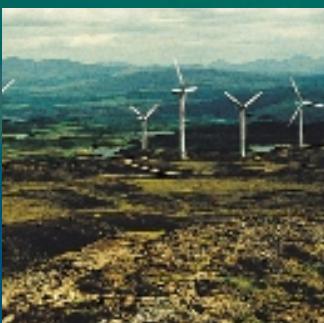
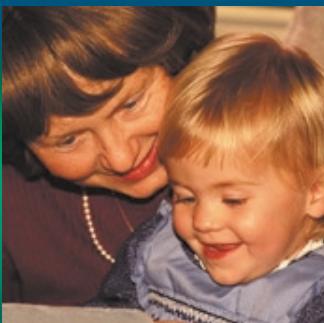


# Social, Environmental and Security of Supply Policies in a Competitive Energy Market



A Review of Delivery Mechanisms  
in the United Kingdom

May 2001



Department of Trade and Industry

# **SOCIAL, ENVIRONMENTAL AND SECURITY OF SUPPLY POLICIES IN A COMPETITIVE ENERGY MARKET**

## **A REVIEW OF DELIVERY MECHANISMS IN THE UNITED KINGDOM**

This booklet outlines UK experience so far in using competitive energy markets to deliver social, environmental and security of supply policies. It highlights the benefits that have emerged from this approach and sets out the instruments the Government has used to enhance policy delivery. It is intended to promote debate with other Member States about their own experiences and the mechanisms they have developed to deliver Government policy in these areas.

This is the longer version of the booklet produced earlier in the year (March 2001) and it includes annexes giving examples of some of the delivery mechanisms referred to in the introductory section. It does not, however, attempt to give a completely comprehensive outline of Government policy in these areas.

**DEPARTMENT OF TRADE AND INDUSTRY  
UNITED KINGDOM  
May 2001**



# **SOCIAL, ENVIRONMENTAL AND SECURITY OF SUPPLY POLICIES IN A COMPETITIVE ENERGY MARKET**

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# **SOCIAL, ENVIRONMENTAL AND SECURITY OF SUPPLY POLICIES IN A COMPETITIVE ENERGY MARKET**

## **A Review of Delivery Mechanisms in the United Kingdom**

**This paper describes the ways in which energy markets can be used to deliver social, environmental and security of supply objectives. It sets out a range of policy instruments for this purpose and shows how they can be used to work with the grain of the market to maximise and focus the general benefits of competition – low prices, increased consumer power, greater innovation etc – on achieving policy objectives in these areas. It also sets out the policy principles that underpin the objectives. The UK has aimed to apply an appropriate level of regulation to ensure that social, environmental and security of supply objectives are met within a competitive market framework.**

1. A key part of UK energy policy over the last decade has been the introduction of competitive markets, which the Government believes to be essential to the achievement of energy policy objectives of lower consumer prices and greater choice. It is also an important aspect of sustainable development: ensuring a better quality of life for everyone, now and for generations to come. Central to that policy is the related objective of safeguarding the interests of consumers, including those in vulnerable groups through a fair and effective regulatory framework. Consequently, both the Government and the Regulatory Authority have a legal duty to protect the interests of consumers, wherever appropriate through the promotion of effective competition. They are also required to take account of social, environmental and security of supply concerns.
2. The Government's objective is to open electricity and gas markets to competition wherever it is appropriate to do so. Where competition works effectively, market forces will lead to benefits for customers in terms of greater choice and lower prices. It is the regulator's aim to withdraw from direct price regulation of retail businesses and concentrate on ensuring that these operate free from abuses. Regulation of supply is currently in transition as competition becomes firmly established. However, where competition is not economically feasible or sufficiently effective, regulation through price controls will continue to be necessary to ensure that customers receive value for money and appropriate service. This applies to the separate monopoly network businesses that run the pipes and wires to bring electricity and gas to suppliers' customers.
3. Competition itself brings with it benefits for consumers, for companies and for security of supply. Consumers enjoy lower prices, better choice and higher standards of service. Companies are given the incentive to innovate by the drive to provide ever more desirable products and services. Competition also plays a vital part in security of supply, using the price signal to indicate when and where new investment should take place and encouraging a wide range of suppliers and sources of energy. There has been substantial investment in new generation capacity, maintaining the margin of

spare capacity over peak demand. This has been due in part to the growing number of smaller generators and autogenerators supplying local networks or individual sites. This is a key aspect of maintaining security of supply, as shown by recent experience in California. Governments need to ensure that generators do not face unreasonable barriers to building new capacity and should be prepared to intervene to support investment in infrastructure if necessary.

4. In the UK, competition has brought real benefits to consumers. It has meant that suppliers must be more responsive to the needs of their customers and, within a supporting regulatory framework, service standards have improved and continue to improve, without compromising the requirement for all reasonable demands for supply to be met. The Regulatory Authority is now developing a new Information and Incentives Project, basing price regulation on incentives for companies to improve quality of supply to customers. Competition has also led to lower prices and more innovative tariff systems, helping the poorest customers afford to heat their homes.

### **Why should competition contribute to social, environmental and security of supply objectives?**

5. The basic benefits of competition contribute to social, environmental and security of supply objectives (though they may not all be compatible with each of them). Where they are fully competitive, markets are generally more effective than monopolies in protecting consumers' interests. Some regulation will however still be necessary to prevent abuse by dominant players and ensure that new entrants are not unfairly discriminated against. There are ways of using regulation positively to influence market behaviour. It can provide a framework in which companies can work together to address specific environmental or social needs or support to enable new industries or technologies to enter the market. In the case of the latter, however, Government should also be prepared to intervene if the market does not produce adequate levels of research and development.

6. Markets can be a more effective instrument for delivery of government policy than more traditional mechanisms. They operate more closely to the customer – the point of delivery. They respond more quickly to influence and can be fine-tuned more easily than legislation. They can also apply the innovation and ingenuity of business to policy delivery, making it more flexible, accessible and better-shaped to consumer needs.

7. Regulation can take various forms: it may be legislation, it may be in the form of a specific regulatory authority. Use may also be made of market instruments such as taxation. There are also less formal instruments of influence such as partnerships between government and industry. In a competitive market, where Government sets overarching policy and companies deliver energy supplies, a partnership approach is essential.

8. This paper outlines some of the mechanisms used in the UK, describing how they have been developed to operate in a competitive market; it also outlines the policy objectives that they aim to fulfil.

## **How can markets deliver policy objectives?**

### **Social policy**

9. In the UK, social policy in the energy market has centred around the Government's priority of tackling fuel poverty<sup>1</sup> and removing the situation in which some can pay for the fuel they need, while others suffer ill health from rationing its use or being cut off from supplies. The immediate policy objectives are:

- To reduce energy prices for the poor; and
- To improve the home energy efficiency of fuel poor households.

10. **Competitive markets:** Competition itself drives down prices and poorer people benefit from falling prices. Competition also gives customers the ability to change their supplier if dissatisfied with their treatment. Competition has also led to social innovation from the energy companies. The Government has set out the importance it attaches to helping the poor and has used a partnership approach, with the Regulator, to encourage companies to develop programmes to help poorer consumers (which bring commercial advantages of their own through increasing customer base and enhancing corporate image). Companies have responded creatively with a range of special payment schemes, debt management and energy efficiency advice, insulation and central heating packages, and signposting to other sources of help and benefits (See Annex A for details of examples of these schemes). Although this is still a developing area, many of these schemes are starting to have a real impact by reaching the consumers who most need the help and supplying them with practical assistance.

11. **Regulation:** The Regulatory Authority aims to safeguard consumer interests through a fair and effective regulatory framework. The consumer interest encompasses not only price and service but also continuity and quality of supply. The Regulatory Authority uses licence conditions to impose social obligations on suppliers of gas and electricity, including:

- A legal obligation to supply domestic customers;
- A requirement to publish their prices, and to provide a range of payment methods, including cash and other credit terms;
- Procedures to ensure that domestic customers in genuine payment difficulties are treated sympathetically (using methods such as payment by instalment and pre-payment meters);
- A range of special services for elderly, disabled or chronically sick customers;

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<sup>1</sup> The common definition (used in the UK) of a fuel poor household is one that needs to spend in excess of 10% of household income in order to maintain a satisfactory heating regime and provide other energy services.

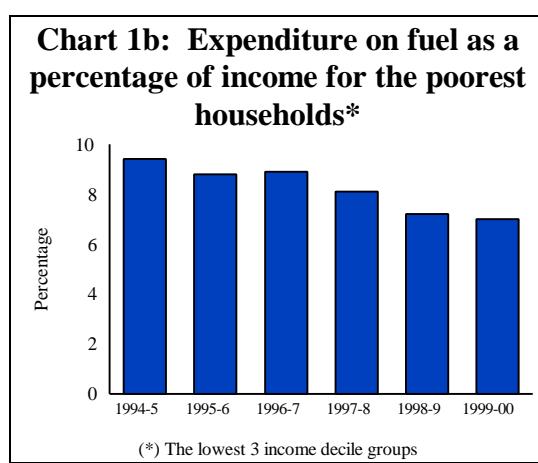
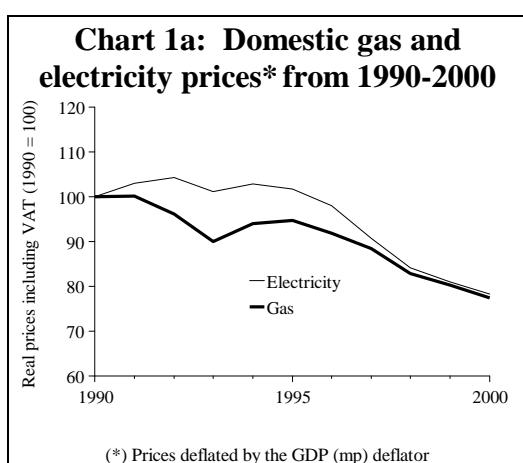
- Arrangements for providing energy efficiency advice.

12. Whilst competition drives down prices in the market, regulation is needed to cover monopoly activities such as transmission and distribution. The Regulator has introduced price controls, based on forecast costs (including efficiency savings) and an estimate of the appropriate return on capital, to reduce prices and is now looking at introducing performance incentive schemes that strengthen the financial incentive on companies to maintain or improve service.

13. **Government funding:** Additional help is needed to assist the most vulnerable in society to pay their fuel bills. The Government therefore provides direct help to the poorest consumers through a number of mechanisms, including winter fuel payments to pensioners and grants to pay for energy saving home improvements for those on low incomes.

#### 14. Results

- Average prices for domestic gas and electricity customers have fallen by 18½% and 23% respectively in real terms since the mid-1990s<sup>2</sup> (see Chart 1a below);
- The percentage of expenditure on fuel for the poorest households (lowest three income deciles) has fallen from 9.4% in 1994/5 to 7.0% in 1999/00 (see Chart 1b below);
- In England, it is estimated that between 1996 and 1999, lower fuel prices have removed around 0.7 million households from fuel poverty;
- A wide range of social initiatives has been developed by the industry such as new tariff structures and programmes to deliver energy efficiency support for the poor.



<sup>2</sup> Price movements are influenced by a number of factors, some arising from causes other than liberalisation. For example, the recent increases in international gas prices will put pressure on domestic gas and electricity prices.

## **Environmental policy**

15. The generation and use of energy creates a variety of environmental issues, including the problems of climate change. Key environmental objectives are:

- To reduce greenhouse gas emissions by 12.5% below 1990 levels over the period 2008-2012 and move towards the domestic goal of a 20% cut in carbon dioxide emissions by 2010;
- To encourage better energy efficiency and the use of alternative, low-carbon fuels; and
- To promote the development of sustainable energy technologies.

16. **Competitive markets:** Conservation of energy supplies can be ensured through regulation even in a competitive market. Competition has the key environmental benefit of providing for efficient resource use at any given price level, minimising waste and maximising welfare. Competitive markets help to encourage companies to differentiate their product, while still supplying what the consumer wants, and in recent years, some energy companies have started to offer “green tariffs” based either on using energy from renewable sources or on programmes of carbon sequestration. Competition also increases the pressure on companies to meet consumer needs and concerns; as consumers become more environmentally aware, so must companies.

