

The Government is committed to delivering a strong economy based not just on high and stable levels of growth, but also on high standards of environmental stewardship. This Budget responds to the Stern Review on the Economics of Climate Change and sets out the next stage in the Government's strategy for tackling climate change both domestically and globally, including:

- **that the Government will launch a competition to develop the UK's first full-scale demonstration of carbon capture and storage, the result of which will be announced next year;**
- **an increase in fuel duty rates of 2 pence per litre (ppl) from 1 October 2007, and increases in the next two years of 2ppl and 1.84ppl respectively;**
- **announcing car vehicle excise duty rates for the next three years, including rates for the most polluting cars rising to £400 and rates for clean cars in band B falling to £35;**
- **a review to examine the vehicle and fuel technologies which over the next 25 years could help 'decarbonise' road transport;**
- **a package of measures to support biofuels including extending the 20 pence per litre biofuels duty differential to 2009-10;**
- **a rise in climate change levy rates from 1 April 2008 in line with current inflation;**
- **that from 1 October 2007 all new zero-carbon homes costing up to £500,000 will pay no stamp duty, with zero-carbon homes costing in excess of £500,000 receiving a reduction in their stamp duty bill of £15,000;**
- **an intention that, by the end of the next decade, all householders will have been offered help to introduce energy efficient measures with the aim that, where practicably possible, all homes will have achieved their cost-effective energy efficiency potential;**
- **increasing funds available through the Low Carbon Buildings Programme to a total of over £18 million to help meet the demand from households for microgeneration technologies; and**
- **a £800 million international window for the Environmental Transformation Fund to finance overseas development projects that deliver both poverty reduction and environmental benefits in developing countries.**

The Budget also reports on the Government's strategy for tackling other environmental challenges including:

- **an increase from 1 April 2008 in the standard rate of the landfill tax by £8 a tonne per year, until at least 2010-11; and an increase in the lower rate of the landfill tax from £2 per tonne to £2.50 per tonne from 1 April 2008; and**
- **an increase in the aggregates levy rate to £1.95 per tonne from 1 April 2008.**

Sustainable development 7.1 The Government is committed to delivering strong, stable and sustainable economic growth. To achieve this aim it is crucial to take care of the natural environment and the resources on which economic activity depends. Economic growth need not be at the expense of the environment. Instead it must be based on the principles of sustainable development: integrating economic prosperity with environmental protection and social equity.

Long term challenges 7.2 Growth in economies and populations is putting greater pressure on the environment and greater demand on the world's natural resources. Managing this pressure has been identified as a key long-term challenge, as set out in *Long-term opportunities and challenges: analysis for the 2007 Comprehensive Spending Review*¹, published on 27 November 2006. The report assesses how growth has led to increasing levels of degradation, potentially threatening the future benefits derived from the environment. It points to a number of key areas for further action over the coming decade and beyond, including:

- *climate change* – the most pressing environmental issue the world faces, which requires a coordinated, international response so that the worst effects can be avoided at manageable cost. Some climate change is already inevitable, so the UK and other countries will also need to adapt;
- *rising levels of waste* – municipal, commercial and industrial waste streams are expected to increase steadily, at a time when the UK is committed to reducing the volume of waste sent to landfill;
- *water scarcity and water quality* – changes to the UK's climate and demographics will lead to increased pressure on water supplies in some areas, particularly south-east England. Pollution from diffuse and point sources continues to put the quality of water bodies at risk; and
- *biodiversity* – eco-systems with greater biological diversity are more adaptable and resilient to external shocks and changes. Biodiversity also plays an important regulatory role, underpinning the healthy functioning of the environment as well as having a cultural value.

Government intervention 7.3 Every section of society – business, individuals and government – has a role to play in helping meet the UK's climate change and other environmental goals. For its part, the Government recognises it is required to take action where market failures prevent long-term economic and environmental consequences from being taken into account in decision-making. A key aim of government intervention is to encourage behavioural change, particularly with regard to the use of energy, waste and water. Investment to increase efficiency in these areas is often a cost-effective option for businesses and households, but short-term cost considerations, lack of information or awareness and market failures can create barriers to the take-up of more efficient alternatives. Intervention can correct these market failures, ensuring the implementation of the 'polluter pays' principle where environmental costs are fully internalised in economic decisions.

Principled approach 7.4 *Tax and the Environment*, published by HM Treasury in 2002, set out the detail of how environmental policy should be developed. In the 2005 Pre-Budget Report, the Government reiterated the principles which underpin decisions about whether government intervention is needed and if so, what that action should be:

- the decision to take action must be evidence-based;

¹ *Long-term opportunities and challenges: analysis for the 2007 Comprehensive Spending Review*, HM Treasury, November 2006.

- any intervention to tackle environmental challenges must take place at the appropriate level – international, national or local;
- action to protect the environment must take account of wider economic and social objectives;
- action on the environment must be part of a long-term strategy;
- the right instrument must be chosen to meet each particular objective; and
- where tax is used, it will aim to shift the burden of tax from 'goods' (e.g. employment) to 'bads' (e.g. pollution).

