THE POLITICAL ECONOMY OF ENERGY REGULATION IN THE UK 1945 – 2007: PARADIGMS AND POLICY

by

Shane Fudge
Lester Hunt, Tim Jackson, Yacob Mulugetta and Michael Peters

RESOLVE Working Paper 02-08

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Research Group on Lifestyles, Values and the Environment
Centre for Environmental Strategy (D3)
University of Surrey
Guildford, GU2 7XH, UK
http://www.surrey.ac.uk/resolve/

Contact details:
Shane Fudge: email – s.fudge@surrey.ac.uk
Tel: 00 44 (0)1483 682187, Fax: 00 44 (0)1483 686671

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Abstract

This paper considers the current and historical debate that has taken place around energy policy and government regulation in the UK. Exploring Helm's (2005) idea that the regulation of energy policy in the UK has been characterized by three different phases or paradigms, the paper explores the dominant ideological agenda that has characterized each of these periods and how energy policy has itself been enmeshed within particular political and economic goals. Exploring the circumstances that precipitated firstly the post-war nationalization of energy policy, and then the transition to a market-led approach, the paper problematizes Helm's claim that there has been a post-1998 paradigm shift in response to issues such as climate change and energy security. While his work has been influential in suggesting that UK policy-makers are in the process of redesigning the *Market for Energy* approach to energy regulation, the paper problematizes the claims for an accompanying *ideological* transition as could be evidenced in previous energy regime changes. It is suggested that while issues such as climate change and supply security may suggest a paradigm shift in regard to the circumstances in which energy policy takes place, there remains a dominant political consensus on the fact that it is the market which will solve these problems; albeit within a commitment to 'sustainable economic growth'. The paper considers the implications of the argument for this 'third way' in UK energy policy and concludes by exploring the possibilities for a real paradigm shift and what this would entail.

Key words: Paradigm shift, governance, regulation, political economy

1. Introduction

The debate on energy policy has taken centre stage in recent years as rising energy prices join concerns over the longer-term environmental consequences of continuing to pursue hydrocarbon intensive economic growth. Constructing effective energy policies in order to deal with climate change and security of supply are now a greater cause for concern for the public and policy-makers alike. The search for a balanced mix of policies which will be effective enough to address the complexities of climate change for instance was put into sharp focus in the UK in 2000 where the Royal Commission Report: *Energy – The Changing Climate* pointed to the dilemma which was now facing political leaders. While New Labour had began its term of office by setting early targets on reducing CO^2 emission levels, it was pointed out that increased road and air travel were two of a number of factors which now informed an increase in energy demand and often mitigated against the effectiveness of environmental goals. Thus, in the aftermath of the Royal Commission Report, the appearance of two Energy White Papers in 2003 and 2007 has been visible evidence that policy-makers are currently striving to implement an effective framework through which to address the conditions of what Helm has described as the 'new energy paradigm'[1].

But what is this paradigm? How can it be identified? Helm reasons that the current 'third way' approach to energy regulation succeeds two previous regulatory approaches. Each could be distinguished by distinctive aims and objectives. Helm has identified these three energy paradigms as being characterized by:

A first phase nationalized, 'command and control' framework which ran from 1945 to approximately 1979. This era was primarily politically led with political leaders being centrally involved in decision-making regarding the institutional and operational dynamics of UK energy policy.

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[1] The concept of the 'scientific paradigm' was first considered by the philosopher Thomas Kuhn. In *The Structure of Scientific Revolutions* (1996), Kuhn set out to challenge, not only positivist attempts to validate the hegemony of scientific knowledge, but also Popper's (1972) attempts to resolve this debate through 'falsification'. Kuhn argued that, rather than being studied from the perspective of being an *objective* form of knowledge, the fundamentals of scientific knowledge should be explored from the viewpoint of being a social institution. According to Kuhn, the paradigm consists of a structural framework of concepts and theories which define the 'laws' of the natural world and how they operate. Within the paradigm lie the appropriate methods for studying the natural world, what questions the scientists need to ask, and how they must answer them. Kuhn argues that the scientific paradigm or 'received view' implicitly structures the way that scientists go about interpreting the natural world, their data observations, and the practices with which they engage science. Therefore, revolutionary science or 'paradigm shift' occurs 'not by deliberation and interpretation', argues Kuhn, 'but by a relatively sudden and unstructured event, indicative of a gestalt switch' (Kuhn, 1996:121).

Although Kuhn disputed the more 'relativist' elements that were drawn from his work by later sociologists of scientific knowledge such as Feyerabend (1975) his work remained influential Kuhn influential in informing the linguistic or cultural turn that began to have a greater influence on theory and methods in the social sciences. Thus other belief systems that sought legitimacy in scientific truth – such as Marxism, Freudian psychoanalysis, and systems of governance – were also opened up to challenge using the principles similar to the ones identified by Kuhn.

A second period where there was a shift in emphasis to faith in the principles of the market as the guiding framework for energy regulation. Helm argues that this period introduced the first observable paradigm shift, where the role of political leadership was problematized as the primary steering mechanism for UK energy policy:

Helm reasons that the most recent regime can be typified as a challenge to the market regulatory regime in being able to provide overarching solutions to more contemporary UK energy policy scenarios. Helm himself suggests that this 'third way' paradigm has again seen a shift in the aims and objectives of UK energy policy in response to a changing set of circumstances. The *2007 Energy White Paper* is the UK Government's most recent statement on what these challenges are considered to be:

- The growing evidence of the impact of climate change and wider international recognition that there needs to be a concerted global effort to cut greenhouse gas emissions, especially carbon dioxide;
- Rising fossil fuel prices and slower than expected liberalization of EU energy markets at a time when the UK is increasingly relying on imported energy;
- Heightened awareness of the risks arising from the concentration of the world's remaining oil and gas reserves in fewer regions around the world, namely the Middle East and North Africa, and Russia and Central Asia;
- In the UK, companies will need to make substantial new investment in power stations, the electricity grid, and gas infrastructure (DTI, 2007:6).

This paper explores the background to the more recent aims of a third way 'sustainable energy economy' and considers the legacy of historical responses to energy issues in the UK. It is argued for example that security of supply has always been the principal issue for political leaders throughout the different political and economic permutations characterizing UK energy regulation. Environmental concerns on the other hand have often been considered within a 'benign' or peripheral status, particularly in regard to the more recent link that has been made between fossil fuel consumption and climate change. While the post-war period began to see the first real links forged between industrialization and pollution, the paper argues that UK policy-makers often took the viewpoint that these issues constituted marginal concerns to the practical task of ensuring an efficient link between economic growth and securing cheap, available energy. Thus it is argued that more coherent paradigm shifts in energy policy which took place were carried out with the express purpose of *rationalizing* this particular agenda.

1.2 The growing significance of climate change and energy security

While Goodall (2007:17) argues that an 'economic history of the last 300 years must assign great importance to the changing price and availability of fossil fuel energy', the issue of the environment has arguably moved to centre-stage where the UK has more recently sought to lead the political agenda in implementing and overseeing an effective policy response to the issue of climate change. Similarly, while security of supply has been a concern that has periodically arisen in the UK and other western

economies, it is only recently – in the *Energy White Papers* of 1998, 2003 and 2007 – that the UK Government for instance have acknowledged that an effective policy response in this area must more specifically address an increasing reliance on imported energy. As this paper will argue, while periodic interruptions to oil and gas supplies drew various forms of government response in both the nationalized and market-led eras of UK energy policy in the UK, the long-term political viewpoint invariably held the general assumption that price rises and periods of political instability would be short-term and that the particular political and economic arrangements of these periods would be sufficient in addressing these problems. The significance of oil price rises drew political responses on at least two occasions – in the form of short-term nuclear commitments and energy efficiency drives – but longer-term investment decisions nearly always remained peripheral to economics of cheap oil. The content of the three White Papers since 1998 has been significant however in beginning to acknowledge that both the environmental concerns of climate change and continuing reliance on cheap, readily available fossil fuel supplies – led by a continuing upward trend in oil and gas prices – must now be considered in terms of being actual and potential market failures, requiring a greater degree of planning in policy than may previously have been the case.

Official statements such as the *Stern Review* (2006) have been political statements that have been drawn up with the express purpose of highlighting the significance of failing to incorporate climate change and environmental issues more centrally into the UK energy policy debate. UK environmental issues have been historically linked to domestic energy production and consumption on issues such as acid rain (McCormick, 1995) and pollution (Lowe and Ward, 1998). However, for a long period of time they were not seen as problematic from a UK perspective and it was the trans-border consequences in *other* nations which instigated the process of bringing these issues to wider political and public awareness, whereby effective policies could be formulated through appropriate institutional arrangements. Much of the significance of the *Stern Review* has been that it was launched against a background of increased media coverage, political debate, and public concern over the environmental risks posed by anthropogenic pollution.

1.3 Outline of the paper

The paper begins by considering both the ways and the extent to which the issue of supply security has historically informed UK energy policy. This section of the paper explores some of the developments which framed the nationalized era of energy regulation, where the role of political leadership was seen as central to facilitating national economic performance and in delivering the post-war 'public good'. The nationalized era of energy regulation first demonstrated the political need to ensure security of supply and also illustrated the political will behind the particular energy choices which were made. It is argued that during this period, state ownership of energy utilities – characterized particularly by the ready availability of indigenous coal – ensured that security of supply never really became a major concern for policy-makers. While increasing reliance on oil was instrumental in beginning to change this perspective, it was never felt necessary to diversify or to adapt to possible energy interruptions to any significant degree. Likewise, it is argued that environmental

factors were never considered to be particularly significant to the formulation of energy policy during this period. While environmental issues began to assume a higher profile during the 1970s and 1980s, throughout much of the nationalized era of energy policy formulation, it was thought that top-down decision-making was sufficient in being able to address the possibility of 'public bads' and to justify them on the grounds of modernist progress.

The design of energy regulation that characterized the post-war period of nationalization was rejected by the incoming Conservative Government of 1979 who argued that only a market-based approach would be able to address the inefficiencies and internal political dissent that had begun to problematize the state's involvement in securing particular social goals. The New Right argued that markets should now be allowed to function with minimal state intervention where individual freedom and not social justice should provide the political compass for policy makers.

Therefore, the Conservatives' *Market for Energy* strategy introduced firstly the concept of privatization, whereby public ownership of energy utilities was gradually transferred to the private sector; secondly liberalization, where previously monopolized sectors of industry and public administration were opened up to greater competition and economic incentives; and thirdly deregulation, whereby harmonization in economic regulations and trade restrictions would further enable the market to iron out inefficiencies in pricing and resource production and allocation.

It is argued that this system of regulation worked well for a while in achieving its aims of facilitating more efficient energy use, easing the financial burden on state responsibility, and lowering prices for consumers. However, from the late 1990s, it is argued that the *Market for Energy* approach has been challenged by a new set of circumstances which the Government have identifies as:

- The growing evidence of the impact of climate change and wider international recognition that there needs to be a concerted global effort to cut greenhouse gas emissions, especially carbon dioxide;
- Rising fossil fuel prices and slower than expected liberalization of EU energy markets at a time when the UK is increasingly relying on imported energy;
- Heightened awareness of the risks arising from the concentration of the world's remaining oil and gas reserves in fewer regions around the world, namely the Middle East and North Africa, and Russia and Central Asia;
- In the UK, companies will need to make substantial new investment in power stations, the electricity grid, and gas infrastructure (DTI, 2007:6).

1.4 A paradigm shift in policy?

Paradigm shifts can happen in policy too: events can conspire to change the historical context to a sufficient degree to make it hard to reconcile the existing mindset of policy-makers with the evidence, leading eventually to new objectives and new policy instruments. Paradigm shifts in policy

> typically require a change in the context and a change in ideas in response (Helm, 2005:1).

It has been argued the above developments have begun to expose limitations in market-led energy regulation, once again introducing the idea that another transition in the configuration of energy policy may already be underway. As with the previous shift in emphasis on the principal goals of policy, there has been a realization among UK policy-makers of the discrepancies that had begun to open up a gap between the objectives of market-based regulation and real world practicalities. Helm has suggested that these developments are indicative of a paradigm shift, echoing the significance of previous regime transitions. He suggests that we are now into a 'third way' model of energy regulation, characterized by the search for a balanced mix between both regulatory and market instruments. *The White Paper* of 2007 for example argues that policy goals must now be designed to address the more explicit link that has been made between fossil fuel consumption and carbon emissions, while also addressing security of supply, continued competitiveness, and business investment. This suggests that there can no longer be an 'either-or' approach. Seeming to confirm Helm's observations, policy on energy now spans a broad range of initiatives from macro-economic initiatives based on the introduction of carbon markets, to more micro-based policy goals – such as green taxes and energy efficiency drives – specifically aimed at influencing individual behaviour at the *demand* end of the market.

Helm argues that the post-war history of UK energy policy has been characteristic of following clearly delineated paradigms of knowledge and the application of that knowledge in particular ways. He reasons that this can be clearly seen in the way that security of supply and environmental concerns have previously been wrapped around firstly a command and control regime and then by market and investment issues. Helm argues that it is the effectiveness of the policies that are being designed to address the most recent energy circumstances which will dictate the successful development of a new energy paradigm. The last section of the paper explores the policies which have been developed in the UK post-1998 in order to address Helm's argument more critically. Are we really in a new energy paradigm? If so, what is the evidence to suggest that we are? How does this compare to previous regulatory changes? While Helm claims that finding an effective fit between state and market led approaches will play a big role in deciding the success or otherwise of the aims of current energy policy initiatives, what are the ideological agendas that inform the 'third way' regulatory regime?

2. Post-war energy policy in the UK: 1945 - 1979

Post-war energy policy and associated mechanisms of regulation in the UK correspond fairly closely with the German sociologist Ulrich Beck's (1992) theory of what he describes as 'simple modernity'. For Beck, simple modernity constitutes approximately the period of the mid-18th century to the period of the 1970s whereby industrialization was seen as the principal mechanism through which to achieve economic and social progress in western economies. Helm (2004:2) concurs with this

argument in regard to the dominant 'supply-side policy' perspective which informed government policy on energy regulation during this period where he reasons that 'the overwhelming objective was to produce as much energy as possible (domestically) to keep pace with the demand of what has been called the 'golden age' of the British economy'. The political and institutional configuration that was designed to meet this programme was based principally upon the national integration of state-owned energy monopolies, whereby government agencies and economic institutions worked in tandem. As he explains:

> The nationalized coal industry dug coal primarily for the nationalized electricity company, which built enough power stations for the nationalized electricity industry, which built enough power stations to secure supply. Customers, with nowhere else to go, paid the costs. When North Sea oil and gas were discovered, the Gas Council (and the British Gas Corporation) BGC as it became) built the National Transmission System (NTS), converted households to natural gas and signed long-term contracts for gas to flow through its planned network. The British National Oil Company (BNOC) completed the picture, set up in 1976 to give the state a direct hand in the North Sea, complementing the oil interests of British State Gas (Helm, 2004:14).

Government and political decision-making played an integral role in regulating energy policy in the UK during this period. Policy was designed specifically to set the pricing mechanisms, to quantify outputs, to mediate in negotiating long-term contracts, and to ensure that there was a readily available supply of energy to drive the economy, which was mostly based upon the needs of heavy industry and domestic electricity consumption. The orthodox opinion at this time was that a highly centralized organizational setup, characterized by vertical integration between the relevant political and economic institutions would be the best way through which to achieve this where 'energy was part of the planned economy, and the task of government was to improve its performance within that overall structure' (Helm, 2004:14). Therefore, the previously private companies which had overseen energy policy were taken under public ownership during the immediate post-war period. The National Coal Board (NCB) was set up under public ownership in 1947; the Central Electricity Board was a result of the same process in 1948, as was the introduction of the Gas Council in the same year. All were reliant on an indigenous supply of energy, where the UK 'town gas' infrastructure was further able to expand through the discovery and development of North Sea gas reserves from the 1950s.

The issue over oil constituted the need for a slightly different approach as the dominant oil interests had developed semi-independently of national government regulation. While companies such as Standard Oil and Anglo-Iranian Oil had been the targets of US anti-trust laws from as far back as the 1920s concerning the legimacy of cartels, monopolies, and price fixing, the UK Government was only a shareholder in British Petroleum (BP) – although relatively assured of continuous oil supply through long-term contractual obligations – and therefore held only a degree of influence in oil markets. The other energy sources however were all organized around the perceived benefits of public ownership. They were all taken out of private hands during the immediate post-war period and introduced into a state

monopoly that prized the territorial delivery of public services and their role in serving the public good, and a *nationalized* accumulation strategy.

2.1 Ensuring the public good

Samuelson was one of the first economists to try to define the idea of the 'public good' where he argued that 'a collective consumption good' could be characterized as:

> [goods] which all enjoy in common in the sense that each individual's consumption of such a good leads to no subtractions from any other individual's consumption of that good (Samuelson, 1945:1).

The post-war consensus followed a strong social democratic argument that there should be a particular type of capitalism developed through which to counteract the social privations of both the 2nd World War and the laissez- faire market extremism that had threatened the social order of American and European societies in the 20s and 30s. A nationally based post-war energy policy in the UK was to be the cornerstone of ensuring the public good. Here government intervention in the economy to ensure the execution of particular social goals was deemed to be essential in ensuring a stable, democratic society from the perspective of both the left and the political right. A body of work that had begun in 1901 through the work of Joseph Rowntree and continued into the 20s and 30s through the Fabian Socialists[2] had made a strong link between a high percentage of the UK population experiencing of material deprivation during this period and levels of national economic efficiency. Therefore, based upon the principles of Keynesian economic intervention, the National Health Service, the Welfare State, and the Education Act were all established during the immediate post-war period in order to break down previous social class divides in regard to access to public goods and services. Therefore, the social democratic public good was to be achieved by ensuring:

- A minimum standard of living for the poor;
- Free education for all sectors of society up to the age of 16;
- A high level of employment;
- 'Cradle to grave' provision of welfare benefits;
- Social housing for the less well-off;
- Free healthcare and sickness provision;
- A considerable level of state intervention in industry

[2] The Fabian Society formed in 1884 and its ideas began to inform mainstream government policy during the post-war period. In opposition to Marx, Fabians argued that a democratic society should be the 'rational institution' by which the 'differential advantageousness of any factor over and above the worst in economic use' could be adjudicated (Webb and Webb, 1913; cited in Lund, 2002:59). Therefore, according to this theoretical supposition, working class exploitation was not as extreme as Marx had argued. As Lund has pointed out: 'capitalists did not purloin *all* the value produced by the working class and the capitalist, as organizer of investment, deserved some reward for his efforts. Therefore, Fabians believed that a social democratic order, and the execution of particular social goals, could be achieved through the provision of public services by the appropriation of 'capitalist rent' (Lund, 2002:59).

Post-war policy on energy reflected this ethos, where for instance one of the main aims of the public ownership of energy utilities was that there would be adequate heating and lighting available for all sectors of society and a political commitment to the eradication of 'fuel poverty'. The role of the state during this period was to guard against the imposition of market forces, which were considered to be antithetical to facilitating a non-rival and non-excludable provision of services. T.H. Marshall (1950) reasoned that the post-war consensus could be conceptualized as a socially progressive form of capitalism, characterized by the effective integration of social, political and economic citizenship.

During the immediate post-war period, this arrangement was initially served primarily by indigenous coal production. It was coal which provided the UK's primary energy source and played a central role in fueling the rising demand for electricity. As Goodall (2007:17) points out, 'many of the features of the modern national economy are principally due to the widespread use of coal – both in its original form and then, later, as 'town gas'. The vertical organizational structure of the newly nationalized energy industries were particularly illustrative of the sectoral integration that synthesized the coal and electricity sectors where the rate of coal extraction was principally linked to rising electricity demand from both industry and domestic use. Future predictions and costs were based upon this rising demand.

This arrangement continued into the post-war period and an 'era during which overall energy demand reached record levels for the time in the UK' (Corti and Frazer, 1983:5). From the period of the mid-1960s oil and then gas began to assume much greater prominence in challenging coal as the main source of fuel on both economic grounds, within changes that were taking place in industry and consumer demand, and also along fuel efficiency measures, both in the UK and also in the other western economies. In the 1950s nuclear power had also began making a more significant contribution to what was becoming a more diversified energy mix after almost two centuries during which coal had been the principal driver of UK industry. As Corti and Frazer point out, 'annual inland consumption of primary fuels in 1969 was 325 million tonnes of coal equivalent, which was about 75 million tonnes or 30 per cent more than a decade earlier' (Corti and Frazer, 1983:5). At the same time however, the share of the energy market driven by oil went up from 25 per cent to nearly 45 per cent.

3. International politics and security of energy supply: the oil crisis of the 1970s

> Oil is a key source of primary energy. This pre-eminence arises because of oil's physical characteristics. It is a liquid which flows in three-dimensional space; hence all stages in the value chain attract large technical economies of scale leading to low costs relative to other fuels. Oil also has a relatively high energy content compared to other fuels (Stevens, 2005:19).

An increase in vehicle use, freight and air transport, and development of wider transport infrastructures and its flexibility in contributing to a variety of consumer

durables saw oil becoming a more integral part of energy consumption during this period. Besides the sheer flexibility of oil, its plentiful supply and relatively easy access also meant that it became very economic for the industrialized nations of the west. Increasing reliance on oil was however instrumental in bringing with it concerns over 'security of supply'[3]. Firstly, the physical characteristics of the emerging oil market – the majority of the new oil reserves discovered during the 30s, 40s and 50s originated in the Middle East (Leggett, 2005). This meant that the supply-demand relationship would periodically become subject to political issues. This situation was clearly illustrated in the UK for example where coal extraction was subject to the internal rules of national market regulation; secondly, it was multi-national corporations – known as the 'seven sisters – who primarily dominated what was in reality a *global* market. The UK Government's held a share for instance in British Petroleum (BP) to secure UK supplies and the company retained a degree of autonomy from national control and was free to negotiate with other customers.

3.1 The OPEC oil embargo

The OPEC oil problems which surfaced in 1973 did not constitute the first shock to the growing dominance of oil to the energy infrastructure of the UK and the other western economies. The Suez Crisis was the first time that the productive link between oil and economic growth was problematized in relation to external factors.

Helm (2004) argues in fact that some of the concerns which surfaced during the Suez Crisis had been among the factors which stimulated the appearance of the government's *Energy White Paper* in 1955. The 1955 *Energy White Paper* was the first time in which a more comprehensive UK nuclear programme was mooted as a policy solution to the growing threat of over-reliance on external energy supply. A post-Suez return to both price and supply equilibrium however, in conjunction with the fact that UK consumption of oil at this time remained peripheral to coal production. While this meant that nuclear power was not developed as a serious option, the Suez

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[3] The relationship of a nation's energy policy to security of supply can be defined in three principal ways:

- Firstly, increased reliance on imported energy sources can often mean that importing nations are subject to the imposition of prices imposed by oligopoly or monopoly suppliers, cartels or particular nations. As well as being the dominant players in influencing prices, such suppliers also have the power to terminate or suspend energy supplies;
- Threats to security of supply can also come from damage to infrastructure relating to the transportation or the physical transfer conduit itself (i.e. gas pipes) of the energy source. This threat may come from terrorist attacks, natural events, strike action, or even warfare;
- Threats to energy security in more recent times have come from increased global competition over energy resources. For instance, the increased pace of the industrialization process in both China and India has meant that they now compete more keenly for imported energy resources. This issue also relates to concerns expressed by some that oil and gas reserves are set to peak (Leggett, 2005) at some point over the next thirty years.

The growing importance of oil during this period began to illustrate the growing importance of acknowledging that ensuring security of supply would begin to influence both the UK's energy strategy and those of other western economies.

Crisis can be seen as the clear beginning of periodic scenarios whereby future UK governments looked into various courses of action in regard to threats over supply security of supply in oil and later gas markets.

The Suez Crisis also gave a good indication of how future political responses would prove to be short-term in dealing with supply security threats where reliance on oil meant that investment decisions in alternative energy sources was always sidelined as soon as supply and pricing mechanisms were restored.

While the Suez Crisis was instrumental in signposting some of the future issues which would characterized supply security issues, the Organization of the Petroleum Exporting Countries (OPEC) oil embargo of 1973 can be considered to be perhaps the first real threat to the growing dependence of the western capitalist economies on cheap oil that was coming primarily from the Middle East. Aside from the Suez Crisis most of the history of oil had been characterized by remarkably consistent prices and relatively easy access where it was invariably:

> Elastic to demand, with any potential rise in prices leading to greater exploration and production. By the 1960s, oil was in plentiful supply. Demand did not remotely exceed supply, and the Middle-East was not the political hotbed that it subsequently became' (Helm, 2004:34-35).