17. **Taxation:** Low absolute prices, however, do not encourage energy efficiency and the government also uses taxation as an instrument of environmental policy. The UK Climate Change Levy is based on the principle of encouraging business to become more energy efficient, while safeguarding competitiveness. All the revenue raised will be recycled back to the non-domestic sector. For the most part, this will be through a reduction in employers’ National Insurance Contributions, but also through additional funding for improved business energy efficiency measures, and research and development for new low carbon and renewable sources of energy.

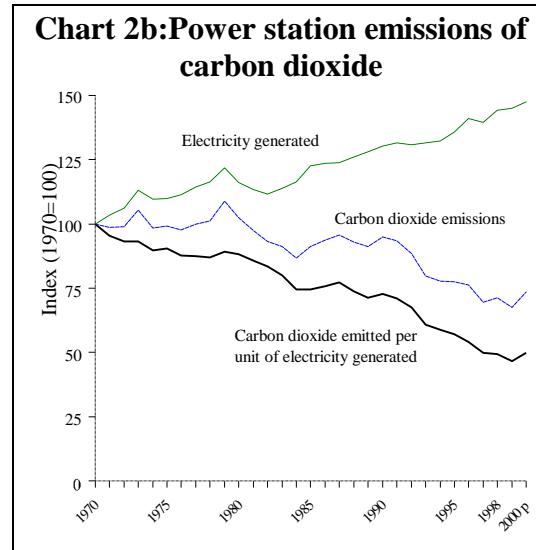
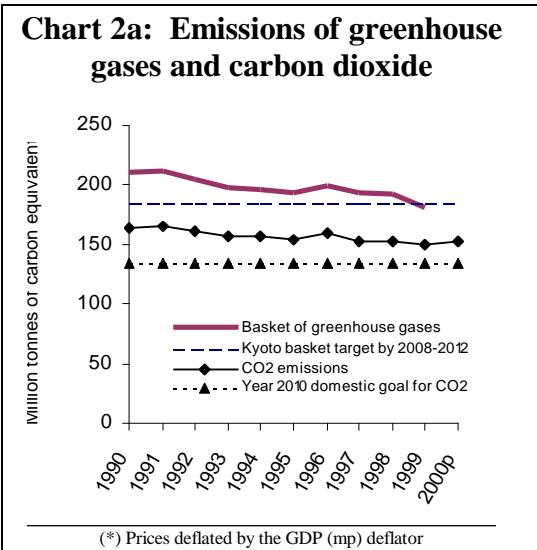
18. **Regulation:** Regulatory intervention also plays a role: for example, the Government has recently taken a new power to set an obligation on electricity suppliers to buy a proportion of their electricity from renewable sources. This aims to support the Government’s objective of increasing the proportion of electricity generated from renewable sources.

19. Regulation can also ensure conservation and in the domestic market, the Government has taken a power to set energy supply companies an obligatory energy saving target (known as the Energy Efficiency Commitment) which they meet by encouraging their customers to save energy, for example, through insulation measures or more efficient appliances. Companies have to give priority to low income customers when undertaking this work. Both these obligations are designed to work in a competitive market, where freedom to find the cheapest way to deliver the obligation is left to the companies.

20. **Government funding:** Funding also plays a part in environmental delivery. This is not only in the form of grants to householders to improve the energy efficiency of their homes, mentioned above. It can also take the form of support for energy-related research and development in areas of new technology such as renewable generation. The Government has launched a new Research, Development and Demonstration programme to help remove barriers to the use of renewable generation.

## 21. Results

- Carbon dioxide emissions in the UK fell by 7½% between 1990 and 1999, while greenhouse gas emissions as a whole were down by around 14½% over the same period. The UK has a domestic goal to reduce carbon dioxide emissions to 20% below 1990 levels by 2010 (see Chart 2a below);
- Carbon dioxide emissions from power stations fell by 22½% between 1990 and 2000 whilst electricity generation has risen by 13% (see Chart 2b below);
- The proportion of electricity generated from renewables has risen from 1.7% in 1989 to 2.8% in 1999. The UK has a target of increasing the amount of electricity from renewable sources to 5% in 2003 and 10% in 2010, subject to the cost being acceptable to consumers;
- CHP capacity increased by over 80% between 1991 and 1999 and, in 1999, provided 6% of overall UK electricity generating capacity. The UK has a target of achieving at least 10,000 MWe of CHP capacity by 2010.



## **Security of supply**

22. Security of supply is an essential component of a modern society in which homes and industry are crucially dependent on the availability of energy supplies in sufficient quantities. Key security of supply objectives are:

- Reliable and diverse supplies of energy – oil, gas and electricity;
- Reliable networks and infrastructure; and
- Reliable delivery to customers at reasonable prices.

23. **Competitive markets:** Competitive markets help to achieve these objectives by lowering the operational costs of energy supply and by encouraging investment to develop and utilise new technology. Competition encourages diversity through the development of different technologies, an increased range of supplies, fuel sources and their means of delivery. Competition also promotes innovation and improvements in service. It provides price signals to keep supply and demand broadly balanced and generally keeps prices low.

24. **Regulation:** The Government has established a regulatory framework that aims to ensure adequate capacity, to encourage efficient investment in transmission networks and to encourage trading as a method of dealing with risk. The Regulatory Authority also plays a role both in monitoring the gas and electricity markets and by placing obligations on individual gas and electricity companies, through their licence conditions, relating to their ability to fulfil consumer demand and provide secure, high-quality supplies of fuel.

25. **Legislation:** The Government has also established emergency powers and procedures for action in the event of a major disruption in supply of oil, gas or electricity. The Energy Act 1976 created wide-ranging powers for the Government to make Orders regulating or prohibiting the production, supply, acquisition or use of these substances and it also enables the Government to maintain oil stocks in line with the UK's international obligations.

26. **Partnerships:** It is in companies' own interests however, to ensure that they can maintain supplies and the Government has taken a partnership approach in this respect. This acknowledges companies' responsibilities for supply and distribution and, in the event of a serious disruption in supply, establishes effective lines of communication to link their actions and expertise with Government procedures. The Government operates in partnership with the National Grid Company (NGC) and Transco<sup>3</sup> to co-ordinate action in the event of electricity and gas supply emergencies. It has also entered into a Memorandum of Understanding with oil companies (which are outwith the scope of the Regulatory Authority) to enable oil supplies to be maintained in the event of disruption. A key component of these partnership

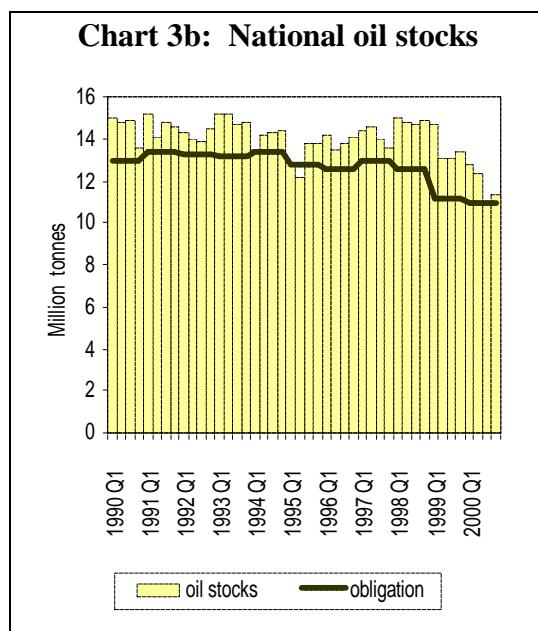
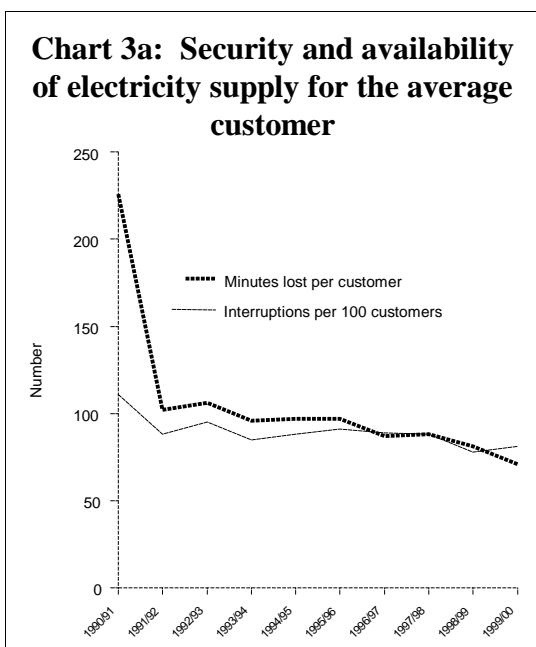
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<sup>3</sup> NGC and Transco are the regulated monopoly businesses that run, respectively, the national electricity and gas networks.

arrangements is a set of agreed procedures between Government and industry on what needs to be done in specific circumstances and the ability to monitor closely what is happening to supplies.

## 27. Results

- Interruptions to electricity supply per 100 customers have fallen from over 100 in 1990/91 to 81 in 1999/00 (see Chart 3a below);
- The average length of time without supply has fallen from over 200 minutes per customer in 1990/91 to 71 minutes per customer in 1999/00 (see Chart 3a below);
- Numbers of payments to customers by electricity suppliers for failure to meet guaranteed standards of performance have fallen from 12,321 in 1992/3 to 6,714 in 1999/00;
- Since the beginning of 1998, the UK has met all its obligations for holding national oil stocks and currently holds stocks covering about 70 days of consumption (see Chart 3b below);
- The Regulator plans to introduce performance incentive schemes to strengthen the financial incentive to companies to maintain or improve service.



## **Conclusions**

28. Competition is an essential driving force for economic efficiency, choice and innovation. As consumers and businesses begin to appreciate the choice, opportunities, innovation and higher service standards that competitive energy markets offer, the pressure will increase on all companies and countries to benchmark themselves against the leaders. At the same time the challenges of addressing social, environmental and security of supply policies also present commercial opportunities, benefiting both business and consumers and also helping government to deliver its objectives. UK experience has been that competitive markets have helped the Government work towards its wider social, environmental and security of supply objectives, and that instruments available to the Government such as legislation, regulation, taxation and partnerships, are most effective when working with the grain of the market, rather than against it.

29. The following annexes (Annexes A to C) give more details and examples of the delivery mechanisms outlined above in relation to social, environmental and security of supply respectively. A final annex (Annex D) sets out a range of indicators for all three areas.

## SOCIAL DELIVERY

### Approach to social issues

*Social policy has always been a responsibility of Government, and this does not end just because energy companies are in the private sector. Social issues now have a higher profile, with a greater emphasis on more effective delivery. The Government has published a fuel poverty strategy to set out its objectives, targets and policies and seek comments on them. It has also encouraged companies to come forward with their own schemes.*

A1. Delivery instruments include:

- i. **Competitive markets:** companies' own initiatives and programmes aimed at helping disadvantaged customers;
- ii. **Regulation:** licence conditions and standards of service set by the Regulatory Authority;
- iii. **Government funding:** to Local Authorities and through the Home Energy Efficiency Scheme (HEES) and Winter Fuel Payments;

A2. The Utilities Act 2000 has established a new emphasis on the consumer by laying down a primary duty for the Government and Regulatory Authority to protect consumer interests, wherever possible, by promoting effective competition. This also embraces the interests of future consumers and includes consideration of price, continuity and quality of supply. The Authority must also pay particular regard to the interests of the most vulnerable consumers (e.g. the elderly, chronically sick, disabled, and those on low incomes). The Authority must have regard to guidance from the Government on its social and environmental policies. The Act has also introduced a reserve power for the Government to cross-subsidise charges for disadvantaged customers if it considers that they are being treated less favourably than others, if necessary.

