

Fourth Annual Report on progress towards the 2003 Energy White Paper goals

Sustainable Energy Act 2003

The report is published in accordance with the Secretary of State's obligations under section 1 of the Sustainable Energy Act 2003. It describes progress made in the reporting period 24 February 2006 to 23 February 2007 towards: cutting the United Kingdom's carbon emissions; maintaining the reliability of the UK's energy supplies; promoting competitive energy markets in the UK; and reducing the number of people living in fuel poverty in the UK. The report is based on information available to the Secretary of State at the date of its completion.

The Annual Report fulfils a Parliamentary requirement to report on progress on the UK's energy goals during the set time period stated above and therefore the document does not include the measures/elements announced in the 2007 Budget or the decisions taken at the European Council in March 2007. Neither does it include the measures set out in the Energy White Paper to which this Report forms an annex. However, to help the reader we have included updates in footnotes on key issues.

1. The Last 12 Months: An Overview

1.1 The 2003 Energy White Paper set out our four goals¹:

- to put ourselves on a path to cut the UK's carbon dioxide emissions by some 60% by about 2050, with real progress by 2020;
- to maintain the reliability of energy supplies;
- to promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve our productivity; and
- to ensure that every home is adequately and affordably heated.

Action this year

1.2 The following are some of the main developments towards the four goals over the last 12 months to February 2007:

- the revised UK Climate Change Programme was published on 28 March 2006 and set out a package of new measures to take us towards our 2010 domestic carbon emissions target;
- we published the Energy Review Report *The Energy Challenge* in July 2006 detailing what needs to be done to stay on track to meeting the goals in the 2003 Energy White Paper;

¹ DTI Energy White Paper 2003: Our energy future – creating a low carbon economy (http://www.dti.gov.uk/energy/policy-strategy/energy-white-paper-2003/page_21223.html)



- the Office of Climate Change (OCC) was established in October 2006. It is a shared resource across the Government established with the aim of ensuring that analysis and policy work is consistent and supports the overall climate change strategy;
- the Stern Review of the economics of climate change was published in October 2006 and confirmed that climate change is real and is a problem that can only be solved by collective international action. The Stern Review demonstrated that urgent action is needed to mitigate the effects of climate change and that the costs of global action to mitigate the most dangerous effects of climate change are significant but manageable, as long as action is taken multilaterally;
- the UK's National Allocation Plan (NAP) for the second phase of the EU Emissions Trading Scheme (2008 – 2012) was accepted without change by the European Commission in December 2006;
- in January 2007, the European Commission published its Strategic Energy Review outlining proposals for the development of the internal energy market in the European Union, including greater unbundling of energy network businesses from other activities, more effective regulation and greater transparency. We support these proposals, which we see as complementary and essential if the market is to develop further;
- market investment in new and enhanced UK gas infrastructure has continued with the completion of the Langeled and BBL pipelines allowing increased flows of Norwegian and Continental gas to the UK and easing the winter supply concerns; and
- investment continued in renewable energy sources to help meet our 2010 target of 10% of electricity coming from renewable sources of energy. The opening of the Braes of Doune wind farm in February 2007 took the UK's wind generation capacity above 2GW, making us one of only eight countries in the world to have reached this level. It took 14 years for the first 6W of wind capacity to become operational and only a further 20 months for the second GW.

2. Reducing Carbon Emissions

Commitment

To put ourselves on the path to cut the UK's carbon emissions by 60% by 2050, with real progress by 2020². The UK also remains committed to the Kyoto protocol commitment to reduce greenhouse gas emissions by 12.5% below 1990 levels by 2008-12.

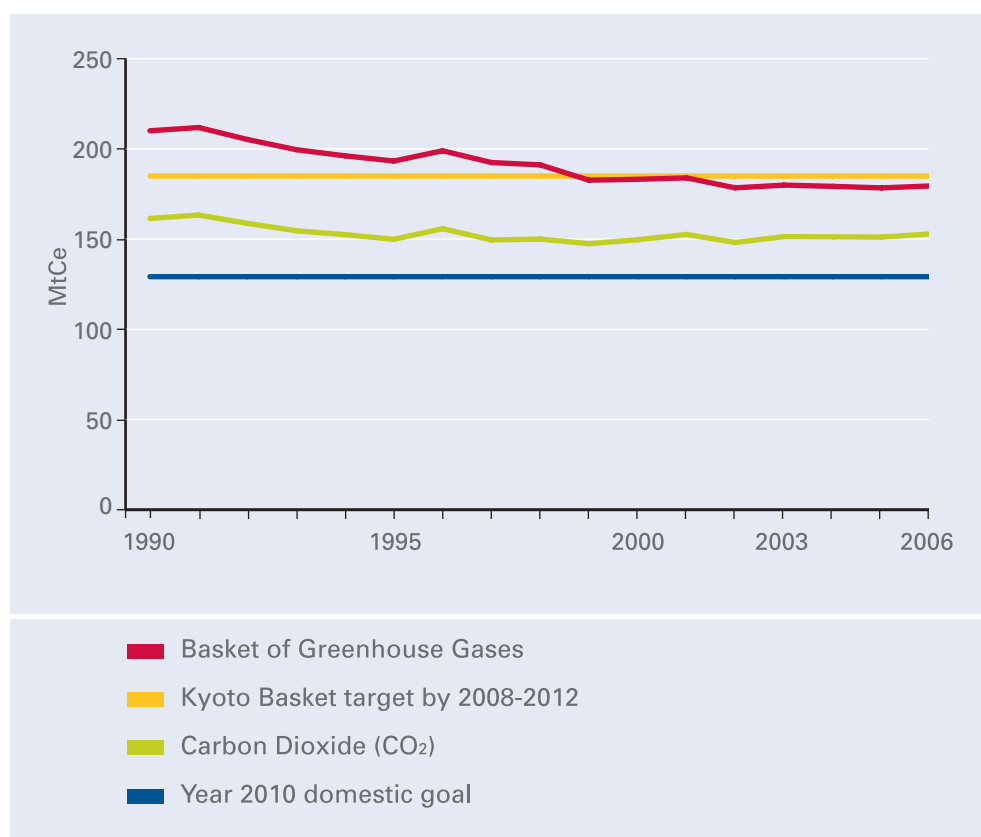
Progress to date

2.1 Latest estimates show that total UK **greenhouse gas emissions** in 2006 had fallen 15% below 1990 levels, while provisional estimates indicate that **carbon dioxide emissions** were 5% below 1990 levels in 2006.

