customer resulting in potential savings for the customer (and company), but also putting in place a structure more conducive to energy conservation as the two fuels would then not be competing against each other.

Overall, the changes which have taken place have led to cheaper energy, and this is not an effective way to promote conservation. However, the establishment of the Energy Saving Trust, despite its low profile has undoubtedly contributed to conservation. Further the entry of IPPs into the market and the construction of CCGTs, which are up to 50% more efficient than coal fired plant (as well as being more environmentally friendly) has been possible within this new structure. Finally, the deregulated market is also allowing entry of CHP units which are very effective methods for saving energy.

Points which should be included in a good answer

- Privatisation
- Approximate Time Scale of deregulation
- Fossil Fuel Levy
- E - Factor and Energy Saving Trust
- Electricity Pool and entry of Independants
- Conservation from
 - a) CCGT's
 - b) Energy Saving Trust
 - c) CHP