A3. To take work forward, a Ministerial Group on Fuel Poverty has been established to take a strategic overview and ensure that policies and initiatives with a bearing on fuel poverty are co-ordinated across Government, between the Devolved Administrations and integrated with the activities of relevant external bodies, such as the Regulatory Authority and the energy industries. The Group published its draft **Fuel Poverty Strategy** in February 2001 and this sets out the Government's fuel poverty objectives, targets for achieving those objectives, the policies to deliver them, and how progress should be monitored. Its approach is to tackle the root causes of fuel poverty using:

- programmes to improve the energy efficiency of fuel poor households;
- continuing action to maintain the downward pressure on fuel bills; and
- continuing action to tackle poverty and social exclusion.

A4. The Regulatory Authority has published a **Social Action Plan** to clarify its own role. It was published in March 2000, following consultation on an earlier draft. It outlined a range of actions to ensure that the economic benefits of liberalisation are spread fairly among vulnerable and disadvantaged customers. It outlined activity in four main areas:

- Using revised licence conditions to enhance protection for disadvantaged consumers;
- Using initiatives aimed at reducing prices and removing barriers to competitive supply markets to lower costs to consumers;
- Using research to explore some of the issues raised in consultation;
- Establishing a Review Group to monitor progress on the action taken.

(i) **Competitive markets**

A5. In general, average domestic electricity prices have fallen steadily during the late 1990s (following privatisation in 1990 and full opening of the domestic supply market to competition in 1999) with the exception of 1994 when VAT was introduced. The reduction in VAT in 1997, tighter distribution price controls and reductions in the Fossil Fuel Levy have played some part in this, as well as the pressure of the competitive market. Overall domestic electricity prices have fallen in real terms by 22% between 1990 and 2000. Similarly, in 2000 annual domestic gas prices had fallen by 33% in real terms since privatisation in 1986. There has been a recent, sharp increase in the wholesale price of gas in the UK. A major reason for this was arbitrage, through the UK-Belgium gas interconnector, with higher, oil related gas prices on the continent. Several gas suppliers have increased their prices to domestic customers in 2001 as a result of this, with increases of around 5% for many customers. While this will put some upwards pressure on electricity prices (as gas is used for generating electricity), the effects may be limited as fuel costs account for only a modest proportion of the price of electricity; gas is not the only fuel used in electricity generation and there is downwards pressure on electricity prices as a result of the New Electricity Trading Arrangements in England and Wales which came into effect on 27 March 2001.

A6. Energy companies have also responded, both individually and jointly, to the challenge of tackling fuel poverty, following action from Ministers and the Regulatory Authority to raise the priority of social issues. The Electricity Association (a trade body) in May 1999 set up a Fuel Poverty Task Force. Its main focus is on achieving common standards among the range of schemes that companies are developing to address fuel poverty among their customers. It has published a major study of self-disconnection and rationing by prepayment meter customers. Its main focus in the near future is on access to the banking system (including credit unions) for unbanked low-income consumers, and on how best to co-ordinate delivery, at a local level, of the various types of aid available for the fuel poor.

A7. Companies are also developing individual programmes of work to help poorer consumers. The fuel poor are a significant market segment, and making a particular company attractive to them would increase market share. As supply companies generally have relatively high levels of fixed costs, increasing customer numbers can

help to increase profitability. Schemes have typically been based on one or more of the following:

- Special payment schemes (e.g. through fixed or regular payments);
- Debt management advice and assistance;
- Signposting to other sources of help (e.g. Government schemes or benefits); and
- The installation of central heating or insulation on favourable terms (e.g. through Government or private sector schemes).

A8. This is a developing area but these schemes are starting to have a real impact. The main company schemes operating at the time of writing are listed below.

### **Energy efficiency schemes:**

- The Government has worked with BG **Transco** (the main gas transportation company) to develop an “**Affordable Warmth Programme**”, which uses an innovative application of lease finance (which required a change in the relevant tax rules) to encourage the installation of insulation and gas central heating in up to 1 million homes by 2007. Transco is also funding the expansion of training needed to meet the demand for the extra heating engineers that the scheme will entail, including 3,000 skilled gas-fitter jobs. The package is worth about £20 million (split evenly between the project support and the training elements); and Transco will underwrite the residual value of the leased heating systems (which could theoretically amount to tens of millions of pounds, although mostly the housing providers will purchase them).
- **Centrica**<sup>4</sup> has a link with the **Help the Aged** (HA) charity, covering general support of day centres, including transport of clients to centres, and some installation of energy efficiency measures in particular hardship cases. The support is not tied to the supply of gas, other than to HA day centres.
- **Centrica** also offers to its 1 million prepayment and frequent payment customers its “**Warm-a-Life**” scheme, which is aimed at helping vulnerable households at risk from fuel poverty through referral to energy efficiency grant schemes, a free benefits check, and a one-off reduction of up to £15 in energy bills.
- Energy companies (Transco, npower, Yorkshire Electricity, Northern Electric, and London Electricity) are helping to finance the 5 “**Warm Zone**” projects set up with Government assistance to explore mechanisms for improving local delivery of energy efficiency measures to low income households. Powergen is also supporting the central administration costs of the projects. The overall cost of these 5 pilots over a 3 year period is around £6½ million.

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<sup>4</sup> Centrica is the gas supply company that was formerly part of British Gas.

### **Tariffs for low income consumers:**

- **Texas Utilities'** (TXU) “**Staywarm**” is aimed directly at people on State benefits, and offers a very low price achieved by simplifying supply operation and administration (no meter reading, no bills) because annual bills are fixed amounts determined by categories of dwelling types and the number of occupants rather than by actual consumption. The averaging of energy consumption across broad housing categories means that there is no year-on-year carryover of debt for particular individuals with high fuel use – an important feature for people on low incomes. The householder pays the bill via regular payments over the year, either by direct debit or by cash through the Post Office.
- **Powergen** and the **Age Concern** charity have set up Age Concern Energy Services, which markets through Age Concern’s network of local groups. Its benefits include a special tariff package, an energy efficiency survey and advice, a non-disconnection policy, and free heating if the temperature falls below 0°C. In January 2001, Powergen also launched an initiative to reduce by half the additional cost of electricity through its prepayment meters, with a promise to eliminate the prepayment surcharge altogether by 2005. Part of this cost reduction will be achieved by replacement of Powergen’s existing prepayment meters with more reliable user-friendly smart cards. Other planned measures for this customer group include free energy efficiency surveys and state benefit health checks.

### **Advisory/finance services:**

- Npower’s “**Health Through Warmth**” scheme will train district nurses, health visitors, and voluntary workers to offer advice on what grants are available to people they visit, helping to ensure that assistance goes to the people who need it most. The scheme will also provide money to help the most vulnerable people make their homes more energy efficient, so that they can get warmer at lower cost. Innogy, npower’s parent company, is investing £5.7 million in the programme.
- In March 2000, **Scottish Power** launched “**Neighbourhood Energy Services Team (NEST) Makers**”, which has established a network of local energy advisers in the West Midlands of England, offering free advice to householders on benefit, including a benefits check, and referral (where appropriate) to other schemes and sources of help.
- **Scottish Power** has developed an initiative with the **Royal Bank of Scotland** to provide basic bank accounts for previously unbanked customers, who can thereby benefit from direct debit savings on their bills, as well as gaining access to a range of other banking facilities. The initiative was announced in August 2000, with a trial promotion in Fife, Lanarkshire and the Scottish Borders.
- In January 2001, **Centrica** announced a link with the **Bank of Scotland** to provide for its low income customers, who live by cash, special bank accounts which enable them to get cheaper fuel through access to direct debit terms.

## **(ii) Regulation - licence conditions**

A9. Any person who generates, transmits, distributes or supplies electricity is required to be licensed by the Regulatory Authority unless exempted under the provisions of the legislation. The Utilities Act 2000 enabled the introduction of standard licence conditions for electricity, following their use in the gas industry, and the aim is to align, as far as possible, the provisions of gas and electricity licences. The changes made to the Regulatory Authority's duties by the Utilities Act are also reflected in the licensing regime with a shift of emphasis towards protecting the interests of gas and electricity consumers wherever possible through promoting competition, rather than focusing primarily on the companies and their ability to finance their activities and to satisfy reasonable consumer demand (though these still remain important).

A10. Licence conditions vary according to the type of activity being licensed, i.e. generation, transmission, distribution or supply. They generally cover the basic requirements of safety, security, service delivery, and handling of customer complaints. Suppliers have to meet important social obligations to their domestic customers that include the following.

- A legal obligation to supply domestic customers on request (subject to certain exceptions).
- The requirement to publish their prices, and to provide a range of payment methods, including cash and other credit terms.
- Procedures to ensure domestic customers in genuine payment difficulties are treated sympathetically. Safeguards include instalment plans and the provision of a prepayment meter. As a result of these procedures, disconnections for debt have been virtually eliminated.
- A range of special services for elderly, disabled or chronically sick customers who may register their needs. Services include special passwords, meter repositioning, special controls and adapters for appliances and meters etc.
- Arrangements for providing energy efficiency advice.

A11. As mentioned above, price controls have also played an important part in driving down the costs of energy for consumers. The Regulatory Authority has been developing a new Information and Incentives Project, which would introduce an additional licence condition for Public Electricity Suppliers. This would work alongside existing price control mechanisms but link financial incentives to quality of service measures. More about this and about the ways in which licence conditions also reflect security of supply considerations can be found in Annex C.

### **(iii) Government funding**

A12. The Government has substantially increased the funding for housing investment by Local Authorities to maintain or improve council housing. On average, around £2.5 billion will be allocated to Authorities over the three years from 2001/02 – more than double the amount allocated in 1997/98. The targeting of investment would be guided by the Authority's housing strategy, and would generally include not only the Authority's own council housing but also grants to private sector stock occupied by low-income families and housing owned by registered social landlords.

A13. The Government's new Home Energy Efficiency Scheme (HEES), launched in June 2000, is designed to tackle fuel poverty among those most vulnerable to cold-related ill health – the elderly and families on low incomes, the disabled and the chronically sick. The scheme is focused on the private housing sector, where some 70% of the fuel poor are to be found. With a budget of over £600 million between 2000 and 2004, HEES is expected to reach some 800,000 vulnerable households, 480,000 being made up of people over the age of 60. HEES applies to England only, with the Devolved Administrations having their own, similar, schemes.

A14. In addition to HEES and the Energy Efficiency Commitment (see Annex B), there are other schemes supported by the Government but managed by the Energy Saving Trust<sup>5</sup> (EST) which aim to encourage the take-up of energy efficiency measures in households. Many are local projects, some of which act as pilots for future, wider schemes. The Trust also provides a network of Energy Efficiency Advice Centres, giving free, impartial advice to householders and small businesses. So far, roughly 900,000 customers have benefited from this service, saving around £24 each per year from measures actually installed.

A15. The Government also provides social security payments to the most needy in society. To help with fuel bills specifically, it also makes a Winter Fuel Payment to men and women over 60 (subject to eligibility) which, this winter, has been increased from £150 to £200.

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<sup>5</sup> An independent, not-for-profit company, limited by guarantee which undertakes management and delivery of public projects as well as providing independent advice on energy efficiency.

**ANNEX B**  
**ENVIRONMENTAL DELIVERY**

## **Approach to environmental issues**

*The Government's environmental approach to energy policy has centred on encouraging better energy efficiency, as well as stimulating new and more efficient sources of power generation.*

B1. Delivery instruments include:

- i. **Competitive markets:** companies' own initiatives aimed at increasing energy efficiency and using alternative sources of energy; development of emissions trading;
- ii. **Taxation:** the Climate Change Levy;
- iii. **Regulation:** the Renewables Obligation and the Energy Efficiency Commitment;
- iv. **Government funding:** encouraging R&D and investment in new and renewable power generation.

B2. One of the key impacts of the use of energy on the environment is climate change. The Government has set out its strategy for dealing with the issue of climate change in the UK in the **Climate Change Programme**, published in November 2000. The UK programme details how the UK plans to deliver its Kyoto target<sup>6</sup> and move towards its domestic goal to cut carbon dioxide emissions. The Government estimates that the proposals in the Climate Change Programme could reduce the UK's greenhouse gas emissions to about 23% below 1990 levels in 2010. This is substantially beyond the UK's Kyoto target of reducing emissions to 12.5% below 1990 levels by 2008-2012. The quantified measures in the programme could reduce carbon dioxide emissions by about 19% in 2010, representing significant progress towards the Government's domestic goal of a 20% reduction in these emissions from 1990 to 2010. Overall it aims to move the UK towards a more sustainable, low carbon economy, using policies and measures to reduce emissions from all sectors of the economy.