However, the fragility of the political relationships that developed around the increasing demand for oil became exposed by Middle-East conflict in 1973. The crisis that was triggered by the Yom Kippur war between the Arab and Israel state grew into an international situation where the Arab members of OPEC refused to transport petroleum to nations that were seen as having given their support to Israel in the conflict (Pearson and Rochester, 1998). The members of OPEC reinforced this situation by using their dominant bargaining position to ratchet up the monetary value of crude oil by 70% while also cutting oil production by 25%. Starkly illustrating the way in which western dependence on OPEC oil production had grown and had superseded other energy sources in the post-war period, this situation was largely responsible for sending the global economy into a tailspin where, as Urwin notes:

> A combination of price rises, production cutbacks, embargo and hoarding produced an acute shortage of petroleum products, especially as far as the consumer was concerned, petrol. Most countries hastily made preparations for rationing along wartime models; some introduced restrictions on the use of cars, while others allowed the market to determine rationing on a 'first come, first served' basis (Urwin, 1998:219).

It has been argued that the impact of the rise in the price of oil at this time can be traced primarily to the 'fear and irrationality of panicking investors and oil companies than to any firm economic causes' (Energy Matters, 2008:1). However, the OPEC crisis had a severe effect on western economies and served to demonstrate the UK economy dependence of imported oil. Productivity was severely restricted and

power cuts were introduced into homes alongside the three day working week in order to conserve energy. In the context of later political and economic developments that were to shape and develop a broader conception of governance and the acknowledgement of the need for a wider institutional structure for the regulation of energy markets, perhaps the most interesting aspect to this period was the particular *national* political response that came about in the wake of the 1973 oil crisis. As Urwin points out, 'a coordinated Western European response was not forthcoming; even within the EC. Within this period, the actions of each member state tended to emphasize its own problems and needs, and the appropriation of national strategies' (Urwin, 1998:219). The United States did make a concerted attempt to involve and orchestrate the other Western nations in a more coordinated way through the instigation of the International Energy Authority (IEA) in 1974. The aims of the IEA were to 'provide a long-term forum for consultation on national energy programmes, energy conservation and how to reduce dependency on imported energy, and contingency plans for oil sharing should similar emergencies reoccur' (Urwin, 1998:219).

Most of Western Europe accepted the United States' proposal and joined the IEA. However both Britain and Norway decided against membership, arguing that any unified response and would jeopardize 'reaching a satisfactory settlement between producers and consumers' (Urwin, 1998:219). There was also a feeling from some nations that the IEA project was itself designed to serve US national self interest given its increased dependence on imported oil supplies since the 1970s. As with the other western capitalist nations, the US was now heavily reliant on OPEC oil production.

3.2 The coal issue: negotiating internal security

Both Britain and Norway had another, more practical reason to play a less active role within the IEA. While the Suez Crisis and the OPEC crisis were instrumental in demonstrating the UK's increasing reliance on imported oil, *internal* supply concerns began to expose some of the perceived limitations of the fixed supply and investment policy which underpinned the coal industry in the UK. The UK's coal supply – which at the time of the OPEC crisis contributed to over 30% of the nation's electricity generation – had come under greater threat during the early 1970s from increasing union dominance, from the deteriorating quality of the coal itself, and from the developing economic situation of North Sea gas as a cheaper and more flexible energy source in electricity generation.

The coal industry was particularly symbolic of what Harvey (2005) has called 'embedded liberalism' in the UK during the post-war period up to the 1970s where the corporatist arrangement between labour and capital prioritized:

> Full employment, economic growth, and the welfare of its citizens. State power should be freely deployed, alongside of or, if necessary, intervening in or even substituting for market processes to achieve these ends. A class compromise between capital and labour was generally advocated as the key guarantor of domestic peace and tranquility (Harvey, 2005:10).

However, while embedded liberalism delivered high rates of economic growth in the UK and the other western capitalist economies during the 1950s and 1960s, this system began to come under pressure from the events described above – particularly the oil price rises – where they began to expose the logic of fixed capital and fixed labour investment which underpinned the state-owned industrial structure of the UK. The coal industry was often heavily subsidized by the UK Government during this period where, as argued above, the chief concern was that supply must always meet demand. Of chief concern to the UK Government was the collective power of the National Union of Mineworkers (NUM) that had grown within this framework. Encouraged by a corporatist political framework which fostered democratic debate between labour and capital, the collective bargaining of the NUM power became such that they could be considered to be an integral and increasingly influential part of the governance of the coal industry itself during the post-war period. Thus, while the NUM continually pushed for wage increases which would reflect the working conditions of the miners, political leaders argued that fluctuating competitiveness meant that this was putting an increasing strain on public finances.

The miners' strikes which took place throughout this period were graphically illustrative of the dynamics of the way in which political relations had shaped the coal industry in the UK. Security of supply had become an *internal* issue and had now become problematic for a number of reasons to the UK government's traditional reliance on indigenous coal supply, and associated nationalized infrastructure, as a means through which to drive the UK economy. These reasons can be summarized as thus:

- Firstly, the coal industry had undergone significant contraction since the 1960s. This was reflected in falling coal production, falling numbers of those employed in the industry, and a decreasing number of pits in operation;
- Secondly, working conditions had not improved in any significant way both in terms of pay and job security. Miners' pay had not kept in line with inflation or with other sectors of employment;
- Thirdly, the unions thought that the industry would soon be in a position to exploit an improved bargaining position in relation to the increased price of oil. This was used as a lever in negotiations to bargain for better pay conditions and greater job security.

The political and economic status of UK coal meant that the UK Government of the early period of the 1970s made various concessions to the labour movement through corporatist negotiations. As argued above, the miners were seen as being at the vanguard of trade union activity during this period and were at the centre of a series of strikes, the first notable ones of which took place during the period of the Conservative Government reign during the period 1970-1974. The second miners' strike during 1973/74 seemed to support faith in the increased bargaining power of coal against the inflated oil prices which followed the OPEC embargo. Again, the 1973/74 strike centred principally on the right to a pay structure which would match working conditions. The high inflation of this period saw the TUM using its influential bargaining power to barter for a 30% wage increase for the sector. The

miners won their pay increase and now illustrated the link between energy security and political popularity when the Heath was forced out of office Wilson's Labour Government returned to power. Faced with the uncertainty and immediate improbability of finding an alternative energy solution at this time, the UK government reaffirmed its commitment to the coal industry.

3.3 The Department of Energy and the Plan for Coal

In 1974, a specialized Department of Energy was set up by the UK Government in order to devote more time to exploring possible solutions to the UK energy crisis. Its immediate decisions were shaped by the coal disputes and a concern to 'keep the lights on' in the UK. Again, this response signposted some of the issues which lay ahead where it was now clear that political popularity could be severely dented by interrupted electricity generation. However tentative, longer-term plans were also made around this time to begin exploring the options for more diversified energy use in the UK in order to stabilize or at least spread some of the risks now associated with conventional energy choices. Despite political noises to this effect however, the official response offered by the DoE in the short-term took the form of the 1974 *The Plan for Coal*. *The Plan for Coal* suggested the blueprint for a longer-term strategy for the industry where it was comprised of a policy structure which was designed first and foremost to hold up coal output, and then to work back to the financial outlay required to finance it. The general consensus was that *The Plan for Coal* was a political compromise whereby the government would continue to offer finance to the industry in return for uninterrupted electricity generation. The NUM were satisfied with the overall content of this agreement, particularly with what they perceived to be a more concrete government response to the uncertainties they felt had surrounded the industry during the preceding period. It seemed that *The Plan for Coal* reconfirmed the importance of political intervention in the coal industry. In fact, the NUM saw *The Plan for Coal* – alongside incorporation of what were considered to be reasonable pay levels – as evidence that there could now be for a future expansion of the coal industry. In reference to Hick's (1955) famous claim that the post-war 'Labour standard' represented the gold standard of the 1930s, Helm describes how 'the NUM now set the terms, and electricity customers and the Treasury paid the bill'. He points out that 'the costs would only become apparent when the oil price collapsed, and, with it, the headroom for the coal industry and the miners' pay' (Helm, 2004:37).

It is clear that both the OPEC crisis and the internal disagreements within the corporatist arrangements in the coal industry were instrumental in raising both political and economic issues on how energy should be regulated in the UK. As argued above, incorporating the use of alternative energy sources went through further consideration at this time as political leaders pondered ways of ensuring continued and long-term reliance on cheap, plentiful fuel to drive the UK economy. While the discovery of oil and gas reserves in the North Sea dated back to the 1950s, the urgency for these to be adopted as more mainstream supplies by the UK Government now gained greater momentum. As Kearton (cited in Corti and Frazer, 1983: vii) points out, the events of 1973 saw, firstly, the *Oil and Taxation Act* and then the *Petroleum and Submarine Pipeline Act* as paving a way for the introduction of the

British National Oil Corporation (BNOC). North Sea reserves now gave the UK Government the platform for greater oil market influence where the BNOC gave it direct ownership of 51% of North Sea oil discoveries, and also as an independent explorer for and developer of North Sea resources. Developed as a public/private collaboration but within the principal interests of the UK's state energy requirements, the BNOC was now seen as providing a serious alternative to both the problems that now came with imported oil and also to the political issues that had surfaced in the coal industry.

The UK Government also at this time began to reconsider the possibility of a larger role for nuclear energy as a viable option through which to further diversify the energy mix and to shift the balance away imported energy. Posner (1973) argues that while the events of the 1970s caused political leaders to begin a rethink on the shortcomings of the nationalized energy industries and what they saw as a *rigidity* in responding to both internal and external circumstances, the long-term time frames of planning decisions and investment choices could be adapted to some of the new energy sources that were under investigation. For instance, it was thought that the largely vertical, national structure of much of the energy industry, and its subsequent state investment capacities, would be largely facilitative of both offshore oil and gas exploration in the North Sea (in the form of the BNOC), *and* also the long-term investment decisions that would be needed for the domestic programme of nuclear build that was being considered. Political leaders still reasoned that the state still had a principal role to play in facilitating levels of investment, even within the now changing circumstances of energy markets. It was thought that issues such as long-term contractual obligations and the high degree of planning and technical specialization still needed to be protected from the often short-term nature of market forces if supply was to continue to meet demand.

4. Diversifying supply

As argued earlier, the OPEC oil crisis and the structure of the coal industry were particularly significant in exposing many of the *political* assumptions that had characterized the design of UK energy policy up to this point. Perhaps the principle assumption was that continued reliance on low fossil fuel prices and conditions of excess supply could be factored into predictive, nationally sequestered policy measures. In the wake of the OPEC situation for instance, policy-makers now had to consider the possibility that oil prices could continue to rise in the wake of greater political mobilization in the Middle East. One of the aims of the DoE was to provide more direction to the political management of these new uncertainties. Therefore, one of the principal aims of the DoE was to find ways in which the UK Government could make future provision for less reliance on coal and less reliance on imported oil: in other words, there was now acknowledgement that at least some degree of diversification from OPEC to non-OPEC energy supplies was now necessary to lesson the degree of risk that was now beginning to characterize cost effective energy sourcing and economic growth. The initial aims of the DoE therefore were largely concerned with pro-coal, more nuclear power, and more intensive North Sea oil exploration.

Diversifying the energy mix and exploring more indigenous sourcing locations at this time involved making political decisions on four basic sources of energy and the different issues that characterized each one at this time. These were: coal, local oil, local gas, and nuclear power. The economist Michael Posner (1973) reiterates the argument outlined above that in many ways, while some of the shortcomings of the institutional setup of this period had been exposed by the external developments of the OPEC situation and by the internal political wangling of the coal industry disputes, a nationalized UK energy framework still held the potential to effectively oversee a future regime that was flexible enough to be able to deliver a more diversified energy mix. He reasoned that such an energy commitment could be easily integrated through continued faith in the three-way relationship between public ownership, monopoly, and vertical integration. The detailed, rational planning required for the development of a nuclear infrastructure in the UK for example, which was made during this period was potentially illustrative of these claims. As with the comprehensive nuclear programme that had been carried out in France, it was argued that state ownership of the industry in the UK could provide the optimum conditions for the necessary long-term employment of engineers and technological specialists. Likewise the exploration and technological expertise demanded for future expansion and raised production levels of North Sea oil and gas, was in many ways ideally suited to the long-term contracts and publicly financed commitment of state sector investment. The next section takes a closer look at the three options that were taken by the UK government in the wake of this period of reappraisal and explores the political responses that typified each pathway.

4.1 The nuclear debate in the 1970s

As Damian points out:

> Until the mid-1970s, only one alternative to fossil fuels was developed: for more than twenty years, in all the countries involved, nuclear power held almost exclusive sway over national energy research and development policies and energy equipment programmes (Damian, 1992:599).

The 1955 White Paper *A Programme of Nuclear Power* was the first UK policy statement to set out the future possibilities for nuclear energy as a possible fuel which would meet the UK's future energy demands. The White Paper suggested that nuclear energy would in time be a fuel that held the capability of producing power both within agreeable economic terms and would also produce energy in large enough quantities to accommodate the growing share of domestic consumption. As Damian argues, there was a growing political consensus at the time that going with the nuclear option would produce 'energy too cheap to measure'. Subsequent to the publication of the White Paper therefore, the UK Government oversaw a trebling of the nuclear programme. As with the nuclear programmes that were being developed at this time the same time in France, the United States, and Germany, the nuclear project in the UK was largely a legacy of the technology that had been developed in the west during the 2nd World War, particularly in bomb production and nuclear powered submarines (Damian, 1992:597). However, despite the claims and optimistic forecasts of the White Paper, nuclear power remained on the periphery of orthodox energy use in the UK where political choices in the

technological hardware through which the programme was set out in the White Paper proved to be less cost effective than first envisaged. Coal remained economically favourable to the long-term costs of nuclear energy. As argued in the previous section, this decision was also aided and abetted by the passing of the Suez Crisis when oil market prices returned to more stable levels. In view of recognition of the full costs in funding a state sponsored nuclear programme, this meant that there was less political urgency to push ahead the proposals for a full nuclear power programme in the UK.

The OPEC situation saw a return to the possibilities for nuclear energy. This was followed through in France where the Pressurized Water Reactor Programme (PWR) was developed to virtually replace coal fired electricity generation. Many of the problems that had characterized the first attempt to implement nuclear power as a realistic energy option in the UK still remained. In particular, the problem of investing in what were long-term programmes with no immediate return was compounded by technological choices. The chosen hardware of the British-made Advanced Gas-Cooled reactor (AGR) over the visibly more successful PWR model favoured in the French nuclear development programme meant that the political decision to return to nuclear power in the UK was characterized generally by:

> A piecemeal build programme which was spread over a long period. The timescale meant that economies of scale in construction were not fully exploited, technical changes created new 'first-of-a-kind' costs with each new station, and the planning approval process proved more complex than was anticipated. As a result, the economic performance, at least until the 1990s, was dismal (Helm, 2004:38).

As well as the difficult economic choices that have faced various UK Government attempts to commit to nuclear energy, the use of nuclear power as a mainstream energy source has also remained a political charged issue and public opinion has generally not been favourable.

4.2 Energy options in the North Sea

The third option open to the UK in the wake of the energy crisis of the mid-1970s concerned the continued exploration and extraction of oil and gas reserves in the North Sea. As Helm reasons, 'the costs of exploration –assumed to be in excess of $10 billion per annum – were now thought to be worth the risk (against an OPEC production cost of $2-3 billion per annum). Oil companies throughout the world began to search for new supplies' (Helm, 2004). National planning and vertical coordination remained central to the UK's North Sea energy initiatives in the shape of the British Gas Corporation (BGC) and the British National Oil Company (BNOC) which, with the aid of a UK claim to a significant part of the continental shelf, was set up specifically to ensure the UK's market share of North Sea reserves.

While the North Sea seemed to provide at least a partial solution to the oil issue in the UK, oil production and exploration could not simply be incorporated into state-owned monopolization as it had with onshore gas, electricity and coal. The domination of oil markets by multi-national corporations made it difficult for the UK

Government to exert this kind of political influence. While the UK government had a stake in British Petroleum this was generally held to be a fairly passive role and BP was, to all intents and purposes, a private company with an obligation to supply the UK alongside other customers. The BNOC was an attempt to provide at least a partial remedy to the problems of ownership in the North Sea. To these ends the UK Government exerted its national stake in the Continental Shelf by managing the development of fields and by controlling the licenses. North Sea reserves now gave the UK a measure of influence in the oil industry that it had not previously had. In the event of a supply interruption of the kind threatened in the early 1970s, the UK Government could still ensure a percentage of oil for the home market as well as to trade.

4.3 British gas

The commitment to greater expansion and investment in the North Sea at this time reflected the major reorganizations that had been led by first the Gas Council, and then the British Gas Corporation (BGC). The use of gas had become more widespread in the 1950s and by the 1960s the UK became the net importer of 300,000 of liquefied gas from Africa every year. The conversion of the 12 area boards which had overseen a local implementation of town gas into the nationalized structure of British Gas Corporation was speeded up by the discovery of rich reserves of natural gas in the North Sea. Therefore, backed by government funding, the BGC carried out a major conversion of UK households from town gas to natural gas. The powers of the BGC were given added impetus by the *Gas Act* of 1972, building upon the powers bequeathed by the *Gas Act* of 1965. The BGC now had wider sourcing and distributional powers and it now integrated its activities with the companies now operational in the North Sea in long-term, monopoly contracts at fixed price rates. Marginal costs were passed on to a captured customer base where, in keeping with the ethos of UK energy regulation, the priority was to regulate output to meet demand.

4.4 Nationalized electricity

The role of central government in the industry grew slowly from the advent of electricity generation in the UK in the latter part of the 19th Century. In alignment with the post-war nationalization of the UK's other domestic utilities, nationalization of the key sectors of the electricity industry involved the transference from private to state ownership of 'the country's generating capacity, the national grid, as well as the 12 semi-autonomous regional distribution boards in England and Wales, two vertically-integrated companies in Scotland, and one vertically-integrated company in Northern Ireland' (EIA, 2007:2). This process was further consolidated with the *Electricity Act* of 1957 whereby the Central Electricity Generating Board (CEGB) was established in order to oversee 'the operation of electricity generation and transmission facilities and all related investment decisions' (EIA, 2007:2). The twelve regional electricity boards retained a measure of their former status and a measure of autonomy from centralized control. An electricity council held the regulatory position which took place according to long-run marginal cost which was use to measure a bulk supply tariff (BST), 'which was the price charged to the distribution companies by the CEGB' (EIA, 2007:2).

As with the other nationalized industries, the CEGB was expected to locate the operations of UK electricity within the remit of wider social and political objectives. During the 1970s for instance, the Labour Party Government 'put pressure on the industry to restrain prices in order to reduce general inflation'. As argued above, the industry was also used to prop up the domestic the coal industry rather than rely on oil for its source of generation.

It was also used to promote the development of the nuclear industry, where the huge costs – and subsequent market position – of nuclear power were largely underwritten by the economic infrastructure of the UK electricity sector. As already argued, these costs often far outweighed the prices of non-electricity generation. The cost effectiveness of these wider goals led to several unsuccessful attempts at industry reform which were to prove unsuccessful, due largely to political disagreement. These issues in the electricity sector and in the other state run energy utilities were to come to a head with the return to power of the Conservatives in 1979.

5. Regime change: the new market strategy for energy 1979 – 1998

While the mid-1970s energy crisis had instigated a set of plans from the UK Government that were primarily aimed at restoring and modifying the command and control policy infrastructure that had been set in place, Helm argues that the seeds had now been sown for the gradual development of a *second* paradigm shift in energy policy regulation and in the UK political economy itself. The ideological and practical implications of these were set out in this statement by the Conservative Minister for Energy in the early 1980s Nigel Lawson where he argued:

> I do *not* see the government's task as being to try to plan the future shape of energy production and consumption. It is not even primarily to try to balance UK demand and supply for energy. Our task is rather to set a framework which will ensure that the market operates in the energy sector with a minimum of distortion and energy is produced and consumed efficiently (Nigel Lawson, 1982).

The advent of the Conservative Government of 1979 is generally held to be a landmark time for the direction of British politics. The growing argument that nationalized industries were not able to adapt to changing economic and political circumstances was adopted more fully by the Conservatives. However, the entrenched philosophical and practical considerations of dismantling the post-war consensus on nationalized energy utility provision did not happen immediately. This period was the start however, of the crystallization in policy of a set of ideas – described by Ha Joon Chang (2001:1) as coming from the 'moral and political philosophy of the Austrian-Libertarian tradition' – that had begun to gather momentum during the previous decade. The alleged 'failures' of nationalization had given these ideas further credence. Drawn from the influential work of economists such as Hayek (1980), Friedman (1982) and Buchanan (1968), these theories on the 'correct' procedural techniques to be utilized in political economy argued that there should be a reconsideration of the role and aims of government in liberal

democracies. These ideas were almost diametrically opposite to the idea that the role of government should be inextricably tied in with economic intervention and that the role of the state should be the focal point in guiding the economy.

Market liberalism as it became known was characterized by the viewpoint arguing that it had been the *containment* of market forces under nationalized consensus government that had promoted firstly economic inefficiency and consequently political instability. Drawing from original observations made by advocates of monetarism such as Adam Smith (2001) Hayek and Friedman argued that it was the market that was the best way forward in providing the most effective 'guiding hand' through which to ensure economic, political *and* social progress. The particular idea promoted by monetarism suggested that the post-war consensus had been a failure in delivering the kind of society that had been envisaged by the influence of people such as Keynes, and Bevan. On the contrary they argued that many of the problems perpetuated by economic nationalism, such as hyper inflation, excessive public spending, and stifling bureaucracy, could be traced to the structural deficiencies of a system that was exacerbated by excessive political intervention. The main argument proposed, as Ha Joon Chang (2001:2) points out, was that 'this imperfect nature of the state results in government failures: regulatory capture, rent seeking, corruption and so on. The costs of these government failures are typically much greater than the costs of market failures, and therefore it is usually better for the state not to try to correct market failures because it may make the outcome even worse'.

James Buchanan (1968) became an influential voice in arguing that, rather than facilitating the idea of the public good, politicians and civil servants had often been motivated by self-interest and a primary concern with 'empire building'. Buchanan argued that a fully functioning market system was the only way in which true democracy could take place by ensuring an effective system of checks and balances that could hold public officials to account. Drawing on the theory of 'rational choice' and the idea of 'economic individualism', Buchanan suggested that actions and motivations resided in the individual rather than in collective notions of altruism and the public good. For similar reasons, Buchanan argued that politicians and civil servants were not always necessarily acting in the interests of the electorate and practicing political rhetoric, suggesting to the contrary that these were often a smokescreen for ulterior motives. Echoing the arguments of Hayek and Friedman, Buchanan argued that the free market was the only true way through which politicians would be able to represent their electoral duties: through an appeal to the market sensibilities of the *rational individual.* The transparency of the free market, he argued, was a far better system than the labyrinthine structure of state bureaucracy in regulating the role and function of contemporary government and associated political institutions.

Although not yet consensual throughout the Conservative administration that came to office in 1979, the Prime Minister Margaret Thatcher was deeply influenced by these ideas and they began to change the philosophy of the way in which education, health, and welfare services had been run up to that point. The Conservative Government came into administration at a time of great political and economic

uncertainty. The 'winter of discontent' had given way to soaring unemployment levels that stood at 2.7 million in 1980 'and the biggest collapse in industrial production in a single year since 1921' (Marr, 2007:338). The new Prime Minister argued that the principal solution to these problems must be to address inflation, which would be achieved through controlling the overall quantity of money in the economy in tandem with tax cuts. Monetarism held that other issues such as unemployment and productivity need not be directly addressed in policy as before, as a greater commitment to the primacy of economics and the functioning of the market would mean that these areas would flourish within the new conditions. Marr reasons that the intellectual attraction of monetarism at this time was obvious:

> Conventional economic management had become a horrendously difficult and uncertain business, juggling uncertain and out-of-date information about output, the balance of payments, unemployment, inflation – a game with one too many rules ever to fully grasp. Monetarism swept away all that with the statement: 'Only hold firm to the principle, get the money supply down and you will succeed' (Marr, 2007:386).

The new administration began to introduce the idea that UK energy policy would be one of the principal beneficiaries from an injection of these ideas in providing the solution to problems encountered by the previous political regime.