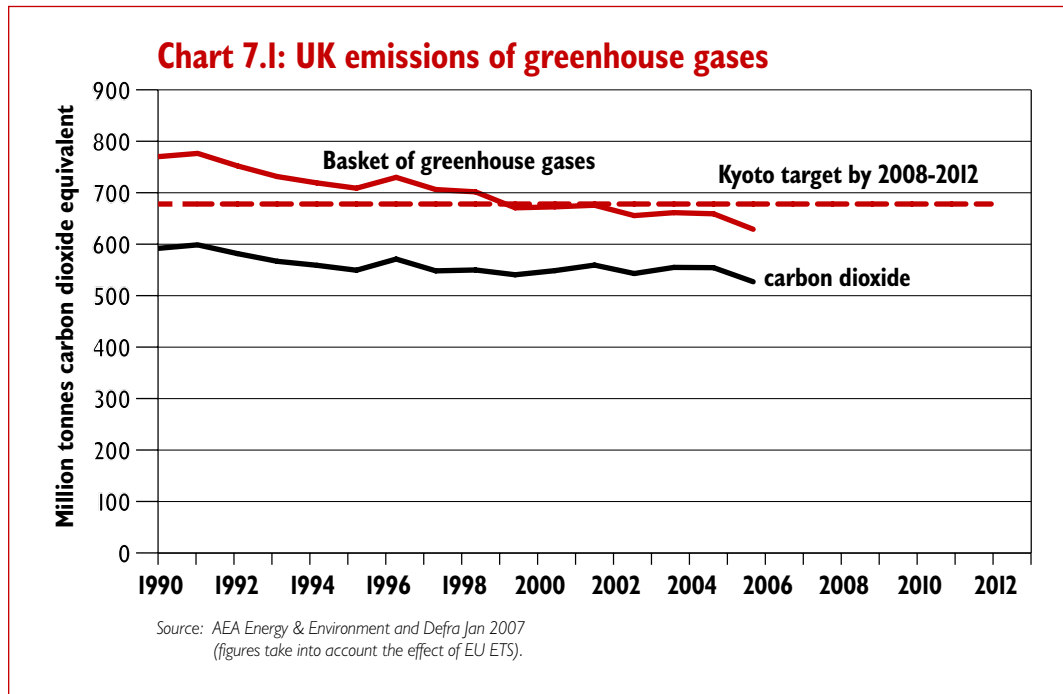
7.5 Within this framework, it is essential that the Government uses the most effective instrument to achieve its aims. For instance, regulation or voluntary agreements can be most effective where there are a limited number of polluters, or where, for example, market failures make product standards for energy or water efficiency the most cost-effective instrument of behavioural change. Spending measures may have a role to play where the polluter cannot afford to reduce pollution, or where equity or distributional issues make a tax or similar measure unacceptable. Fiscal measures can tackle external environmental costs, such as pollution, through reflecting such costs in prices and encouraging the behavioural changes needed to move to a more sustainable economy. Indeed, as highlighted in its *Statement of Intent on Environmental Taxation*, published in 1997, the Government believes that fiscal measures can be an important part of a wider package of measures, and is committed to reforming the tax system to shift the burden from 'goods' to 'bads'. Overall, it is crucial that environmental policy is the outcome of balanced decision-making. All intervention by the Government to meet environmental aims must also take account of the impact of any action on its wider economic and social objectives, including macroeconomic stability, business competitiveness, social inclusion and reducing fuel poverty.

Commission for Environmental Markets and Economic Performance **7.6** The Government believes that a green economy can also be a growing economy, and that there are new opportunities for UK business, commerce and science. That is why a new Commission for Environmental Markets and Economic Performance (CEMEP) was set up in November 2006 with a remit to examine the likely growth of global markets in environmental goods and services over the next 20 years, and the current and potential comparative advantage of UK firms in this area. The Commission is chaired by the Secretaries of State for the Environment, Food and Rural Affairs, and Trade and Industry, and is made up of experts from business, NGOs, academia and trade unions. It will investigate how government and business can stimulate employment and productivity in sectors with a significant contribution to environmental outcomes and resource productivity. These recommendations should ensure that the UK is well placed to take advantage of growing markets in environmental technologies and services. The Commission is due to report to the Government before summer 2007.

Progress to date on environmental challenges

7.7 The UK has made significant progress on all its environmental priorities, while maintaining strong economic growth. On climate change, the UK's contribution to the EU's commitments under the Kyoto Protocol is to reduce greenhouse gas emissions by an average of 12.5 per cent compared with 1990 levels over the years 2008 to 2012, taking emissions trading into account. On this basis, UK greenhouse gas emissions fell by 18.8 per cent by 2005, making the UK one of the few countries on track to meet its Kyoto commitments. On the same basis, UK carbon dioxide emissions in 2005 were approximately 11 per cent lower than 1990 levels. Following the measures announced in the Climate Change Programme and

Energy reviews, projections suggest that by 2010 the UK could reduce greenhouse gas emissions by over 23 per cent compared to 1990. Carbon intensity, which measures the level of carbon dioxide emissions against gross domestic product (GDP), has also improved by 55 per cent since the early 1970s at a rate of 2 per cent per year.