B3. There is an important role for economic instruments, reflecting the external costs that the production and use of energy can impose on the environment. For example, burning fossil fuels causes emissions of CO<sub>2</sub> which contribute to climate change and sulphur emissions, which combine with water in the atmosphere to form acid rain. Companies do not fully consider the environmental costs in their production decisions. Economic instruments, such as taxes, charges and trading, can offer a cost-effective way to "internalise" these costs.

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<sup>6</sup> Under the 1997 Kyoto Protocol, developed countries have agreed to take on legally-binding greenhouse gas emission limitation and reduction targets, which represent a 5.2% cut in emissions below 1990 levels by 2008-12. The EU's share of this target is an 8% reduction, which under the terms of the "EU bubble" has been redistributed among Member States.

B4. The March 2000 Budget Statement describes the advantages of using economic instruments to achieve environmental improvements: “By making use of the price mechanism, economic instruments allow those involved in environmentally damaging activities to respond according to their own circumstances. Those facing the lowest costs of abatement have the incentive to make largest reductions. Pricing-in the wider economic costs not only provides a short-term incentive to reduce pollution, but also provides a permanent incentive for innovation and investment in less polluting processes, and encourages the consumption of cleaner products.”

B5. As with its approach to social issues, the Regulatory Authority has sought to clarify its role in an **Environmental Action Plan**. This clarifies the role of the Regulator in relation to environmental protection and aims to improve the coherence and transparency of the Regulator’s activities. The Plan, outlines a number of specific actions including:

- Developing an environmental impact checklist to be used as an aide in regulatory decision-making;
- Continuing work to investigate and eliminate barriers to renewables, CHP and embedded generators;
- Supporting the Energy Efficiency Commitment and encouraging companies to do more to promote energy efficiency to consumers, e.g. through developing energy services;
- Promoting better information and understanding of environmental issues amongst consumers;
- Encouraging more companies to report annually on their environmental impact and activities; and
- Clarifying and improving its links with other organisations.

#### (i) **Competitive markets**

B6. With the growth of embedded generation<sup>7</sup>, companies have increasingly developed innovative systems for generating electricity to respond to the particular needs of on-site users. This has both utilised and encouraged the development of new technology. Examples are not only business-related but can also be found in the public sector, funded usually by a mixture of grant and private money. In many cases these provide environmental benefits through their efficiency or their use of renewable energy sources, while also fulfilling social needs, such as providing energy for schools, medical equipment, or lighting in public areas.

B7. Government has also recognised the part that embedded generation can play in helping to meet emissions reduction targets and it has established a Working Group comprising representatives from the Regulatory Authority, from the electricity transmission and distribution industries, embedded generators, and consumers. In January, the Group published its recommendations for consultation. These included a

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<sup>7</sup> That is, plant which has been connected to the distribution networks of the public electricity distributors rather than directly to the National Grid Company’s transmission systems. Generally they are smaller stations, located on industrial sites.

wide range of design, operational, charging and disclosure issues where changes may be appropriate and that will affect the ability of developers and operators of such plant to gain access to and use distribution networks. More information about the group's work is available on DTI's website.

B8. One of the key areas, however, where the Government sees most potential for innovation in the delivery of both social and environmental benefit, is in the area of energy services. The Government is keen to encourage the development of an energy market place where suppliers are not only interested in selling energy (as now) but seek to develop a more imaginative and innovative services package based on the heating, lighting and power needs of their customers. This implies a careful balance between:

- helping poorer consumers to meet their needs;
- helping customers in general to meet their needs in the most efficient way to minimise environmental damage; and
- making the package attractive by offering a seamless service package involving the customer in least cost, time and trouble.

B9. **Emissions trading** is another market-based measure likely to have a major impact in the future. International emissions trading is perhaps the most far-reaching of the three "Kyoto Mechanisms"<sup>8</sup> created under the Kyoto Protocol. It creates a way to give emissions a market value, thereby addressing an environmental issue in a way that works along market principles. The mechanisms allow developed countries to "buy" emissions reductions that have taken place in other countries as a way to meet part of their Kyoto targets, if to do so is cheaper or easier than reducing emissions at home. Therefore, if countries have achieved emissions reductions over-and-above those required by their Kyoto targets, they may "sell the excess" to countries finding it more difficult or expensive to meet their commitments. An international trading system for carbon could emerge, with carbon "permits" sold on an international market.

B10. The Government is committed to establishing an emissions trading scheme domestically and believes that emissions trading can offer real benefits to companies while also delivering emissions reductions with certainty for Government and regulators. In November 2000, the Government published a consultation document outlining its proposals for how a trading scheme might operate. This was in response to the proposals, drawn up by the business-led UK Emissions Trading Group. Responses to the consultation have been analysed and considered during the process of finalising the framework for the scheme, which is due to be published shortly.

B11. The European Commission has published a Green Paper on emissions trading, proposing establishment of emissions trading within the Community, and this has been welcomed by the UK Government. The wider the scope of the scheme, the greater

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<sup>8</sup> The other two mechanisms are the Clean Development Mechanism (CDM) and Joint Implementation (JI). Both are project-based and will allow developed countries to invest in emissions-reducing or limitation projects in other developed countries (JI), or developing countries (CDM) in return for emissions credits.

the potential benefit for all involved. The UK Government does, however, believe that any framework for an EU scheme must not be too prescriptive. It should not constrain member states' ability to meet their Kyoto commitments in a way that reflects national circumstances; and it should allow flexibility to member states that wanted to opt-out or opt-in particular sectors and gases. The UK has been involved in a Commission-led working group taking forward the options for emissions trading in the EU and further developments are expected in the summer as part of the wider European Climate Change Programme.

B12. The Government has also announced the creation of the **Carbon Trust**, an independent, not-for-profit company limited by guarantee. It will be charged with working alongside business, public bodies, Government and the research community in helping the UK move towards a sustainable low-carbon economy whilst maintaining competitiveness. The Trust will be chaired by Ian McAllister, Chairman and Managing Director of Ford UK, and the Deputy Chairman will be Ian Stephenson, a Director of Johnson Matthey. The Trust will offer advice on energy management, helping organisations to minimise their Climate Change Levy liabilities (see paragraph 13 below) and it will promote investment in low-carbon technologies. The Trust will also administer the new Enhanced Capital Allowances Scheme for energy saving technologies (see paragraph 16 below).

## (ii) Taxation

B13. One of the cornerstones of environmental fiscal policy is the new Climate Change Levy on the business use of energy, which came into effect on 1 April 2001. It is designed to maximise its environmental effectiveness while safeguarding the competitiveness of UK business. The Levy is payable on the use of energy in industry, commerce and the public sector, and the revenue raised is recycled to business. It funds cuts in employers' National Insurance Contributions, energy saving measures, including enhanced capital allowances for businesses making approved investments in specified energy efficient products, and research and development for new and renewable sources of energy. In the UK, the Climate Change Levy as a whole will save around 5 million tonnes<sup>9</sup> of carbon annually by 2010. This includes the influence of the tax on energy consumption; the use of revenues to encourage energy efficiency; and the impact of climate change agreements, negotiated with energy intensive business sectors.

B14. Recognising the high energy costs of some sectors and their exposure to international competition, those energy intensive sectors that enter into agreements to implement cost-effective energy saving measures and achieve energy saving or carbon emission targets which meet the Government's criteria qualify for an 80 per cent discount from the main levy rates. In view of their environmental benefits, some forms

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<sup>9</sup> This figure breaks down into around 2 million tonnes of carbon saved as a result of the Levy itself; around 2.5 million tonnes through the climate change agreements; and around 0.5 million tonnes through energy efficiency measures funded from recycled revenue from the Levy.

of generation (new and renewable generation and Good Quality CHP<sup>10</sup>) are levy exempt. These measures are subject to approval under EU State Aids procedures.

B15. The European Commission is developing new guidelines for “environmental” State Aids, and the UK has been contributing to the development process. The Government takes the view that the new guidelines must strike the right balance between the need for strict conditions to avoid state aids abuse and to provide certainty for business. In other words, the new rules should provide a framework within which State Aids approval can be given for a period which is long enough to give industry a stable environment in which to plan ahead with sufficient certainty to prepare their energy efficiency and carbon reduction investment strategy.

B16. The Government has also introduced 100 per cent first year capital allowances<sup>11</sup> on selected energy saving technologies, for example, Combined Heat and Power plant, lighting and refrigeration and variable speed drives. A list of qualifying products and criteria was published in March 2001<sup>12</sup>. Eligible investments will qualify for enhanced capital allowances. The Government has also announced in Budget 2001 that it will be consulting on a Green Technology Challenge, to identify new technologies that meet appropriate criteria and which can be added to the existing list.

B17. The Government has established a set of tests of good taxation that any environmental tax must meet. One of these tests is that environmental action must not hurt the most vulnerable members of society. To this end, the Government has reduced the rate of Value Added Tax (VAT) on domestic fuel and power from 8% to 5% - the lowest rate allowable under EU regulations. To encourage domestic energy efficiency, Budget 2000 contained a reduction in VAT on the installation of certain energy saving materials for all households from 17.5% to 5% from 1 April.

B18. The March 2000 Budget announced a change in the tax rules relating to the leasing of heating equipment which effectively makes the installation of insulation and gas central heating cheaper to provide (because of the lease basis and capital allowances). This will underpin Transco’s “Affordable Warmth Programme” which aims to support the installation of modern gas-fired heating systems and insulation in up to 1 million homes by 2007 (see Annex A for more details of this).

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<sup>10</sup> As defined under the Government’s CHP Quality Assurance scheme.

<sup>11</sup> Businesses will be able to set these allowances against their corporation or income tax bills.

<sup>12</sup> The full list is available on the ECA website at [www.eca.gov.uk](http://www.eca.gov.uk). It also includes instructions on how to have products registered.

### (iii) Regulation

B19. Initially market stimulation for renewable energy has been delivered using Non-Fossil Fuel Obligation (NFFO) Orders<sup>13</sup>, the ten executed so far should contribute around 5% of UK electricity needs being met from renewable electricity by 2003. Over the last decade, they have halved the cost of electricity generated from renewable sources under NFFO contracts.

B20. The Utilities Act will introduce the **Renewables Obligation** as a new form of market stimulation (to operate alongside the remaining NFFO contracts) for renewables in the shape of an Order requiring electricity suppliers to provide a proportion of their power from renewable sources. The Order is expected to be made later this year and will be set at a level consistent with increasing the contribution from all renewables from around 5% in 2003 to around 10% in 2010, subject to the cost being acceptable to consumers. The period of the Obligation is expected to apply until 2026, giving companies a degree of certainty for the purposes of forward planning.

B21. The Government is currently preparing a draft Order to implement the Obligation. In broad terms it will operate as follows:

- The Regulatory Authority will operate a certification system to monitor and enforce compliance among companies.
- Supply companies will trade certificates from qualifying renewables generators as evidence that they have supplied electricity from renewable energy to consumers.
- Some trading, banking and borrowing of certificates will increase the flexibility of the scheme.
- If the expense of renewable energy becomes too much, companies may buy out their obligation at a price set by the Order (currently proposed to be 3.0p/kWh initially but linked to the Retail Price Index), making payment to the Regulatory Authority. The current wholesale price of electricity is around 2p/kWh.
- The buy-out mechanism is intended to protect the consumer by effectively capping the amount that the Obligation will cost - currently estimated to be an additional 20p a week on 1998 electricity prices by 2010.

B22. The **Energy Efficiency Commitment** (EEC), formerly known as Energy Efficiency Standards of Performance (EESoPs) is an obligation on gas and electricity suppliers to encourage and assist consumers to make energy savings through measures such as cavity wall insulation, loft insulation, boiler replacement (with a condensing boiler) and energy saving light bulbs. Suppliers make a contribution to the cost of the measure at a level, which will induce the householder to take it up.