5.1 Politics, ideology, and the economy

So why the particular neo-liberal response to the conditions that characterized this period? Harvey (2005:12) has argued that the political response *could* have been 'to deepen state control; including if necessary, curbing the aspirations of labour and popular movements through austerity measures, income policies and even wage and price controls'. He makes the point that this response had been pushed as a solution by the communist and socialist parties that were active in Europe at the time, notably 'Red Bologna'; in Portugal and Spain after the demise of Fascism; and the expansion of social democracy in Sweden. There were also high hopes for the development of 'EuroKeynsianism' during this time led by France's Mitterand. However, according to Harvey, the solutions offered by the left no longer dovetailed with the requirements of capital accumulation. While there was still no coherence to the neo-liberal project at this time, a schism had now developed between the left and the right with the latter coming to the fore with a reassertion of class interests. This has been a point made by Dumenil and Levy (2004), and Van Apeldoorn (2002) who reason that there is no doubt that the political economic transition that was set in motion during this period was driven by particular sectional interests and informed by a specific ideological agenda. Gill (2003) has argued that these changes were particularly illustrative of the ways in which relationships between 'knowledge and political power', in accordance with particular socio-economic conditions, were able to mobilize in order to reconstitute state powers. Harvey reiterates the point that the political response that eventually manifest in the way it did, through the liberalization of capital markets came as a response to what he describes as the 'organic crises' that had developed in nationally sequestered accumulation strategies in the West. He argues that it was primarily the need to steer capitalism through

what had been approximately a ten year period of crisis, which had precipitated action from banks and business interests, in association with western political leaders.

The political and economic arguments characteristic of the coal industry in this period would seem to illustrate the above points. Addressing the problems of the coal industry in the UK now concerned the financial crises of over-accumulation and export market constraints; cheaper imports; infrastructural and labour force expenditure; and the militancy of the new working class. As Harvey observes:

> On the surface, these difficulties could be best captured by one word: rigidity. There were problems with the rigidity of long-term and large-scale fixed capital investments in mass-production systems that precluded much flexibility of design and presumed stable growth in invariant consumer markets. There were problems of rigidities in labour markets, labour allocation, and in labour contracts (especially in the so-called 'monopoly' sector). And any attempt to overcome these rigidities ran into the seemingly immovable force of deeply entrenched working-class power (Harvey, 1990:142)

Harvey argues that the ideological foundations that informed the post-war settlement had to be reordered to enable this organic crisis to be overcome if capitalism was to survive as a socio-economic ordering system. Importantly he points out that this had to be *politically initiated* as the system itself is structurally incapable of addressing its own internal crises. Harvey reasons that this is the reason that the transition to what Gill (2003) has described as 'disciplinary neo-liberalism' was such a drawn-out process: even when the Thatcher Government attained power. Due to its traditional links with the industrial working class, the Labour Government that had been in power prior to the 1979 election could only go so far in introducing change to a system that was beginning to threaten the position of the business/political elite. Harvey asserts that the shift to a new socio-political order could only take place when political cohesion took place around the dominant ideas which would inform this shift. It could only occur, he reasons, when they were able to attain hegemonic status. As Marr (2007:387) points out, 'in 1979 monetarism had not been widely tested outside the military dictatorship of Chile'. Thus the catalyst for these ideas around what became known as the 'New Right' was led principally by the Reagan Government in the US and the Thatcher administration in the UK.

5.2 Market liberalism and energy regulation in the UK

The policy consensus which had characterized the post-war energy regulation in the UK – one which was based on integrated public monopolies in gas, coal, and electricity, and central planning by government – was now rejected by the incoming Conservative Government. As argued earlier, monetarist critiques of the nationalized energy regime had begun to gather influential support from as far back as the 1960s, although this did not reach political consensus until *during* the Conservative reign. All aspects of UK policy on energy were to undergo significant changes over the subsequent twenty years from the beginning of the Conservative

administration as they sought to address the 'inefficiencies' of command and control as a style of government planning and political intervention into energy policy regulation. As Helm (1989:1) argues:

> In its place was to be established a new market philosophy for the energy sector. The role of the public sector was to be reduced, first by encouraging competition in gas and electricity through the Oil and Gas (enterprise) Act in 1982 and the Energy Act in 1983, and second by the privatization of the public sector utilities – starting with British Gas in 1986 (Helm, 1989:1).

The new 'market for energy' strategy that was gradually introduced by the Conservative Government from this time was predicated along a particular set of arguments:

- That a centralized, nationalized energy regime demonstrated an inherent inflexibility in adapting policy initiatives to the requirements of a changing world;
- The command and control structure was limited by underperformance due to a lack of market incentives;
- There was a problem of capture through the tendency towards monopolization;
- An absence of incentives and lack of market discipline meant that energy production and dissemination was often inefficient, based as it was on predicted outputs and long-term, contracts that were integrated across key sectors of the energy industry.

The market for energy approach – in tandem with wider changes to the way in which policy was to be implemented from now on – argued that the above *political failures* were to be addressed in three main ways:

- *Privatization:* this would involve a process whereby ownership was transferred from the public sector (government) to the private sector (business). The monetarist argument proposed that private sector actors would deliver products and services more efficiently than the public sector within the disciplines of a free-market;
- *Liberalization:* in the case of energy, this would involve opening up previously monopolized sectors to greater competition through a change in laws that would encourage greater market entry. Again, it was thought that this would lead to greater efficiency and price reduction within the rules of the free-market;
- *Deregulation:* as with the above, this was to be the process by which governments could encourage the market to lead more directly by simplifying regulations and trade restrictions in order to encourage firm to be more competitive.

Advocates of the new market approach argued firstly that there had now been a 'break' from the conventional link between economic growth and energy demand. As Helm (2005:3) points out for instance, 'after the Second World War it was assumed that economic growth at 3 per cent translated into growth in electricity demand of 7 per cent'. Predictions such as these were simply not borne out by what happened. The DoE pointed out in 1989 that in the end, less than half of this amount

was needed. The gradual shift away from the energy intensive, heavy industries from the late 1960s into the 70s and 80s was one of the principal causes of the separation between energy consumption and output alongside technological developments that promoted more efficient energy use. For example, while the Iranian revolution of 1979 had suggested that the economics of coal would be cheaper, oil prices subsequently dropped and exposed not only the high price of coal when exposed to these conditions, but also the problems of fixing prices to gas and electricity.

Related to this, it was pointed out that centralized, nationalized energy markets had been inefficient. The nationalized era of energy policy tended towards ensuring *output* rather than profit maximization which monetarists argued led to great cost inefficiencies where the financial risks were borne by the public sector and consumers. As argued above, this accompanied growing criticism that the decision-making structures of the nationalized energy industries were not acting in the name of 'the public good' contrary to rhetoric. It was argued that investment decisions were often based upon misguided, inflated prices which were invariably offloaded onto a consumer base which was 'locked-in' to a captured market. Advocates for the introduction of a new market regime pointed out that decision-making was often characteristic of a 'bloated bureaucracy', driven by self-interest rather than the stated aims of wider social responsibility.

Introduction of the new market philosophy into UK energy policy was however introduced gradually. While the Prime Minister in particular felt that there was a sense of urgency needed to get this programme of 'economic recovery' underway, there was also a necessary sense of caution in dealing with both an institutional design and an ideological commitment that had embedded UK policy for over thirty years. As the miner's strikes had demonstrated, this regime shift was not consensual. It had involved a clear ideological break with the political framework of the previous era. The early period of the new Conservative administration was therefore marked by the utilization of whatever levers were available to address the priorities of the resource allocation, efficiency, and pricing issues, but without tampering too much with the overall framework. While this shift in UK energy policy was ultimately to follow a direction typified by a shift towards competition, privatization, and deregulation, as argued above, this was initially implemented on a discretionary, piecemeal basis. The oil shock which occurred in the wake of the Iranian revolution of 1979 meant that the initial task of the Thatcher Government – echoing the political response of the OPEC crisis in 1974 – was to ensure continuity of energy supply. This meant that in order to 'keep the lights on' there could be no radical departure from the *Plan for Coal* – although the content of the revised document was to begin to change the way that the industry was run in the future – that had been negotiated five years earlier. The interlocking deals tying in the coal and electricity markets in particular, meant that this area was to be a slow reform agenda characterized by dialogue between labour and capital over the future direction of the industry. The early days of UK energy regulation within this regime also meant managing the continuing development of the North Sea interests, and negotiating increases in gas and electricity tariffs in the wake of another increase in oil prices. Considering a

future based on the legacies bequeathed by nationalization, the incoming government again considered the viability of the nuclear option as a way through which to diversify energy and to regulate public investment.

6. The Competition Act: breaking down 'national monopolies'

The Competition Act in 1980 was the first significant policy statement to be made by the new regime as they began to introduce the idea of market forces as the guiding framework for UK energy policy, and for policy in general, *vis-à-vis* the control of money in relation to the *Public Sector Borrowing Requirement* (PSPR). Industry budgets up to that point had been controlled by the state through the PSBR and a revision of the PSBR now framed the ambitions of the Thatcher administration as it sought to weaken the link between the state and public service provision. *The Competition Act* had the principal effect of beginning to open up the monopoly status of the energy industry to wider scrutiny and, more importantly, to the Monopolies and Mergers Commission. While the *Competition Act* was restricted in activating radical overhauls, it was instrumental in setting in motion a process whereby the new regime were able to put the 'inefficiencies' of the nationalized energy industries under greater scrutiny and subsequently into the media spotlight and wider public awareness. It was hoped that this auditing process would begin to *prove* the inefficiencies of state run services. In the energy industries, this auditing process was subsequently developed more fully through the *Oil and Gas Enterprise Act* in 1982 and then the *Energy Act* in 1983. All these initiatives were intended to challenge the influence of the idea that the nationalized industries continued to uphold the idea of the public good and were representative of democratic policy-making. Concluding a series of early 1980s reports on the state of the UK's nationalized energy industries, the Monopolies and Mergers Commission concluded that their inefficiencies were characterized as:

- Excess output in the coal industry;
- Too many power stations – many of them uneconomic;
- Pits that had been kept open that were now uneconomic;
- Planning laxity and financial mismanagement;
- Prices that had been set at artificially low levels relative to marginal costs;
- Wage biases and labour overstaffing (Monopolies and Mergers Commission 1980).

Changes in each of the main energy sectors that occurred during the post-1979 period are all interesting in the ways in which they began to illustrate the changes which would begin to shape the new energy order. Shifting power alliances, the growing dominance of the new market framework, and a readiness to apply the principles of economic rationality to the problems that had been identified by critics of the command and control era of energy regulation could all be discerned in the new regulatory regime that was introduced by the Thatcher administration.

6.1 Changes in the coal industry

In assessing how the politics of what came to be called the 'New Right' were to affect UK energy policy post-1979, the coal industry is perhaps the clearest example of how

these changes would impact on UK energy policy as this period began to unfold. The position of the UK coal industry was a perfect illustration of both the economic and political arguments that were now being leveled at the nationalized energy industries from the perspective of the new government strategy. In particular, Prime Minister Margaret Thatcher was well aware that it had been primarily the influence of the NUM that had toppled the Heath government back in 1974. She was emphatic in arguing that it was the dominance of the trade union movement was the biggest threat to her vision of a new political and economic order and she argued that command and control had been a system of regulation that had been implicit in providing the conditions for NUM domination during the preceding decade. This had been one of the arguments proposed by the economic theorists of the time: that corporatist political regimes were vulnerable to capture by interest groups and other sub-state actors who were likely to interfere with the 'invisible hand' of the market.

Parker (2000:1) argues that the conditions for a revitalization of the coal industry had initially seemed to be favourable to the political and economic case for indigenous coal when the Conservatives first came to office. The Iranian oil crisis meant that there was now a tripling of the price of crude oil; coal's share of the 'UK primary energy market had stabilized at around 36%; and in 1979/80 NCB output was the highest for four years and UK coal consumption the highest for seven years'. In addition to this, Parker points out that power stations based in the UK were utilizing record amounts of coal which accounted for three-quarters of the fuel used in electricity generation. In addition to this, the AGR nuclear programme was hampered by delays in construction and there were political arguments over the type of reactor that should form the basis of a long-term programme of nuclear energy in the UK. Furthermore, Parker argues that in this period natural gas was regarded as a 'premium fuel too valuable to be used in power station boilers and future prices and supplies of internationally traded power station coal were then very uncertain' (Parker, 2000:1).

Changes in the coal industry, which gathered momentum post-1979, have therefore been explained from a number of different perspectives. Parker reasons that these can be typed into three viewpoints: firstly it is argued that the primary determinant of change was the political agenda that was levied by the Thatcher government on breaking the power of the NUM and their symbolic role as the vanguard for the working class; secondly, Parker asserts that UK coal was undermined by changes in market forces for different energy sources which had the effect of exposing structural weaknesses in the industry; thirdly, he argues that 'the industry (both management and miners) was the engine of its own destruction' (Parker, 2000:xiv). He argues that the truth is very probably a combination of all of these factors. What is clear however is that the ideological argument that monetarism should be the guiding framework for future policy decisions was a central factor in drawing these debates out into more open contestation between the various interests.

As Parker points out, the first problem for the labour movement regarded the some of the failures of the *Plan for Coal* to achieve the aims that had been agreed upon between the government and the NUM in 1974. As he argues:

> Not only were the capital costs of the investment programme substantially greater in real terms than originally projected, the performance on productivity and operating costs was poor. Notwithstanding, the *Plan for Coal* assumption of 4 per cent per annum increase in output per man, in fact, it was not until 1981/2 that labour productivity exceeded the level seen in 1973/3; and few high cost collieries were closed. Due to these and other factors, average colliery operating costs rose by almost 50 per cent in real terms between 1972/3 and 1979/80, storing up serious economic problems for the industry in the 1980s (Parker, 2000:7).

Although seemingly endorsing the role of UK coal in the 1980 G8 Summit in Venice, where governments pledged agreement to begin to diversify from reliance on OPEC oil supplies, Margaret Thatcher remained skeptical over the extent to which the coal industry could expect to be subsidized and politically supported in the way it had been under corporate governance. She was cautious of its historical links to the Labour Party but particularly of the influential position of the NUM which she argued symbolized the wider power of the trade union movement at that time and the kind of socialism that was antithetical to the economic philosophy that she was in the process of implementing.

Parker argues that, despite this viewpoint, the Conservative Government had no radical plans to overhaul the coal industry at this moment. The power of the NUM would have made this difficult anyway, not least due to the fact that electricity generation in the UK was based primarily on coal-fired power stations. The strength of power cuts as a political tool had been instrumental in bringing about the downfall of the previous Conservative Government and suggested a pragmatic approach was the best option this time around. The continued threat of strike action meant that a cautious approach was also necessary by a government whose policies were becoming increasingly unpopular with both the electorate and also within some factions of the Cabinet.

6.2 The Coal Industry Act 1980: a revised Plan for Coal

The *Plan for Coal* was revised between the government and the NUM in the light of a new agreement based on the PSPB. As Parker explains: 'although the Conservative Government showed no sign of wishing to cut back the high level of capital expenditure on major projects inherited under the *Plan for Coal* programme, nevertheless they wanted the NCB to play its part in reducing the PSBR by achieving a greater degree of self-financing of investment'. This agreement was crystallized in the *Coal Industry Act 1980* where there was a new arrangement limiting future government subsidies to the industry. The Parliamentary under Secretary of State declared at the time:

> Our policy is based on two principles. The first is that, if the coal industry is competitive and based on efficient, high productivity capacity, it will have an essential and increasing part to play in meeting our future needs for energy. There will be an expanding market for coal at the right price. The second principle of our policy is that the industry must be put on a sound commercial and financial footing for the future. During a difficult period of change, the industry has come to need substantial government grants. The government is naturally concerned to reduce the degree of financial support which it now gives. But the industry too will want to free

> itself progressively from dependence on government funds and to make itself fully viable and competitive (Coal Industry Bill, April 1980, Hansard).

Parker argues that the points raised here very clearly signposted the direction that the government saw for UK coal. The future of the coal industry was now seen fundamentally in regard to its competitiveness and efficiency. *The Coal Industry Act* was significant in that it highlighted a move away from the traditional idea of the link between economic growth and the coal industry based on substantial political intervention. The new emphasis of the *Coal Industry Act* was characteristically stamped by the dominant ethos of the new political administration. It was now clear that subsidized coal outputs would now be assessed within market driven conditions.

These new arrangements almost immediately encountered problems when the NCB realized that it would be unable to reach its side of the bargain due to the volatility of world market conditions. In particular, the slump in manufacturing output caused by the worldwide recession in the early 1980s had seen a sharply reduced demand for energy, and particularly coal. As Parker reasons, during the period 1979/80 and 1980/81 'UK primary energy demand fell by 25.m tonnes of coal equivalent (m.t.c.e.) the total fuel required for electricity generation by 7 m.t.c.e., and total UK consumption by 8m. tonnes' (Parker, 2000:12). The tightened supply/demand conditions for UK coal were further exacerbated by the rising global productivity and upward curve for cheaper coal imports. The NCB chairman Derek Ezra warned the government that without financial support from the state, pit closures and consequent unemployment would be unavoidable. In her memoirs, the Prime Minister later wrote 'I agreed with him that with coal stocks piling up and the recession continuing, there was no alternative to speeding up the closure of uneconomic pits' (Thatcher, 1993:140).

This 'agreement' on the direction of British coal mining eventually led to what Marr (2007:411) describes as 'the longest strike in British history, one of the most tragic industrial disputes of modern times, and the long-term result of the total defeat of the miners. This was followed by the virtual end of deep coal mining in Britain'. The Conservatives eventual victory in the battle for the political direction of the coal industry was seen to be both ideological and practical. As the Prime Minister noted at the time:

> What the strike's defeat established was that Britain could not be made ungovernable by the Fascist Left. Marxists wanted to defy the law of the land in order to defy the laws of economics. They failed and in doing so demonstrated just how mutually dependent the free economy and a free state really are (Thatcher, 1985; cited in Marr, 2007:411).

Perhaps the biggest legacy to come from this period was the fact that there was now widespread acknowledgement that this government was clearly prepared to make *social* trade-offs in order to ensure that this particular market philosophy was upheld. The social costs to many sectors of society of rising numbers out of work –

unemployment figures reached 3 million in the early 1980s, largely from the industrial sector – were now felt by political leaders to be both a peripheral and a necessary cost of maintaining what were seen as the overall economic benefits of a policy direction that was based first and foremost on monetarist principles.

In 1984 UK coal mining industry had been the most productive in the world. Parker points out that its economic value was often distorted by the huge subsidies that European governments allocated their coal industries, making UK coal uncompetitive internationally. The declining market for coal – both internally through the privatization of the electricity sector and externally – eventually led to the Coal Industry Act of 1994 which began the process of privatizing the UK coal industry – largely the assets left by the legacy of deep-cast mining over the still profitable open-cast minefields – where, it then limited future costs within a system that had become uneconomic within the regulation of the new market structures. As Helm (2004:345) points out, from its former political and economic position as the principal driver of the UK's productivity the coal industry had then become a member of 'the super league of subsidized activities, alongside nuclear power and agriculture'. By the time of privatization, only fifteen pits were left in production.

7. Liberalizing the gas and electricity markets

The introduction of market principles into the UK gas and electricity sectors was a particularly good illustration of the 'producer to consumer' driven ethos that had been introduced by the Conservatives as the chief remedy in redressing what was held to be the *political* failure of command and control style energy regulation and state-led service provision. Whereas under the previous regime, the British Gas Corporation (BGC), the Central Electricity Generating Board (CEGB), and the twelve Regional Electricity Boards (REBs) held a monopoly over UK gas and electricity customers, the liberalization, deregulation, and eventual privatization of both industries, changed the ethos that had driven both these sectors in the nationalized era, into a much more market-driven focus. Again, this was an incremental process, whereby initially rule changes in the operation of these industries were implemented primarily to encourage market entry at the infrastructural and supply end. Although private sector monopolization had been a particular criticism of both sectors, as with the coal industry, the transfer of ownership into the private sector was to come much later. Liberalization therefore proceeded through the argument that market forces would have the effect of driving down energy prices in both these sectors for consumers while increased competition would encourage participating companies to become more innovative and more efficient in both energy sourcing and generating.

7.1 Gas

Marr (2007:428) observes that the Conservative Government of the 1980s oversaw 'the greatest shift of assets from the state to the private sector in the history of this country. During the decade £29 billion was raised in sales of land and businesses and £18 billion from the sale to their tenants of 1.24 million council homes'. While much of the ethos behind privatization was claimed as the need to construct a much

more streamlined approach to energy regulation – one in which the discipline of the market would facilitate a much more efficient and therefore economically sustainable system – in the longer term it was also feted that the New Right dream of a 'shareholder democracy' could be realized. The Prime Minister Margaret Thatcher argued that this would now be a society where businesses and consumers alike could all theoretically own a stake in the system. In this way, the new administration saw opportunities in the privatization of the major energy utilities in particular as a way through which to recast the idea of socialism into the idea of 'social democracy'. As Kay (2004) argues, rather than a redistribution of wealth, shareholder democracy aims to facilitate a redistribution of *opportunities.* The argument here was that there would be more direct citizen participation in governance and therefore greater equity running the economy. As Giddens (1998), one of the advocates of the 'new social democracy' explains, the Swedish social democratic model in the early 1970s provided a particularly good illustration of how domestic energy policy could be constructed along these lines:

> One model is the approach used in Sweden twenty years ago, when the government drew the public directly into the formulation of energy policy. The government, unions, parties and education agencies set up day-long courses in energy. Anyone who took such a course could make formal recommendations to the government. Seventy thousand people participated in an exercise that decisively shaped policy (Giddens, 1998:78).

The sale of British Gas would attempt to incorporate much of this ethos by appeal to the sovereignty of the consumer as opposed to a producer driven agenda.

As with electricity privatization, restructuring British Gas in accord with the new market philosophy posed a difficult set of challenges for the Thatcher Government. It was the most modern of the UK energy industries where the infrastructure in place was largely a result of the North Sea discoveries and the large scale investment that had been developed here since the 1950s. As pointed out in the previous section, gas had originally been a somewhat localized energy source, firstly in the form of town gas and then its production through 'coal conversion'. While the availability of imported liquefied natural gas (LNG) began to provide a small market based more on storage and flexibility in meeting peak demand it was the discovery of vast reserves in the North Sea that began a process of changing perceptions as to the greater potential of gas as a mainstream energy source in the UK.

The original engineering infrastructure that had converted UK households to natural gas had been a result of long-term planning and investment that had been heavily subsidized by public sector money. The expansion of the UK gas industry was also aided by the contractual settlement that was developed through state monopoly. As a fete of engineering, Hannah (1979) has argued that only construction of the national grid during the 1920s and 1930s has rivaled the gas conversion programme that integrated UK households into North Sea gas supplies. As Helm has points out, UK gas was 'a public good that was constructed according to an integrated plan with common specifications, at a reasonable cost of capital' (Helm, 2004:110). State

ownership also defined the delivery of the gas down the pipes where the government owned Gas Council – and its legal options in the Continental Shelf Act – meant that it held the options on purchasing all gas landed. The UK Government also held the licences that were needed by the oil companies to operate and it was therefore in a position to 'manipulate' them into contracts that were on terms favourable to it. It was the particular contractual arrangements of this period that meant that gas privatization became a drawn out process and then held up the introduction of competitive market elements in the second half of the 1990s.

Prike (1981) has pointed out that one of the political levers which the Conservatives used to challenge the role of government in the gas sector during this period therefore was what it considered to be the inefficiency of a pricing structure of long-term take-or-pay contracts that often bore little or no relation to market prices. There was in effect no market and capital risk was simply passed on to customers in captured markets. It was this rationale which began to undermine the nationalized structure of British Gas, particularly under the scrutiny of the MMC. As Helm argues:

> In order to cover the risk of developing and investing in North Sea assets, British Gas in the public sector entered into contracts averaging twenty-five years on a take-or-pay basis. These contracts could be signed because British Gas had a statutory monopoly downstream with its customers. It could pass the costs through (Helm, 2004:41).

As with the coal industry, this had meant that supply had to be 'managed' to meet demand. Long-term contracts were a necessary requirement of developing the British Gas market at this stage due to the capital intensity of infrastructural and engineering costs. This became a problem in the early 1980s however when British Gas' marginal costs – which had been artificially set – began to rise and there became a very real danger that, as demand actually rose to meet the prices that were being charged, that demand would begin to exceed supply. Prike points out that the marginal costs pricings were pushed up to address this situation and political intervention took the form of the *Gas Levy Act 1981*, where a levy was imposed on all UK gas from the Continental Shelf that was purchased by British Gas under contractual arrangement that had been entered into before 1st July 1975. Prike makes the point that in the period of where the British Gas infrastructure was created and the North Sea fields were developed, it is reasonable to assume that likely that the vertically integrated structure was the most efficient one for achieving the aims of this period. By 1985, however, much of the capital intensity of the investment phase was over and political leaders argued that the challenge now was in moving more towards the efficient exploitation of created assets that had been constructed in a world where there seemed to be abundant supplies of fossil fuel energy sources.