² The draft Climate Change Bill creates a new legal framework for the UK achieving, through domestic and international action, at least a 60% reduction in carbon dioxide emissions by 2050, and 26-32% reduction by 2020, against a 1990 baseline.

Progress to date

FIGURE A1. GREENHOUSE GAS AND CARBON DIOXIDE EMISSIONS



2006 figures are DTI provisional estimates

Source: Department for Environment, Food and Rural Affairs

2.2 The revised UK Climate Change Programme was published on 28 March 2006 and set out a package of new measures to take us towards our domestic carbon emissions goals. The Climate Change and Sustainable Energy Act 2006 commits the Government to report annually to Parliament on progress to reduce greenhouse gas emissions and steps taken to reduce them. That report will be published shortly.

2.3 The Government's microgeneration strategy was published on 28 March 2006. The objective of the strategy is to create conditions under which microgeneration becomes a realistic alternative or supplementary energy generation source for the householder, the community and small business. The strategy commits to tackling barriers currently preventing widespread take-up. Microgeneration could provide 30-40% of the UK's electricity needs by 2050 and help reduce household carbon emissions by 15% per annum. Measures to tackle upfront costs include the Low Carbon Buildings Programme, an £86 million capital grant programme. Phase 1 of the Programme was launched in April 2006.

2.4 The 2003 Energy White Paper set out the importance of the work of the English regions in the delivery of our energy policy goals. Partnerships of Regional Development Agencies (RDAs), Regional Assemblies, and the



Government Offices have been operating in all regions to set regional energy priorities, and to take forward innovative projects aimed at delivering national energy policy and to maximise benefits for local communities and business. Over the past twelve months, regional partnerships have taken forward the following innovations:

- the North East has supported the planning system in delivering improvements to energy efficiency and increased uptake of microrenewable technologies;
- West Midlands completed the second phase of a Sustainable Housing Action Plan;
- East Midlands launched an Affordable Warmth Strategy;
- the North West launched a Climate Change Action Plan;
- Yorkshire and Humber completed and launched a Regional Energy Infrastructure Action Plan;
- East of England looked at how to support the development of distributed networks for energy – including for offshore renewables;
- the South East set up the South East Sustainable Energy Partnership;
- the South West has committed £650,000 to the delivery of the South West Bioheat Programme; and
- London prepared and launched a Climate Change Action Plan.

2.5 Following on from the Energy Review Report, the Government established the Office of Climate Change (OCC) in October 2006. It is a shared resource, reporting to ministers across the Government and has a vital contribution to make to ensure that analysis and policy work is consistent. It also supports the Government's overall climate change strategy.

2.6 The Stern Review of the economics of climate change was published in October 2006 and confirmed that climate change is real and that it is a global problem that needs a multilateral solution. The main findings from the Review are:

- the impacts of climate change on growth and development could be much higher than previously thought;
- serious impacts will be felt around the world, including in developing countries least able to adapt;
- action is urgent – the earlier we start, the greater the chance we have of limiting the risks of dangerous climate change and the cheaper it will be;
- acting to reduce emissions and stabilise greenhouse gases at sustainable levels could cost around 1% of world GDP, not acting could cost at least 5% and up to 20%; and
- the costs of global action to mitigate the most dangerous effects of climate change are significant but manageable, as long as action is taken multilaterally, with flexibility to respond to new scientific and economic information.

The Stern Review highlighted the need for a carbon price signal across countries and sectors to ensure that emission reductions are delivered in the most cost-effective way.

2.7 The European Commission published the results of the first year of the EU Emissions Trading Scheme (ETS) from the Community Independent Transaction log in May 2006. The first year results showed that the infrastructure behind the scheme is sound and forms a solid base to build on

for the future. Compliance was excellent in the UK – almost all operators submitted their verified emissions reports and surrendered the correct allowances within the deadlines.

2.8 The UK submitted its Phase II National Allocation Plan (NAP) for the EU ETS to the European Commission by the December 2006 deadline. Since then the Commission has made its decisions on NAPs submitted by Member States, with the UK's NAP being accepted without change. The majority of Member States have seen their overall allocation reduced by the Commission in line with meeting their Kyoto commitments.

2.9 Following the release of the Stern Review, the Government published a Vision Statement on Emissions Trading which reiterated our commitment to building on the EU ETS as the main way to price carbon in the economy.³ The vision statement gives three areas that we would like to progress with our EU partners:

- setting safe, stable and affordable emissions limits;
- building a global carbon market; and
- improving the efficiency of the scheme.

2.10 The Mexico Ministerial in October 2006 focused on how the three strands of climate change mitigation (technology development and deployment; financing of climate change projects; and the overall economics of climate change), fit together and could be used to take forward the Gleneagles Dialogue's work on climate change. The overall message from the second ministerial was one of increasing urgency.

2.11 The next meeting of the Dialogue will be hosted in September 2007 by the German Government during their G8 Presidency. The Japanese Government also agreed to take forward the Dialogue in 2008, with a report to the G8 summit in the summer. Both the German G8 presidency in 2007 and the Japanese G8 presidency in 2008 will continue to have a strong focus on climate change and associated themes.

Increasing renewables

2.12 The Government has a target of 10% of electricity coming from renewable sources of energy by 2010, with an aspiration for this level to double by 2020. We have continued to work with interested parties to alleviate the barriers that are preventing industry from achieving this target. Recent action includes:

- with the opening of the Braes of Doune wind farm in February 2007, the UK became one of only eight countries in the world to achieve more than 2GW of wind generation. It took 14 years to reach 1GW and only a further 20 months to reach 2GW;
- between March 2006 and February 2007, DTI granted consent for:
 - a combined offshore windfarm and gas generating station – the Ormonde project. This innovative hybrid project will be sited around 10km from Walney Island (off the North West coast of England) and has the potential to generate a total of up to 200MW of electricity, with around half coming from the wind farm; and



- three Round 2 offshore wind projects with a total capacity of 1800MW. Of these, the London Array development has the potential to be the largest offshore wind farm in the world, supplying around 1% of the UK's electricity supply equivalent to 750,000 households.
- in April 2006 the Scottish Executive gave consent to the Whitelee wind farm project, with a capacity of 322MW and August 2006 saw the first of two 5MW offshore wind turbines installed in the Moray Firth – the furthest from shore and deepest in the water of its kind in the world. Scottish Executive has committed £3 million to the project;
- in June 2006, the 19MW Callaghan wind farm was opened in Co. Fermanagh bringing total large scale wind generation capacity in Northern Ireland to 106MW. In addition some 1,200MW are the subject of Planning Applications in Northern Ireland; and,
- the UK has seen planning approval in 37 small and large Renewable Obligation eligible projects with a total capacity of 2676MW, including 15MW landfill gas and 9MW biomass⁴.