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<sup>13</sup> NFFO Orders were placed upon electricity supply companies requiring them to contract for specified amounts of electricity from non-fossil (nuclear or renewables) sources. Although supply companies would pay above-market prices for this fuel, they would be reimbursed for the extra cost by funds raised through the Fossil Fuel Levy, paid by all electricity consumers through their bills.

B23. The level of the proposed Commitment to run from 2002 to 2005 has not yet been set but is provisionally expected to achieve an ongoing annual energy saving worth about £250 million for customers in England, Scotland and Wales by 2005 and to cut carbon emissions by 500,000 tonnes per year. The scheme will maintain the focus on the fuel poor with the proposal that companies should seek at least 50% of their target fuel saving from disadvantaged customers, and also give near-benefit customers priority in achieving the remainder of their target.

B24. The new-style Commitment is based on giving companies the flexibility to innovate and fulfil their obligation in the most cost-effective way, also taking into consideration the environmental and social value of the measures they choose.

- It will not specify the measures to be offered to customers nor the amount of money companies should devote to the programme.
- The Government will determine the basis for apportioning the obligation between companies and companies' programmes will be allotted a score by the Regulatory Authority in fulfilling that obligation.
- Obligation holders will be able to trade with each other their obligations and accredited performance. They will also be able to target their programmes at all consumers not only their own customers.
- It is also anticipated that over-achievement against the obligation will be eligible for conversion into carbon and sale into the UK's emissions trading scheme.

#### **(iv) Research and Development**

B25. In recognition of the importance it attaches to the development of renewable and other sustainable energy technologies, the Government has developed a package of support for renewable energy worth over £260 million over the next three years, covering support for commercial applications of technology as well as R&D. Principally, this includes £100 million devoted to a Renewables Fund, which will be spent over the next three years and allocated following the report of the current review of renewable energy by the Government's Performance and Innovation Unit. Other aspects of the package to support particular energy sources include:

- a £39 million fund for capital grants to support the development of the UK's offshore wind resource – the Government has already announced the pre-qualification of eighteen developers for leases of the UK Territorial Seabed for the development of wind farms;
- £50 million for energy crops, small-scale biomass heating projects and offshore wind projects;
- the Ministry of Agriculture, Fisheries and Food has also provided £12 million over three years for planting grants for energy crops;
- £10 million funding for a demonstration project for solar photovoltaics; and
- the current renewable energy research and development programme which is worth over £55.5 million over the next three years.

B26. The Government has also initiated a major new exercise to prepare long-term strategies for individual renewable technology areas, in consultation with industry, academia and also involving the European Commission. This will be based on a series of route maps for each specific technology area covering wind, biofuels, water-based renewables, solar, fuel cells and for a new programme on embedded generation. The route maps will cover the current status of individual technologies, UK strengths and R&D needs, and will be the basis for a detailed set of targets and priorities ranging over a twenty-year timescale. When completed, these route maps and targets will be published and this will then form the basis on which future R&D proposals would be supported by the Government.

B27. The Government is also looking into the role that Smart Metering could play in the future. This form of metering would offer electronic remote, real-time monitoring and collection of usage data through the use of communications-enabled utility meters. This could offer a range of benefits including:

- Providing a digital gateway in the home to enable the use of other smart technology;
- A way to monitor energy use by the elderly or sick (where lack of usage could raise the alarm);
- A way for householders to better monitor and control their energy usage, enhancing energy efficiency;
- Alerting suppliers as soon as power cuts happen; and
- Developing and maintaining an efficient, co-ordinated and economical system of transmission.

## ANNEX C

### SECURITY OF SUPPLY DELIVERY

#### **Approach to security of supply**

*The Government's overall approach is that while open, competitive markets help to maintain security of supply, they need to be underpinned by statutory powers to enable the Government to deal with emergency disruptions, and effective partnership arrangements with industry. Maintaining public service standards is also of prime importance.*

C1. Delivery instruments include:

- i. **Competitive markets:** increasing customer choice and diversity of power supplies, inspiring innovation and improvements in customer service;
- ii. **Regulation:** obligations placed upon individual companies by the Regulatory Authority through licence conditions;
- iii. **Legislation:** statutory powers enabling the Government to deal with emergency disruptions of fuel supply;
- iv. **Partnerships:** between the National Grid Company, Transco, and oil companies to co-ordinate action in the event of disruption of supplies.

#### **(i) Competitive markets**

C2. As described earlier, the Government's policy approach is that open, competitive markets help to maintain security of supply by encouraging diversity of fuel sources, enabling price signals to influence energy efficiency and technological innovation, keeping prices down, and by using trading to spread risk. Ensuring the security of energy supply is a public interest consideration of great importance: crucial to underpinning both economic performance and quality of life. For this reason, it is important that the Government and Regulatory Authority should have an active role both to monitor security of supply, and to intervene if it is threatened. Statutory powers to achieve this are enhanced by an operational partnership with key private sector organisations – their involvement is essential in an increasingly complex market.

C3. The Government's Energy White Paper<sup>14</sup>, published in October 1998 presented a detailed review of fuel sources available for power generation and made recommendations designed to encourage diversity of supply. Subsequent follow up work has included a review of technological issues connected with the switch from coal to gas as the main fuel for power generation. The Government continues to develop its emergency arrangements to deal with disruptions to supplies of petrol, gas and electricity, and works domestically and internationally (e.g. through the Energy Charter) to strengthen the network infrastructure. The UK welcomes the European Commission's Green Paper on Security of Supply, which provides the opportunity to take stock of security of supply policies generally in a European context.

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<sup>14</sup> "Conclusions of the Review of energy sources for power generation and Government response to the fourth and fifth reports of the Trade and Industry Committee" (DTI, October 1998).

C4. The diversity created by competition has led to increasing choice for customers, with the result that in general, service has improved and prices have fallen. A review of competition in the domestic gas supply market, conducted by the Regulatory Authority, found that 96% of customers were aware of their ability to switch suppliers, while 25% had actually done so. Most customers switching from the Centrica (the former British Gas and still the largest gas supplier in the UK) were able to obtain discounts of up to 20% on their tariffs. Increasingly “dual fuel” tariffs are becoming available, with a single company providing both gas and electricity, often at discounted rate, and nearly half of those customers who had switched suppliers had moved to take up this kind of contract.

## (ii) Regulation

C5. The Regulatory Authority monitors the gas and electricity markets and is required by the Utilities Act to ensure that, where economic, reasonable demands for gas and electricity are met and that licence holders are able to finance their activities to fulfil their obligations. The Authority imposes obligations on companies through **licence conditions** in order to safeguard universal service and high standards of service, and can impose fines for contravention of licence obligations or even revoke licences.

C6. The regulatory framework places an obligation on distributors to connect any customer to an electricity or gas supply on request and allows the distributor to make requests in exchange for example for information and payment. It also effectively imposes a universal service obligation on supply companies which requires them to provide high levels of service. The standards required are set out in the licences that supply companies must hold in order to operate. Broadly, obligations fall as follows:

- Suppliers are obliged to ensure that they can fulfil consumer demand for energy where the demand is reasonable and cost is economic).
- Electricity generators are required to fulfil the terms of their own licence in contributing to secure, high-quality supply, particularly in co-operating with transmission system operators. They are also obliged to comply with the relevant grid distribution and fuel security codes. Generators can also be required to hold certain levels of fuel stocks.
- Transmission system operators must report annually to the Regulatory Authority on their performance in terms of the availability, security and quality of supply. They have statutory duties to:
  - ⇒ develop and maintain an efficient, co-ordinated and economical system of transmission; and
  - ⇒ offer non-discriminatory terms for connection to or use of the system by licensed suppliers or operators.

## **International service standards**

The European Council of Lisbon in March 2000 asked the Commission to update its 1996 Communication on services of general economic interest. The Communication states that maintaining the highest public service standards is an essential prerequisite for liberalisation of energy markets. Experience shows that with appropriate regulatory measures, such services can actually be improved in a competitive market. The Commission is undertaking a benchmarking exercise in each country which will form the basis of a Communication on public service in the fields of transport and energy.

C7. The Regulatory Authority may prescribe certain **standards of performance** to be met in relation to energy distribution, supply and metering. The Regulatory Authority has the power to require licensees to provide information to customers about the standards that have been set and their performance against them. There are two types of Standards:

- Guaranteed Standards setting service levels which attract a fine, payable to the affected customer, if not met;
- Overall Standards which set minimum levels of service in areas where specific standards cannot be prescribed.

C8. The Standards were introduced for the electricity industry in 1991 and have subsequently been revised and tightened to improve performance of the whole sector by spreading best practice. The period since 1991 has seen a steady improvement in companies' performance against the Overall Standards. Payments made by companies for failure to meet Guaranteed Standards have fluctuated partly in response to a general tightening of these standards and partly due to interruptions in supply caused by winter storms in recent years. The Standards are being revised, with the objective of aligning the obligations between electricity and gas, focusing on those areas where there is no competition.

C9. The Regulatory Authority has been developing a new **Information and Incentives Project**, a performance incentive scheme based on an additional licence condition for Public Electricity Suppliers and which would work alongside existing price control mechanisms (based on revenue, customer numbers and volume of electricity distributed). This aims to enhance the price control process by linking financial incentives to quality of service measures, including the number and duration of interruptions to supply; while also encouraging distributors to compete with each other in these respects. The Regulatory Authority has developed common definitions of these output measures and the new reporting arrangements started on 1 April 2001.

C10. Companies will be required to report information that will be included in the incentive scheme, such as the number of interruptions and the speed of telephone response, as well as supporting information including the medium term performance of

the network. The incentive schemes themselves are due to be introduced from April 2002, and the Regulatory Authority is carrying out work this year on their form, including whether companies will be incentivised on their relative performance.

### **(iii) Legislation**

C11. The Utilities Act places a new primary duty on the Government and Regulatory Authority to protect the interests of consumers, wherever appropriate by promoting effective competition. The Act also requires that this duty be fulfilled while having regard to:

- the need to secure that, where economic, all reasonable demands for gas and electricity are met; and
- the need to secure that licence holders are able to finance their activities in order to meet their obligations.

C12. The Energy Act 1976 laid down statutory powers for the Government to enable it to deal with emergencies in which supplies of oil, gas and electricity were disrupted. For example, should a supply emergency occur in electricity, a Contingency Planning Review Panel (chaired by National Grid Company) would act as an advisory panel to the Government for the duration of the emergency. In this regime they might advise and seek agreement of the Government under the Energy Act to implement prioritisation of electricity consumption and rota disconnections to alleviate the situation.

C13. Additionally, if fuel stocks were generally in short supply, the Government could, under the Electricity Act 1989, call a Fuel Security Period. It would then have powers to direct generators to make contingency arrangements for fuel stocks and other materials, and to use those stocks in a manner as directed.

C14. Because of the overriding need for safety in gas supply, Transco operates under the Gas Safety (Management) Regulations as the National Emergency Co-ordinator. To enable it to address emergency and safety issues it may need to set cuts in gas supply. This action could, of course, disrupt supplies to a variety of consumers, but the priority is to keep domestic supplies going. Lists of other priority gas consumers (hospitals etc.) must also be maintained and if it is safe, and there is sufficient gas, priority will also be given to them.

C15. Under the Energy Act, the UK places obligations to hold emergency stocks on those companies involved in the supply of oil products to final consumers above a set threshold. The amount of stock to be held by each company is reviewed annually to ensure that the levels required reflect the current levels of consumption. The requirements are for stocks equal to 67½ days of consumption of key oil fuels to be held. As well as ensuring an adequate level of supply in an emergency situation in the UK, these measures allow the UK to meet its obligations as a member of the European Union to hold such stocks as required by EU Directive 98/93EC of 14<sup>th</sup> December 1998. Under this Directive, the UK will work with other Member States to minimise the economic impact of any disruption of international oil supplies. Similarly, the UK is also a member of the International Energy Agency, which also works to reduce the

economic impact of oil supply disruptions amongst the wider group of OECD member countries.