While *The Oil and Gas Enterprise Act 1982* and the *Energy Act 1983* began the process of curbing the monopoly held by the BGC over transportation, distribution and supply, and opened up the industry to greater competition, these policies had a initially fairly limited impact and also began to raise interesting questions such as

whether a publicly owned company could still be competitive, particularly in the market-driven climate that was being introduced by the Conservative Government. Political attempts to question this were vigorously defended by the chairman of British Gas Denis Rooke who argued that the company should be pushed in its present structure as a UK national champion which was able to integrate gas exploration activities as well as dealing with its distribution. Many of the problems that characterized the piecemeal process of privatization that occurred in the UK gas industry – and could also later be identified in the privatization of the electricity sector – could be traced to political contention over 'networks' and issues regarding 'unbundling' the activities and assets of what Black (2003) describes as a 'natural monopoly'.

The above difficulties that existed for political leaders in liberalizing and privatizing British Gas could be clearly observed in the *Gas Act 1986.* The political influence of the industry ensured that British Gas retained a substantial measure of control as the sole licensee for the subsequent twenty-five period where it would then be subject to a further ten years notice from the Secretary of State, with obligations on it to ensure supplies. The company would however also be answerable to new shareholders – including the public – and there was also a quasi-governmental regulatory agency set up called the Office of Gas Supply (OFGAS).

While considered to be a fairly minimal development in gas regulation at the time, it was OFGAS that became instrumental in pushing for further changes in the industry and opening the way for further liberalization. This was a process that came to a head in 1993 when, in the wake of numerous complaints concerning 'extensive discrimination in the pricing and supply of gas to contract customers' that had resulted in three MMC investigations dating back to 1988, a 1993 MMC report declared that:

> BG is now a seller of gas, and owner of the transportation system which its competitors have no alternative but to use. In our view, this dual role gives rise to an inherent conflict of interests which makes it impossible to provide the necessary conditions for self-sustaining competition (MMC report on gas, 1993:1).

In effect, the MMC argued that British Gas was acting as a *private monopoly* as opposed to the public monopoly that had drawn political critique initially. It was argued that the privatization of British Gas had so far simply transferred a public monopoly into a more privately structured monopoly.

The 1993 MMC report was ultimately significant in leading to the *Gas Act_1995* and the enforced break-up of the privatized British Gas into two companies: one that dealt with the network infrastructure and the other one with supply. The new arrangements worked well in at the beginning of this period, certainly in terms of reducing gas prices for consumers. The introduction of a more competitive element into the supply chain had been an instrumental factor in giving customers more choice and in this way it has also worked to address issues such as fuel poverty. It is not clear whether these conditions will continue however and prices began to rise in

the early part of the decade when conditions of excess supply – which some critics argue was always an instrumental factor in underpinning these low prices – began to come under threat from the fact that supplies in the North Sea had peaked and there was now a greater reliance on supplies of imported gas – from Norway and particularly from Russia – which have often been subject to geo-political issues (Kjarstad and Johnsson, 2006:869). Conditions of excess supply are no longer certain and diminishing returns in the North Sea have meant that an increasing proportion of the UK's gas will come from imports.

7.2 Electricity privatization in the UK

Once gas became privatized, it seemed that it was only a matter of time before electricity followed. The Energy Information Administration (EIA) (2007:1) suggests that 'the United Kingdom offers an interesting case study into the processes of electricity restructuring, privatization, and regulatory reform'. A number of economic *and* political issues provided the background challenges to the privatization of the electricity sector in the UK, namely:

- Whether it was possible to trade electricity as with any other commodity;
- Would a competitive model be compatible with the particular generation risks that characterize the electricity sector and the fact that security of supply must be present at every stage of generation?
- Could a deregulated industry improve upon the long-term contractual structure and vertical integration characteristic of the nationalized era of electricity generation?

Being one of the first nations to implement widespread privatization of its electric utilities the EIA (2007:1) point out that UK efforts 'have been among the world's most ambitious and path-breaking in introducing market forces into this particular energy sector'. This became a particular issue for the nuclear power industry which up to that time had been largely financed by state-led. Despite intermittent construction programmes and seemingly unclear long-term future plans, nuclear power had never totally left the equation, and successive politicians harbored hopes that it would still at one time play a more central role in securing future cheap, indigenous electricity. Investment in a greater proportion of electricity generation from nuclear power remained at no more than 20% of overall capacity however, where the high levels of investment needed in sunk capital costs were the principal reasons behind intermittent political intentions up to this point. It was acknowledged that the nuclear sector would struggle if opened up fully to market forces.

While the Conservative administration had tried to introduce elements of market competition into the electricity sector through the *Energy Act of 1983*, early moves in this direction were also politically motivated in levering energy demand towards less of a reliance on coal. During this period, gas began to gain credibility as a cheaper option than coal in electricity generation and this began to expose the inefficiency of cross-industry political agreements which had effectively propped up the coal industry. While the *Energy Act of 1983* was introduced to encourage greater access to the national grid for independent producers, it was the *Electricity Act 1989* that is generally regarded as the landmark for electricity privatization in the UK. While the

1983 act had seen the beginnings of political attempts to widen access to the national grid, the continued monopoly of the Central Electricity Generating Board (CEGB) over all aspects of the industry ensured that participation remained limited in relative terms, mostly due to a combination of technical barriers regarding grid access and low investment returns for new entrants. Critics argued that this was mainly due to the legacy of the centralized structures *vis-à-vis* control of the 'natural monopoly' aspect of the industry that was being exercised by the CEGB. 1989 saw a renewed political attempt to resolve these issues through further restructuring of the industry. However, wary of the problems that had been instrumental in holding up the privatization of the gas sector concerning continuing political arguments over the status of natural monopoly and what the role of public and private ownership should be, the *Electricity Act 1989* meant that:

> The industry was restructured by the government along functional lines. Guiding the government's restructuring was the idea that electricity generation and marketing could be made competitive industries, while transmission and distribution needed to be treated as natural monopolies for the indefinite future (EIA, 2007:1).

The structure of privatization that was agreed upon in the *Electricity Act 1989* firstly split up the generation activities of the CEGB into two companies: National Power and PowerGen. Explaining part of the rationale that lay behind this particular model, Helm explains that 'National Power was to be given enough market power to carry all the nuclear costs, while PowerGen would be given a big enough market share to keep an element of competitive pressure on National Power' (Helm, 2004:130). It was assumed by politicians that the generating sector of the industry was an area that would need the least regulation and that a competitive market would develop automatically from the changes that were set in motion. National grid ownership was transferred to the privatized regional electricity companies (RECs) and transmission was thought to be the area that would benefit through being exposed to greater competition. The government continued to hold a stake in the electricity industry through what was known as the 'golden share' in National Power and PowerGen and it also held shares in the 12 RECs.

It was claimed that the particular innovation introduced in the *1989 Electricity Act* was the England and Wales 'electricity pool' (Green, 2005). Kay (2004:128) points out that the nationalized electricity sector had worked remarkably well primarily because 'the engineers who controlled it were competent and honest and were supplied with accurate information about operating conditions in all the fifty or so power stations'. He reasons that the complexities of the industry – particularly in regard to storage, capacity, and transmission – meant that it was an advantage that the whole network in effect operated under the single ownership of the UK Government. The pool was an attempt to replicate these efficiencies but with more of an emphasis on 'sweating the assets' for greater financial returns. In contrast to the bulk supply tariff which had operated under the previous regime, the pool or spot market was an attempt to solve the problem of 'incentive compatibility' which would be brought by private sector bids to supply electricity by 'paying ahead' to

meet demand. Kay has described the structural dynamics of how the pool was to operate:

> The owners of each power station would make bids into a pool. Their bid would state the generating capacity they offered, and the price at which they would sell. The engineers of the central control room were replaced by traders, who reviewed the bids. As demand fluctuated, the traders bought supplies just sufficient to meet demand. The highest bid they accepted was called the pool price, and all successful bidders received the pool price (Kay, 2004:129).

Electricity prices proved to be quite volatile within this way of working and critics argued that one of the reasons for this was that, in reality, the operation of the pool remained open to manipulation by the dominant players. A particular accusation was that National Power and PowerGen had been using their influence to manipulate pool prices. This led to the first investigation by the newly installed Office of Energy Regulation (OFFER) into pool pricing activity where the conduct of the generators became subject to a period of almost continuous review by the new regulator. The subsequent setting of a price cap system singularly failed to reign in this exercise of market power.

The introduction of the New Electricity Trading Arrangements (NETA) in 2001 was 'a response to the failure to develop a sufficiently competitive generation market – and therefore of the original privatization model to deliver what it had promised' (Helm, 2004:306). There was also a new independent body, OFGEM that was introduced from the merger between OFFER and OFFGAS. The principal duty of OFGEM has been to 'promote choice and value for all gas and electricity customers' (OFGEM, 2007) while providing regulation to the increasing integration between the gas and electricity sectors. The role of OFGEM was also intended to provide a more market oriented style of regulation in than that which had been provide by OFFER where critics argued that the agency had often been ineffectual in breaking the transmission monopolies. Helm argues that the original privatization settlement had been remarkably naïve in its assumption that a competitive market would develop through price transparency 'once generation had been separated from transmission, split into several companies, and entry was permitted'. As Steen and Vrolijk (2002:20) point out, 'under NETA, generators now have to predict their output not later than three and a half hours in advance of the time of generating. Any difference between predicted production and actual output is liable to a penalty fee'. In stark contrast to the previous regime, electricity and gas generation was now to be run increasingly on a just-in-time basis where planning and pricing take place more or less instantaneously according to transparent signals.

7.3 The privatization of the nuclear programme

Helm (2004:188) suggests that 'the history of nuclear privatization has been the very gradual triumph of economic reality over managerial optimism'. While command and control regulation of UK energy was retrospectively suited to the development of the UK nuclear programme – stop-start though it was – the new market rationality of the incoming Conservative agenda of 1979 ensured that the nuclear debate was

gradually to be considered in terms of *economic viability* rather than planned government intervention. By its very nature the development of nuclear power had been predicated upon long-term planning and investment. Much of the public investment in nuclear energy remains shrouded in secrecy, not least due to its links to the military. The periods in UK energy policy when the nuclear option had been considered had been characterised by the consequences of choices in infrastructure that were made in these periods, where consequent levels of investment, the costs of decommissioning and the economics of safety regulations all served to prevent a UK nuclear programme, for instance on the scale of the one in France. In fact the debate over privatization was characterized by the extent to which these 'investment liabilities' were to be split between the public and the private sector.

In the end, as with the coal sector, asset liabilities meant that the nuclear industry was only partially privatized. In 1997, nuclear power generated 26% of the UK's electricity. However, a number of these plants have now come to the end of their lives and have been decommissioned. The two remaining Magnox stations and four of the seven AGR plants are currently on course to close for the same reasons by 2015. This is one of the causes behind the UK's forecast 'energy gap', as nuclear power still contributes to 20% of the UK's electricity generation.

7.4 Oil markets

The signals that had threatened the end of cheap oil in 1973 resurfaced in 1979. The tripling of oil prices precipitated by the Iranian revolution again emphasised the importance of oil to almost every aspect of western capitalism and particularly its role in sustaining economic growth.

On June 23rd 1980, at the start of the Thatcher regime in the UK, the continuing prominence of oil to the success of the world's economies was illustrated in a G7 meeting in Venice. The Iranian revolution had just seen oil prices triple, contributing to the western recession of the time. Governments again spoke of the need to diversify from oil in the wake of yet another shock to their economies. Political leaders argued in fact that there now seemed to be a problem with energy production *per se* and there were signs that the world now seemed to be on the verge of an overall energy shortage. A draft communiqué concluded: 'there must be more oil production, more coal production, faster nuclear power station building and more conservation and energy efficiency – and if possible, dialogue with OPEC' (Howell and Nakhle, 2007:19). Others were not so sure. The British Energy Minister Denis Howell and the German Industry Minister Otto Lambsdorf pointed out that the market would work to rectify the worst of the situation. They suggested that the world recession was already beginning to slow the demand for oil while new discoveries were opening up new sources. They pointed out that all the signs were that oil prices would again be driven down by another supply glut in conjunction with lowered demand. They were to be proven right over the next five years where,

significantly, a worldwide recession revolved mainly around the steep decline of western industrialism and the transition to a less energy intensive service economy

In fact, the UK had another reason for an optimism that had barely been present at the time of the last oil shock. In 1977, the Prime Minister Jim Callaghan argued that 'God had given Britain her best opportunity for a hundred years in the shape of North Sea oil' (Callaghan cited in Marr, 2007:433). Marr (2007) suggests that the importance of North Sea oil has often been neglected in helping to explain how the UK was able stay afloat through the recession of the early 1980s. Indeed, as he points out,

> Oil helped to bankroll Thatcherism, for Britain was self-sufficient in oil by 1980. Up to 1985 Britain was producing 127 million tonnes and was responsible for nearly a tenth of world exports. Revenues for government soared from zero in 1975 to nearly 8 billion in 1982-3, at which point they accounted for almost 8.5% of revenues (Marr, 2007:434).

As Marr adds further, one of the ironies to this situation was that 'this great new source of national wealth helped to produce mass unemployment, or at least make it politically possible' (2007:435). While other sectors of industry were failing, North Sea oil was enabling the UK economy to stay in the black.

Corti and Frazer (1983) argue that the influence of privately-owned multi-nationals always made the oil industry a tricky sector to regulate however. That North Sea oil never really delivered the long-term benefits to the UK economy that had been forecast by politicians in the mid-1970s has been viewed by some as a political inability to establish a measure of *national* control over proceedings. The decline in UK industry for instance, had a knock on effect in regard to investment in infrastructure, notably the new oil rigs that were needed to extract the oil in the first place and the ships that were necessary for transportation. As Marr (2007:435) points out, it was the great American oil majors who were always ahead of the game – 40% of the 'UK' rigs were American owned – and US operators 'were able to fund their work in the North Sea themselves, developing rigs from the earlier experiences in the Gulf of Mexico'. While the BNOC had been set up to maintain the UK's influence over the North Sea reserves, it was generally felt that it could not compete with the expertise, know-how, and financial muscle of the American majors. The oil producing sector of BNOC was eventually privatized by the Conservatives in 1982, becoming Britoil.

Marr suggests that in many ways the UK failed to capitalize on North Sea oil because the Conservatives provided no real blueprint by way of investment through which to ensure a longer-term sustainable extraction rate. Marr argues that this was instrumental in enabling the more organized multinationals to move in and to dictate the terms of engagement. He argues that the Conservative philosophy during this period was to extract as quickly as possible in order to boost revenue at a time when North Sea oil was proving to be a sure-fire economic winner in reducing the UK Government balance of payments deficit. This lack of investment however, a

preoccupation with 'sweating the assets' that were already in place, and selling off UK owned sectoral investments, began to look like political and economic misjudgement when world oil prices began to rise again in the mid-1980s. Indeed, UK strategy in the North Sea policy was to prove to be generally short-sighted over the coming two decades where peaks in both the North Sea oil and gas reserves have led to a growing acknowledgement that the UK will once again become a net importer of both oil and gas; partly through having depleted its own stocks.

8. The end of the market for energy paradigm?

The main energy utilities were gradually opened up to market forces as outlined in the above section, throughout the course of the Conservative reign, and the processes characteristic of the privatization, liberalization, and deregulation were carried over by the incoming Labour Government of 1997. As already suggested, Helm (2005:2) has argued that the changes which took place in the immediate post-war period *and* those subsequent to 1979 were radical enough restructurings as to constitute paradigm shifts in UK political economy. He argues that, as with the introduction of the command and control regime the *Market for Energy* became 'an internally consistent view of the world and provided a preferred solution to problems as they arose. If a particular outcome was unsatisfactory in some way, the answer in this paradigm was predicated on pushing for more private ownership, the removal to restrictions on trading, and the promotion of competition'.

However, Helm argues that policy has again become open to challenge in more recent times as circumstances have begun to expose some of the assumptions on which the *Market for Energy* regulatory regime was based. He suggests that an over-reliance on the market has actually served to exacerbate some of these problems where it is no longer a given that economic solutions can be applied. Conditions of excess supply and low prices, particularly in the gas and oil markets, often served to mask the underlying issues of a UK economy that was beginning to rely more and more heavily on imported energy sources. Thus while the second energy strategy adopted by decision-makers has been characterized by the freeing up of market forces as the perceived view through which to construct an effective and efficient UK energy policy, many of the 'incomensurabilities' between theory and real world practicalities remain to be worked out. As Helm reasons:

> The liberalization of the domestic gas and electricity supplies in the 1990s was more an act of faith in markets than a well worked-out policy. The consequences were not thought-out, nor were the process well planned and executed. Rather, liberalization was very much a stab in the dark. It did, however, happen at a particularly opportune moment. There was a window of opportunity in the late 1990s, particularly gas, with abundant supplies and falling prices. Everyone would be a winner anyway, and price caps could be tightened in any event. That falling prices came to be associated with competition in supply rather than regulation was the consequence of good salesmanship by regulators (Helm, 2004:271).

Critics such as Thomas (2007) have argued that the imperfections of the market design of energy policy have become apparent where the UK Government has been prepared to make social and environmental trade-offs to ensure that the competitive element of the liberalization package has been able to work. He points for instance to increased corporate concentration in the UK energy sectors and he argues that the profits that have been made have often accompanied workforce streamlining in the name of 'efficiency'. He also suggests that, despite rhetoric to the contrary, responsiveness to consumer needs has not necessarily been more effective than it was during the nationalized era of energy utilities. The situation during the 1990s with British Rail has been a clear warning of many of the dangers of introducing private ownership into utilities which have a degree of monopoly in the way in which they operate. Already a loss-making sector, the public good of British Rail was further lost when new investors hiked up ticket prices and cut services in order to maximize shareholder profit. Government subsidies to bail out the industry have meant that in real terms, the failure of privatization in this sector has cost the public more money than a nationalized service would have.

The next section considers the developments in the regulation of UK energy policy which have taken place subsequent to 1998. Within the context of the particular characteristics that typified previous regulatory changes in UK energy policy, the section then considers Helm's claim that we are witnessing a paradigm shift in the UK's political economic structure.

9. The challenge of Climate change: integrating science and economics

> The consensus among climatologists is that we are now experiencing the first effects of global warming and that more extreme events could well be on their way. I believe that global warming is the most serious threat facing our world today (King, cited in Vernon 2006:31).

From the late 1980s, the increasingly significance a growing link between global energy use and environmental concerns became manifest in the issue of climate change. The UK government began to take an active interest in the issue of climate change from the time of the late 1980s. The appearance of *This Common Inheritance* in 1990 has been held by some to be an endorsement of the then Thatcher Government viewpoint that 'global warming is one of the biggest environmental challenges now facing the world and that this generation has a duty to act' (para 5.14). In its conclusions, *This Common Inheritance* reasoned that 'despite the uncertainty, the risks clearly justify action to begin to reduce greenhouse gases' (5.17). There were even UK targets to keep greenhouse gas emissions within their present levels set during this period in the face of scientific claims that levels were rising. The greater use of renewables, energy efficiency measures, and a higher profile for nuclear energy were all considered in policies such as the *Non-Fossil Fuel Obligation* (NFFO). The NFFO was an attempt to introduce renewable energy into electricity generation as well as to guarantee that a certain percentage of nuclear power would be sourced as electricity privatization continued. The NFFO put an obligation on the electricity Distribution Network Operators to buy electricity from nuclear – which continued to be state-

owned – and from renewables. The NFFO was financed by the *Fossil Fuel Levy* (FFL) which was a tariff placed on all electricity consumption in the UK for these purposes. Critics have pointed out that the NFFO was responsible for a negligible amount of renewable energy sourcing and Newbery (2001) has argued that the actual impact of the FFL on levels of CO_2 emissions has been actually fairly minimal. Despite these apparent limitations, it has been seen as an important step in beginning to introduce the idea of policies that could address the problem of CO_2 emissions and environmental pollution and paving the way for policies such as the *Renewables Obligation* (RO).

Ingham and Ulph (2005) point out that, from the start, one of the central issues for policy-makers in formulating effective climate change policies has concerned the high degree of uncertainty surrounding the elements and decisions that must be considered in constructing effective policies in mitigation. There is currently no absolute measurement involved in assessing the processes driving climate change so governments and decision-makers cannot currently operate from within clear-cut predictions concerning both the time and the scale of future scenarios. Consequently, as Ingham and Ulph suggest, there can be no real measurement of future impacts 'caused by changes on society and the economy, the extent of adaptations that might take place, and the economic value to be attached to these impacts' (2005:43). This means that policy-makers cannot simply impose direct political solutions but must work with business interests in shaping abatement policies that maintain or enhance economic competitiveness. This has not always proved to be an easy process, particular concerning issues such as agreement over an effective 'price' for carbon. As illustrated in the *Stern Review*, constructing economic models has been seen as the most effective way to deal with the long-term risks associated with climate change. 'Internalizing' market failure such as CO_2 emissions has proved to be highly contentious however and governments have been so far unwilling to set a price on carbon that can be agreed upon. In relation to this, there is also the issue of 'short-termism' associated with the UK electoral process. Consistency in political intervention cannot be guaranteed unless there is consensus between political parties over the kinds and types of intervention that are to be implemented. This can mean that, while governments and many experts argue that faith in the market will yield technological breakthroughs in the battle against climate change, there is often a reluctance to invest in particular sectors or technologies because of the risk of changes in regulation.

9.1 The Rio Declaration: internationalizing the environmental policy framework

The first World Climate Conference was held in 1979 in the wake of increasing scientific evidence suggesting that there could be a potential link between fossil-fuel consumption and changes in the earth's climate. As the gathering concluded: 'the conference finds that it is now urgently necessary for the nations of the world to foresee and to prevent potential man-made changes in climate that might be adverse to the well-being of humanity' (World Climate Conference Cited in Gupta, 2001:12).

Ten years later a specific agency, the *Intergovernmental Panel on Climate Change* (IPCC), was established bringing together an international coalition of experts and scientists with the remit of analyzing peer-reviewed and published scientific research from around the globe. Data produced by the IPCC would be used to provide the overarching framework for a new global environmental agenda. It was also significant in that it brought together a wide range of different organizations and specialist agencies in order to be able to inform effectively on the complexities of the debate.

The *United Nations Conference on Environment and Development* in 1992 was one of the most significant international events to take place around the growing problem of addressing climate change. Key outputs included the *Rio Declaration on Environment and Development* and *Agenda 21*, as Irwin (2001:42) points out:

> The Rio Declaration approved 27 principles on the goal of establishing a new and equitable global partnership. Agenda 21 offered a 40-chapter sustainable action plan for the 21st century, covering a whole host of actors (including women, indigenous people, farmers and business people) and issues (for example, poverty, seas, forests, waste management, human health). Agenda 21 represents a framework within which governments must operate in order to achieve an environmentally and socially sustainable environment. Social equity and wide public participation are central to this framework. Rio also produced a Climate Change Convention and a Biodiversity Convention along with agreements on a range of other issues and a commitment to reduce global poverty (Irwin, 2001:42).

Perhaps the major significance of the Rio Declaration was that it was instrumental in beginning to bridge the developing scope of global environmental awareness and the transnational consequences of energy use and consumption patterns, into the beginnings of a policy framework which would begin to develop into an *international* policy response to climate change. In particular, the Rio Declaration furthered the progress on developing an international policy response to the issue of climate change where it became manifest in the United Nations Framework Convention on Climate Change (UNFCCC). The Treaty is aimed at exploring ways in which to reduce global greenhouse gas emissions. While legally non-binding, the UNFCCC sets out a policy framework for updates on progress known as 'protocols' which set mandatory emission caps.

9.2 The Kyoto mechanisms

The principal recommendations to come out of the UNFCCC provisional updates have been the 1997 Kyoto Protocol mechanisms: the major policy agreements to come out of the discussions that had been set in motion by the Rio Earth Summit. Agreed between eighty-four national signatories in 1997 – the Kyoto Protocol informs and underpins the predominant agenda at both global and national levels on policies regarding climate change4. Grubb *et al* (1999) argue that the Kyoto Protocol is

[4] The three Kyoto mechanisms to which the UK is signed up are constituted by the following:

unprecedented in that 'it represents a pinnacle of trends towards globalization in economic and environmental terms'. They suggest that while criticisms of the Kyoto Protocol have concerned its failure to incorporate the US and China – the two largest industrial polluters - it has been significant in that it has added 'teeth' to the longer term aims of the UNFCCC.

As Albrecht (2002:1) reasons, when the Convention was opened for signature in Rio, 'only a legally non-binding voluntary pledge to reduce greenhouse gas emissions to their 1990 level by the year 2000 was formulated'. It had been recognized that these targets would not be reached in this way by most of the nations who had signed up. Furthermore, the voluntary nature of the agreements that had been drawn up made it very difficult to keep participating nations to their agreed targets.