7.8 Good progress has also been made in other areas. On air quality, between 1997 and 2004, nitrous oxide emissions were reduced by 24 per cent and sulphur dioxide emissions were reduced by 49 per cent. Between 1997-98 and 2005-06, the quantity of waste going to landfill fell by 25 per cent and household recycling rates in England increased from around 8 per cent to nearly 27 per cent. Between 2001 and 2005, sales of virgin aggregate in Great Britain reduced by around 18 million tonnes, with an estimated increase in the use of recycled aggregate in England of around 5.5 million tonnes. In 2005, 64 per cent of England's rivers were of good chemical quality, compared with 43 per cent in 1990, and 71 per cent were of good biological quality, up from 60 per cent in 1990.

TACKLING THE GLOBAL CHALLENGE OF CLIMATE CHANGE

Stern Review 7.9 *The Stern Review on the Economics of Climate Change*² commissioned by the Chancellor of the Exchequer in July 2005, was set up to understand more comprehensively the nature of the economic challenges of climate change and how they can be met, both in the UK and globally. Published on 30 October 2006, the Review brought together the latest science on climate change, and employed economic methods to assess both the human and environmental impacts of, and responses to, climate change. It examined the consequences of climate change in developed and developing countries and promoted understanding of the costs and benefits involved in meeting the challenge. Since the publication of the Stern Review, the UK has agreed it will support a number of other countries in conducting similar national reviews and Sir Nick Stern will continue in an advisory role to them.

² *The Stern Review on the Economics of Climate Change*, Oct 2006.

7.10 The Stern Review highlighted that the scientific evidence is now overwhelming: climate change is serious and demands an urgent response. Increasing concentrations of greenhouse gases in the atmosphere will lead to a likely increase in extreme weather events and other impacts of increasing magnitude and severity. If no action is taken to reduce greenhouse gas emissions, global temperatures could rise by over 2 degrees Celsius from pre-industrial levels by 2035 and greenhouse gas concentrations by the end of the century could result in at least a 50 per cent chance that the temperature rise exceeds 5 degrees Celsius during the following decades. This would be equivalent to the change in average temperature from the last Ice Age to today. All countries would be affected by this change in the global climate, with developing countries being hit hardest. The Review concluded that the benefits of bold and early international action far outweigh the economic costs of not acting. The Review estimated that the cost of not taking action could be equivalent to losing between 5 and 20 per cent of annual global consumption whereas the costs of taking action can be limited to around 1 per cent of annual global GDP if the world pursues the optimum policies.

Importance of international action 7.11 Stern argued that an international approach to tackling climate change is essential for both environmental and economic reasons. Climate change is a global environmental problem – all countries emit greenhouse gases, and no one country can make all the necessary cuts alone. For that reason, all countries have to contribute to reducing emissions in line with their common but differentiated responsibilities and capabilities. It is also in the interests of the world economy that it costs no more than is necessary to mitigate climate change, with emissions reduced where most cost effective.

7.12 To avoid the worst impacts of climate change it is necessary to stabilise the concentration of greenhouse gases in the atmosphere at an appropriate level. The Stern Review highlights that global atmosphere concentrations of greenhouse gases are currently at 430 parts per million (ppm) of carbon dioxide equivalent (CO₂e) and are increasing at a rate of at least 2.5ppm per annum. The Review argues that getting below 450ppm will be very difficult and costly, while stabilisation above 550ppm could have disastrous consequences. The Review shows clearly that using the right policies to stabilise within this range would be cost effective relative to the consequences of not acting.

Economic methodologies 7.13 The Stern Review also considered the use of appropriate economic methodologies for taking the effects of climate change into account in making policy choices. Cost benefit analysis, as it is usually conceived, is appropriate for considering policies which have more marginal effects on overall welfare whereas climate change potentially has very large effects. In addition, use of discount rates which are big enough effectively to put little or no weight on costs for future generations is ethically inappropriate for considering the prudent response to climate change. So the Review both takes account of the scale of the problem and explicitly chooses not effectively to dismiss the welfare of future generations. In doing so it demonstrates that its main conclusions are robust to plausible changes to the main assumptions chosen. Given the very special nature of the climate change problem these developments are unlikely to have an effect on most areas of government analysis and decision making, though consideration is being given to possible consequences. In particular, the Government is taking forward work on the impacts on the calculation of the social cost of carbon.

Developing the right international framework

7.14 The Stern Review makes clear that coordinated and multilateral action is key to reducing emissions, while keeping costs manageable and avoiding damaging competitiveness. Climate change is an international issue and all countries need to act together to make a difference. Reducing global emissions must be the aim, rather than focusing on reducing emissions from individual countries.

International leadership 7.15 The UK has helped to build international consensus on the need to tackle climate change, and has driven forward multilateral action to reduce emissions. This leadership has been at both an EU and global level, and has involved engagement with developed and developing countries. The UK has supported the UN Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol, which provide the world with an international framework within which all governments can work together towards global emissions reductions in an equitable manner. The UK Government also championed action on climate change through its G8 and EU presidencies during 2005. The Gleneagles Summit in July 2005 achieved significant progress with the adoption of an Action Plan and a continuing Dialogue among the world's 20 largest energy-using economies. And in response to the UK's initiative at Hampton Court in October 2005, the EU has adopted a joined-up approach to energy and climate change for the first time.