Renewables policy

2.13 We have made a number of changes to the Renewables Obligation (RO) to improve its effectiveness following the 2005 RO Review. Further changes to the RO were proposed in the 2006 Energy Review Report⁵ which set out our ideas on strengthening the performance of the RO. One of the principal changes proposed was to adapt the RO to provide greater support to emerging technologies and less support for established technologies. The Government's preferred option for achieving this was through a "banding" system. DTI published a consultation document – Reform of the Renewables Obligation and Statutory Consultation on the Renewables Obligation Order 2007⁶ – in October 2006 seeking views from the renewables sector on the above proposals⁷. The consultation proposed a number of administrative changes, in particular, proposals to make it easier for microgenerators to access the benefits of the RO.

2.14 The Energy Review Report stated that the Government was committed to introducing fundamental change to the planning system for major energy projects, this will include large onshore wind projects. In December 2006, in his Pre-Budget Report, the Chancellor welcomed the Eddington and Barker reviews which both made recommendations for the UK planning system. These recommendations on planning for infrastructure can play a significant role in ensuring the UK's competitiveness and delivering our objectives on climate change, the environment and energy security.⁸

4 Planning, Monitoring & Review of Renewable Energy Projects, Project Status: www.restats.org.uk

5 <http://www.dti.gov.uk/energy/review/page31995.html>

6 <http://www.dti.gov.uk/consultations/page34162.html>

7 The Government conclusions to this consultation can be found at: <http://www.dti.gov.uk/energy/whitepaper>

8 The Planning White Paper: *Planning for a Sustainable Future*, published in May 2007, sets out proposals in planning reform.

2.15 The Scottish Executive consulted during 2006 on the creation of a Marine Supply Obligation (MSO) under the Renewables Obligation (Scotland). This will require suppliers, as part of their renewables obligation in Scotland, to supply a specific proportion of their electricity sales from wave and tidal generation located in Scottish waters. The buy-out price which suppliers would pay in respect of any shortfall against their MSO would be at a considerably higher level than the standard buy-out price, to reflect the higher costs of generating power from wave and tidal devices.⁹ However, the level of the MSO will remain at zero until there is generation from these technologies which allows suppliers to meet it. Reviews of the MSO level will take place each year (on the basis of transparent and published criteria), and the legislation amended accordingly.

2.16 Under the Clean Energy Programme, announced in May 2006, the Scottish Executive committed £25 million over two years for the development of wave and tidal energy, biomass, and hydrogen and fuel cells (as well as additional funding for small-scale renewables).

2.17 In February 2006, the Environment and Renewable Energy Fund (EREF) was launched providing an additional ring-fenced amount of £59.2 million over two years to enhance and accelerate renewable energy development in Northern Ireland. The EREF, which confirms the Government's commitment to reducing Northern Ireland's high dependence on imported fossil-fuels, focuses on four broad areas:

- research and demonstration (£15.2 million);
- accelerated deployment (£35 million);
- building market capacity (£2.5 million); and
- underpinning knowledge and raising awareness (£6.5 million).

3. Energy Reliability

Commitment

Our goal is that people and business can rely on secure supplies of energy – gas, transport fuel and electricity – at affordable prices delivered through competitive markets, whilst minimising the impact on the environment.

We are committed to maximising economic benefits for the UK's oil and gas reserves and maintaining production levels of three million barrels of oil equivalent per day until 2010.

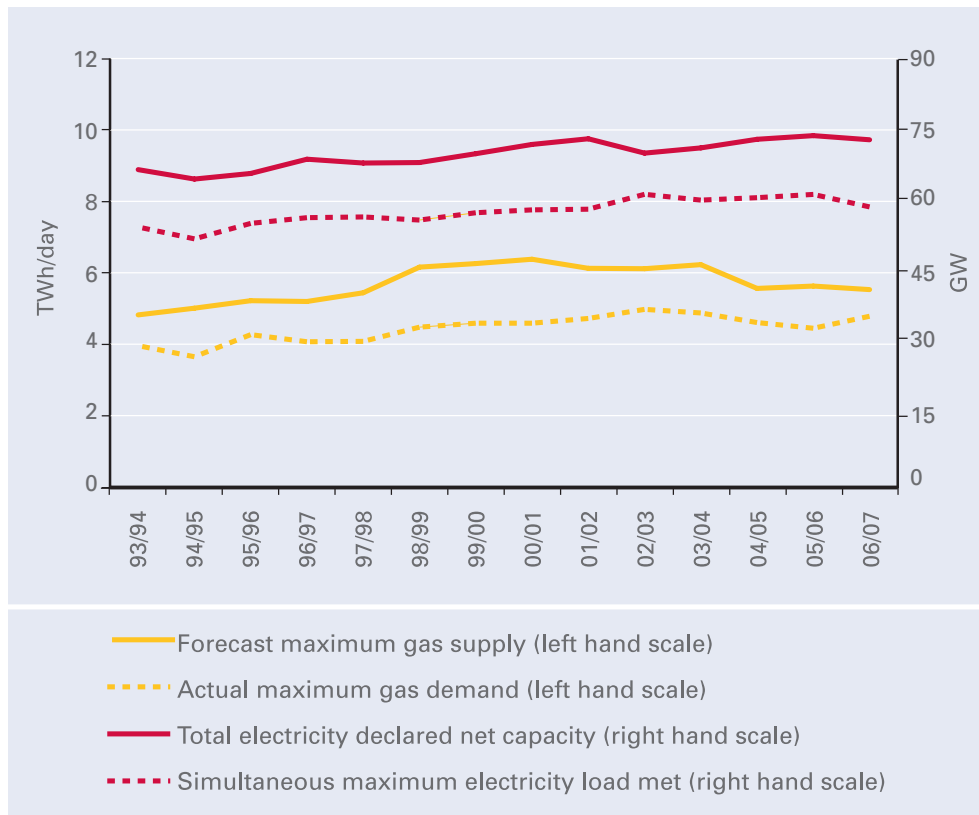
Progress to date

3.1 After a relatively tight gas market last winter (2005/06), supplies of gas and electricity have comfortably met demand this winter and there have been no potential shortages of supply since the Gas Balancing Alert in March 2006 and the electricity Notice of Insufficient Margin (NISM) in July 2006. UK North Sea gas production has continued to meet a significant proportion of demand, and there have also been substantial and consistent flows through new import infrastructure – the Langeled pipeline from Norway and the BBL pipeline from the Netherlands. In addition, the Rough storage facility (in the Southern North Sea) was repaired and was full ahead of the winter along with medium-range storage.