Therefore the Kyoto Protocol was significant in that it replaced the voluntary initiatives agreed five years earlier in the Rio Declaration with a set of legal arrangements binding the forty nations of the Annex II group to 'limit their greenhouse gas emissions by at least 5 per cent below 1990 levels' (Albrecht, 2002:1).

European Union Emissions Trading Scheme (EU ETS): The principal aim of the EU ETS is to apply the procedures laid out in the Protocol in targeting what are considered to be the most energy intensive sectors in industry and commerce in order to reach both the EU's Kyoto commitment of an EU average 8% reduction in CO_2 emissions by 2012. In the case of the UK, the EU ETS is also another instrument designed to address its own targets of a 20% by 2010 and a 60% cut by 2050 respectively.

The EU member states submit a National Allocation Plan (NAP) specifying caps that have been marked out on greenhouse gas levels emitted by power plants and other sectors of trade and industry. Each targeted source is then allocated a maximum amount of emission allowances within the agreements set by the NAP for a particular stage of the three-phase period. To comply, sectors must either reduce their emissions or purchase allowances from those who hold an excess of allowances. As Lockwood (2007:49) points out, 'the actual carbon emissions are measured by how much oil, gas, or coal is used in each location'. By enabling participants in the EU ETS the flexibility to trade allowances the caps placed on the overall emissions are theoretically achieved in the most cost-effective way possible.

The clean development mechanism (CDM): The CDM is not intended to replace emissions trading as a way in which to reach agreed pollution quotas but is seen as a way in which a compromise and a degree of flexibility can be found in reducing global 'net emissions'. A country attempting to gain credits in return for a CDM project must first gain the consent of the developing country in which the project is taking place. The proposal must also show that the proposed contribution will provide 'additionality' to the host country by way of contributing to the United Nations Framework Convention on Climate Change (UNFCCC) goal of promoting sustainable development in Annex II nations. However, Annex I nations are limited in how many credits they are able to use in CDM projects and subsequently in how much these credits can contribute to their own pollution targets. As Vernon (2006:102) points out, the critical stipulation framing the policy aim of CDM projects is that 'they must result in a reduction to greenhouse gas emissions beyond what would have been the case without the project'.

Joint implementation (JI): The JI was introduced as one of the two 'flexible mechanisms', alongside the CDM, agreed at the Kyoto negotiations (DTI, 2007). As with the CDM, JI is designed to promote a degree of manoeuvrability within the overall Kyoto policy aims. Under the terms of the JI, participating countries are able to obtain credits for subsidizing an emission reduction project that is taking place in another country that also has Kyoto commitments in place – the so-called Annex I countries.

Miliband (2007) makes the case that the global implications of climate change mean that the UK can only construct effective polices through a closer relationship with the EU. He also reasons that the fact that energy markets are now much more international in scope means that issues such as supply security are more effectively dealt with at a European level of negotiation. He has argued therefore that the most significant action during the first term of the New Labour Government in regard to confirming their environmental goals was to sign up to the Kyoto Protocol in 1997. While the previous Conservative administration had endured a somewhat uneven relationship with the institutions of Europe – characterized for instance by disagreements over the contents of the social chapter at Maastricht, the economic problems concerning the Exchange Rate Mechanism in 1992, and the BSE crisis – the New Labour Government argued that a strengthened EU, with the UK at the centre – was the only way forward in tackling the new environmental challenges.

10. Challenges facing contemporary UK policy on energy 1998 – present

Energy policy was not a priority issue for the New Labour government when it came to office in 1997. The political squeeze that had been put on the coal sector and the associated 'dash for gas' in electricity generation had meant that the UK's CO_2 levels had dropped over the previous decade and fossil-fuel prices remained low and stable in conditions of excess supply. Therefore the political stance on energy at this time was very much based upon and continued within both the political and economic legacy bequeathed by Lawson's *Market for Energy* strategy regarding the three pillars of liberalization, deregulation and privatization. The issue of sustainable development had by now however come much more to the fore in debates on policy and implementation in regard to both the problems of environmental degradation and resource use. By early 1998 these issues came into sharper focus where the conditions upon which it was possible for the market to retain pre-eminence in decisions regarding the constitution of energy policy slowly began to change. The major infrastructural investment decisions having already been made during nationalized energy regulation meant that the economic effectiveness of this system resulted primarily from forging a relationship between 'sweating the assets' and cost efficiency, together with conditions of abundant supplies and low prices in the oil and gas markets. These provided the optimum conditions within which the policy aims of liberalization, privatization and deregulation were most effective. Helm argues these conditions have changed and it is no longer necessarily the case that simply promoting more liberalization, more privatization, and more deregulation can solve circumstance that have begun to shape what he sees as a new era for the regulation of energy policy. In this way, he describes the issues that are beginning to force energy policy back onto the political agenda:

- *A greater politicization of environmental concerns:* environmental issues such as climate change are now mediated through a wider network of actors, agencies and coalitions. National governments now need to be seen to be taking action by the public, non-governmental organizations (NGOs), the political opposition, and the media;
- *International Treaties:* global agreements, EU membership, and subsequent international environmental standards have begun 'ratchet up' national law

procedures; a principal illustration being the Kyoto commitments. There is also a greater awareness that issues such as security of supply are becoming foreign policy issues that have to be agreed more at interstate level;

- *Markets or governance?* Helm points out that there is also a growing awareness that the competitive market-based structure through which energy policy has been implemented in more recent times has often meant that governments have had less control over regulation in areas such as ensuring the public good and, more recently, climate change. This has meant that there is now a 're-politicization' of energy policy taking place in the search for effective policy measures;
- *Security of supply:* awareness of the limitations of market-based solutions also applies to the problem of security of supply where it is acknowledged that the UK economy, as with the rest of Europe, is fast moving towards a situation where 70% of energy sources are being sourced from imports. There is growing consensus that security of supply – as with climate change - is an 'externality' that can not be addressed according to the 'laws' of supply and demand;
- *The need for investment:* the legacy of energy infrastructural assets which are being utilized or 'sweated', but whose 'longevity' is shaped by the earlier command and control era that put a high priority on maintenance and investment. A series of network failures in the early 2000s illustrated a current priority to invest in aging assets in order to avoid network failures. The market era had largely benefited from a system that was already operational but was now in need of investment;
- *Terrorism:* in a post-9/11 world and continuing problems in the Middle-East, the threat of terrorist attack on energy pipelines and networks has never been greater.

10.1 Energy Sources: New Labour's energy strategy

The appearance of *Energy Sources* in 1998 was significant in that it was the first government White Paper to address the link between energy policy and climate change – if only to reiterate political claims that there was continuing progress in reaching early targets that had been set. As argued earlier, while the New Labour government's 1997 manifesto had committed it to a 20% reduction in CO_2 emissions from 1990 levels by 2010, this pledge had been made easier by the contraction of the coal industry and the greater role of gas in electricity generation. As Bradbeer (2001:97) points out: 'less carbon dioxide is emitted per kilowatt of electricity generated by gas as opposed to coal fired power stations'. The main purpose of the document was to promote greater clarity over the direction of UK policy on energy, particularly in regard to criticisms that had emerged over apparently conflicting political objectives over the role of state support. Part of energy secretary Peter Mandelson's remit for the White Paper was to deflect allegations in regard to 'agreements' that had been allegedly been made between the electricity and coal sectors where there were accusations of 'political management' by the new government. It had been pointed out by critics that electricity generators had been 'persuaded' to sign new coal contracts in the wake of the continuing drop in fossil fuel prices and the economic preference for gas in the new market arrangements in the liberalized gas and electricity sectors. Therefore a further aim of the White Paper

was to demonstrate that objectives such as competition and sustainable development would remain compatible goals within a market-led framework despite growing concerns over ensuring security of supply in both the oil and gas markets. Therefore, *Energy Sources* argued that any government intervention into the area would be limited to 'fine tuning' the existing market for energy approach. Despite growing evidence that the UK's greenhouse gas levels were beginning to rise during this period, the contraction of the coal industry and the associated 'dash for gas' was held up as evidence that the UK was well on course to deliver on both its own environmental objectives and also the targets that had been agreed during the Kyoto negotiations of the previous year.

The 1998 White Paper therefore confirmed the view that further liberalization throughout the EU was necessary if energy markets were to work more efficiently in the way that they had in the UK. Reiterating the aims outlined in the 1996 European Commission White Paper: *An Energy Policy for the European Union, Energy Sources* argued that 'security of supply, energy diversity, social and environmental factors, the role of nuclear, sustainable development, and an increase in renewables, could only be achieved within an integrated, European market (European Commission, 1996).

10.2 The EU and UK energy markets

As argued earlier, international developments have been instrumental in shaping UK policy on environmental issues in recent years and have also been influential in linking the debate much more explicitly to energy policy. The debate on climate change has also seen the UK itself in the role of policy instigator – illustrated particularly in the advent of the UK Emissions Trading Scheme (UK ETS) which preceded the start date of the EU ETS by three years and was the first carbon trading programme of its kind to appear. However there is no doubt that climate change, security of supply, and the emphasis on competitive energy markets, now form part of a much broader trans-national political approach to current policy on energy. As the European Commission points out:

> A European Energy Policy will firmly commit the European Union (EU) to a low consumption economy based on more secure, more competitive and more sustainable energy. Priority energy objectives involve ensuring the smooth functioning of the internal market in energy, security of strategic supply, concrete reductions in greenhouse gas emissions caused by the production or consumption of energy and the EU's ability to speak with a single voice on the international stage (European Commission, 2007:1).

The UK has traditionally been regarded as the 'awkward partner' of the EU. Joining the then European Community in 1973 alongside Ireland and Denmark, there had been a history of antagonism that had marked relations – particularly with France – and had been instrumental in preventing earlier accession during the 1960s. As Urwin (1998) notes, it was principally an economic decision on the part of the UK to join the Common Market. As outlined in the first section of the review, the breakdown of the Bretton Woods agreement, the oil crisis of the early 70s, and the

growth of global economic competition during the same period, had all been implicit in precipitating the need to find a solution to the problem of 'stagflation'. The extension of the single market through a primarily neo-liberal agenda was the principal solution developed in order to solve this situation during the mid-1980s.

This has been an argument developed by Van Apeldoorn (2002) who suggests that the extension of European integration at the time of the Single European Act (SEA) was part of an elite, decision-making response to the 'organic crisis' that began to grip national economies during this period and began to challenge the idea of embedded liberalism as an organizing force for western capitalism. As Milward (1994) concurs, the project of European integration was always primarily designed to bolster the nation-state as a political and economic entity rather than the process of federation that many political leaders have railed against. The framework of the European Community (as it was then) provided an ideal framework through which to begin to construct the economies of scale needed to solve the crisis in accumulation that was occurring within the majority of European economies. Furthermore Van Apeldoorn suggests that Treaty revisions that have taken place since the mid 1980s have been driven primarily by this vision of a deregulated, liberalized European economy where business interests and transnational capital have now been able to coalesce more explicitly around the common goal of market integration.

Helm asserts that 'for most of the period since 1979, Europe has impinged on British energy policy only in the most marginal way' (2004:372). Despite increasing integration in other areas of the economy he points out that energy markets remained primarily national. This began to change within the domestic liberalization of the UK energy market during the 1980s and 1990s. The UK model of privatization has been the one driving changes in Europe and has been the model adopted by the Commission as they have worked to open up the EU energy market. The gradual convergence between UK and European energy markets has been driven by a combination of physical, political and economic changes:

- Structurally the European interconnector has joined up the European and UK gas markets since 1998;
- There has been a consolidation of the European energy market among a few giant corporations;
- The Kyoto Protocol has illustrated a gradual harmonization of European environmental regimes.
- There has been a growing recognition of the EU's gradual reliance on imported energy;

This last area has been particularly significant in regard to EU policy where Nugent (2003:315) argues 'the idea of a common energy policy has been stimulated in no small part by the realization that energy cannot be isolated from the increasingly integrated Single European Market (SEM), and also by increased appreciation of the over-reliance of the EU on external suppliers'. Nugent points out that currently the EU now relies on almost half its energy requirements from outside the SEM where, in the case of oil, this figure is now approximately 70%.

However, while there can be no real argument against the fact that it is in the economic sphere where integration is deepest, there remains a conflict of interests between the major players over what *kind* of capitalism should exist at European level and how it should be regulated. In these regards the development of a common market in energy has been a slow process where there has often been reluctance on the part of some member states – France for instance – to liberalize their domestic energy markets in the way that the UK has done. One of the central challenges for the EU therefore has been its role in facilitating the development of a fully integrated and interconnected European market. Cross-border energy trading has been encouraged by harmonizing disparities between 'national technical standards and differences in network capacities' (European Commission, 2007:2) but problems of 'unbundling' continue to problematize separation issues between networks, production and sales in the gas and electricity markets. The Commission argues that vertical integration remains a problem in the single market in discouraging new entry, new investment and consequently greater competitiveness. Merger activity in gas and electricity markets over the last ten years has often served to mitigate against the best intentions of EU competition rules, particularly in enforcing the aims of the *1996 Electricity Directive* and the *1998 Gas Directive* to counteract the consolidation of this kind of market power. Multinationals such as E.ON, Gazprom, ENEL, RWE, Ruhrgas and the Dutch company Vattenfall, have often been able to dominate and to consolidate market positions between themselves.

The importance of a more unified EU response in addressing the new circumstances that face member states on energy issues was illustrated in 2000's Green Paper *Towards a European Strategy for the Security of Energy Supply.* The Green Paper spelled out some of the problems facing the increasingly integrated European energy market as well as some of the opportunities that now presented themselves in the market conditions of the more globalized economy. It set out three basic objectives:

- *Developing an internal market in energy.* Progress has been made in a number of areas, including opening up public procurement in the energy equipment sector, standardization of energy equipment and energy products, and some liberalization of the electricity and gas markets. From 2004 business consumers – who account for about 70% of the market – have had access to other member states' electricity and gas supplies;
- *Developing external energy relations and ensuring security of supply.* Initiatives in this area have largely focused on establishing binding rules at the international level for the sale and transportation of energy. A major breakthrough was achieved in 1991 when 47 countries signed the Commission-promoted European Energy Charter. The principles and objectives set out in the charter were then used as a base for the negotiation of the Energy Charter Treaty and Energy Charter Protocol on energy efficiency and related environmental aspects which were agreed by 50 countries in 1994. Central to the treaty are requirements that energy trade should be conducted on the basis of WTO rules, and associated energy policies – on exploration, and transportation – should be non-discriminatory;

- *Minimizing the environmental impact on the environment of energy use and production.* Measures here include a variety of programmes with such purposes as developing alternative sources of non-polluting energy and reinforcing domestic and industrial efficiency. However, several proposals to give the environmental dimension of energy policy real teeth by establishing fiscal incentives (for energy saving and the environmental effects of pollution) and disincentives (for polluting) have met with resistance in the Council of Ministers (Nugent, 2003:316).

As Helm reasons, the significance of the Green Paper on Energy is that it served to remind of the global dimensions of both the environmental and the economic implications on contemporary policy considerations where 'there is now an increased recognition of the need for common positions on imports and energy security' (2004:373). No longer is it realistic, he reasons, for member states to adopt isolationist policies in relations to energy matters and their relationship, for instance, to environmental concerns. The status of security of supply is becoming the norm rather than the exception in all the member states. The increasingly integrated design of energy infrastructures in the EU also makes it difficult to adopt isolationist strategies. For instance, while gas and electricity networks have been organized *nationally* – and many are still predominantly organized according to national political boundaries – as Helm points out:

> European countries can now be linked up so that a wide diversity of fuel sources is available to be dispatched, and the security of each is mutually supported by its interconnected European neighbours. For example, all France's neighbours could, in principle, tap into its nuclear stations, whilst small markets such as Ireland can benefit from Northern Irish and British supplies. And long gas pipelines can bring natural gas through many countries to final customers. There now is the possibility of a European grid and a European pipeline system, and hence the physical internal energy market is a practical option, with potentially enormous benefits to the European Union as a whole (Helm, 2007:2).

However the observations by Helm are yet to match reality and the fact that virtually all western economies are moving towards becoming net importers of energy and global energy (DTI, 2007), has meant that the political nature of global energy consumption itself has begun to bring into tangency the idea of energy as a private concern and its increasing status as a collective good. While some nations have responded better than others in beginning to develop alternative energy sources and changing aspects of demand behaviour away from conventional energy use, Dorian *et al* (2005) argue that it is still the case that by 2030, global energy demand will increase by two-thirds in relation to present levels of consumption. Of this demand, they point out that 'developing countries will replace the industrialized world as the largest group of energy consumers' (Dorian *et al*, 2005:1). Thus the UK now finds it is in a position where it is increasingly reliant on imported energy where it is hoped that this will be solved by further liberalization. Russia for instance has been unwilling to liberalize its gas markets for instance where it would prefer to use its

supplies as a political bargaining tool through which to exert sovereign influence on the international stage.

Environmental issues have also illustrated the same kinds of problems for policy-makers with nations often unwilling to take responsibility for levels of pollution. As well as enabling member states to collaborate more effectively in finding solutions to the problem of security of supply, integration has been particularly pertinent in regard to a more unified response to contemporary environmental concerns. The European Union's development as an active player and instigator in the dynamics of environmental standard setting at an international level has enabled it to make a more effective contribution to the environmental debate at a global level where as Grubb *et al* (1999) point out, 'the EU has been at the forefront of pressure for stronger action on climate change'. Here the implementation of the Kyoto Protocol regarding the EU coordinated Emissions Trading Scheme (EES), the Clean Development Mechanism (CDM), and the Joint Implementation (JI) into member state policy domains, is perhaps the most significant development of a European coordinated response to the issue of climate change. Whilst shaped by the differential politics of the international context through which the Kyoto negotiations took place – particularly regarding the status of quantifiable caps and agreements over the particular mechanisms through which Annex I countries would meet their targets – the influence of a coordinated EU in the negotiations was instrumental in shaping a particular strategy whereby addressing the problem of greenhouse gas emissions in policy would remain embedded in the economic structure of the Single European Market (Lightfoot and Burchell, 2005).

11. Our Energy Future: Creating a Low Carbon Economy

It was the growing salience of all these issues to what Helm (2005) describes as 'the new energy paradigm' that provided the context for another Energy White Paper in 2003. As Helm (2006:8) has argued, in regard to the principal objectives that had been recommended in *Energy Sources,* UK performance was clearly moving in the wrong direction as demonstrated by:

- The fact that carbon dioxide emissions were not falling but were continuing to rise;
- The 'benign' economics upon which energy policy was predicated was thrown off balance as gas and oil prices began a steady rise;
- Assets that needed investment;
- Competitiveness – once the much trumpeted achievement of the excess supply years of the 1990s – was beginning to decline;
- Fuel poverty had not disappeared and was also beginning to rise again;
- Energy demand was increasing both domestically and globally.

Critics argued that there was a need for further clarification regarding what they saw as the economic, social, and political trade-offs that had characterized much of the content of *Energy Sources.* This was considered by some to be indicative of the lack of a coherent policy direction in regard to what was clearly turning into a set of changing circumstances. According to Helm, current rhetoric did was not actually

meeting the reality. The appearance of *Our Energy Future: Creating a Low Carbon Economy* was therefore an attempt to address and answer some of these trade-offs within a set of more identifiable UK policy objectives. The White Paper also set out to locate the role of government in energy policy and the extent to which political intervention could still be reconciled with a primarily market-led framework. While *Energy Sources* had pointed out that the principal concern of the future direction of the UK government's energy policy should be: 'to ensure secure, diverse, and sustainable energy at competitive prices' (DTI, 1997), this objective had been sorely tested by a number of subsequent developments for which a recourse to the White Paper's continued commitment to market-led solutions did not necessarily provide easy answers. In particular, the low prices that had underpinned the market-led era of UK energy policy in meeting its stated objectives of cost efficiency and low customer prices began to come under pressure during the late 1990s. The unanticipated tripling of oil prices in particular, threatened the conditions of excess supply that had characterized the asset maximization agenda central to the privatization of gas and electricity in the UK. This situation had been unanticipated in *Energy Sources* where Energy Minister Peter Mandelson had simply gone along with the dominant economic consensus of the time that low fossil-fuel prices would continue as they were at the time.

The steady rise in oil prices at the end of the 1990s also began to undermine some of the other policy aims that had been claimed as feasible by New Labour. The problem of fuel poverty – an explicit aim of the new administration when they came to power in 1997 – was largely dependent upon the availability of low gas and electricity prices for vulnerable groups and households. As already argued, the 'pooling system' had seen prices fluctuating due to continued vertical integration and market dominance by National Power and PowerGen. There was no sign that attempts to remedy this through the introduction of NETA in 2001 were necessarily going to be any more effective, where reliance on spot-markets and the emphasis on short-term trading has often meant price fluctuations: a situation exacerbated by rising oil and gas prices. At the beginning of the Millennium there was now a situation where the energy supply-demand balance was becoming much tighter. These conditions were instrumental in beginning to lessen the effectiveness of market signals as a guiding strategy through which to facilitate the social and political aims of the market-led approach to UK energy policy.

Security of supply issues had also been demonstrated through infrastructural problems through network failures and a number of power cuts which took place in the UK, the US, and Scandinavia during the period subsequent to the release of *Energy Sources.* The power cut in California in 2001 was a particularly worrying development for the UK Government as it was widely accepted that the Californian structure of privatization had been based principally on the UK model. Structural problems could also be detected in oil refineries – in the North Sea and elsewhere – where aging assets began to show strain under the increasing energy demand that characterized the late 80s and 1990s. As outlined earlier, the main premise of the market for energy strategy introduced by the Conservatives was that the assets that had already been constructed during the nationalized era of energy production

should now be 'sweated' by circumnavigating investment where possible for fear of pushing up marginal costs. However, the combination of all of the above developments were instrumental factors in serving to illustrate that the market for energy as an end in itself would find difficulties in internalizing issues such as climate change and the political issues associated with supply security.

11.1 The 2000 Royal Commission Report

Ten years on from *This Common Inheritance,* the appearance of the 2000 *Royal Commission Report on Environmental Pollution* was a landmark publication in its observation that there had been little progress over the previous decade in reducing the UK's pollution. In fact, this document was instrumental in challenging what it saw as the New Labour Government's optimism in setting some clearly ambitious early targets on CO_2 emissions reductions. Countering the Government's claims that the UK's levels of pollution had declined during the previous decade, the Royal Commission Report pointed out that one of the main reasons for any *relative* decline during the 1990s had been primarily the 'benign effect' of the switch from coal to gas in electricity generation as opposed to particular policy actions which may have been taken during the previous ten years. Furthermore, the report argued that these levels were now increasing anyway due to an overall increase in energy demand and higher levels of road and air travel (Goodall, 2007). The Commission Report argued that there had been little diversification away from fossil fuels over the previous decade and there seemed to be little evidence that the present policy structure would facilitate the emergence of a low-carbon economy. As it pointed out:

> Curbing the UK's dependence on fossil fuels is technically feasible, but far from easy. Reductions in energy use, large-scale development of non-carbon energy sources and fundamental changes in electricity networks will all be necessary. If the demand for energy can be reduced, that makes it easier to avoid large programmes of new nuclear power stations or other technologies that might prove controversial (Royal Commission, 2000:180).

While the Royal Commission pointed to the limitations of present policy initiatives in reaching 2010 targets, it argued that more stringent, long-term targets needed to be put in place in order to address the urgency of the climate change debate. It therefore recommended that the UK Government revise existing policy in order to plan for a 60% reduction in greenhouse gas emission by 2050 – due to become a legal entity in the forthcoming Climate Change Bill.

As the Royal Commission pointed out, while New Labour had been confident enough in placing continuing faith in the *Market for Energy* strategy as the framework to reach its own targets of a 20% reduction of CO_2 emissions in UK by 2010, this had taken place within a background where reductions were caused in large by the marginalization of the coal industry and the 'dash for gas': environmental concerns *had not* been the primary intention of these political restructurings. In any case, emission levels were beginning to rise again due to increased demand for carbon intensive energy. Bradbeer (2001) has argued that this period saw the transport sector now becoming responsible for a quarter of the UK's greenhouse gas emissions.

These problems also began to demonstrate the problems in regulating *demand* and the way in which consumer driven behaviour was becoming an important issue that would have to be addressed at some stage. This was another corollary of the Conservative emphasis on the primacy of consumerism. As the Royal Commission observed, consumer demand for energy now had to be reconciled with securing a growing demand for energy alongside the urgency of climate change.