**(iv) Partnership**

C16. Following fuel protests and action leading to the disruption of petrol and diesel supplies in September 2000, the Government entered into a Memorandum of Understanding with oil companies. As such it involves the UK Government, the Scottish Executive, the Cabinet of the National Assembly for Wales, the companies, the police and trades unions engaging in joint planning and processes with the aim of preserving supplies and, in the event of any unavoidable supply disruption, of protecting supplies to defined essential users. This involves the implementation of early warning systems and related contingency plans, along with agreed crisis management systems. These arrangements, combined with those described below for gas and electricity, aim to ensure fuel supplies will be maintained in the event of any future supply disruption, whether caused by international or domestic supply problems.

C17. Similar arrangements have been made between the Government and the regulated monopoly transmission operators for gas and electricity (Transco and National Grid Company respectively). For electricity, a Contingency Planning Review Panel (CPRP) acts as an advisory panel to the Government and co-ordinates action during emergencies. The Panel would also be tasked with informing, warning or advising of the need to invoke the Government's emergency powers under the Energy Act 1976, as well as itself acting to alleviate the problems presented by the emergency supply problem. The Panel is chaired by the National Grid Company and draws its membership from the representatives of the electricity supply companies. In the case of gas, Transco is the National Emergency Co-ordinator under the Gas (Safety) Management Regulations, and it can act in a similar way to the CPRP. During an emergency, both CPRP and Transco are responsible for the management of their networks from their control centres, under instructions from Ministers. In the light of last Autumn's fuel protests, the Government is reviewing all its energy emergency arrangements.

## **ANNEX D**

### **SOCIAL AND ENVIRONMENTAL INDICATORS**

D1. The UK and Dutch Governments have developed a methodology for constructing a set of competition indicators. Details can be found in the booklets, "Energy Liberalisation Indicators in Europe - preliminary report" May 2000, and "Energy Liberalisation Indicators in Europe - full report" October 2000, carried out by OXERA for the Governments of the UK and the Netherlands. Both booklets can be found on the DTI website at [www.dti.gov.uk](http://www.dti.gov.uk). These indicators are aimed at monitoring the development of competition in gas and electricity markets across Europe, and from that, to identify areas where competition is less effective and further policy consideration is needed.

D2. However, it is equally important to monitor social and environmental progress, and to monitor security of supply. Some initial ideas for indicators to monitor progress in these areas could include:

#### **Social indicators**

- Domestic electricity and gas prices;
- Number of households in fuel poverty in England;
- Expenditure on fuel (as a percentage of total income) of the three lowest income deciles;
- Expenditure on domestic sector energy efficiency.

#### **Environmental indicators**

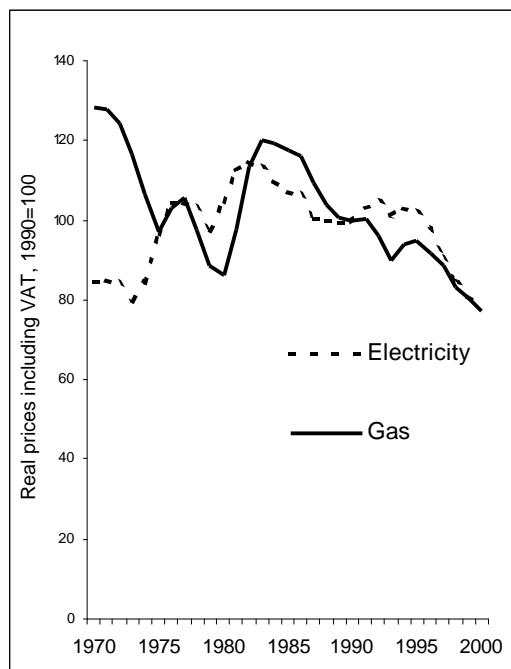
- Carbon dioxide (and other greenhouse gas) emissions;
- Sulphur dioxide emissions;
- Energy efficiency of electricity generation;
- End use sector energy efficiency;
- Electricity generated from renewable sources;
- Combined heat and power generation capacity.

#### **Security of supply**

- Security and availability of electricity supply for the average customer;
- National oil stocks.

D3. This is a set of broad, high level indicators. It is, of course, possible to develop more detailed indicators within this framework. For example, these more detailed indicators could look at specific social or environmental programmes, and their impact on consumers, or particular fuels (e.g. gas or electricity) and the efficiency with which they are produced (and used) and the resulting emissions.

## Fuel price indices for the domestic sector<sup>(1)</sup>



(1) Prices deflated by the GDP(mp) deflator with 1995 base year but rescaled to 1990 = 100.

- Competition in supply and continued regulatory controls in the transmission and generation markets continue to exert downward pressure on prices.
- Average prices for gas and electricity have fallen by 18% and 23% respectively in real terms since the increase in the mid-90s following the introduction of VAT.
- Tight price controls throughout the 1990s and the introduction of competition in the past few years and the reduction of VAT to 5% in 1997 have contributed significantly to the lower bills customers have paid.
- The impact of competition and the introduction of the New Electricity Trading Arrangements (NETA) will continue to exert downward pressure on prices, although it is recognised that other factors also affect the cost of fuel to customers.
- Falling fuel prices have helped the poor. In England it is estimated that between 1996 and 1999 about 0.7 million households were taken out of fuel poverty because of lower prices.

## Context

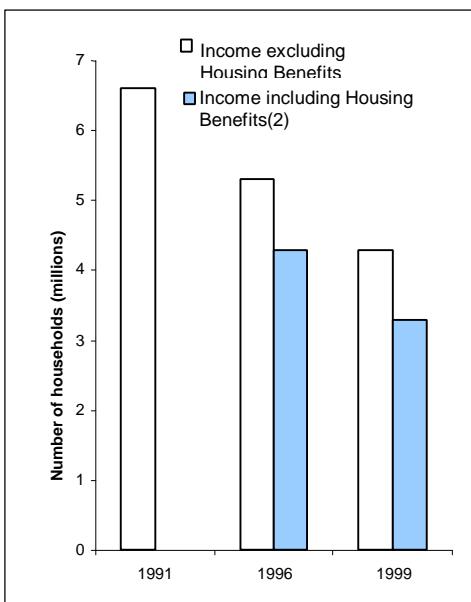
Competition, through gains in efficiency and innovation, should reduce prices for all consumers. In the domestic sector this improves living standards but especially helps the poor.

## Background

This indicator shows trends in electricity and gas prices since 1970. The gas industry was privatised in 1986 and the electricity industry in 1990. The domestic gas market became fully open to competition in May 1998, and the electricity market followed in May 1999.

VAT was introduced in 1994 at a rate of 8%, leading to an increase in prices. The rate was then reduced to 5% in 1997, the lowest rate allowable under EU rules.

## Number of households in fuel poverty in England<sup>(1)</sup>



(1) Based on data from the English House Condition Survey.

(2) Numbers including housing benefits are not available for 1991.

- Using data from the 1996 English House Condition Survey (EHCS), it was estimated that in 1996 there were 4.3 million households in fuel poverty, this figure is estimated at 3.3 million for 1999.
- In England it is estimated that between 1996 and 1999 about 0.7 million households were taken out of fuel poverty because of lower prices.
- Of those in fuel poverty, about 70% are considered to be in vulnerable groups, such as the elderly, disabled and households with children.
- Fuel poverty is addressed through programmes that tackle:-  
energy efficiency - improving the insulation of homes.  
fuel costs - keeping downwards pressure on fuel prices, reducing VAT.  
household income - actions to improve the incomes of households of vulnerable households.

## Context

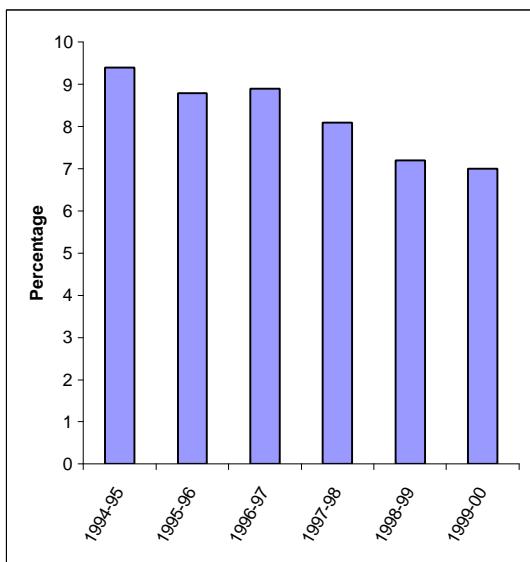
The most widely accepted definition of a fuel poor household is one which needs to spend more than 10% of its income on all household fuel to heat its home to an adequate standard of warmth (generally defined as 21°C in the living room and 18°C in the other occupied rooms). It is important to note that it is the amount which needs to be spent rather than what is actually spent. Many fuel poor households cannot afford to spend the necessary amount and instead may live in a cold home. Fuel poverty is different to simple poverty in that it is caused by a combination of factors, most significantly energy efficiency of the home, household income and fuel costs.

## Background

Since 1996 there have been a number of significant Government policy developments that have moved households away from fuel poverty including reduced fuel prices and increases in household income through, for example, the introduction of working families tax credit and the minimum wage.

The issue cuts across many areas including housing, energy, income and health policies. The Government has been developing a comprehensive strategy to tackle fuel poverty and is currently consulting on this. The consultation period ends on 31 May 2001.

## **Expenditure on fuel as a percentage of income for the lowest 30% income group**



- In the five years from 1994/95, the proportion of income spent on fuel by the lowest 30% income households fell from 9.4% to 7.0% compared with a fall from 4.3% for all households to 2.9%.
- Over the same period, the lowest 30% income household group have spent over twice as much of their income proportionally on fuel than the average for all households and over three times that of the highest 30% income household group.
- Gas prices have fallen by 18% and electricity prices by 23% in real terms since 1995; these falls are reflected in a fall in the amount spent on fuel in real terms by the lowest 30% income household group. The amount spent on fuel by this group has fallen by 20% since 1995-1996.

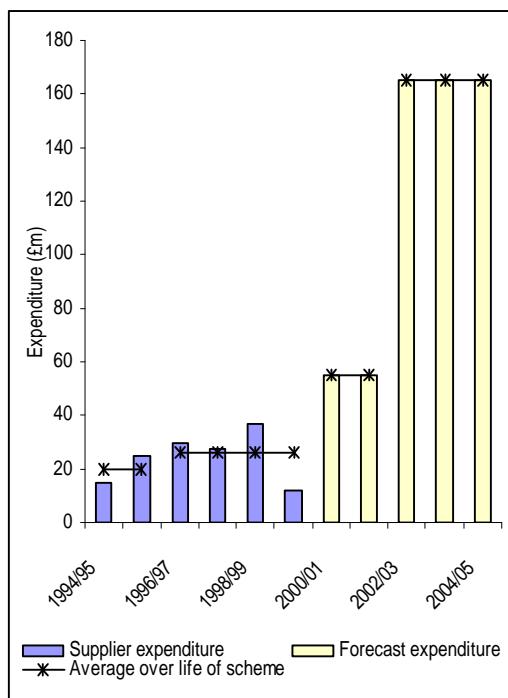
### **Context**

Fuel poverty is the inability to provide adequate heat and light for the home without spending a disproportionate amount of income. As part of its commitment to tackle fuel poverty, the Government has set a target to reduce fuel expenditure as a percentage of income (including housing benefit and income support for mortgage interest) for the lowest 3 income deciles to be reducing and below 5% by 2003/4. This indicator illustrates how the proportionate actual expenditure on fuel has changed in recent years for those households on lower incomes.

### **Background**

Three main causes of fuel poverty have been identified: low income, high energy bills and energy inefficient housing, including over housing (having to heat a larger property than is needed.) Not all households fall within the technical definition of fuel poverty actually spend more than 10% on fuel. Many cannot. They may choose to use less fuel. But many do and may have to substitute expenditure on other items for fuel. This indicator shows actual expenditure, rather than the necessary expenditure to maintain an adequate heating regime.

## Expenditure on domestic sector energy efficiency<sup>(1)</sup>



(1) Expenditure on energy efficiency here is expenditure on EESoPs (to be known as the Energy Efficiency Commitment).