Progress to date

**FIGURE A2. GAS AND ELECTRICITY CAPACITY MARGINS –
MAXIMUM SUPPLY AND MAXIMUM DEMAND 1993/94 TO 2006/07**



Data for winter 2006/07 are provisional

Source: National Grid and DTI

3.2 Wholesale gas prices have fallen considerably since last winter, with the average for this February being 20p per therm compared to 65p per therm for February 2006. This reflects the completion of new import infrastructure on or ahead of time, increased confidence in the availability of supplies, and modest demand due to mild weather both here and on the Continent. There has also been considerable price convergence with the Continent on both the spot and the forward markets.

3.3 On electricity, there was sufficient margin of installed capacity (22%) to accommodate long-term outages at a number of nuclear and coal-fired stations. Gas and coal were the most important contributors to the generation mix, each accounting for around 40% of electricity generation, with nuclear accounting for most of the rest. For coal, this is down on the 50% it supplied last winter, largely because of increased gas fired-generation, reflecting lower gas prices.

3.4 With reductions in the wholesale price, the situation for industrial consumers buying gas at current prices should therefore have eased. However, gas prices remain uncomfortably high for users who negotiated contracts when the forward price was high, e.g. last summer, though there is evidence that some of these contracts are being re-negotiated on a "blend and extend" basis.

3.5 In July 2006, the Government established the Business Energy Forum to ensure that sound preparations were made for winter. This is a high level group, jointly chaired by DTI and CBI and bringing together Ofgem, National Grid, energy suppliers and users and other key players in the energy industry. The group met three times in 2006 to ensure there was effective communication and co-ordination of effort. As part of this, DTI created a dedicated webpage¹⁰ to provide information and signposting on winter energy supply issues.

3.6 The work of the Gas Supply Infrastructure Task Force has been followed up with a number of specific Government measures. These are: proposals to streamline and simplify the existing onshore consents process (set out in the Government's 2007 Planning White Paper); proposals to deliver regulatory certainty to those considering the offshore storage of gas and offshore unloading of Liquid natural Gas (public consultation closed in February 2007, and legislation is to be taken forward as soon as Parliamentary time allows); and a focus on the provision of information to the public, and local decision makers in particular. In May 2006, the Secretary of State published a Parliamentary Statement of Need for Additional Gas Supply Infrastructure to clarify the Government's views on the pressing need for new infrastructure in the UK. In addition, the Government continues to identify and tackle regulatory obstacles to new gas supply projects, working with developers from an early stage in the planning of new projects.

3.7 The North Sea continues to be critical to delivering the energy needs of the country and there are still substantial quantities of oil and gas to be produced. The Government is working closely with industry to ensure we have the best licensing, environmental and business frameworks to attract the investment needed to deliver the North Sea's full potential.

3.8 The key PILOT (the UK industry/Government oil and gas forum) initiatives in the last few years are acknowledged as highly successful by all sides: promoting North Sea overseas and attracting new players; enhancing licensing system; freeing up fallow (unworked) acreage; improving commercial behaviours and infrastructure access; and finding ways to recover more oil and gas from existing "brown" fields (Stewardship Initiative). The Government and industry will continue to push in these and other areas to ensure that North Sea investment and economic recovery of hydrocarbons is maximised.

3.9 The 24th offshore oil and gas Licensing Round demonstrated the continuing attraction of the UK Continental Shelf. Offers of 150 oil and gas exploration and production licences were announced in February 2007 to 104 companies covering 246 blocks, continuing the record numbers of licences issued last year.



4. Competitive Energy Markets (including energy prices)

Commitment

Our goal is to promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve productivity.

Ensuring an open and competitive market throughout Europe remains a priority for the UK.

Progress to date

4.1 The UK energy market remains the lowest in the EU15¹¹ for domestic gas prices, and below average for domestic electricity prices, and recently announced price reductions will act to decrease prices. Price increases over the past year have moved the UK above the EU median for industrial consumers which have historically been below average.

4.2 The European Commission published its *Strategic Energy Review – an energy policy for Europe* in January 2007. Among other issues, this made a number of welcome proposals for the development of the internal energy market. Key among these were:

- greater unbundling of energy network businesses from other activities; this would ensure that vertically integrated companies are unable to use privileged information from their network operations to block market entry by competing suppliers and generators;
- more effective regulation; ensuring that all national regulators have sufficient powers and independence to carry out their tasks; and establishing a regulatory structure to oversee the development of cross-border technical standards and trading arrangements, with several ways of doing this suggested; and
- greater transparency; more information is needed from some transmission system operators to ensure that markets can function, so minimum requirements should be developed.

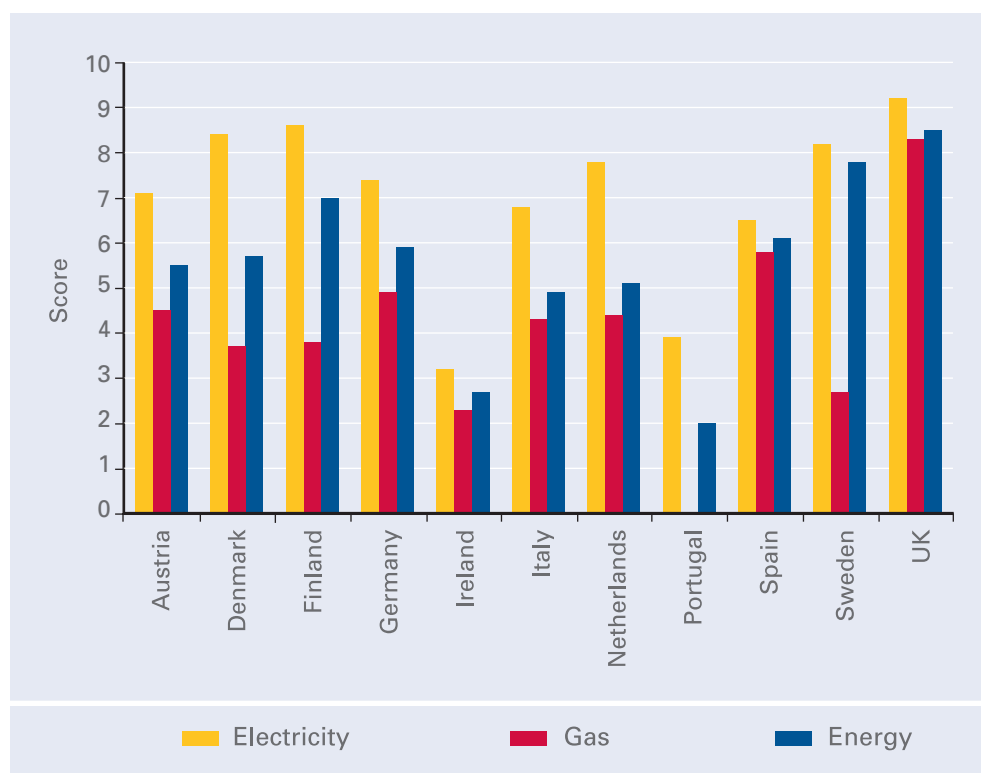
We support these proposals, which we see as essential if the market is to develop further.¹²