The EU and the G7 7.16 The Commission's Strategic Energy Review (SER) was published on 10 January 2007 and at a landmark summit on 8-9 March 2007, European Heads of State agreed to support this comprehensive package of proposals putting Europe at the head of global leadership on energy and climate change, which could accelerate international agreement on a post-Kyoto framework. European Heads of State agreed to a binding EU-wide target to reduce greenhouse gases by 20 per cent by 2020 compared to 1990. Moreover, the European Union undertook to achieve a 30 per cent reduction in emissions by 2020, as part of a wider international agreement. Further targets were agreed on renewables, biofuels, energy efficiency, and on carbon capture and storage.

7.17 A key conclusion of the Stern Review was the need for Economic and Finance Ministries to be involved in climate change policy. Over the coming months, therefore, Ministers from HM Treasury and the Department of Trade and Industry (DTI) as well as the Department of Environment, Food and Rural Affairs (Defra) will undertake a series of joint visits to European countries to underline the need to translate Europe's ambitions into policy proposals. These visits will include meetings with their counterparts in Germany and Poland, as well as Portugal and Slovenia – the holders of the next two EU presidencies. At the G7 Finance Ministers conference on 9-10 February, the major economies also recognised the key role of market-based policy responses to the challenge of climate change.

Clean Energy Investment Framework 7.18 The Clean Energy Investment Framework is a direct response by the multilateral development banks to the Gleneagles Action Plan. It is designed to facilitate greater public and private investment in cleaner and more efficient energy focusing on the provision of access to energy in developing countries, the transition to a low-carbon economy and the need to adapt to climate risks, particularly in the poorest countries. The UK has called on the multilateral development banks to adopt a collaborative approach that could lead to the development of a unified global investment framework; and for the development banks to jointly set out a level of ambition for the scale of investment that could be mobilised through their frameworks. A conference on financing clean energy through public-private partnership was held in London on 13-14 March, bringing together the development banks, the private sector and the public sector to initiate work on how best to leverage investment.

Deforestation 7.19 The Stern Review highlighted that deforestation is responsible for 18 per cent of world greenhouse gas emissions, and prompt action to tackle deforestation is a critical and cost effective part of the global response to climate change. Sustainable forestry management has the potential to deliver many economic benefits for local communities as well as wider environmental gains. Since the publication of the Stern Review, the UK Government has been involved in discussions with Brazil, Papua New Guinea, Costa Rica, Germany (as President of the G8), the World Bank and other countries on how resources can be mobilised for sustainable forestry.

7.20 The Congo Basin has the second largest tropical forest in the world. Already some 1.5 million hectares of forest are lost each year and deforestation in the Congo is expected to accelerate if action is not taken, adding hundreds of millions of tons of carbon emissions. As announced in Chapter 5, **in the 2007 Comprehensive Spending Review the Government will create a new international window of the Environmental Transformation Fund (ETF) with £800 million of overseas development assistance to support development and poverty reduction through environmental protection, and to help developing countries respond to climate change. The Government will allocate £50 million from the fund to support proposals made by ten Congo Forest countries to help them protect the Congo Basin's forests and people.** Chapter 5 provides more detail.

The Stern Review Policy Framework

7.21 Box 7.1 outlines the main elements of the mitigation framework set out by the Stern Review. Within this framework, the Stern Review makes clear that governments should have the flexibility to choose the most appropriate levers to address specific market failures. This is in line with the UK Government's principled approach to taking action to protect the environment.

Box 7.1: The Stern Review on the Economics of Climate Change – Policy Framework

The Stern Review identified three key elements of an appropriate mitigation policy response:

- **pricing carbon through trading, tax or regulation** – ensuring that emissions reductions are delivered in the most cost-effective way to reflect the marginal damage caused by emissions which rises over time as the stock of greenhouse gases grows;
- **encouraging research, development, demonstration and deployment to bring forward a range of low carbon technologies; and**
- **measures to encourage long-term behavioural change and overcome barriers, particularly on energy efficiency where there may be remaining market failures in the move to a low carbon economy.**

The Stern Review also highlights the need for adaptation to the unavoidable impacts of climate change. This will be important in all countries but especially developing countries that will be hit soonest and hardest.

7.22 The UK's 2006 Climate Change Programme and Energy Reviews set out how both new and existing policies will enable the Government to move towards its targets for reducing greenhouse gas emissions. Box 7.2 highlights that, since 1997, the Government's approach has included all three elements of the Stern framework in its efforts to tackle climate change, employing an innovative range of measures at both international and national level. In addition, the forthcoming Energy White Paper will also bring forward an ambitious package of further measures to meet the twin challenges of energy security and tackling climate change.