Problems in these areas had already being flagged up in the transport sector where the previous government had attempted to impose green taxes on road fuel; most notably in the *Fuel Price Escalator* (FPE). The FPE had been seen by the Conservatives as a way in which to begin to discourage unnecessary road use and also to make a political commitment to cut the need for future road building projects. Country-wide fuel demonstrations in 2000 however, where taxation levels paralleled the oil price rises at the turn of the century, served to illustrate some of the limitations that governments would now face in reconciling these kinds of taxation measures with popular electoral support (Guardian Unlimited, 2000).

Environmental groups and organizations were particularly unhappy about the scrapping of the FPE due to these 'direct action' pressures from consumers. The argument proposed by Friends of the Earth (FoE) for example was that higher taxes are essential policy mechanisms in addressing climate change. FoE reasoned that these kinds of economic penalties were particularly important in beginning to change the behavioural norms that characterize unnecessary vehicle use. Green taxation measures, they argued, needed to be given time to mature as long-term strategies in *directing* people to cut down on unnecessary journeys, to use smaller, more fuel efficient vehicles, to make greater use of public transport, or to inform longer-term political decision-making on transport infrastructure.

12. Explaining the four aims of the 2003 White Paper

These issues then provided the background to the four objectives that informed the content of 2003's White Paper. *Creating a Low-Carbon Economy* can be considered as the UK Government's response to the Royal Commission Report – a statement which it was required to respond to by law in any case. *Creating a Low-Carbon Economy* was the UK Government's attempt to flesh out a coherent strategy for the future direction of domestic energy policy and the principle aims through which it could now integrate growing environmental concerns. The 2003 Energy White Paper thus set out these four objectives:

- To put ourselves on a path to cut the UK's carbon dioxide emissions – the main contributor to global warming – by some 60% by about 2050, as recommended by the RCEP, with real progress by 2020;
- To maintain the reliability of energy supplies;
- To promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve our productivity and;
- To ensure that every home is adequately and affordably heated (DTI, 2003:11).

Responding to the main concerns of the *Royal Commission Report*, the main areas that were to be given greater political clarification were climate change and security of

supply. However, the White Paper also attempted to situate these, alongside more generic, social aims, of which the most important one was to tackle the problem of fuel poverty. These objectives were then set within an overall framework which decreed that competitive energy markets would continue to provide the best way in which to pursue an effective long-term UK energy policy strategy.

12.1 Climate Change

One of the first aims set out in *Creating a Low-Carbon Economy* was the acceptance 'of the Royal Commission on Environmental Pollution's (RCEP) recommendation that the UK should put itself on a path to a reduction in carbon dioxide emissions of some 60% from current levels by about 2050' (DTI, 2003:25). As argued earlier, this was perhaps the central thread of the 2003 EWP alongside the issue of security of supply, where it was acknowledged that there was an urgent demand to begin to construct an effective array of policies through which to address both the pollution targets that had been set by New Labour in 1997 and also the Kyoto target that had been agreed. So here, the 2003 EWP offered another target of a 60% emission reduction at 1990 levels by 2050 to the previous UK target of 20% by 2010 and the Kyoto goal of 12% by 2012. The 2003 EWP offered three principal strategies through which to address climate change: energy efficiency, renewables, and the UK ETS (to be integrated into the European Emissions Trading Scheme in 2005). The document argued that there was already evidence of the development of effective policies through which to reach these goals as evidenced in a raft of home energy efficiency measures, the *Climate Change Levy* (CCL), the *Renewables Obligation* (RO), and the above mentioned *UK Emissions Trading Scheme* (UK ETS). The EWP pointed out that the UK ETS had proven a success in its first year where all volunteers had been able to reach the domestic targets that had been put in place. The White Paper argued that the advent of the EU ETS in 2005 would add further weight to the progress that had been made by the UK model. It was hoped in particular that out of these initiatives would come a price for carbon that would drive an effective market in emissions and subsequently facilitate the adaptation and innovation necessary to drive further cuts. The EWP argued that the future EU ETS would also begin to incorporate more sectors of industry and commerce as it progressed through the different phases that were set where progressively 'capped targets' would add greater legislative teeth to the policy. The document argued that the UK ETS – the first carbon trading scheme of its type in the world – in accord with policies that were designed to address a wide range of issues including lifestyle behaviour and consumer demand, demonstrated that the UK would begin to lead the way in providing an example to others of innovation in regulation, strategies and targets to existing Kyoto agreements. The 2003 EWP also signposted the beginnings of addressing the demand end of energy policy where household energy use was now targeted by a range of policy initiatives such as the *Energy Efficiency Commitment, Warm Fronts, The Home Energy Conservation Act* and a number of new building regulations.

12.2 Security of supply

The second major issue addressed in the 2003 EWP was the question of security of supply. As the earlier section of the review pointed out, security of supply was often a benign concern in pre-1998 government policy on energy where geography and

economics more often than not came into tangency with UK institutional arrangements and demand requirements. While the 1998 EWP pointed out that the UK, as with the US and most of Europe, was now moving towards a being a net energy importer as opposed to being a net energy exporter: a situation that had already been acknowledged in both the EU's *Green Paper on Security of Supply* response in 2000 and also in 2001's *US Energy Plan,* as already argued, *Energy Sources* was characterized by the lack of a firm strategy through which to address this situation. *Creating a Low Carbon Economy* recognized that the need to address this in policy had become more of an urgent concern, where 'increasingly price fluctuations and interruptions to supply caused by regulatory failures, political instability or conflict in other parts of the world' (DTI, 2003:9) were a threat to all four aims of the current policy agenda.

The 2003 EWP also recognized the fact that 'energy vulnerability' in all its different guises was also accompanying a marked rise in global energy consumption. While the energy demands of the UK have been predicted to grow at an annual rate of 2 – 3 per cent, the document echoed the concerns of the International Energy Agency (IEA) and its forecast that the global demand for energy – principally fossil fuel consumption – would rise by 60% by 2030 with China and India the nations most likely to overtake the United States as the world's largest energy consumers (IEA, 2004). In these regards, the EWP pointed out that the gradual diminishing of North Sea oil and gas reserves – along with the marginalization of indigenous coal – meant that the UK increasingly had to compete with other nations in the global energy market.

As with climate change policy, the EWP suggested that one of the most effective ways forward in these respects would be in using less energy: a strategy that needed to be wide ranging enough to bridge the spectrum from producers to consumers. It was felt that policies on new home build such as the *EU Directive on the Energy Performance of Buildings* and the range of home energy efficiency policies would prove to be effective in contributing towards these aims.

The *Renewables Obligation* (RO) was another policy held up as a policy initiative that was designed to challenge the orthodoxy of 'once through' energy systems (Pearce, 2005), within its obligation to licensed electricity suppliers in the UK to source an increasing, annual proportion of power from renewable resources such as wind power. The EWP also considered a future role for nuclear energy, while making no firm statement as to the extent of this role in any future UK energy mix: 'Although nuclear power produces no carbon dioxide, its current economics make new nuclear build an unattractive option and there are important issues of nuclear waste to be resolved'. The EWP continued: 'Against this background, we conclude it is right to concentrate our efforts on energy efficiency and renewables. We do not, therefore, propose to support new nuclear build now. But we will keep the option open' (DTI, 2003:44).

12.3 Promoting competitive energy markets and sustainable economic growth

Underpinning the two primary aims of the 2003 EWP was the continued promotion of competitive markets to the UK's longer-term energy strategy and a reiteration of faith in the economy as the guiding principal through which policies should be constructed. Here the document argued that a commitment to 'reliable and affordable energy makes a significant contribution to the economy, and represents a key input into all other sectors' (DTI, 2003:15). More efficiency and greater innovation were framed as being fundamental in these respects where it was felt that the market problems identified as important enough to encourage a further White Paper response could realistically be turned into catalysts for continued economic growth and productivity, as well as meeting social and environmental goals. The document stressed that it was now the job of government to facilitate market-led solutions but to intervene only where appropriate. While is was acknowledged that there were problems in integrating prices into both climate change and climate security, it was felt that the job of the government was to enable the market to drive the necessary changes needed to 'correct' these market failures.

The EWP argued that a greater commitment to market innovation and enterprise would be fundamental in these respects, where a more diverse energy supply; a promotion of cleaner technologies; carbon trading and tax incentives; alongside behavioural and lifestyle change at the demand end of the energy spectrum, would all inform a flexible, robust, long-term policy response to an increasingly complex set of questions. Thus it explained: 'to achieve our objectives we need to exploit existing technologies and also develop new technologies. Industry will need to innovate to maximize the opportunities offered by a low carbon economy and by global markets in environmental goods and services' (DTI, 2003:102).

12.4 Energy and the 'fuel poor'

The fourth aim set out by the 2003 EWP was to address the ongoing problem of poverty and energy consumption where it pointed out that 'for some people, basic energy needs continue to account for a disproportionate amount – as much as 10% of their income' (DTI, 2003:107). Stressing the need for a future energy policy to be effective in integrating 'social impacts' into the more orthodox policy goals, the EWP pointed out that current research showed that many households were spending as much as 10% of overall income on heating their households. It was argued that fuel poverty was often the result of a combination of factors, notably existing household energy inefficiency, and the cost of fuel related to particular low income brackets. *Creating a Low Carbon Economy* reiterated the Government's commitment to 2001's *UK Fuel Poverty Strategy* and the policies that had been put in place at this time to address fuel poverty in vulnerable households in the UK. As the 2003 EWP recalled, the *UK Fuel Poverty Strategy* consisted of a combination of ways through which to address the energy efficiency of vulnerable households, particularly in ensuring competitive energy prices and aiding increased incomes where appropriate. The introduction of the *Warm Fronts Grant* in 2000 was one of the policies that put in place to address the times in which the market was unable to deliver low energy prices to those in lower income groups in the UK. The *Warm Fronts Grant* was targeted at vulnerable groups such as those on disability or benefit allowances, who are able to claim grants for improving energy efficiency measures in their living

accommodation such as cavity wall and loft insulation, energy efficiency light bulbs, boilers and appliances, (DEFRA, 2007:1). In these regards, the stated goal in the 2003 EWP was that by 2016-18, within what it called 'reasonable terms', no household in Britain should be living in a position of fuel poverty.

The 2003 EWP stressed that the link between energy and the vulnerable was also an important policy issue within the wider *international* picture. Here *Creating a Low-Carbon Economy* pointed out that foreign policy and the global reach of UK government needed to be geared towards 'promoting economic growth, especially pro-poor growth, stability and good governance in energy producing countries as part of UK international efforts' (DTI, 2003:109). Again the report stressed that the success of these endeavors was more likely to be achieved through a sustained, collaborative international effort.

13. Monitoring the progress of the 2003 Energy White Paper

One of the commitments made by the UK Government in the 2003 EWP was that there would be yearly reports published tracing the progress of the aims and objective that had been made regarding domestic energy policy strategy. Much of this had been to appease the environmental lobby who had pushed for the implementation of annual carbon targets in the UK. This has resulted in three follow up reports, which then led to a further EWP in 2007. The first report on the implementation of *Creating a Low Carbon Economy* appeared in 2004. In the forward, Secretary of State for Trade and Industry Patricia Hewitt and the Secretary of State for the Environment, Food and Rural Affairs Margaret Beckett, suggested that perhaps the most significant development in the year subsequent to the release of the 2003 EWP was that it had moved the environmental debate much more centrally into the energy policy process. Raising the collective consciousness and encouraging citizens to face up to the urgency of climate change, they argued, was perhaps the most important legacy of the interim year between the appearance of the 2003 EWP and its follow up implementation report. As the first monitoring report pointed out, the increasing complexities of the energy debate also demanded that a more open-ended and collaborative problem-solving approach should be utilized in policy. It was pointed out that energy policy was no longer a simple choice between political decision-making and economic choices. It must now be characterized by a 'joined up' approach where partnerships between regulators, business, citizens, communities, and the networks of governance all make a valid contribution to addressing the complexities of policy formulation. In these respects, subsequent reviews have stressed that it was important that the central issues in the energy debate such as climate change would begin to resonate with the public as they were now centrally involved in driving the policy process.

As signposted in the 2003 EWP, the following three yearly reports on the implementation of the EWP kept the issue of climate change at the heart of the monitoring process. This next section tracks the progress of the four central aims that were outlined in *Creating a Low Carbon Economy,* principally through the three subsequent monitoring reports and also in 2006's *Climate Change Programme Report*.

The annual monitoring framework was also intended to substantiate what the 2003 EWP intends to be a fifty year, ongoing strategy; particularly with the current target of a 60% reduction in greenhouse gas emissions to be legally implemented in the proposals that will inform the new Climate Change Bill.

13.1 A low carbon economy

As the *Third Annual Report on the Implementation of the White Paper* points out:

> Latest estimates show that total UK greenhouse gas emissions in 2005 had fallen 15% below 1990 levels. Current projections show that they should be about 24% below by 2010, around double our Kyoto target. However, meeting our goal of reducing carbon dioxide emissions by 20% on 1990 levels is proving challenging. Higher than anticipated levels of economic growth and the recent rise in global energy prices, which has altered the relative prices of coal and gas, have led to increases in our carbon dioxide emissions in recent years (DTI, 2006:8).

It was during the period leading up to the publication of the *Second Annual Report* in 2005 that the UK's domestic policies on climate change – specifically the UK ETS – began to be shaped by the UK's Kyoto Protocol commitments in the form of Phase 1 of the EU ETS. It is stressed in the document that one of the major strengths in the UK adoption of the EU ETS will be the localized delivery that is offered by the devolved administrations and the joint implementation of the UK Government, the Welsh Assembly Government, the Scottish Executive, and the Northern Ireland Assembly. As DEFRA's 2006 *Climate Change UK Programme Report* points out: 'action in the UK is already driving a significant reduction in emissions, with annual emissions falling by about 14.6 between 1990 and 2004' (DEFRA, 2006:24). The report points out that this fall has been driven principally 'by restructuring, especially in the energy supply industry; energy efficiency measures; pollution control measures in the industrial sector; and other policies that reduced emissions of non-CO_2 greenhouse gases' (DEFRA, 2006:25). The report reasons that the new measures introduced by the revised Climate Change Programme and the implementation of the EU ETS have been particularly effective in driving the changes that are necessary to reach the UK emissions targets.

In fact, the advent of the EU ETS in January 2005 has been held up by UK policy-makers as perhaps the most significant developments to have occurred during the three year period since the 2003 EWP. Supplementing and developing the earlier UK Emissions Trading Scheme – a project that in itself had been successful in aiding thirty-three voluntary organizations to reduce approximately 7 million tonnes of CO_2 from their projected 'business-as-usual' emissions (DEFRA, 2006) – the EU ETS has contributed to a rapidly developing carbon market facilitating approximately €7.2 billion worth of carbon trading to date. This was picked up in the *Third Annual Report* published in 2006, where it was pointed out that the volume of daily trade taking place during 2005 was estimated at around an average of a million tonnes of carbon. In addition, according to the same document: 'market liquidity is growing and volumes traded are now in excess of 2 million allowances per day' (2006:9). Based on results published by the European Commission, it pointed out that nearly

all participants had adhered to regulations and most were able to submit their particular emission reports on time.

The 2006 documentation by both DEFRA and the DTI reasoned that the signs so far were encouraging that the EU ETS would prove to be a particularly fruitful and stable policy mechanism through which to address and to actively engage with both the shorter term Kyoto Protocol commitments of 12.5 per reduction on carbon dioxide emissions below base-year levels for the 2008-2012 period, and also for the longer term aims of 60% reductions by 2050 as set out in the 2003 EWP. The *Climate Change Programme Report* was unequivocal in suggesting that the developing carbon trading market in the UK would be a vital component in contributing to the longer-term development of a carbon price signal through which to facilitate long-term decision-making on investment and innovation. While still in its infancy, it was felt that the development of a flourishing carbon market through the EU ETS would ultimately be one of the principal keys to an effective international carbon market.

13.2 Security of Supply

As argued in the 2003 EWP, increasing the use of renewables in electricity generation had been also been seen as one of the principal policy mechanisms through which to address both climate change and also security of supply. The document had proposed that greater use of renewables in energy supply through policies such as *The Renewables Obligation* was an important means through which to encourage less reliance on fossil fuels on the part of producers and to develop greater local sources of energy supply. All the monitoring reports subsequent to 2003 have argued that the *Renewables Obligation* had been successful in promoting a producer incentive whereby licensed electricity suppliers were now sourcing a specific and incrementally increasing percentage of the electricity they supplied from renewable sources. Introduced in April 2002, it was felt that the *Renewables Obligation* had been able to iron out some of the difficulties which had been encountered in earlier policy initiatives such as the Non Fossil Fuel Obligation in providing greater market incentive for all eligible forms of renewable energy as well as politically imposed targets. The *Third Annual Report* in particular reasoned that current targets set for 2010's would see 10% of the UK's electricity generation utilized in this way to be joined by a further target of 20% of electricity supply to come from renewables by 2020.

The *Energy Efficiency Commitment* (EEC) has been held up by the review process post-2003 as another policy which would become more integrated into the addressing both climate change and supply security. The introduction of the EEC in 2002 required that electricity and gas suppliers to the UK must reach specific targets in promoting of improvements in domestic energy efficiency. It had been estimated that in 2004 domestic energy use was responsible for 30% proportionate energy use overall and around 27% of the UK's CO_2 emission levels. Of this total it was estimated that 60% was used for heating; 20% for hot water; and the rest for lighting and appliances (DEFRA, 2006:75). Policy-makers have pointed out that tackling household energy use 'is an effective way, not only to reduce emissions, but also to support progress towards wider economic and social objectives' (DEFRA, 2006:74).

13.3 Regulating the fossil fuel economy

While the UK energy framework subsequent to 2003 has been characterized by a greater commitment to developing policies such as the above initiatives through which to address the transition to a more sustainable energy economy, it was stressed that this agenda would remain integrated within the regulation of the existing fossil fuel economy: the primary driver of energy use. *The Third Annual Report* in 2006 for instance, pointed out that the high price of gas had been an instrumental factor in periodic returns to coal-fired electricity generation – particularly in the winter of 2005 – in contributing 'to a period characterized by some 40% of total generation where it supplanted gas as the main generating fuel of choice' (2006:14). As the 2006 document points out however, while this kind of market activity patently does not contribute to solving carbon emission problems, the instigation of a Government sign-up to the *Large Combustion Plant Directive* and associated measures on emissions *were* activities that have been designed to counterbalance the market-led nature of energy prices.

Despite period price increases in the oil and gas markets, the 2006 *Third Annual Report* pointed out that the UK had generally held an excellent record for maintaining reliable energy supplies during the period since 2003. The document reasoned that this would be continued through commitment to the following policy strategies:

- Continued cooperation with Russia and also Norway on gas supplies and delivery where the document reiterated the argument that 'the key challenge for the security of the UK's energy supplies over the next five years will be to manage the transition to becoming a net importer of oil and gas' (*Third Annual Report*, 2006:13).
- Continuation of the jointly commissioned reports that were currently held between the Department of Trade and Industry and Ofgem which monitored future scenarios and future indicators relating to trends in energy security. It was argued that this was one example of the commitment to the 'governance approach' to energy policy where there was greater joined up thinking on potential risks such as terrorist attacks and threats to energy infrastructures such as power failures;
- The 2006 report also asserted the importance in continuing to source from remaining UK gas and oil reserves. Here the document pointed out that PILOT, the energy forum for Government and industry, had a role in ensuring an open market – for instance access to data and industry structures – for new entrants, in order to gain access to potential reserves. While it was acknowledged that North Sea reserves had 'peaked', the *Third Annual Report* argued that this might simply mean that more investment were needed to facilitate more advanced exploration and drilling techniques. It was figured that these could well be economic depending on the world oil price;
- The report stressed that future support for the secure market delivery of gas and electricity supplies would be achieved by 'ensuring that adequate market signals developed so as to trigger the market to construct new generation plant when it

was needed; ensuring that security of supply was fully taken into account by economic and environmental regulation; removing barriers to the commercial exploitation of alternative sources of gas supply and ensuring appropriate infrastructure' (DTI, 2006:14).

The monitoring process since 2003 has left the door open for the UK nuclear energy industry while not placing it at the centre of its long-term strategy. It was acknowledged however that the fact that nuclear power currently provided approximately 20% of current UK electricity generation, there would have to be some role for the industry. This was particularly important with many plants coming to the end of active service. The review process acknowledged that a potential shortfall needed to be addressed at some point as well as keeping open the possibility for a larger role for nuclear power in the future.

13.4 Competitive energy markets and sustainable economic growth

The 2006 *Third Annual Report* reaffirmed the aims of the 2003 EWP in stating that competitive markets were central to the success of the aims of UK energy policy where it argued:

> They are [competitive markets] the best means of delivering reliable supplies of affordable energy whilst encouraging energy efficiency and minimizing the impact on the environment. We monitor our competitiveness by looking at how our markets work, for example whether they are open to new entry. We also look at what impact our policies have on the cost of energy for UK consumers and how this compares with costs for foreign consumers and with historic costs and projections for the future (DTI, 2006:15).

It pointed out that industrial and consumer prices for both gas and electricity continued to fall during the period since 2003, affirming that the UK's energy markets remained the most competitive of all the EU and G7 countries. It argued that the push to liberalize European energy markets would be augmented through further EU legislation, particularly concerning ongoing harmonization agreements relating to cross-border trading, and 'unbundling' in both gas and electricity. The ongoing liberalization of energy markets, both within the EU and more internationally would continue to provide the seedbed for a market structure which would be more able to meet both environmental commitments *and* energy security. The report argued for instance that, while prices for consumers would possibly rise in the short-term due to issues such as continuing uncertainties regarding the price of carbon and security of supply, a more competitive market would even out these concerns in the longer term.

13.5 Tackling fuel poverty

All three of the annual monitoring reports produced since 2003 pointed to significant progress concerning the aim of ending the problem of fuel poverty in the UK. Defined as households having to pay over 10% of income for heating costs, the monitoring process since 2003 charted an incremental fall in fuel poor households and vulnerable groups from a 1996 total of four million to approximately one and a

quarter million in 2002. The 2006 report confirmed continuing success in this area where it highlighted the dual strategies of commitment to open markets and increases in incomes that were fostered through the benefits system. The 2006 document pointed out that innovations such as the new *Pension Credit* for instance, had been instrumental 'in ensuring that, from April 2003, no single pensioner has had to live on less than £102.10 a week' (DTI, 2006:17). It reasoned that the devolved government administrations as well as specialist working organizations such as the Fuel Advisory Groups and Communities Scotland had also been a central institutional feature in driving a more grassroots approach to the problem, particularly in highlighting the need for more resources and delivery at the local level, better integration of programmes, and more efficient targeting of vulnerable groups and individuals. Another Government policy statement – 2006's *The Energy Challenge* argued that the key to future success in this area will remain as increased market competition and further deregulation in continuing to drive down prices and to give consumers greater choice; more efficient targeting of vulnerable groups and individuals; more efficient heating in housing and accommodation; and appropriate benefits allocation to in risk group categories.

14. The Stern Review: highlighting the need for urgency on climate change

The UK government financed *Stern Review,* which appeared at the end of 2006 is the most comprehensive UK analysis to date in the assessment and evaluation of future impacts concerning the threat of climate change. Confirming the fears on the need for urgency in the climate change debate expressed in the *Royal Commission Report, the Stern Review* argues that climate security presents an altogether different challenge to policy-makers from more conventional market problems. *The Stern Review* reasons that climate change is the biggest market failure we have so far encountered. It *reiterates* the argument concerning the dominant scientific consensus – most clearly illustrated in the four reports that have been compiled by the Intergovernmental Panel on Climate Change since 1990 – which suggests that climate change is almost certainly occurring as a result of human interference in the natural order, where the predominant use of fossil fuels as a proportion of GDP in the production and dissemination of energy must be considered to be the principal cause.

As Wall (2008:3) has pointed out, the approach adopted by Stern is that 'climate change costs money, the cost of things can be measured and added to the price of all the things that we do that lead to climate change'. Wall points out that the significance of the *Stern Review* is that, while it clearly remains tied to economic theory – and the assumptions which often structure debates on cost-benefit analyses – as with the Royal Commission Report, it stresses the long and short term implications of inaction. *The Stern Review* therefore draws on the argument of many of the leading economists and their asserted estimation that the immediate cost of 1% of GDP will offset the increase in future environmental risk and associated costs that will be precipitated by non-action in regard to ensuring climate security. As he reasons: 'the *Stern Review on the Economics of Climate Change* has forced even hardened neo-liberals to acknowledge that there is now a serious problem' (2008:1).

The Stern Review argues that it is now a matter of urgency that governments must now implement an effective blend of green taxation and carbon trading if disaster is to be averted.