¹¹ EU15 refers to the 15 countries in the European Union prior to the expansion in 2004 and 2007.

¹² These proposals were endorsed by the European Council in spring 2007. The Commission has been asked to bring forward detailed proposals by the end of this year.

Progress to date

FIGURE A3. OVERALL COMPETITIVENESS SCORE FOR SELECTED EU ENERGY MARKETS (USING PRELIMINARY 2005 DATA)



Source: Study undertaken by OXERA on behalf of DTI
<http://www.dti.gov.uk/files/file35324.pdf>

5. Tackling Fuel Poverty

Commitment

The goal of the UK Government is to seek an end to fuel poverty by 2016-18 with various interim targets in each Devolved Administration.

Progress to Date

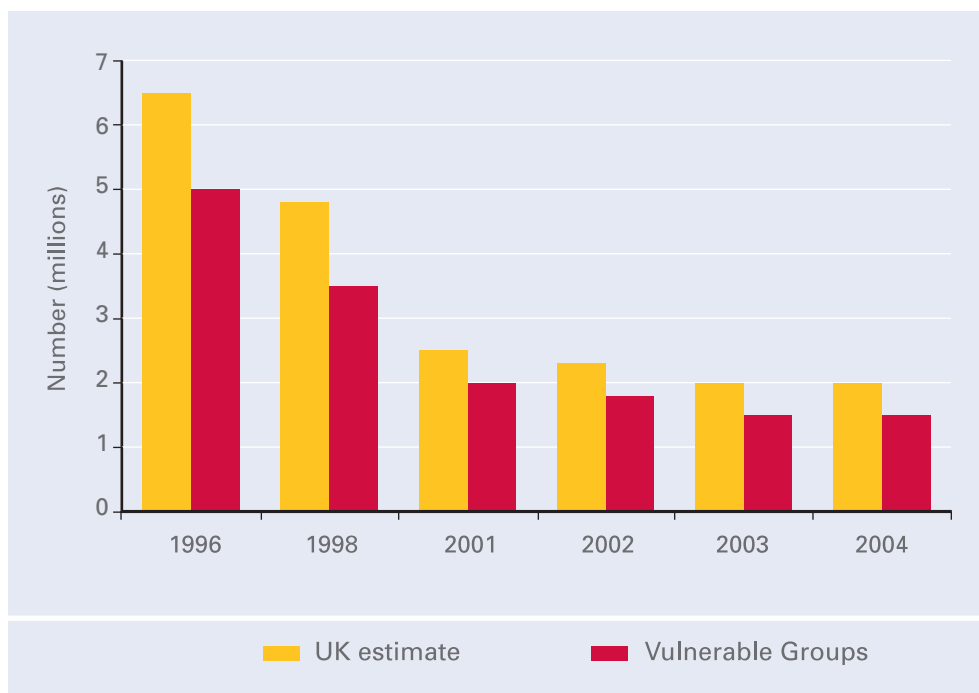
5.1 The latest estimates published in the *UK Fuel Poverty Strategy Fourth Annual Progress Report 2006* indicate that, in 2004, there were approximately two million households in fuel poverty in the UK. One and a half million of those were vulnerable households. This represents a fall of around four and a half million households overall, and of around three and a half million in the number of vulnerable households, from 1996 levels. Fuel poverty is a devolved issue, with separate targets and differing policy approaches across each of the devolved nations. Official figures for 2005 will be produced later this year in the *UK Fuel Poverty Strategy Fifth Annual Progress Report 2007*. Scotland, Wales and Northern Ireland have dedicated advisory bodies to help meet our fuel poverty targets.¹³

¹³ The Fuel Poverty Advisory Group for England's Fifth Annual Report was published in April 2007 and contained a number of recommendations that the Government will respond to in the UK Fuel Poverty Strategy Fifth Annual Progress Report.



Progress to date

FIGURE A4. NUMBER OF HOUSEHOLDS IN FUEL POVERTY (UK)



Source: DTI, for further details on fuel poverty see <http://www.dti.gov.uk/energy/fuel-poverty/index.html>

5.2 The number of vulnerable households in fuel poverty in England in 2004 remained at broadly the same level of 1.0 million, with 1.2 million households in total in fuel poverty (around 6% of English households). Warm Front is the Government's main tool for tackling fuel poverty in the private sector in England. The Scheme provides a package of heating and insulation measures to vulnerable households in receipt of certain qualifying benefits. From the introduction of the Scheme in June 2000 to the end of March 2007, over 1.4 million households received assistance. Warm Front also carries out Benefit Entitlement Checks for those not eligible for the Scheme at the point of application, or where the provision of measures has not increased the energy efficiency of the property to an agreed level. The average increase in income from a successful Check is around £1,300.

5.3 The number of households in fuel poverty in Scotland in 2004/05 was 419,000 (18% of Scottish households), an increase of 69,000 compared to the previous year. The key scheme for tackling fuel poverty in Scotland are the Central Heating Programme and Warm Deal. To date, the Central Heating Programme has installed central heating systems and insulation in 81,000 homes. The Warm Deal Programme, which provides insulation measures (primarily loft and cavity wall insulation), energy efficiency advice and a Benefit Entitlement Check has so far insulated 238,000 homes, bringing the total number of homes insulated in Scotland to 319,000, around 14% of the housing stock. From January 2007, eligibility for Warm Deal was extended to include households with disabled children. So far, the Scottish Executive has spent over £300 million on these two highly successful programmes. As a result, the cost of heating participating homes to an acceptable standard has halved.