7.23 On 13 March 2007, the Government published a draft Climate Change Bill which would put into statute the UK's targets to reduce carbon dioxide emissions, through domestic and international action, by 60 per cent by 2050 and 26-32 per cent by 2020, against a 1990 baseline. It would require the Government to set binding limits on aggregate carbon dioxide emissions over five-year carbon budget periods, beginning with the period 2008-2012, with at least three successive budgets always set. A Committee on Climate Change would be set up as an independent statutory body to advise the Government on the emissions reductions pathway to 2050, and on the level of carbon budgets. The Government would also have a duty to report annually to Parliament on the UK's progress towards the 2020 and 2050 targets and in relation to meeting its carbon budgets.

Box 7.2: Highlights of Government action since 1997 to tackle climate change:

Pricing carbon:

- strong support for the EU ETS, including setting stretching national caps in Phase I and Phase II and publishing the UK Emissions Trading Vision Paper which set out the UK's proposals for Phase III.

Encouraging innovation and research, development, demonstration and deployment of low carbon technologies:

- leading international collaboration such as through the Renewable Energy and Energy Efficiency Partnership (REEEP), the Southern Africa biofuels taskforce and the EU-sponsored Near Zero Emissions Coal project with China;
- increasing funding to around £800 million by 2008 to support environmental R, D and D and developing public-private partnerships through the Energy Technologies Institute and the UK Energy Research Partnership; and
- supporting the development and deployment of new energy sources through the Renewables Obligation, the Renewable Transport Fuel Obligation and the Low Carbon Buildings Programme to support microgeneration.

Removing barriers to behavioural change and encouraging energy efficiency:

- supporting international initiatives to improve energy efficiency such as the EU Energy Efficiency Action Plan; the International Framework Agreement on Energy Efficiency; and the I-Watt Initiative;
- encouraging energy efficiency in businesses through: the climate change levy and climate change agreements; the Carbon Trust; and enhanced capital allowances for energy-saving technologies;
- encouraging energy efficiency in households through the Energy Efficiency Commitment; the Energy Saving Trust; new building regulations; reduced VAT rates for energy-saving materials and microgeneration technologies; Warm Front; and the Landlords Energy Saving Allowance; and
- encouraging fuel efficiency in the transport sector through reforms to vehicle excise duty and company car tax.

Carbon pricing

7.24 The first element of the policy framework for responding to climate change set out in the Stern Review is to create a carbon price, through tax, emissions trading or regulation, to reflect the marginal damage caused by emissions, which rises over time as the stock of greenhouse gases grows. Over time, the aim should be to work towards a common price across sectors and countries to ensure that emissions reductions are delivered in the most cost-effective way.

EU ETS 7.25 The EU, with a strong lead from the UK, has taken the world's most significant step towards carbon pricing by establishing the EU Emissions Trading Scheme (EU ETS), which keeps emissions within fixed limits while allowing emissions to be reduced at least cost through trading. The EU ETS is the UK's principal carbon pricing instrument, capping half of the EU and UK's emissions.

7.26 In November 2006, the European Commission took an important decision on ten member states' proposed plans for EU ETS Phase II (2008-12). The Commission requested reductions in the total number of allowances in nine of the ten member states' plans (that is, all but the UK's), and the Commission has now made decisions on a further four national allocation plans (NAPs). Taken together these decisions will ensure greater scarcity in Phase II and reinforce the scheme's long-term credibility. The UK NAP for Phase II covers more activities than Phase I, covering approximately 52 per cent of UK emissions. The plan commits the UK to limiting its contribution to emissions to 246 million tonnes of carbon dioxide (equivalent to an overall emission reduction of 29 million tonnes of carbon dioxide (MtCO₂e), or 8 million tonnes of carbon (MtC) per year below business as usual), with 7 per cent of allowances being allocated through the use of auctioning.

7.27 In October 2006, the Government published its vision for the long-term future of emissions trading, with the aim of developing the EU ETS as the basis of a global carbon market and forging an EU agreement to a post-2012 framework. The UK's key proposals are to:

- set a new European-wide emissions reduction target from 1990 levels of 30 per cent by 2020 and then at least 60 per cent by 2050, providing greater long-term certainty for business. As set out above, member states have now agreed to a 20 per cent reduction by 2020 and have indicated their willingness to commit to an additional 10 per cent conditional on other countries taking similar action;
- foster a deeper, more liquid market by considering expansion of EU ETS to cover more sectors and gases;
- move towards more auctioning of allowances in future phases; and
- extend the scheme beyond Europe – first, by guaranteeing that credits from Clean Development Mechanism projects in developing countries will be valid for compliance in EU ETS beyond 2012, which will enable not only financial flows but technology transfer to the world's poorest countries, and second, by enabling similar schemes in other countries, such as those being developed in Japan, Australia, the North Eastern American states and California, to trade with the European scheme.