- Energy suppliers will spend £55 million a year on the energy efficiency commitment (EEC) over the period 2000/1 to 2001/2.
- This is planned to increase to £165 million a year over the period 2002/03 to 2004/05.
- Schemes in the period 1994/5 to 1999/2000 only applied to electricity suppliers. From 2000/01 the scheme was extended to gas suppliers.
- The National Audit Office has reported that the net economic benefit of EESoP measures undertaken between 1994 and 1998 was £330 million.
- It is estimated that about 65% of expenditure to date has gone to low-income or over-60s households.

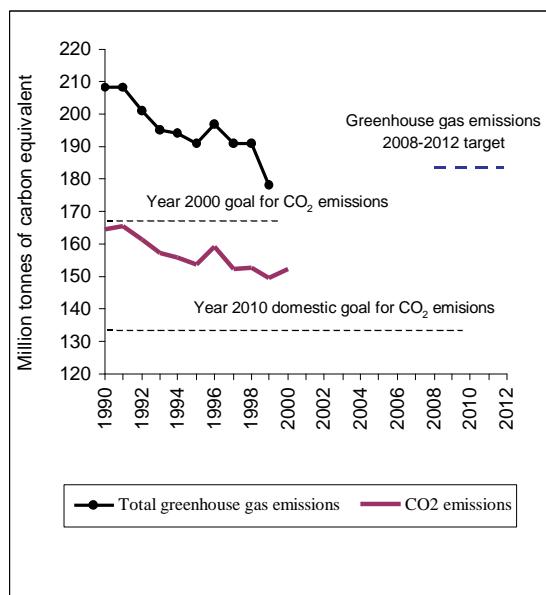
### Context

The energy supply companies' involvement in the Energy Efficiency Standards of Performance (EESoPs) now the Energy Efficiency Commitment (EEC) shows a commitment both to disadvantaged customers and to the environment in reducing energy costs through more efficient energy consumption and lower bills.

### Background

EESoPs were launched in 1994 in England and Wales as part of the electricity companies' price control. This was an obligation on licensed electricity suppliers to encourage or assist domestic customers to take up energy efficiency measures. The first two schemes ran over two and four years respectively and the average expenditure per year for each scheme is shown as a line in the above chart. Two new schemes take the EEC scheme into the future and licensed gas suppliers are now also included. It is estimated that between 2002 and 2005 the EEC scheme could, by the end of the period, yield an average annual energy improvement (taken on lower bills or increased comfort) of £16.50 per low income household. On top of the expenditure shown above additional funds, "leveraged funds", have been released by other parties as a result of the EESoP expenditure. For instance, as a result of cavity wall insulation put in under the EESoPs scheme, a local authority may decide to install other measures. For the first scheme (1994-95) this leveraged expenditure amounted to £22.5 million on top of £39 million supplier expenditure, the second scheme (1996-2000) resulted in a further £32.5 million on top of the £105 million expenditure.

## Greenhouse gas and carbon dioxide emissions (IPCC definitions)



- Emissions of the “basket” of six greenhouse gases, weighted by global warming potential, fell by 14½% between 1990 and 1999.
- Carbon dioxide emissions make up more than 80% of all greenhouse gas emissions. Between 1990 and 2000 CO<sub>2</sub> emissions were 7½% below the 1990 levels, despite a small increase in emission between 1999 and 2000.
- The small increase in emissions between 1999 and 2000 was due to the higher levels of coal-fired electricity generation during 2000 because of the maintenance and repair at nuclear and Combined Cycle Gas Turbine Stations, and higher gas prices at the end of the year.

### Context

Greenhouse gases are the main contributory factor to climate change. Climate change is recognised as one of the greatest environmental threats facing the world today. All countries party to the United Nations Framework Convention on Climate Change have acknowledged the need to reduce greenhouse gases, which are causing global warming. Developed countries have agreed legally binding targets to reduce their emissions.

Carbon dioxide is the most important greenhouse gas. It contributes more than 80 per cent of total greenhouse gases in the UK. Large reductions in these emissions will be necessary to stabilise atmosphere greenhouse gas concentrations.

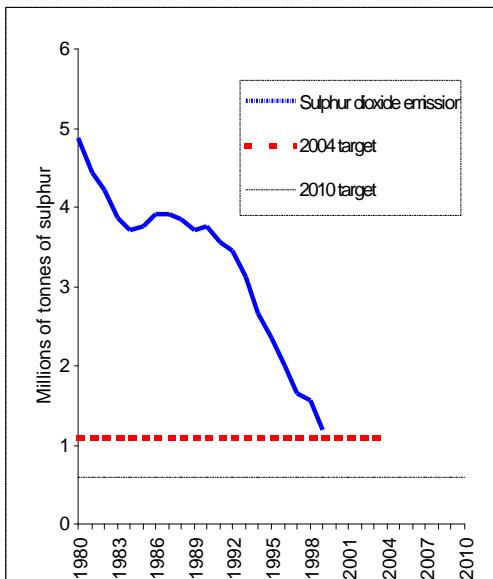
### Background

The six greenhouse gases included in the “basket” are: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexaflouride. Under the Kyoto Protocol, the UK has a legally binding target to reduce emissions of greenhouse gases by 12.5% relative to the 1990 level over the period 2008 – 2012.

The UK had a domestic goal to reduce CO<sub>2</sub> emissions to below 1990 levels by 2000 and to 20% below 1990 levels by 2010. The main sources of emissions are power stations, industry, road transport and the domestic sector.

Note: 2000 figures for CO<sub>2</sub> emissions are estimates based on changes in energy consumption between 1999 and 2000.

## Sulphur dioxide emissions



- Emissions of sulphur dioxide fell by 7 per cent between 1980 and 1999.
- Overall, emissions of sulphur dioxide have decreased as a result of lower coal and fuel oil consumption. This reflects the gradual reduction in the quantity of coal used by power stations as well as the increased output of nuclear stations and the increasing contributions of gas-fired plant.
- Since 1993, flue-gas desulphurisation has come progressively into operation, which has helped reduce emissions further.

## Context

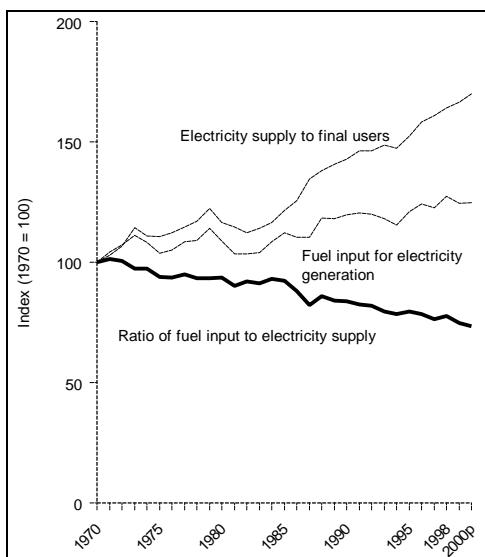
Sulphur dioxide emissions contribute to acid rain and local air pollution. Acidification has led to the loss of species at all levels of the food chain and has resulted in a reduction in bio diversity of these systems

## Background

Combustion of coal is the biggest source of sulphur dioxide emissions – oil comes second. In 1999, 65% of sulphur dioxide was emitted by power stations, with a further 15% coming from industrial combustion.

The UK has an SO<sub>2</sub> emission target of below 1,100kt in 2004 to meet international commitments to reduce SO<sub>2</sub> emissions below 585kt in 2010.

## Ratio of fuel use for electricity generation to electricity used by final users



- Final users provisionally consumed 70% more electricity in 2000 than in 1970.
- Over the same period total fuel use for electricity generation has risen by only 25%.
- As a result the overall conversion ratio has fallen by 28% since 1970.
- Since 1970 overall conversion efficiencies in the electricity industry have increased because nuclear and, more recently, Combined Cycle Gas Turbine stations have come on stream to meet the expanded demand for electricity. At the same time many smaller, older and less efficient coal and oil fired conventional steam stations have been closed.

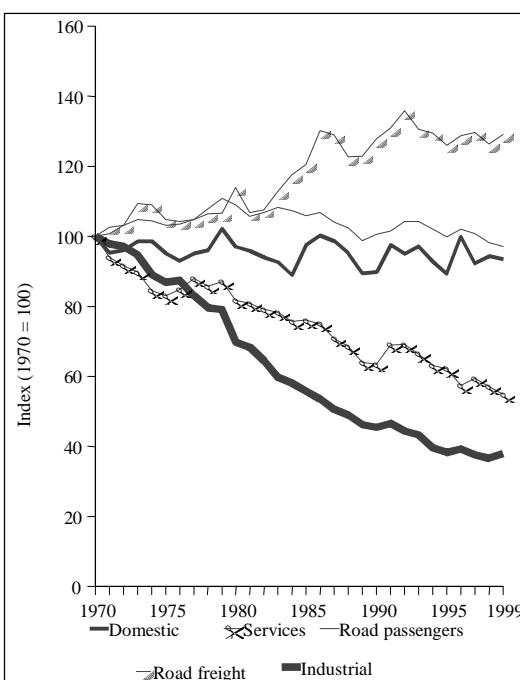
### Context

If the efficiency with which fuels are converted into electricity continues to increase, our dependence on fossil fuels will be reduced and emissions will be lower.

### Background

Nuclear stations currently operate at about 37 per cent efficiency and combined cycle gas turbine stations at 46 per cent efficiency. Conventional steam stations in the 1970s were frequently only 25 per cent efficient, although modern conventional steam stations run at base load can reach over 36 per cent efficiency. Add two new sentences in brackets to the end of the “Background” section: (All efficiency figures quoted are based on gross calorific values of the fuels used. In net calorific value terms efficiencies can be up to 10 per cent higher depending on the fuels used).

## Energy intensity by sector



- Energy intensity in the industrial sector has fallen by 62 per cent since 1970, the fall being mainly due to falls in energy intensity in the chemicals sector.
- Service sector energy use per unit of output has also fallen over the period, by 45%. Over the same period, output more than doubled.
- Energy intensities in the domestic and road passenger sectors have both remained fairly steady between 1970 and 1999, despite some fluctuations from year to year.
- Road freight energy use per tonne-kilometre has increased by 29 per cent since 1970.

### Context

Lower end use energy efficiency leads to lower emissions. Energy intensity is defined as energy consumption per unit of activity. It is affected by changes in the pattern of activity within a sector (structural change) as well as by changes in energy efficiency.

### Background

Energy intensity is often used as a measure of energy efficiency, although structural changes and other changes in the way that energy is used will also influence its evolution. Energy intensity in each sector has been defined as follows:

Domestic energy intensity is domestic energy consumption per household.

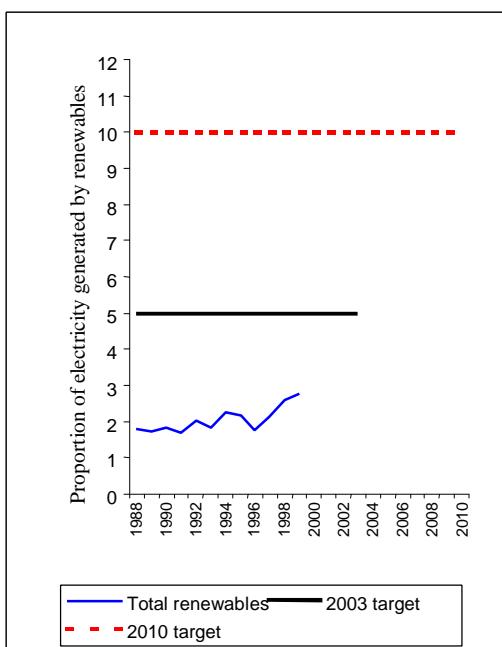
Service sector energy intensity is service sector energy consumption per unit of output.

Industrial energy intensity is industrial energy consumption per unit of output.

Road passenger energy intensity is road passenger energy consumption per passenger-kilometre.

Road freight energy intensity is road freight energy consumption per tonne-kilometre.