The Stern Review makes the particular point that there needs to be a more substantial international effort than exists at present in countering the trans-border effects of climate change. While domestic carbon dioxide emissions currently account for only 2% of the global total, the report stresses that the UK will continue to demonstrate leadership on these issues but within the collaborative umbrella of the United Nations Framework Convention on Climate Change (UNFCCC) and the EU. The review stresses that the trans-border characteristics of climate change mean that it will only be within this kind of political response that effective policies can be constructed and put into practice. The review warns that there will already need to be a degree of adaptation to some of the already observed effects. *The Stern Review* reasons that its recommendation that the aim of cutting 60% of greenhouse gas emissions by 2050 will provide the long-term framework to work within which, during this period, the most appropriate options will be explored and developed in order to prevent the possibility of more irreversible damage.

In the light of the observations made in the *Royal Commission Report* and *the Stern Review,* concerning the urgency of climate change and the growing problem of supply security for UK Government policy, the next section begins with the 2007 Energy White Paper in assessing UK Government claims that a coherent energy strategy is 'meeting the energy challenge'

15. The 2007 White Paper: Meeting the Energy Challenge?

> The White Paper must start to deliver the cuts in carbon emissions which are needed if the UK is going to play its part in tackling climate change. This means much larger cuts in emissions than Ministers have so far talked about. Government targets for a 60 percent cut in emissions are simply not going to be enough. A recent scientific paper shows that if every country in the world delivered cuts on this scale we would still see devastating climate change with a temperature rise of 4 or 5 degrees centigrade (Friends of the Earth, 2007:1)

While government reports since 2004 suggest that there has been plenty of progress since the EWP of 2003, 2007's *Meeting the Energy Challenge* is the third EWP to have appeared in the last nine years suggesting that the UK Government have yet to find a coherent strategy through which to address the changing conditions of energy policy. Critics argue that this is evidence of the difficulties that the UK Government have had in addressing what have often turned out to be a set of conflicting aims and objectives. Helm (2007:1) has suggested that 'the latest UK EWP will probably be remembered as a modest further step in the attempt to construct an energy framework which marries up the liberalized market and competition regime inherited from the 1990s, with a set of public aims and objectives which the market would not on its own deliver'.

As with the core objectives of 2007's *Meeting the Energy Challenge* makes addressing climate change and security of supply its principal concerns. Again, as with the 2003 statement, these aims are framed within a continuing commitment to competitive markets as the strategic framework in which policy will operate. The problem of fuel poverty does not register as a central aim of the 2007 EWP as it is argued that progress in this area means that this is no longer such a high profile policy issue. In agreement with the proposals of the *Stern Review*, the 2007 EWP reiterates its faith in a market based approach to the long-term framework of UK energy policy:

> We believe a market-based approach within a clear policy framework provides an effective way to help us to deliver our energy policy goals. This is because companies are best placed to weigh up and manage the complex range of interrelated factors affecting the economics of energy investments. The Government's role is therefore to provide a policy framework that encourages the development of a wide range of low carbon technologies, so we can minimize the costs and risks to the economy of achieving our goals (DTI, 2007:160).

15.1 Meeting the core challenges of climate change, security of supply and competitiveness

As argued above, the 2007 EWP draws on the findings and predictive models of *the Stern Review* in order to highlight the 'economic costs of failing to act to tackle climate change', where it is argued that continuing the pursuit of a business-as-usual approach to this issue is not an option. As argued earlier, *the Stern Review* had pointed out that in monetary terms this approach 'could be equivalent to at least 5% of GDP each year and could possibly rise to 20% of GDP or more if a wider range of risks and impacts are taken into account' (EWP, 2007:29). According to the estimates of their calculations however, the economic analysis of the *Stern Review* suggested that the cost of immediate action however could amount to as little as 1% of GDP. The 2007 EWP reiterates the main policy instruments through which the aims and objectives of UK energy policy will be achieved through a mixture of market-led initiatives coupled with resulting technological innovation. They can be broken down as follows:

- *Market-led* – Carbon trading;
- *Technological* innovation – renewables;
- *Technological innovation* – energy efficiency;
- *Market-led* – competitiveness;

15.2 The politics of carbon Trading

While the UK ETS was in its first year of operation when the appearance of 2003's EWP began to suggest a greater degree of urgency over the substantiveness of UK energy, its integration into the EU ETS in 2005 has been heralded as an central component of the new market instrumentation introduced to address climate change. Phase 1 of the EU ETS only came into enforcement in the UK on 1st January 2005 and therefore there is currently only data available for the first year of trading. The overall cap for the first year in phase 1 – due to run from 2005 to 2008 – of 245 $MtCO_2$ was achieved in the first year of the EU ETS in the UK, setting the scene for a lower second phase cap – to take effect in the 2008 – 2012 period – which has been set at 238

$MtCO_2$. These figures were in fulfillment of the agreements reached in the National Action Plan (NAP) that was originally presented by the UK Government to the European Commission in 2004 (WWF, 2006). As well as an overall quantifiable level of reduction in CO_2 emissions, it was also pointed out in the 2005's *Review of the EU Emissions Trading Scheme* that the initial stage of phase 1 had also had *qualitative* impacts on targeted sectors. These were identified as:

- An increased recognition of the effect of carbon pricing into marginal cost analysis;
- An overall trend towards factoring in the implications of the EU ETS into longer-term investment decisions;
- A greater awareness of the need for technological innovation in the relevant sectors of industry and commerce – one of the principal aims of the market aims of the scheme – in sectors that had trouble in reaching their pollution ceilings (DEFRA, 2005).

The EU ETS is still in its early stages, and remains difficult to judge as a success or a failure in meeting the Kyoto agreements, or in regard to its potential to reach both the UK targets that have been set, and as an effective instrument through which to counter the longer-term effects of global climate change. A number of problems which cast into doubt some of the stronger claims that have been made by the policy-makers writing the 2007 EWP about what the EU ETS can do in providing an effective policy to combat climate change have been signposted. Lockwood (2007) for instance argues that one of the main problems with the scheme as it currently stands is that caps on emissions have so far been set at too low a level to effect real reductions in pollution levels; an argument that is corroborated by critics of carbon trading as a an effective mechanism for reducing CO_2 emissions such as Lohmann (2006). Lockwood points out that heavy lobbying by industry over the National Action Plans (NAPs) did much to ensure that caps were set at a weak rate in the first phase of the programme in order to ensure that European industry remained competitive in the global market. He makes the case that weak regulation on pollution caps will often serve to mitigate against the market-driven ethos of the EU ETS where there currently remains little incentive for firms to innovate and drive the long-term changes that are needed to develop a fully functioning carbon market which will effectively bring CO_2 emissions in line with long-term targets. There have also been criticisms of over-generosity in permit allocation – they are currently 'grandfathered' – where firms have often gained financially with little environmental impact made. As Reyes (2008:1) has argued, in the first phase of the EU ETS 'more than 90% of the heavy industrial plants covered by the scheme emitted less than their quota of free credits. The market value of the credits collapsed, pollution continued apace, and the companies involved made billions in windfall profits by passing on imagined "costs" to consumers'. While allocations and caps have been set more stringently for the second phase of the programme, permits have yet to be allocated for the 2008-12 phase of the EU ETS, meaning that there is currently no long-term carbon price stability to provide the appropriate transparency needed to inform investment decisions. There has also been criticism that the EU ETS does not yet

embrace growing pollution problems such as the air industry and transport although this is due to change in Phase three of the programme.

The 2007 EWP does acknowledge that lower caps must be set in the future where forecast emissions from the EU ETS 'are currently expected to have reduced by only 5%' (DTI, 2007:46). The 2007 EWP concedes that the UK can only be truly effective in contributing to a more effective EU ETS through multi-lateral debate where the Commission will play a central role in determining both the *internal* structure for EU members, and it will also play a key role in pushing for an *international* trading market. The 2007 EWP does answer criticism that the current scheme excludes many energy intensive sectors that should be included, such as commercial buildings, where there are plans in place for the UK to extend this scheme more widely. *Meeting the Energy Challenge* also suggests that carbon trading will in the future be extended to road transport and air travel which, as already argued, are the fastest growing emissions sources in the UK. The very real problem of a follow on programme to the current EU ETS is left unanswered by the EWP where no plans are currently in place and hence no reduction targets have been agreed post-2012.

In many ways therefore the operation of the EU ETS has served to illustrate some of the limitations of political intervention in designing effective climate change mechanisms and limitations that were apparent to some in the UK ETS which preceded the Kyoto design. While the UK scheme had been voluntary in orientation, critics point out that it failed to kick-start an effective carbon market – despite promises given in the 2003 EWP. Lack of a long-term price through which to aid investment decisions thus still hampers real progress in technological innovation – arguably the turn-key to a successful EU ETS. Governments have so far been unwilling to intervene directly in this way and carbon prices have been volatile, but usually too low to make any difference to 'business-as-usual'. As argued above, the growing consensus is that rising emissions from transport, domestic, and energy sectors mean that the EU ETS has so far been a disappointment to claims to be innovative in driving the necessary changes towards a low-carbon economy. As the Worldwide Wildlife Fund (WWF) point out, in order to begin to lower the levels of CO_2 emissions from the sectors which have been targeted:

> The European carbon market needs to impose tougher pollution limits. Only with supply scarcity of allowances, will this market deliver results. Also must allowances are now allocated for free to companies ("grandfathering") reducing incentives to cut climate pollution. WWF believes that the key requirements for a functional scheme are the pan-European harmonization of allocation to avoid unfair competition between companies from different countries. This should be coupled with full auctioning of pollution rights with the revenues to be reinvested in climate protection and clean energy development (WWF, 2007:2).

Reyes (2008:1) has argued that, rather than demonstrate an urgency to tackle climate change, carbon trading has so far demonstrated a 'right to pollute' on the part of industry. He argues that 'despite the mass of evidence, from the Intergovernmental Panel on Climate Change downwards, that the next 15 years will be the crucial

period for action on climate change', the EU ETS as the cornerstone of action on climate change currently seems to be weighted towards enabling business to drive the agenda rather than imposing limits on polluting activities.

15.3 The contribution of renewable energy

As the 2007 EWP points out, 'renewable energy is an integral part of the Government's strategy for reducing carbon emissions as renewable energy resources produce very little carbon or other greenhouse gases' (DTI, 2007:143). As already argued, UK policy-makers argue that they also hold the potential to address the UK's security of supply problem by contributing to a more diversified energy mix. With the opening of the Braes of Doune wind farm in 2007, the EWP points out that the UK has now become 'one of only eight countries in the world to achieve more than 2GW of wind generation' (DTI, 2007:310). The Ormonde project – a combined offshore windfarm and gas generating station – holds the potential to generate 200MW of electricity, while the Whitelee and Callaheen wind farm projects join a further 37 projects 'small and large Renewable Obligation projects have been given planning approval in the last year with a total generating capacity of 2676MW, including 15MW landfill gas and 9MW biomass' (EWP, 2007:311). Following the initial impetus provided by the *Non-Fossil Fuel Obligation,* the introduction of the *Renewables Obligation* in 2002 has been at the centre of the UK Government's drive to utilize energy use through the greater use of renewable energy (Pearce, 2005). The 2007 EWP argues that the RO is well on course to reach the target of electricity sourced from renewables which was set at 10% in the 2003 EWP, where 'the level of obligation is currently set to increase in annual steps from 7.9% in 2007/8 to 15.4% by 2015' (EWP, 2007:147). A *Department of Trade and Industry Report* in 2007 points out that '2.4 of the total generation from *Renewables Obligation*-eligible renewable sources was around 4.0% of electricity supply in 2005: up from 1.8% in 2002'.

However, Foxon and Pearson (2007), and Pearce (2005) all argue that, despite evidence of progress, the *annual* government targets that have been set for the integration of renewable energy into the mainstream UK energy mix are not being met due to a number of flaws in the RO policy design. One of the principal reasons for this has been pointed out by Unruh (2000) as a process of 'carbon lock-in'. This means that the low price of fossil fuels at present – at least in relation to the current price of renewable energy – continues to remain a market barrier to the *significant* contribution of renewable energy. They point out that this is also true of things such as geographical location and capacity issues (wind) and infrastructural issues – particularly in regard to connecting renewable energy sources to electricity generation. Renewable energy currently remains an expensive option and market driven conditions mean that they are currently heavily subsidized by the UK Government in order to avoid them going off of the radar altogether. Thus while landfill gas, biomass co-firing, and offshore wind have made progress in contributing to post-RO electricity generation, other renewable energies such as biomass, wave, or solar, remain cost inefficient and often incompatible with the practicalities and economics of the existing industry infrastructure. Proposals to 'band' the RO to different levels of government support have been criticized by Helm (2007) for instance as 'picking winners' despite policy-makers claims that it is ultimately the

market that will decide. Thus despite many of the political claims that have been made for renewables – particularly in the official documentation since the 2003 EWP – there is no real evidence to suggest that these sources of energy will become marketable any time soon in the way that the government claim; particularly in reaching the future targets that have been set for them in the 2007 EWP. The fact that policies from the *Non-Fossil Fuel Obligation* onward have always been politically driven suggests that the UK government is aware that companies are unwilling to invest in renewable energy in any substantial way. In fact it has been argued that, even if there is more investment in renewables, the de-commissioning of the majority of the UK's nuclear energy plants in the near future may ensure that all this effectively does is to effectively replace current nuclear capacity.

Seager and Milner (2007:1) in fact argue that 'government officials have been secretly briefed ministers that Britain has no hope of getting remotely near the new European Union renewable energy target of 20% energy from renewables by 2020 that Tony Blair signed up to in the spring – and have suggested that they find ways of wriggling out of it'. They point out that the current contribution of less than 2% of renewable contribution to UK energy is unlikely to rise to more than 5% by 2020. In fact according to The Guardian, the UK currently has the lowest percentage for the uptake of renewables in reaching final energy consumption figures in the EU 27 (Guardian, 2008:14-15). Seager and Milner compare these figures to Austria where renewables currently contribute to 23.3% of their overall energy input; Sweden at 39.8%; Portugal at 20.5%, and Denmark 'which now gets 25% of its electricity from renewable sources' (Goodall, 2007:301).

15.4 Energy efficiency

> Reducing the amount of energy we use is the best way of achieving all of our energy goals, with an additional benefit of reducing costs to homes and businesses (DTI, 2007:325).

Since 2001, the UK Government has introduced a raft of policy measures which have been designed to encourage homes and businesses to achieve greater energy efficiency. The 2004 *Energy Efficiency Plan*, the 2006 *Code for Sustainable Homes*, new provisions in building regulations and 2002's *Energy Efficiency Commitment* (EEC) have all been designed with the aim of delivering an annual energy saving of 6-9 MtC per annum by 2020 from these sectors (DTI, 2007:326). These policies have been developed from research such as a 2004 Energy Audit showing that domestic energy use was responsible for 30% proportionate energy use overall and was subsequently accounting for around 27% of the UK's CO_2 emission levels. Of this total it has been estimated that 60% is used for heating; 20% for hot water; and the rest for lighting and appliances (DEFRA, 2006:75). In this way, particularly though the annual monitoring process from 2003, policy-makers have pointed out that tackling household energy use 'is an effective way, not only to reduce emissions, but also to support progress towards wider economic and social objectives' (DEFRA, 2006:74). Policies such as the *Energy Efficiency Commitment* are therefore seen as a central part of addressing energy use in the domestic sector. Firstly it addresses the supply-side of the utilities market by *incentivising* the delivery of energy; secondly, policies such

as the EEC have been seen as an effective way in which to raise awareness on the demand side of the market and individual consumption habits on the benefits of energy efficiency in contributing to environmental and cost-saving goals.

Therefore, policy analysts from DEFRA's *Climate Change Programme* have pointed out that energy suppliers all reached their target of 62 TWh saved in the first round 2002 – 2005 where it is predicted that this will translate into approximately 0.37 MtC saved annually leading up to 2010. Furthermore, the CCP claim that the EEC has 'delivered energy saving measures to consumers, with overall cost effectiveness of about £300 per tonne of carbon saved (i.e. net benefits) and costs to suppliers of around £3.20 per customer'. They point out that these figures translate into an average of 2% of consumer household bills as a proportional attribution to energy efficiency measures. This is considered to be a particularly important aspect in addressing fuel poverty where the 2007 EWP argues that there has been significant progress. Customers on income-related benefits are now more likely to lower their fuel bills over the longer-term. It is suggested that this investment will continue to drive domestic energy efficiency where both environmental benefits and costs will continue to be monitored during the second phase of the EEC. As the 2007 EWP argues, the effectiveness of the EEC is that it is a broad ranging policy in that is can 'create incentives and reduce barriers to greater energy efficiency businesses, individuals *and* government' (2007:50).

While there have been huge strides made in fostering greater energy efficiency through policies such as the *Energy Efficiency Commitment*, the *Home Energy Conservation Act* and the *Warm Fronts Grant*, writers such as Sorrell (2007) and Goodall (2007) argue that real change in the way of significant carbon reductions is often offset by the 'rebound effect'. This has happened in the transport sector where technological innovations in fuel efficiency gains have been offset by increased road use. Thus in a similar way, lowered fuel bills can be offset by consumer technology such as digital set-top boxes that remain on standby.

While energy efficiency policies have also led to a measure of success in tackling fuel poverty, this is also tempered by the fact that increased volatility in oil and gas prices is very much related to *external* market circumstances. The 2006 increase in gas prices affected both consumers and also environmental objectives when coal-fired power stations were required to bridge the capacity gap that was left by gas price spikes instigated by the political influence of Gazprom.

15.5 Competitiveness in the UK energy market

The 2007 EWP points out that 'the UK energy market remains the lowest in the EU for domestic gas prices, and below average for domestic electricity prices, and recently announced price reductions will act to decrease prices' (DTI, 2007:315). While one of the aims of energy efficiency measures has been to address fuel poverty, policy-makers argue that it is ultimately competitive markets which will lower prices for all consumers. However, while progress in lowering prices has been an instrumental factor in reducing the number of homes in a situation of fuel poverty – there has been 'a fall of around four and a half million in the number of vulnerable

households from 1996 levels' (DTI, 2007:316), as argued above, it is not always made clear how greater competitiveness will be allied to addressing the central aims of security of supply and climate change. It could well be argued that the trade-offs between a competitive energy policy and the new conditions of climate change and security of supply are still to be satisfactorily reconciled in the 2007 EWP. As argued earlier, governments have so far been unwilling to impose emission caps that are too punitive on businesses for fear of damaging global and regional competitiveness. The World-Wide Fund for Nature (WWF) again point to the inadequacies of carbon trading of changing the long-term behaviour of businesses in curbing CO_2 levels in any *significant* way. In 2007 the WWF published the results of 'dirty thirty' of Europe's worst polluting power stations and the biggest emitters of CO_2 emissions. The particular research commissioned by the WWF discovered that the UK accounted for ten of these plants, which were all coal-fired power stations. The WWF have themselves been vociferous in arguing that one of the main problems, first with the UK ETS and then with the EU ETS, has been that emissions caps have been set far too high to stimulate the technological innovation that governments hold to be the key in addressing climate change. Furthermore, they point out a 'polluter pays' policy must become a much more central feature of the EU ETS. The WWF argue that emissions trading in its current form is currently largely legitimating a business-as-usual approach as opposed to seriously addressing the high levels of greenhouse gas emissions from industry.

Porritt points out that a 2007 survey conducted by *YouGov* on behalf of the accounting firm KPMG revealed:

> That climate change is pretty much bottom of the priority list for the FTSE 350 companies in the UK – with issues like brand awareness, marketing and even corporate social responsibility commanding a higher share of senior management and boardroom attention. Only 14% of the 73 companies interviewed for the survey had any kind of serious strategy for tackling climate change (Porritt, 2007:1).

He argues however that many of the most influential business groupings *are* urging the UK Government to get more directly involved in regulation. He points out for instance that the Corporate Leaders Group (CLG) have been vociferous in lobbying both the UK Government *and* the European Commission for more direct government regulation in regard to constructing effective climate change policies. In this way, one of the positive aspects regarding this interface between the UK Government and business could well take place in the shape of the *Carbon Reduction Commitment* (CRC): 'a mandatory carbon trading scheme for businesses and other organizations that use a lot of energy but which are not affected by the EU's emission trading scheme. While not necessarily solving the problems in the existing EU ETS, the CRC may start to involve other polluting sectors and can also start to demonstrate the *willingness* of business to drive the changes that are necessary.

15.6 Competition in gas and electricity

While 2007 EWP points to the lower prices that it argues have been a result of the introduction of NETA, it fails to point out the problems that have also accompanied

this system in dealing, particularly with security of supply and climate change issues. As pointed out in the previous section, the short-term just-in-time nature of the NETA design has meant that there has often been a lack of capacity through running a 'tight market' which to deal with price shocks to the system. As Thomas (2007:28) argues, the system as it stands is unable to 'draw down' supplies when the supply-demand relationship becomes tight. The dangers of this were quite clearly apparent with the gas price rises in the winter of 2005/6 and the exercise of market power by Gazprom when the coal option had to be utilized to enable capacity to be met. This response then meant that environmental targets were compromised to deal with this market failure; serving to highlight the fact that there has been an insubstantial measure of energy diversity introduced into the system. Helm suggests that the NETA market design does not provide incentives 'for investors to provide excess capacity (which is necessary for security of supply). (Helm, 2006:31). In this way it is hard to believe that the system as it stands at present in the gas and electricity sectors will be sufficient to address security of supply and climate change.

He argues that it is nowhere more apparent in these sectors that the issues are now global and not national. This is a fact that is acknowledged in the 2007 EWP, and indeed as a political issue that needs to be developed at EU level. As Helm points out:

> When the British electricity and gas industries were broken up and privatized, the companies themselves were all British. This is no longer the case. Across Europe, three dominant electricity companies have emerged – E.ON, RWE and EDF – with a cadre of pretenders to this status – ENEL, ENDESA, Suez, Gas de France and Vattenfall. Many in the latter camp are themselves takeover targets. These three multinationals raise the sorts of problems that oil companies have traditionally tested governments with. Their market power is considerable, their ability to shift capital between markets is immense, and correspondingly the leverage of government over them is very different from the old national champions. These companies have large lobbying resources and pose a serious strategic challenge to any national government that opposes their private interests, which are not necessarily equivalent to the public interest (Helm, 2006:19).

Helm argues that the one of the world's largest energy monopolists Gazprom now has unprecedented market power that even a coordinated response from the EU is unlikely to break. Increasing reliance on imported gas – Helm reasons that Norway will follow on its pricing mechanism from Russia – means that UK energy policy in the gas and electricity sectors has now increasing become a matter of foreign policy, with all the implications that this holds for both security of supply and environmental policy.

15.7 Nuclear energy

Goodall (2007) argues that despite the rhetoric and the political intentions that have taken place since 2003, the UK will almost certainly struggle to reach the short term and almost certainly the longer-term levels of CO_2 reduction targets that it has set. As pointed out earlier, while there has been progress, the primary instruments of the EU ETS, energy efficiency measures and renewable energy initiatives, are simply not

addressing the targets at a time rate that is consistent with the *urgency* of climate change. Therefore, it may well be that the UK Government realize that this may prove to be the case and have been leaving the door open for the nuclear option to be picked up at some point in the future. While not openly proposing nuclear power as the main option, some of the content in 2003's EWP seemed to be aimed at beginning to changing perceptions in the public, media and political domains regarding the possibilities of a greater role for nuclear energy in meeting the aims of security of supply, climate change *and* low-cost fuel. The 2007 EWP seems to makes an even stronger case for a new programme of nuclear power stations through which the UK with the obvious benefit that political leaders can address climate change, security of supply *and* also ensure low-cost fuel: the three principal circumstances that drive the new conditions of energy policy regulation. However, while the 2007 EWP talks up the possibilities of a new nuclear programme it ultimately fudges the issue by pointing out that the market will ultimately decide whether a nuclear build will go ahead.

The attractions of nuclear power are obvious: a comprehensive programme would be able to address the problems of climate change and security of supply simultaneously. However, Helm argues that the 2007 EWP evades the difficult questions that would surface should the nuclear option become more visible:

- A long-term price for carbon: as already argued above, the UK Government has been unwilling to intervene in providing a long-term price for carbon. This immediately sends the wrong signals to potential investors in UK nuclear programme. As Helm reasons, there are government subsidies for other kinds of renewable energy to lever them more directly into the market but as yet no 'nuclear obligation'. Henson (2006:302) argues that the 'massive costs of building and decommissioning nuclear plants' – previously borne by long-term contracts and political intervention – currently work to dissuade investors;
- Planning: according to Helm the above argument touches on the question of *political credibility.* While the question of political 'need' for nuclear build and a generic design through which to overcome a case-by-case and lengthy and costly licensing process is still not made, then this again militates against a purely market instigated approach. As he points out:

  The French solved the historical difficulty of UK different nuclear reactors –with their own unique licensing difficulties – because they had a centrally planned programme with close vertical links between reactor designers, builders and operators and a state owned EDF monopoly to deliver and pass through the costs (Helm, 2006:36).
- Waste: The problem of nuclear waste in any future programme is arguably the most contentious area in the nuclear debate. From the costs of dumping to potential safety hazards, these are further risks on which the 2007 EWP remains silent. There is a strong dissent on safety lines led by FoE and Greenpeace who actively campaign against the nuclear option;
- Terrorism: Critics argue that the current global political climate means that the nuclear option may encourage terrorism where infrastructure is targeted or the technology itself.