5.4 The total number of households in Wales in fuel poverty in 2004 was 130,000, which represented 11% of Welsh households. Modelling to update these figure to 2005, taking into account increases in incomes and fuel prices, showed that there is likely to be 30,000 additional fuel poor households. The Home Energy Efficiency Scheme (HEES) is the Welsh Assembly Government's main vehicle for lifting Welsh households out of fuel poverty. To date, the Scheme has assisted over 70,000 households in Wales by supplying central heating and energy efficiency measures. The Welsh Assembly Government has made significant extra resources available with HEES receiving a further £5 million in both 2006/07 and 2007/08. Since August 2004, all households applying to the Scheme have been offered benefits advice, to ensure that they maximise both the assistance available to them under HEES and access benefits to which they are entitled. This has resulted in £2.26 million in unclaimed benefits being identified.

5.5 The latest figures for 2004 show a substantial decrease in the numbers in fuel poverty in Northern Ireland, from 203,300 (33% of all households) in 2001 to 153,500 (24% of all households) in 2004. Warm Homes and Warm Homes Plus are the main instruments for tackling fuel poverty in the owner-occupied and private rented sector in Northern Ireland. Since 2001, over 70,000 households have received assistance. Funding for the scheme has increased significantly, from just over £3 million in 2001 to just over £20 million in 2006/07 and 2007/08. In addition, the eligibility criteria for Warm Homes Plus was extended to ensure that the over 60s, in receipt of disability related benefits, will now receive full heating systems as well as insulation measures and a benefit maximisation programme was introduced in July 2006 to provide a social security benefit health check to all recipients of the scheme.

5.6 Under the Energy Efficiency Commitment (EEC), electricity and gas suppliers are required to meet targets for the promotion of improvements in household energy efficiency in Great Britain. As a result of the focus on the priority group of low-income consumers, EEC will make a contribution to the alleviation of fuel poverty. As at February 2007, the second phase of EEC, from 2005-08 had delivered around 50TWh of lifetime energy savings in the priority group.

5.7 The Decent Homes Standard is a minimum standard below which homes should not fall. It is a trigger for action and not a level that remedial work should be completed to. Indeed the majority of local authorities and registered social landlords are carrying out work well in excess of the thermal comfort standard with 90% planning to install both cavity and wall insulation and loft insulation even where the standard only requires one¹⁴. The standard requires the presence of efficient heating and effective insulation in homes. Progress is being made on thermal comfort at a faster rate than the other components of the decent homes standard, and the number of social sector homes failing on that criterion has more than halved since 1996 – from nearly two million down to 850,000. The average SAP score for social housing in 2005 was 57 compared to 47 in 1996. The work that social landlords in particular have carried out has contributed to reductions in fuel poverty.

¹⁴ Assessment of implementing decent homes in the social sector: *Housing Research Summary Number 238*, 2007 <http://www.communities.gov.uk>



5.8 The 2005 Pre-Budget Report announced that an additional £300 million would be made available to tackle fuel poverty across the UK. In England, this means that funding for the Warm Front Scheme will exceed £300 million in 2006/07, and puts total funding for the Scheme over the 2005-08 period in excess of £800 million. This represents a substantial contribution to our work in this area, and will strengthen the ability of the Scheme to target and deliver assistance to the most vulnerable households. It also announced a £300 contribution towards the cost of a central heating system for those householders over 60 who are not able to receive Warm Front assistance.

5.9 In the Pre-Budget Report 2006, an additional £7.5 million was announced to support the development of projects which use an area-based approach to identify the needs of each household in order to provide them with a co-ordinated and tailored set of advice and measures. This will complement our existing fuel poverty and carbon abatement schemes for the domestic sector.

5.10 The average price paid by households for electricity and gas in 2006, compared to the average price for 2004, rose in real terms by 45% for gas and 29% for electricity. This means that energy prices in 2006 were around 1984 levels for gas and around 1996 levels for electricity. Energy prices to households began to reduce in early 2007, however the price increases will have increased fuel poverty levels.¹⁵

5.11 We have acted on each of the commitments outlined in the Energy Review Report in relation to fuel poverty. Through industry and the Government working together, we delivered a targeted mail-out offering energy efficiency and income assistance to 100,000 Pension Credit recipients. We are now looking to take this forward for next winter. The funding from the Pre-Budget Report 2006 supports the development of area-based projects. New technologies are being brought into the portfolio of measures offered by many of the main UK fuel poverty schemes. Alongside this, the Low Carbon Buildings Programme is hoping to attract bids from social housing providers seeking to install microgeneration for low income, hard to reach properties.

¹⁵ Projections for fuel poverty are included in the Energy White Paper: *Meeting the Energy Challenge*.

6. Additional reporting following the Energy Act 2004

Energy Sources and Technologies

6.1 Section 81 of the Energy Act 2004 requires the Government to include information in this annual report about a range of energy sources and technologies. Specifically “work carried out to develop or use listed energy sources or technologies: clean coal technology; coal mine methane; biomass; biofuels; fuel cells; photovoltaics; wave and tidal generation; hydrogeneration; microgeneration; geothermal sources, and any other energy source/technology which may cut carbon emissions.” Detail on each is in the table below.

Type of energy source/technology	Action proposed or taken to develop or deploy
<p>Carbon reducing technologies (including coal)</p>	<p>Research and Development:</p> <p>A demonstration scheme for Carbon Abatement Technologies was launched in September 2006 (£35 million over 3 years) with the first call for applications taking place in October 2006.</p> <p>UK CCS Demonstration:</p> <p>In January 2007, PB Power were appointed to carry out an engineering study into the costs of UK based Carbon Capture and Storage (CCS) power generation demonstration, with a view to making a decision on whether to support UK based CCS demonstration in 2007.</p> <p>Regulation:</p> <ul style="list-style-type: none"> • A regulatory task force was set up in May 2006 to consider and take forward issues related to CCS regulation. • In November 2006 we secured an amendment to the London protocol allowing carbon to be stored in sub-seabed geological formations. • As an interim solution for Phase II of the EU ETS (2008-12), the EC said in December 2006 that CCS projects can be “opted-in as a new activity” and the UK is proactively pursuing this route to ensure recognition in Phase II. <p>International:</p> <p>We continued to work with international partners through the G8 and EU and bilaterally to speed the safe deployment of CATS including CCS. For example, the UK is leading the forthcoming EU Near Zero Emissions Coal (NZEC) initiative in China and is actively pursuing a similar project in India.</p>