## **Electricity generated by renewables**



- In 1999, renewables provided 2.8% of the electricity generated in the UK.
- The proportion has increased from 1.7% in 1989 to 2.8% ten years later, with the main areas of growth being landfill gas, poultry litter combustion, onshore wind and sewage gas.
- Most renewable electricity comes from hydro (52% in 1999) with 17% from landfill gas and 13% from municipal solid waste combustion.
- The Government has proposed targets of obtaining 5 per cent of UK electricity requirements from renewables sources by the end of 2003 and 10 per cent by 2010 subject to the cost being acceptable to consumers. On a "trends continued" scenario this could mean biofuels contributing just over half the target in 2010 and wind energy about 35 per cent, with about a third of that offshore. The balance between the various forms of renewable energy will be determined by the market and individual projects will be subject to the normal planning process.

## **Context**

Given their sustainability, renewables offer greater prospects of security and diversity of supply with means that they will continue to be available in the much longer term when the availability of fossil fuel sources deciles.

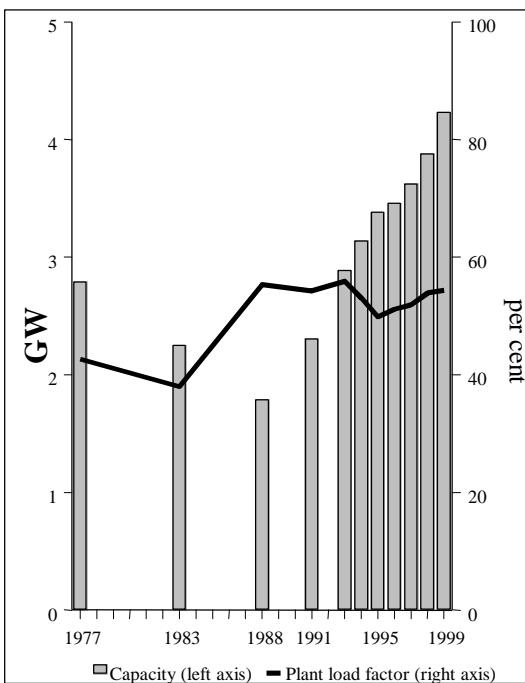
## **Background**

The main instruments for pursuing the developments of renewables capacity have been the Non Fossil Fuel Obligation (NFFO) Orders for England and Wales and for the Northern Ireland, and Scottish Renewable Obligation (SRO) Orders. These Orders require the electricity supply companies to secure specified amounts of electricity from renewable energy sources.

Since 1990 there have been five orders in England and Wales, three in Scotland and two in Northern Ireland, resulting in 933 contracts with 317 live (as at 31 March 2000).

The new Renewables Obligation and associated Renewables (Scotland) Obligation introduced through the Utilities Act 2000 represent a vital instrument in the Government's strategy. They will require power suppliers to derive from renewables a specified proportion of the electricity they supply to their customers. The cost to consumers will be limited by a price cap. The Utilities Act also introduced transitional arrangements for the third, fourth and fifth NFFO Orders in England and Wales and for SRO-1, 2 and 3 projects in Scotland.

## Installed CHP capacity by year



- Between 1991 and 1999 the capacity of CHP plants for electricity generation rose by over 80%.
- The plant load factor measures how intensively the CHP plants were used. The average load factor in 1999 was 54%.
- In 1999 CHP provided 6% of all the electricity generating capacity available in the UK.
- The Government has confirmed its new target of at least 10 GW of CHP by 2010 as part of its Climate Change Programme which represents a doubling of capacity between 2001 and 2010.

### Context

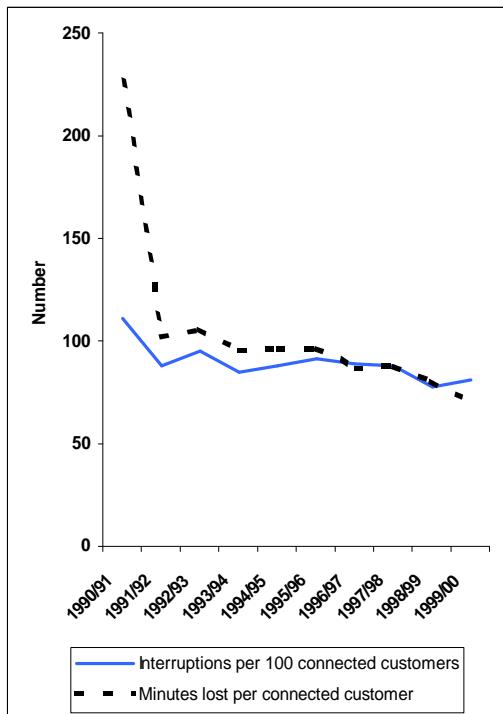
Combined Heat and Power plants offers key energy efficiency benefits by producing both electricity and useable heat, significantly reducing energy costs and greenhouse gas emissions. Useful outputs can be more varied: increasingly, heat is being used to drive absorption chilling, and in some cases power can be mechanical power e.g. to drive a compressor. The term CHP is synonymous with cogeneration and total energy, which are terms often used in other Member States of the European Community and in the United States. The basic elements of a CHP plant comprise one or more prime movers (a reciprocating engine, gas turbine, or steam turbine) driving electrical generators or other machinery; where the steam or hot water generated in the process is utilised via suitable heat recovery equipment for use either in industrial processes, or in community heating and space heating.

### Background

Capacity increased by 354 MWe during 1999 and the previous target of 5,000 MWe for 2000 is now expected to be met during 2001. Various measures have been introduced to help promote the development of CHP in the UK. "Good Quality" CHP is exempt from the Climate Change Levy that has been applied from the 1st April 2001. Enhanced Capital Allowances are available on plant and machinery that meet energy efficiency criteria (including "Good Quality" CHP). Plant and machinery which is "Good Quality" CHP will be exempt from the assessment of the rateable value for a site or business.

Installed capacity at the end of 1999 stands at 4,239 MWe. Over the last decade, capacity has more than doubled, representing an average growth rate over the period of 7 per cent per annum. Growth over the last year has been just over 9 per cent, or 354 MWe.

## Security and availability of electricity supply for the average customer



- During 1999/00, there were 81 interruptions per 100 customers and each of these interruptions lasts approximately 71 minutes.
- 81 interruptions per 100 customers was a slightly higher figure than the 1998/99 equivalent of 78 per 100 customers
- The average length of time without supply was 71 minutes per customer in 1999/00, a 12 per cent improvement on the previous year.
- The number of minutes lost and number of interruptions depends heavily on the weather and other disturbances to electricity cables.

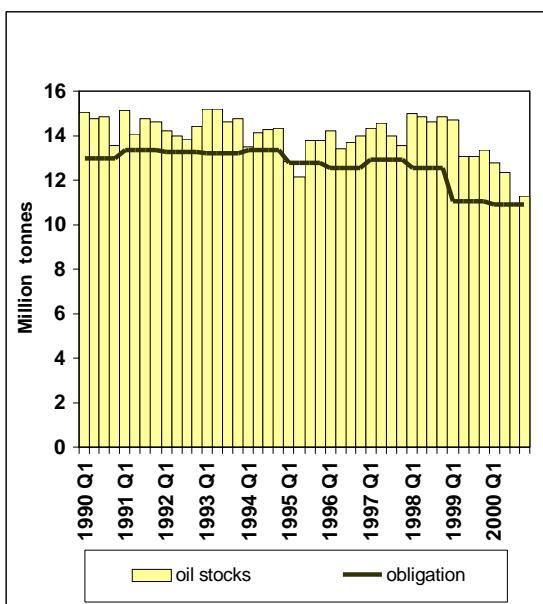
### Context

Most homes in the UK are dependent on electricity. Reduction or no supply of electricity would have detrimental effects on their standard of living.

### Background

The Electricity Supply Regulations, which are issued by the Secretary of State, contain basic requirements for supply quality. They place a duty on Regional Electricity Companies to ensure a continuous supply except in exceptional circumstances. OFGEM monitor the distribution system performance of each public electricity supplier.

## National oil stocks



- Since the beginning of 1996 the UK has met its overall stocking obligations
- The UK currently hold stocks equal to around 70 days of consumption
- Stocks are held as crude oil (50%) and petroleum products (50%).
- Most stocks are held in refineries (77%), crude oil terminals (17%) and in offshore storage tanks (6%)

## Context

Oil remains an essential fuel with a strong political and economic influence. Several key areas of global oil supply continue to be politically sensitive areas, and as such the flow of oil from these areas could be disrupted. Oil is a key energy source both for most developed countries in Europe, America and Japan, and for developing countries in Asia and the Pacific. As such, these consuming countries are vulnerable to an oil supply disruption, and countries hold stocks of oil to reduce the adverse economic impact of such supply disruptions.

## Background

During the 1970s political unrest in the Middle East led to oil supply shortages and to two large oil price hikes. In response, The International Energy Agency (IEA) was established, with member countries committed to take effective measures to meet any oil supply emergency. IEA member countries have plans to reduce demand, but a key component of the measures is to have emergency stocks of oil that can be drawn upon and shared in the event of a major oil supply disruption. As a net exporter of crude oil, the UK has no stocking obligation as a member of the IEA.

There also exists an EC Directive which requires EU member states to hold emergency stocks of oil. This Directive has been revised several times and now requires Member States to hold a minimum amount of oil stocks equivalent to 90 days' of their average daily national consumption. The UK receives a derogation to take account of the extra protection that the UK enjoys through being a producer of oil, which means that the UK obligation is to hold stocks equal to 67½ days worth of consumption rather than 90 days. These stocks can be both stocks of products and also stocks of crude oil itself. At the end of 2000, the UK held total oil stocks equal to around 70 days worth of consumption.

## Bibliography

The following is a list of Government publications of related interest to the issues discussed in this paper. Some may be available on the internet and a list of useful websites is added.

### Government publications

*A Better Quality of Life: A Strategy for Sustainable Development for the UK (1999).*  
Cm 4345.

*DTI Sustainable Development Strategy (2000).*  
Available on DTI website: [www.dti.gov.uk](http://www.dti.gov.uk).

*Royal Commission on Environmental Pollution, 22<sup>nd</sup> report: Energy – the Changing Climate (2000).*  
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*Climate Change: Draft UK Programme (2000)*  
(Final version was due for publication at the time of printing) Available at [www.detr.gov.uk](http://www.detr.gov.uk).

*New and Renewable Energy: Prospects for the 21<sup>st</sup> Century (2000)*  
Available on DTI website (see above)

*Pre-Budget Report: Stability and Steady Growth for Britain (1999)*  
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*The Budget: Prudent for a Purpose: Working for a Stronger and Fairer Britain (2000)*  
Available on HM Treasury website (see above)

*Pre-Budget Report: (2000)*  
Available on HM Treasury website (see above)

*Conclusions of the Review of Energy Sources for Power Generation and Government response to the Fourth and Fifth Reports of the Trade and Industry Committee (1998)*  
Available on DTI website (see above)

*The Social Effects of Energy Liberalisation: The UK Experience (2000)*  
Available on DTI website (see above)

*Energy Liberalisation Indicators in Europe (2000)*  
Available on DTI website (see above)

*A Greenhouse Gas Emissions Trading Scheme for the United Kingdom: Consultation Document (2000)*

Available on DETR website (see above)

*The Energy Report 2000 and UK Energy Sector Indicators 2000*

Published by The Stationery Office and available from:

The Publications Centre, PO Box 276, London SW8 5DT

Telephone orders: 0870 600 5522

Fax orders: 0870 600 5533

*The Energy Efficiency Commitment 2002-2005: The Government's Provisional Conclusions*

See DETR website

*The UK Fuel Poverty Strategy*

See DETR website

*Embedded Generation Working Group: Report into Network Access Issues (2001)*

See DTI website

## **OFGEM publications**

*The Social Action Plan (2000)*

*The Environmental Action Plan – A Discussion Paper (2000)*

*Utilities Act, Standard Licence Conditions – Final proposals (2000)*

*Guaranteed and Overall Standards of Performance – A Consultation Paper (2000)*

All available on OFGEM's website: [www.ofgem.gov.uk](http://www.ofgem.gov.uk).