7.28 Following the 2006 Pre-Budget Report, the UK Government has held discussions with other EU member states to build a consensus on the need to provide long-term certainty on EU ETS. Other member states subsequently reaffirmed their commitment to the central role of emission trading in the EU's long-term strategy for reducing greenhouse gas emissions in the conclusions of the 8-9 March 2007 European Council meetings. The Netherlands and Sweden have also affirmed their commitment to the specific proposals in the UK's vision paper. In addition, UK business, environmental NGOs and the Government published a manifesto for the EU ETS in March 2007 which emphasised the importance of a stable and predictable trajectory of emissions reduction targets in the EU ETS, and called on European industry, NGOs and governments to press member states to secure a sound basis for the future of the carbon trading market.

Building a global carbon market

7.29 Over the last few years, a new market in global emissions reduction has developed from trading in allowances created under the EU ETS, schemes in other countries and the flexible mechanisms of the Kyoto Protocol – the Clean Development Mechanism and Joint Implementation. However, to secure the full benefits of cost-effective global emissions reduction, this developing market needs to evolve, achieving greater scale and liquidity, long-term visibility, and the convergence of currently separate schemes and elements.

7.30 London is already the pre-eminent centre for this new global market. In March 2007, the Chancellor met leading City trading firms who agreed to identify ways to create greater scale and innovation in global carbon markets. **Budget 2007 announces a UK proposal to host an international conference later this year on the developing global carbon market, focusing on how to link schemes in different countries and enhance trading with developing nations.** London's leading position on carbon finance will also be assisted by the announcement extending the Investment Manager Exemption (IME) to include certain instruments for carbon trading (more details can be found in chapter 5).

7.31 The first step towards expanding the EU ETS to other countries was achieved at the meeting of EU Finance Ministers in November 2006, when the European Free Trade Area – Iceland, Liechtenstein, Norway and Switzerland – agreed in principle to being included in the EU ETS. The UK has also been working with California on the creation of an emissions trading market to meet their ambitious long-term emissions reduction targets, and has held discussions with other US states that are also developing schemes. Building on the partnerships with France and New Zealand announced at the 2006 Pre-Budget Report, the Government has had discussions on linking and other issues with the federal Australian Task Group on emissions trading, which is due to report in May. Engagement has also begun with Mexico, who are keen to work with the UK on scaling up and improving the Clean Development Mechanism and on carbon trading in Latin America. In India, the first meeting of the Indo-UK Economic and Financial Dialogue in January also agreed to joint working on how investment can address the challenge of climate change. The UK will continue to work with the European Commission and other member states to forge links with other countries to deepen and strengthen international emissions trading.

Aviation in the EU ETS

7.32 Climate change in general is an international challenge that will affect all countries but aviation in particular is an international industry operating across country borders and reducing emissions from aviation requires a multilateral solution. Globally, carbon dioxide from aviation is responsible for around 1.6 per cent of total greenhouse gas emissions, but this level is set to increase as other sectors reduce emissions while demand for air travel rises. The UK aviation sector currently emits 5.5 per cent of the UK's total carbon dioxide output – and this could rise to 15 per cent by 2030. Aircraft are also responsible for high-altitude emissions of nitrogen oxides (NO_x), and for the formation of cirrus clouds and contrails, which means that the total climate change effect of all aviation emissions is two to four times

greater than the effect of carbon dioxide emissions alone. The Government's policy, as set out in the 2003 White Paper *The Future of Air Transport*³, and supported by the Stern and Eddington Reviews, is to ensure that aviation pays the external costs it imposes on society at large according to the 'polluter pays' principle.

7.33 The UK has long argued for changes to the international laws which prevent the taxation of fuel used on international flights, but this process will inevitably take time. That is why the Government's priority over the last few years has been to work to include aviation within the EU ETS. Adding aviation to the scheme will improve the liquidity of the market and ensure that the aviation sector plays its part in delivering real carbon reductions across Europe. The UK continues to make progress to facilitate, at an international and European level, inclusion of aviation in EU ETS and the Commission legislative proposal for inclusion by 2011 recently received broad support from member states.

Pricing emissions outside the EU ETS **7.34** The EU ETS already covers approximately half of UK emissions including all emissions from electricity generation, and forms the central component in the Government's domestic policy framework to tackle climate change. In sectors not currently covered by the EU ETS, national measures can play a part in pricing carbon. Governments should choose the most appropriate policies to achieve this taking account of economic, social and other factors. Given that different sectors have different characteristics, consideration of these factors leads to different approaches being adopted in different sectors.

Surface transport **7.35** Surface transport is the second largest source of carbon dioxide emissions in the UK and, due in part to sustained economic growth, emissions from it are set to continue growing until around 2015, before falling thereafter. UK transport emissions are primarily priced through a taxation framework – mainly through fuel duty – which provides incentives to individuals and business to drive less and use other modes of transport. In setting fuel duty rates, the Government also takes into account other external costs of motoring, such as congestion and air pollution, and the need to maintain sound public finances.

Fuel duty **7.36** It is the Government's policy that fuel duty rates should rise each year at least in line with inflation as the UK seeks to reduce polluting emissions and fund public services. **Budget 2007 sets out fuel duty rates for the next three years. Main fuel duty rates for 2007-8 will increase by 2 pence per litre (ppl), with these changes in rates deferred until 1 October 2007. Main fuel duty rates will then rise by 2ppl on 1 April 2008 and 1.84ppl on 1 April 2009.** By 2009-10, main fuel duty rates will still remain 11 per cent lower in real terms than they were in 1999. **In addition, the Government today announces an increase in duty for 2007-8 of 2ppl for rebated oils, also from 1 October, maintaining the differential between main and rebated fuel duty rates. Rebated oils rates will then rise by the same proportions as main duty rates in the subsequent two years.** More detail on rebated oils is in Chapter 5.