Type of energy source/technology	Action proposed or taken to develop or deploy
	DTI continued to be active internationally in a number of bodies such as the International Energy Agency's Working Party on Fossil Fuels, the Carbon Sequestration Leadership Forum as well as the EU's Energy Technology Platform for Zero Emission Fossil Fuel Power Plants.
Combined Heat and Power	On 15 December 2006 DTI issued new Guidance to power station developers to maximise the use of CHP where feasible. For the first time, this Guidance gives developers access to information on regional heat customers through DEFRA's interactive heat maps. The Guidance also includes clearer instructions on what information is required from developers.
Coal Mine Methane	Existing and planned commercial utilisation of gas at major emitting sites, combined with funding constraints, has meant that plans to introduce a grant scheme for the flaring of methane emissions has been postponed.
Biomass	<p>The Government published our response to the Biomass Task Force in April 2006 and committed to forming a long term strategy for Biomass.</p> <p>In December 2006, DEFRA announced a five year continuation of the scheme to support the installation of biomass-fuelled heat and combined heat and power projects in the industrial, commercial and community sectors in England, with funding of £10-15 million available for the first two years.</p>
Biofuels	<p>The Government has developed its plans to introduce a Renewable Transport Fuel Obligation (RTFO) in April 2008 as one of the main UK policy instruments in the transport sector to reduce greenhouse gas emissions and to increase the use of renewable fuels, helping to meet UK international obligations under the Kyoto agreement and the EU Biofuels Directive. The RTFO will require transport fuel suppliers to ensure that a certain percentage of their total transport fuel sale in the UK comes from biofuels. The level of the RTFO will be 2.5% in the financial year 2008/09, rising to 3.75% in 2009/10 and 5% in 2010/11. The Government issued a consultation document¹⁶ on 22 February 2007 covering both the detailed design of the RTFO and how it might evolve over time and beyond 5% provided that conditions around sustainability, technical feasibility and costs to consumers are met and that it represents an effective use of UK biomass resources.</p>

16 <http://www.dft.gov.uk/consultations/open/drafttrfo>

Type of energy source/technology	Action proposed or taken to develop or deploy
Photovoltaic (PV)	<p>The Major PV Demonstration programme closed in March 2006, although projects were given until April 2007 to complete.</p> <p>The PV field trials (domestic and large scale) have been completed.</p> <p>The Government continues to support PV through the Technology Programme and the Low Carbon Buildings Programme.</p>
Hydrogen and Fuel Cells	<p>A demonstration programme for hydrogen and fuel cells (£15 million over 3 years) was launched in September 2006. The first successful projects are expected to start early in the financial year 2007/08.</p>
Wave and Tidal	<p>In 2006 the Government continued to support research and development of marine energy technologies primarily through the DTI's Technology Programme. Under the programme a further 7 new research and development projects were supported, with levels of assistance totalling £2.75 million and typically at 50% of project cost. These new projects brought the total number of ongoing marine energy technology R&D projects supported by the DTI to 16 with grant support totalling £17.3 million.</p> <p>In February 2006 DTI launched a £42 million "Wave and Tidal Stream Energy Demonstration Scheme" that will support the first multi-device demonstration projects.</p> <p>The Carbon Trust announced a major new £3.5 million initiative in marine renewable energy called the Marine Energy Accelerator (MEA). The programme aims to accelerate progress in cost reduction of marine energy technologies.</p> <p>In August 2006 DTI offered £4.5 million towards the cost of an infrastructure project known as the "Wave Hub". The proposed "Wave Hub" is an electrical grid connection point 15 km offshore into which wave energy devices can be connected. The "Wave Hub" approach would bring a number of benefits to developers, including a well defined and monitored site with electrical connection to the on-shore electricity grid and a simplified and shortened consents process, reducing the risk for developers of the first pre-commercial wave arrays.</p> <p>In 2006 the European Marine Energy Centre (EMEC) in Orkney completed a £7.2 million project to extend the current facilities to include tidal-stream testing berths.</p>



Type of energy source/technology	Action proposed or taken to develop or deploy
	<p>A new £6 million 4 year programme of fundamental research into marine energy involving a number of UK universities and known as "Supergen Marine" was approved by the Research Councils. This new programme builds upon research carried out under the previous Supergen Marine I research programme.</p> <p>In July 2006 a major £400k study on tidal power in the UK was commissioned by Government. The study led by the Sustainable Development Commission will consider the UK tidal resource and the technologies to harness tidal energy including tidal barrages. In particular the study looks at the potential for tidal power developments in the Severn Estuary and related issues in depth. The study is planned to report in summer 2007.</p>
Hydro generation	<p>The Environment Agency Hydropower Working Group (EAHWG) consisting of the DTI, the Environment Agency and the hydropower industry, continues to work together to find the best solution for developers to deploy hydropower while best protecting the environment.</p>
Micro generation	<p>The microgeneration strategy was published in March 2006 with the objective being to create conditions under which microgeneration becomes a realistic alternative or supplementary energy generation source for the householder, the community and small business.</p> <p>A steering group has been established to drive forward implementation of the strategy. Of the 25 actions in the strategy, 6 have been completed in the period of this report. Progress can be followed at – www.dti.gov.uk/energy/sources/sustainable/microgeneration</p>
Geothermal sources	<p>The Government published in 2002 "Assessment of Technological Options to address Climate Change". Costs remain a significant barrier to geothermal energy in the UK. However, its potential globally is significant and we continue to keep it under consideration.</p>

Science and Engineering

6.2 Section 81 of the Energy Act 2004 also requires us to report on “the maintenance of scientific and engineering expertise in the UK for the development of energy sources.”

Action taken in the last 12 months:

6.3 The Sector Skills Councils, Cogent and Energy & Utility Skills have, as part of their Sector Skills agreements undertaken a full assessment of the current situation and are developing strategic plans with their client industries and other interested parties to ensure that the needs of the energy sector are met;

6.4 The Cogent led National Skills Academies for Nuclear and the Process Industries were approved in October 2006:

- the Nuclear Academy will aim, in its first three years, to deliver 800 apprentices and around 150 Foundation degrees. A further 4,000 existing employers will be up-skilled and re-trained using short courses; and
- although the Process Industries Academy is primarily aimed at the chemical process sector, the refinery and power industries will also benefit.

6.5 Research Councils are spending £40 million per annum on energy R&D and this has a significant feed through to the supply of high-level skills. The Energy Technology Institute will add up to £100 million per annum of extra funding.