16. Conclusion: can we identify a third energy policy paradigm?

This study has considered the development of energy policy in the UK since the post-war period. Utilizing Helm's idea that regulation has been characterized by three distinct paradigm shifts, the review has explored the idea that each of these periods would be identified by distinct shifts in the political economic framework and a distinctive ideological emphasis. The study considered the idea that energy policy could be situated within each of these policy frameworks and would influence, and be influenced by, different social, political and economic goals. It was argued that, according to this idea of energy regulation as 'ideal types', the chief characteristics of these three energy policy paradigms could be conceptualized according to the characteristics of:

A politically led 'command and control' framework which ran from approximately 1945 to 1979;

A second period spanning 1979 to 1998 identified by a 'market for energy' approach where the emphasis moved to a belief that the economy was the most effective framework for energy regulation in the UK;

The most recent phase – spanning approximately the period since 1998 – can be perceived as *challenging* the market for energy approach in being able to provide policy solutions to another set of changing circumstances. These were identified by Helm as:

- Problems with aging energy infrastructures and assets;
- More obvious energy reliability problems related to a new world political order in oil and gas markets identified by greater unpredictability increases in oil and gas prices;
- Shortfalls in capacity perpetuated by spot-trading and diminishing investment;
- A decline in the UK's indigenous energy supplies;
- The growing problem of climate change;
- Finding the appropriate balance between political leadership and markets in regulating the new conditions.

According to Helm the above conditions suggest that limitations in the political economy of the *Market for Energy* approach which he argues ran from 1979 to around the period of 1998 have once again introduced the idea that another transition in energy policy regulation may already be underway. He argues that a distinctive 'third way' style of regulation has now once again shifted the emphasis on what the principal goals of energy policy should be based upon. He reasons that, much as the same way that previous regulatory regimes were discredited, this paradigm shift has been a result of the realization amongst policy-makers of the discrepancies between the policy goals of market-based regulation and real world practicalities.

With Helm's typology in mind, the study has explored the main aims of UK energy regulation since the post-war period through a historical consideration of the

principal objectives that now shape the current regulatory era: security of supply and climate change. The review argues that the primary consideration of UK energy policy has *always* concerned ensuring supply security although shaped in different ways according to the political philosophies guiding both embedded liberalism and neo-liberalism as the dominant regulatory regimes. The study suggests that environmental concerns, particularly climate change, have previously been subsumed by supply security, where its growing significance in recent times has signposted the need for a 'third way' between the two dominant approaches to energy regulation.

The study considered the ways in which energy was vital to the efficient functioning of embedded liberalism where the post-war political economy was closely aligned to this relationship. It was suggested that security of supply was not so much of a priority during this period as indigenous coal meant that the UK economy was almost self-sufficient in readily available energy. Central to the political philosophy of this period was the idea that energy was a 'public good', whereby state ownership of energy utilities would ensure for instance that every home would be affordably heated. Market forces were considered to be antithetical to this objective. It was also assumed during this period that state ownership was the most efficient way through which to ensure an energy extraction rate that would be able to feed demand and future forecasts from UK industry so political intervention played an integral role in this process. Oil was also cheap and abundant during this period and the growth of consumerism began to condition public demand and the role that governments would be expected to assume in ensuring uninterrupted energy supply. It was pointed out that, during this period, conditions of excess supply and low prices meant that western economies became more and more reliant on the flexibility and low prices of crude oil in particular. In this way, oil in particular became vital for ensuring economic growth at a time in which it was able to profitably create economies of scale. However, the Suez Crisis and then the OPEC situation in the 1970s were both instrumental in demonstrating the link between UK energy use and this growing import dependency. As argued earlier, during this period oil also became particularly important to the new ethos that was beginning to characterize the significance of 'consumerism' to the UK economy where the rise of consumer goods such as car ownership would began to illustrate the way in which cheap fossil fuels would now permeate the idea of social and economic 'progress'. As Sampson (1993:15) has reasoned, 'cheap oil became the basis of the industrial boom and the popular vote'.

The study argued that despite periodic warnings over the implications of supply security problems in oil markets, the UK Government made only minimal efforts at diversifying energy supply during these periods. While France for instance became 70% self-sufficient in nuclear driven electricity generation during this period, it was pointed out that UK investment in nuclear has been characterized by political indecision, and over-reliance on the continuity of continuous and cheap oil, and poor investment choices. It is suggested that perhaps the biggest legacy of the command and control period of regulation could be seen as state investment: a legacy which would prove to be both a beneficiary and a handicap to the succeeding market for

energy approach. It is clear for example that the energy infrastructure characterizing UK gas pipelines and electricity networks were a result of substantial state investment, where long-term goals were set through a framework of long-term contracts and monopoly markets.

It was argued that the internal dynamics of state regulation – and the UK's primary indigenous energy supply – began to unravel during the 1970s where the economics of coal production became a political issue. It was suggested that the oil price rises of 1973 began to expose the tenuous nature of long-term strategies that had been designed to integrate fixed capital and labour investment. A political development of this relationship had been the trade union consciousness that had grown out of the corporatist arrangements of this period and was now linked to the rise of the 'new working classes' and sectoral ambitions towards greater social and economic parity. This became manifest in strikes and internal threats to supply security in the UK.

It was pointed out that the ideological and practical implications of these developments witnessed a gradual change in the political consensus that had characterized the post-war perspective on the role of nationalized industries. This 'structural shift' in policy was instigated primarily by the Conservative regime which came to power in 1979 where they were able to catalyze the ideas of the 'New Right'. Predicated on the ideas of Hayek and Friedman, and the belief that monetarism should preference political leadership in governance, Lawson's *Market for Energy* strategy made the case that the nationalized regime had demonstrated the failings of state ownership as an effective and democratic resource allocation system. In particular, monetarists argued that state controlled energy utilities – as with the other state controlled services – demonstrated clear underperformance due to a policy structure which laid an over-emphasis on 'predictable outputs'. The New Right reasoned that these contradictions were further embedded in long-term contracts across key sectors of the energy industry. Critics made the argument that a clear lack of incentives in this design had led to an inefficient system that bred monopolization and bureaucracy. How could the 'public good' be carried out, they argued, in a system where customers were forced to pay over-inflated prices in captured markets and bureaucratic barriers undermined any semblance of accountability? The new market for energy approach therefore was implemented by the new political administration in three ways: privatization, liberalization, and deregulation.

It was argued that throughout the 80s and 1990s, the market-based approach to energy regulation in the UK was viewed as being largely successful. As the review reasons, privatization itself turned out to be a fairly drawn out process, taking place incrementally over the next twenty years. While the coal and nuclear privatizations have been largely unsuccessful in relative terms, the gas and electricity sectors have been held up as models of the market approach to energy. Electricity privatization for instance, has been the model adopted by the European Commission in ongoing efforts to liberalize European energy markets. While not without teething problems, the new 'stakeholder' dynamics of the UK gas and electricity sectors have been hailed as innovatory in overcoming the problems that characterized earlier energy policy designs where 'the privatizations and associated regulatory frameworks had

reduced network costs for investors and customers alike (Helm, 2006:5) With low prices and excess capacity in world oil markets during this period, energy policy was therefore not seen as a priority by the incoming New Labour Government in 1997. The new regime simply assumed that the market for energy approach to regulation could be continued with little political intervention.

It was pointed out that a number of developments began to challenge this policy of 'benign neglect' and subsequently the fundamental approach characterizing the market for energy strategy itself. It had been assumed for instance that the problem of climate change – the UK's CO_2 levels had fallen over the previous decade – had been solved by the further contraction of the coal sector and the associated gas entry in electricity generation. The 'dash for gas' had been instrumental in enabling the UK Government to have no political qualms in signing up to the Kyoto Protocol in 1997. It could be reasonably argued in fact that these developments had, at the same time, given it the confidence to announce a *domestic* commitment to reduce the UK's greenhouse gas emissions by 20% at 1990 levels by 2010. During this time, fossil-fuel prices had also remained low and in excess supply, underpinning the competitive ethos – and supply security – behind the market for energy approach.

However, it was argued that towards the end of the 1990s, domestic CO_2 levels had begun to rise again, linked primarily to increasing road and air travel but also to a rising demand for energy overall. The 2000 Royal Commission (RC) Report *Energy – The Changing Climate* was unequivocal in linking rising levels of CO_2 emissions primarily to prices in fossil-fuels, 'and their relationship to other goods and services' (Royal Commission Report, 2000:65) and the ways in which energy markets have been an instrumental factor in creating the conditions for a growth in energy choice, use, and intensity. The RC therefore recommended that the UK Government must revise existing policy in order to plan for a 60% reduction in greenhouse gas emission by 2050. The RC report was instrumental in highlighting urgency in the need to explore more innovative solutions to the problem of climate change than had been in evidence so far. The fact that the UK Government is required by law to respond to the RC's recommendations has subsequently seen the appearance of two further EWPs in 2003 and 2007. At the beginning of the new millennium, it was now clear that more deregulation, more liberalization, and more privatization, were no longer sufficient as solutions to new problems and changing circumstances. Perhaps the principal dilemma was that market-driven energy demand would need to undergo a radical rethink, particularly in regard to the recommendations that were now offered by the RC. The RC report, and then later the *Stern Review*, was also instrumental in challenging the previously held supposition that largely informed the UK's commitment to the Kyoto Agreement, regarding the fact that it was managing its pollution levels and could even set an international example in setting more stringent domestic targets.

16.1 A new energy paradigm?

In relation to the above arguments, Helm therefore argues that we are now entering the realms of a new energy paradigm where, much as the market for energy approach superseded command and control style intervention, a new policy

landscape will dictate appropriate changes in energy regulation. Helm's argument therefore provides a neat fit into New Labour's claims that policy-makers are now negotiating a third way between the state and the economy where 'appropriate' political interventions complement market-led inititiatives. Miliband (2007:337) for instance has made the point that issues such as climate change and security of supply have been significant in forcing a rethink on 'the role of markets and the state, social justice, and also the role of Europe' in government policy.

The last section of the review therefore looked at the main policies that have been pursued by the UK Government, particularly since the period 1998 – 2000 and what has been claimed to be a new era in energy policy regulation. This section provided a more critical evaluation of Helm's claim that the post-1998 energy landscape represents a paradigm shift in policy. While it was argued that earlier shifts in UK energy policy were driven by very distinct aims and objectives – mirroring wider ideological shifts in UK political economy – the section argued that there has been no clear divergence from the *Market for Energy* strategy. As the earlier section of the study suggested, both the 1945 welfare consensus and the period beginning with the advent of the New Right were driven by particular sets of ideas and an accompanying political dispute over their implementation. The first one was predicated on the central role of government in underpinning public services and the second one was able to mobilize support on the *failure* of this kind of regulation due to a lack of market discipline. It could be argued therefore that the post-1998 'third way' agenda has been characterized by an absence of this kind of debate, particularly between the main political parties in the UK. While Helm proposes an argument that this paradigm shift is characterized by a search for the right balance between politics and markets, critics of New Labour such as Callinicos (2001) and Finlayson (2003) have pointed that if the third way is really representative of a new direction for a 'progressive' form of politics, then why does the market remain the primary mechanism through which this is to be achieved? Bourdieu (2000) has reasoned that, as an ideological position, the third way is complicit in continuing to present market rationality as self-evident without considering the possibility of alternative ways. As he asserts: 'it is taken for granted by those in power 'that maximum growth, and therefore productivity and competitiveness are the ultimate and sole goal of human actions and that economic forces cannot be resisted' (Bourdieu, 2000:31).

The last section of the study highlighted for instance the influential position of carbon trading as the flagship policy the UK Government claims will be effective in delivering long-term cuts in carbon emissions. It was argued however that the UK is currently struggling to meet both its domestic and Kyoto targets through the EU ETS (Reyes, 2008). Lohmann suggests that one of the reasons why this may be so is that carbon trading currently fails to offer anything particularly innovative in addressing the *urgency* of climate change, particularly the continued reliance on fossil-fuel use and the way in which the demand for energy is increasing. Reductions in emissions from the EU ETS for instance are currently expected to have reduced by only 5% by the end of its current lifespan in 2012 (DTI, 2007:46). It is argued that there is currently a need for greater political leverage in imposing tougher caps on polluters alongside more stringency with permit allocations. Weaknesses to the design of EU

ETS in both these areas have meant that currently there remains little incentive for firms to innovate and drive the long-term changes that are needed to develop a fully functioning carbon market. This is important as innovation can only really be encouraged in this way through high carbon prices. Current evidence suggests that the design of the EU ETS as it stands is still too concerned with making the market work than in effecting real reductions in pollution levels. In fact, there is a strong argument to suggest that the predominant ethos within all three of the current Kyoto mechanisms is to mitigate climate change in the cheapest way possible without harming the competitiveness of industry (Smith, 2008). Thus, while political leaders claim that carbon trading is *mitigating* climate change, does an apparent over-emphasis on the market to drive the necessary change as opposed to political intervention mean that it is merely *adaptation* to a business-as-usual approach?

The *Stern Review* (2006) and the *Royal Commission Report* have both asserted that a 'polluter pays' principle must become a much more integral part of initiatives to address climate change. As this study has argued, part of the political reluctance to widen the scope for reducing emissions, such as the introduction of carbon taxes for instance, seems to stem from a continued reluctance to harm industrial competitiveness. Dorsey (2008) has argued that case that the business lobby has also been hugely influential in influencing the structure of carbon trading on terms more favourable to business than to the environment. It was also pointed out that in order to be truly effective, a more internationalized trading market must incorporate the main culprits of greenhouse gas emissions *vis-à-vis* the US, China and India. The reluctance of these nations to sign to Kyoto again reflects a political reluctance to cede competitiveness. However, as the *Stern Review* and the *Royal Commission Report* both emphasize, failure to take the necessary actions in the present will result in greater longer-term costs. Miliband has argued that trading should be one tool amongst others where it should accompany a *mix* of policy initiatives such as 'regulation, tax, subsidy, planning, procurement, *and* the transformation of markets' (2007:345).

There is also the very real problem that the EU ETS currently excludes energy intensive sectors such as transport and aviation – the fastest growing source of CO_2 emissions in the UK – and commercial buildings, although these will be integrated into the scheme in the near future. This has been acknowledged by political leaders – for instance in the 2007 EWP. However, it also remains the case that while political leaders and businesses try to address these problems, there is also no follow-up programme to Kyoto in place to lead these changes from 2012 and subsequently no further reduction targets. The complexities and some of the limitations of contemporary governance are particularly well illustrated in the EU ETS where climate change, as well as issues of security of supply, and the greater emphasis in ensuring competitive energy markets, form part of a much broader political approach to current policy on energy.

It was also argued that carbon trading as a policy approach also evokes philosophical issues around energy consumption, notably what can now be considered to be the 'public good'. It was pointed out that the command and control era of energy

regulation in the UK for instance had a very clear idea on what the public good should be, how it should be embedded in policy, and how it should be regulated by governments. This became less clear during the market for energy period, although the ideological argument was that the market would deliver lower prices for *all* sectors of society. Lohmann has argued the point however that in many ways, the fact that the three Kyoto instruments have been accommodated first and foremost to a market design means that the atmosphere and the 'right to pollute' has been privatized, challenging the status of 'clean air' as a public good. He suggests that the design of the three Kyoto mechanisms mean that the problem of CO_2 emissions is passed over to the private sector to deal with, often away from public scrutiny. Ideologically therefore, markets are still seen as the mechanisms that will ultimately solve the problem of climate change.

16.2 Widening the problem-solving approach

The UK Government has provided a raft of policy initiatives through which to supplement carbon trading and the problems that currently characterize the 'contract and convergence' model, where it hopes that an effective combination of these approaches will spearhead a new era of energy regulation in the UK. Renewable energy is seen as having an integral part to play in addressing climate change, security of supply, and also the 'once through' ethos of conventional energy use. The last section of the study however questions the more dramatic claims made for renewable energy in the UK. For instance Seager and Milner (2007:1) pointed out that currently 'Britain has no hope of getting remotely near the new European Union renewable energy target of 20% energy from renewables by 2020 that Tony Blair signed up to in 2007'. They reasoned in fact that the current contribution of 2% of renewable contribution to UK energy was unlikely to rise to more than 5% by 2020. They compared these figures to Germany where renewables currently contribute to 13% of overall energy output, or Denmark which sources 25% of its electricity from renewables. As the study pointed out, one of main issues for renewable energy in the UK is the problem of 'carbon-lock in'. It was suggested that this is a particular challenge for integrating renewable energy into a market framework where both the infrastructure and ethos remain tied to the flexibility and low-prices of fossil fuels as marketable commodities. Thus, while policies such as the *Non-Fossil Fuel Obligation* and the *Renewables Obligation,* have made some headway in introducing renewables into electricity generation, the UK's percentage of renewable energy is currently one of the lowest in Europe. Although there is a lot of future scope for renewable energy in addressing both climate change and security of supply, renewable energy currently remains an expensive option in market-driven conditions. It seems unlikely that renewables will live up to the claims of UK policy-makers in meeting both climate change and security of supply, certainly without further government intervention by way of subsidies and more direct political intervention.

This particular dilemma also informs the case for nuclear power as a possible option to address security of supply and climate change. Whilst the study argued that command and control era government regulation was conducive to this kind of long-term programme – although never adequately exploited – this kind of investment does not necessarily fit easily within current economic and political conditions. As

argued above, one of the benefits of the market for energy approach to potential investors has been the fact that marginal costs could be reduced by 'sweating the assets'. A current legacy of this diminishing emphasis on investment can be observed in the oil, gas, electricity *and* the current nuclear sectors where reluctance to invest in infrastructure has seen more incidences of network failures and problems with aging infrastructure. Thus while it was argued that the 2007 EWP appears to have left the door open for a full programme of nuclear investment, the UK Government has decided that this is to be 'left to the market'. One of the central issues here – perhaps reflected in the political indecisiveness in this area – relates to public uncertainty over a larger role for nuclear power in the UK. The nuclear question has also become unavoidable for policy-makers in the UK where the current nuclear capacity is approaching the end of its life-cycle and decisions must be made on what is going to fill the 20% energy input that is currently being contributed by nuclear power. As with carbon trading, this raises issues over whether energy and pollution must be publicly or privately regulated. Whilst the *Stern Review* accepts that climate change is a form of market failure, should there be a greater degree of political intervention than is presently the case – as was suggested in the recent example of Northern Rock for instance? What would be the ethical issues concerning major private investment in nuclear power? Would there be public acceptance of a privatized nuclear programme, particularly after the investment problems with Railtrack and criticisms of the increasing privatization of the health service? Would this simply be an easy way out for a UK government that is unlikely to reach looming targets on CO2 emissions through its current policy strategies?

As the last section of the study points out, while there have been huge strides made in fostering greater energy efficiency in the UK, particularly through the development of policies such as the *Energy Efficiency Plan,* the *Code for Sustainable Homes,* and the *Energy Efficiency Commitment*, Goodall (2007) argues that real change in the way of significant carbon reductions is often offset by the 'rebound effect'. This has happened in the transport sector where technological innovations in fuel efficiency gains have been offset by increased road use. Thus in a similar way, lowered fuel bills fostered by greater monitoring of energy use can often be offset by consumer technology such as the increased popularity of digital set-top boxes that remain on standby and 'gadgetry'. Much of the future success of energy efficiency as a policy goal will be closely linked to its effectiveness in communicating – to both producers and consumers – the urgency of behaviour change and consumption habits. The study suggests that current government policy on efficiency and the need for widespread changes in energy use has often been characterized by mixed messages. For instance the perceived urgency in addressing climate change has been interdispersed with announcements on road building projects and new airports – sectors that receive substantial financial support in relation to environmental goals. Government messages must also compete with powerful media images that are often fuelled by consumer messages taking a contrary position to the idea of sustainable consumption. It is often the case that the government will adopt a backseat position to market pressures whenever these kinds of issues come into collision in policy.

16.3 Facilitating 'political citizenship' in the governance of energy policy

As the study argues, the complex nature of the issues the inform energy regulation mean that more and more policies have now been developed to try to address the problem of energy demand and consumer behaviour. Behaviour change and engaging citizens in driving the changes to a low-carbon economy and more sustainable lifestyles is perhaps the biggest challenge to the present government initiatives on climate change and the study suggests that this is one area where market preferences continue to dominate. One of the principal difficulties for this agenda would seem to be in changing perceptions of public 'rights' concerning the availability and product pricing that have developed from two different eras of energy regulation. As the study argues, the post-war consensus was underpinned by the idea that citizens of the UK had a *right* to affordable and available housing with associated heat and light. This became guaranteed for the majority of the population by the political leaders of the time. Both the left and the political right did all that they could to ensure that 'the lights stayed on' and energy regulation became increasingly important to the relationship between government and electorate during the post-war period. As the first section of the study illustrated, the strikes of the mid-1970s showed that energy supply was intrinsic to electoral stability and the Heath administration fell, in part, because they could no longer ensure this. It was argued that the Conservative regime that came to power in 1979 learned from the way in which energy became 'politicized' in a much more high profile way, while also learning that shifts and changes in the class composition – which had occurred as a result of rising prosperity and accompanying aspirations – would need to be accommodated if the new monetarist ideas on how to run the economy were to be successful. Therefore the Thatcher regime introduced the idea that the new market economy would facilitate a new stakeholder democracy where a free market – defined by cheaper goods and more responsive services – would enable a better standard of living for everyone. Sectors of the working classes for instance were wooed away from traditional class politics into the higher social status associated with home ownership for example. The market was to bring about a more fluid social structure defined more by consumption and lifestyles of taste.

Therefore, energy efficiency and sustainable consumption have been areas that the UK Government have been trying to engage the public in more directly in order to increase their effectiveness. However, one of the problems for present policy aspirations would seem to be the way in which market sovereignty has served to 'individualize' society from more collective forms of political identity. Thus, while government rhetoric seeks to collectivize ideas on behaviour change in regard to the relationship between energy use, climate change and supply security, for the last thirty years the market has been the place where individuals have been taught to exercise their citizenship rights and there has been an accompanying decline in the idea of *political* citizenship. A decline in levels of voting in western democracies has been one of the key areas through which people such as Habermas (1976) have charted a 'legitimation crisis'. Governments must now ask themselves if there is a political citizenship that they can tap into concerning, for instance, awareness of the threat to fellow citizens and to future generations caused by actions in the present, or whether consumerism will continue to contribute to a policy *stasis*.

These issues also signpost some of the difficulties ahead for UK Government plans to implement initiatives such as individual carbon trading programmes. Personal carbon trading has been seen as illustrative of New Labour's *no rights without responsibilities* approach to citizenship in the current age and a more joined up problem-solving approach to the complexities of issues such as climate change. The introduction of personal carbon trading may well bring to the surface issues regarding trust in political leaders for instance. While the environment is often deemed to constitue a public good, as argued above, this now comes into conflict with the post-war consensus on energy as a public good and the market approach to cheaper energy as a citizen's right. The difficulties in trying to address these trade-offs was particularly well illustrated in 2006 where an increase in fuel poverty would have occurred in relation to an increase in gas prices resulting from developments in eternal energy markets. The UK Government was forced to resort to the use of coal to bridge the capacity gap left by gas price increases.

This study has highlighted the *political* nature of energy in the UK and the ways in which internal and external events have shaped government responses to different economic and social circumstances. The study has pointed out that that the state has always played a part in energy regulation, whether this has been explicit – as in the post-war command and control era – or has been a more subtle guiding force as in the market for energy period. It suggests that while the two predominant energy paradigms could be identified by certain distinctive characteristics, the UK has never really adopted a coherent position on energy policy and has very often been *reactive* rather than *proactive* in formulating an appropriate policy framework. The study suggests that energy policy has been a good barometer in assessing the shifting role of the nation-state in recent times, particularly in regard to the continued drive towards competitive markets and also the global nature of security of supply and climate change. The study argues that, while Helm suggests that UK energy policy post-1998 has seen changes in the aims and objectives of policy as to constitute a paradigm shift, this does equate to a structural and ideological break as characteristic of previous regimes. The study suggests that, while exploring the economic, social and political complexities of a variety of different initiatives, the UK Government in many ways remains trapped within a conception of governance that continues to take the market as the primary frame of reference in providing the most effective solutions to current energy policy dilemmas.

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