³ *The Future of Air Transport*, Department for Transport, December 2003.

Technology policy

7.37 Carbon pricing should help bring forward low carbon technologies by providing a market incentive. However, the Stern Review also highlighted the need for additional technology policies to accelerate the shift to new or improved technologies in key sectors such as power generation and transport. These accompanying policies will be essential to avoid locking in high carbon emission levels from long-lived capital stock (such as electricity generation plants) and to keep costs low as constraints on greenhouse gas emissions become tighter. Innovative environmental technologies may also suffer from similar market failures to those in other technologies, such as spillover effects and public good externalities. As with other responses to climate change, it is important that the UK works together with other countries to develop new technologies. But, in technology there are also real opportunities for UK leadership and advantage.

Energy Technologies Institute 7.38 Budget 2006 launched the Energy Technologies Institute (ETI) to deliver a step change in the funding, strategic direction and outcome of UK energy science and technology. The Institute, which will be fully operational in 2008, will be a 50:50 public:private partnership, with the aspiration of raising £100 million per year for UK-based energy research, design, demonstration and development; a total of £1 billion over a ten-year period. BP, Shell, E.ON UK, EDF, Caterpillar, Rolls-Royce and Scottish and Southern Energy have committed to contribute a total of £312.5 million over ten years from 2008. The Institute intends to expand private sector membership further, to match the Government's commitment to provide up to £50 million per year over a ten-year period. The Institute will primarily occupy the ground between the longer-term research funded by the UK's Research Councils and the deployment of proven technologies. It will provide funding for universities, SMEs and other firms, and international collaborations to accelerate the development and movement of promising technologies from the laboratories to commercial application.

Technologies in the energy supply sector 7.39 As set out in the 2006 Energy Review, the Government aims to promote a diverse energy supply, including renewable energy, new carbon abatement technologies to reduce emissions from fossil fuels and, subject to consultation, nuclear power. The Government's role is to provide the right incentives to allow the market to invest in this range of technologies, using policies such as the Renewables Obligation, and, importantly, a long-term carbon price created by the EU ETS.

Carbon capture and storage 7.40 Carbon capture and storage (CCS) could reduce the carbon dioxide emissions from fossil fuel power stations by as much as 90 per cent. The Government made clear in the Energy Review that the next logical step for CCS would be building a full-scale demonstration plant, subject to it being cost-effective. Since the 2006 Pre-Budget Report, the DTI has appointed consulting engineers to look robustly at the costs of a CCS plant based in the UK, and help the Government ascertain whether supporting one through a challenge fund or other mechanism would provide value for money. **The Government announces today that it will launch a competition to develop the UK's first full-scale carbon capture and storage demonstration, the result to be announced next year.** When operational early in the next decade, this will make the UK a world leader in this globally important new technology. Further details of the competition will be announced in the forthcoming Energy White Paper.

7.41 At the Spring Council in March 2007, the UK successfully pushed for a greater EU commitment to developing carbon capture and storage and EU leaders called for the Commission to develop a mechanism to stimulate the construction and operation by 2015 of up to 12 demonstration plants, and for member states and the Commission to work towards the necessary technical, economic and regulatory framework to bring environmentally safe CCS to deployment in new fossil-fuel power plants, if possible by 2020. The UK is continuing to work with the Norwegian Government through the North Sea Taskforce on transporting and

storing carbon dioxide beneath the North Sea, with the outcome to be published by July 2007. The Government has also established a cross Government task force to look at a range of issues related to the regulation of CCS in the UK including licensing of offshore CO₂ storage and responsibility for the long term liability. A consultation on this will be launched later this year. In November 2006 the London Convention was amended to allow carbon dioxide to be stored in geological formations below the sea, a major step towards enabling the implementation of CCS. The UK is now working towards a similar amendment in June 2007 for the OSPAR (Oslo-Paris) convention which governs North East Atlantic waters and restricts CCS in a similar way. In addition, the Stern Review highlighted the particularly important role that CCS technology could play in lowering carbon emissions in fast-growing economies with growing fossil fuel consumption such as China and India. The UK is leading the joint EU-China project to build a commercially viable Near Zero Emissions Coal (NZEC) power plant in China.

Microgeneration 7.42 Microgeneration technologies, such as solar heating and micro-wind, have the potential to contribute to both improved energy security and lower carbon emissions. To encourage their deployment the Government has reduced VAT on microgeneration installations and introduced grant support through the Low Carbon Buildings Programme (LCBP). Budget 2006 announced an additional £50 million to fund a second phase of the LCBP with the aim of stimulating the market for microgeneration technologies so that they can be commercially supplied to the market at a lower price than at present. **The Government today announces that it will allocate a further £6 million – making a total investment of over £18 million – to Phase One of the Low Carbon Buildings Programme for households.** DTI will discuss the future operation of the scheme with the industry. This final tranche of funding for Phase One will aid the transition to a more mature market for microgeneration which, from April 2008, will include support from Phase 3 of the Energy Efficiency Commitment.