6.6 Training and research in nuclear has been increased by universities.

This includes:

- The Nuclear Technology Education Consortium are offering 20 modules at Masters level;
- seven universities are participating in the Engineering and Physical Sciences Research Council (EPSRC)-funded research programme *Keeping the Nuclear Option Open*;
- EPSRC is supporting the Nuclear Doctorate Centre, a collaboration between Manchester’s Dalton Institute and Imperial College London; and
- Lancaster University provides an undergraduate course in nuclear engineering.

6.7 There is a significant oil industry programme under the strategic direction of PILOT and the management of the Industry Leadership Team to address the need for craft and technician skills to replace those retiring. Around 150 new recruits each year are starting apprenticeships, with training delivered under the direction of Cogent and the Engineering Construction Industry Training Board (ECITB).

6.8 The Energy Research Partnership, a high level energy sector forum launched in the 2005 Budget and tasked with enabling the UK to become a world leader in developing innovative energy technologies, has initiated a workstream to improve the supply of high-level skills.

6.9 Membership of Ofgem’s Innovation Funding Incentive for electricity distribution companies has been broadened to include electricity and gas distribution companies. The Incentive aims to re-invigorate R&D within the sector by bringing industry and universities closer together, helping supply chain companies to bring in new technology and developing technical skills for the future.



6.10 The Government's commitment to increasing the supply of Science, Technology, Engineering and Mathematics (STEM) skills to the workforce was reinforced by the actions set out in the March 2006 *Science and innovation 2004-2014: framework next steps*, and the DTI/DFES STEM Programme Report in October 2006. The new National Curriculum places increased emphasis on science, technology and mathematics and has changed the method by which schools are assessed to give greater weight to attainment in English and Mathematics.

Nuclear Research and Development

6.11 The Government recognises that research plays an important role in maintaining nuclear competence and knowledge (around 20% of the UK's electricity comes from nuclear power).

6.12 The UK invests in fusion research through the Engineering and Physical Sciences Research Council (EPSRC) and the UKAEA undertakes the vast majority of the fusion research in the UK.

6.13 As a result of a new grant announced in August last year, EPSRC grant awards to UKAEA Culham will amount to around £95 million over the four years to 2007/08. The EPSRC funding covers the UK's own national programme of fusion research and the UK's contributions to the operation of Joint European Torus (JET). The UK also makes a contribution to the European fusion programme via its overall contribution to the EU budget.

6.14 Ministers from the seven ITER Parties signed the ITER agreement to establish the international organization that will implement ITER on 21 November. ITER is a global scientific collaboration on fusion research and involves the EU, China, India, Japan, Russia, Republic of Korea, and the United States.

Energy Efficiency

6.15 Section 81 of the Energy Act 2004 requires the Government to report on progress towards achieving its energy efficiency aims.

6.16 Reducing the amount of energy we use is the best way of achieving all of our energy goals, with an additional benefit of reducing costs to homes and businesses.

Commitment

- The 2004 Energy Efficiency Action Plan included a residential energy efficiency aim, to save 3.5 million tonnes of carbon from homes in England through energy efficiency measures by 2010. A revised Energy Efficiency Action Plan, which is to be published this summer in accordance with the requirements of the End-use Efficiency and Energy Services Directive, will serve to review the ambition of the aim.
- A second target for household energy efficiency was set in the Housing Act 2004, requiring the Secretary of State to take reasonable steps to improve residential energy efficiency by at least 20% by 2010 from a year 2000 baseline.

6.17 In 2006, as part of the review of our Climate Change Programme, we undertook a comprehensive review of the measures in the 2004 Energy Efficiency Action Plan and announced a strengthened policy package – all told energy efficiency policies are now expected to deliver over half the carbon savings in the new Climate Change Programme.

6.18 In the Energy Review Report we looked towards 2020, with a range of proposals for further policies and measures to help deliver an extra 6-9 MtC per annum by 2020.

Specific action taken this year includes:

6.19 We have significantly strengthened building standards. New provisions in the building Regulations in April 2006, mean (with previous revisions in 2002), a 40% improvement in the energy performance of buildings built to today's standards.

6.20 The Government also published a consultation on our aim that all new homes should be zero-carbon by 2016, an ambitious target. This will be achieved through further progressive tightening of the building regulations in 2010 and 2013 before the zero-carbon standard comes into effect in 2016.

6.21 To support the Government's ambition for zero carbon development, we have also published the Code for Sustainable Homes, the draft Planning Policy Statement: Planning and Climate Change and have committed in the Thames Gateway Interim Plan to explore the feasibility of making the Gateway zero/low carbon.

6.22 To kick-start deployment of the technologies that will be needed to realise this goal, the Chancellor announced in December 2006 that the Government will introduce a time-limited stamp duty exemption in 2007 for the vast majority of new zero carbon homes.

6.23 In the Budget 2006, the Chancellor announced the Retailers Initiative under which we will work with the Energy Saving Trust and retailers to introduce voluntary schemes to raise the energy efficiency of the goods they sell.

6.24 In the Energy Review Report we announced a commitment to maintain a household supplier obligation until at least 2020 following on from the 3rd phase of the Energy Efficiency Commitment, which comes to an end in 2011. We are committed to save 3-4 MtC by 2020 through this instrument. The Review also included proposals for raising awareness of energy use through better metering and billing and for adopting measures to secure savings of 1.2 MtC per annum from large commercial and public sector organisations. We also announced that, by 2012, the Government office estate will be carbon neutral and have set an aspirational target to reduce carbon emissions from the estate by 30% by 2020.

6.25 The Government has adopted a Sustainable Procurement Action Plan, a package of actions to deliver the step change needed to ensure that supply chains and public services will be increasingly low carbon, low waste and water efficient, respect biodiversity and deliver wider sustainable



development goals. Alongside the Action Plan, the Government is also publishing an updated set of mandatory environmental product standards that will ensure Departments procure the most sustainable commodities.

6.26 The EU has adopted an Energy Efficiency Action Plan which comprises a package of policies and measures to realise the potential for saving 20% of the EU's primary energy consumption by 2020.

6.27 The UK's energy tax, the climate change levy (CCL), which was introduced in 2001 to encourage businesses to reduce energy demand will be increased in line with inflation from April 2007.

6.28 The Pre-Budget Report in 2006 announced new investment of £7.5 million to improve the coordination between, and effectiveness of, Warm Front and the Energy Efficiency Commitment. This will fund projects using an area-based approach to identify households and provide the right coordinated set of advice and measures for them.

6.29 Subject to any necessary State aids clearance, the Landlords Energy Saving Allowance will be extended to corporate landlords and will be applied per property rather than per building, ensuring that even smaller properties have access to the full allowance. The acquisition and installation of floor insulation will also be a qualifying investment.