7.43 Many small, distributed generators produce more electricity than they need. This excess electricity can be sold ('exported') to suppliers in order to earn some extra income for the generator, and supply a small amount of electricity to the grid. Energy suppliers are working on the rewards they offer to microgenerators who export their surplus electricity to the grid. If they do not make offers by this summer, the Climate Change and Sustainable Energy Act 2006 gives Government the powers to require suppliers to do so. This will ensure that homes can benefit fairly from the export of electricity. **The Government will ask Ofgem to examine how green homes can benefit more from the prices paid to them when they become not just sources of clean energy for themselves but sell it back to the grid.** In addition, as announced in the Pre-Budget Report, Finance Bill 2007 will legislate so that, where an individual householder installs microgeneration technology in their home for the purpose of generating power for their personal use, any payment or credit they receive from the sale of surplus power is not subject to income tax, and they are not required to include it on their income tax return. **Budget 2007 announces that, for these same individuals, any Renewables Obligation Certificates acquired in respect of electricity generated from microgeneration technologies installed on their property will not give rise to an income tax or capital gains tax charge.**

Alternative transport technologies 7.44 Alternative fuel and vehicle technologies have the potential to deliver significant environmental benefits. To push forward technological development, the EU established voluntary agreements with car manufacturers to reduce the average level of carbon dioxide (CO₂) per gramme per kilometre (g/km) for new cars to 140 g/km by 2008-9. Discussions on the detail of a successor regime to the voluntary agreements are currently being held. The European Commission recently published its 'CO₂ from cars' communication, which calls for new mandatory targets for average new car CO₂ to be reduced to 130 g/km by 2012. Coupled with vehicle improvements, for example, tyre pressure monitoring systems, and an increase in the use of biofuels, the Commission proposed that the overall target should be to reduce

average new car CO₂ to 120 g/km by 2012. The Government's view is that the objective beyond 2012 should be to reduce average new car emissions to 100 g/km of CO₂.

7.45 The Chancellor has asked Professor Julia King, Vice-Chancellor of Aston University and former Director of Advanced Engineering at Rolls-Royce plc, working with Sir Nicholas Stern, to lead a review to examine the vehicle and fuel technologies which over the next 25 years could help to 'decarbonise' road transport, particularly cars. The Review will draw upon expertise in industry, both in the UK and internationally, and across Government, in the Department for Transport (DfT), Defra, DTI and HM Treasury. It will feed into the work of the Energy Technologies Institute. The Secretary of State for Transport will set out the terms of reference for the Review shortly.

Alternative fuels 7.46 The Alternative Fuels Framework, published in the 2003 Pre-Budget Report, affirmed the need for fiscal incentives to reflect environmental benefits of new fuels and committed the Government to a three-year rolling guarantee for biofuel and road fuel gas duty rates, offering certainty to support investment. For aviation, the Government recognises that in the short term there are limited options for using alternative fuels in aircraft, but will continue to explore the areas where Government support may be appropriate.

Renewable Transport Fuel Obligation 7.47 To encourage the development of biofuels the Government is introducing from 2008 a Renewable Transport Fuel Obligation (RTFO), which will require transport fuel suppliers to ensure a set percentage of their sales are from a renewable source. Budget 2006 announced that the level of obligation would be set at 2.5 per cent in 2008-09 and 3.75 per cent in 2009-10, before reaching 5 per cent in 2010-11. This will deliver net savings of around 1 MtC per year by 2010. The Government intends the level of the Obligation to rise above 5 per cent after 2010-11, provided that three critical factors are met: robust sustainability and carbon standards; a new fuel quality standard at EU level to ensure existing and new vehicles can run on biofuel blends higher than 5 per cent; and the costs being acceptable to the consumer and the wider economy. To encourage the use of the most environmentally-friendly biofuels, the Government will require transport fuel suppliers to report on the carbon saving and sustainability of the biofuels they supply. Work on developing a framework for these reporting schemes, led by the Low Carbon Vehicle Partnership, is progressing well. This work is being taken forward in close partnership with the Dutch Government and the European Commission with the aim of demonstrating how such systems could be developed on an EU-wide basis. The Government is also continuing to press the European Commission to develop urgently mandatory minimum standards for carbon and sustainability at EU level.

Biofuels duty differential 7.48 Fuel duty differentials have been in place for biodiesel since 2002 and bioethanol since 2005. **Budget 2007 announces the extension of the 20ppl biofuels duty incentive until 2009-10, offering further certainty to the industry. In addition, the RTFO buy-out price – the price paid by fuel suppliers who fail to meet their obligation for the first year of the RTFO – will be set at 15ppl in 2009-10.** As set out in Budget 2006, the combination of duty incentive and buy-out price is guaranteed at 35 ppl in 2008-09 and 2009-10 but will reduce to 30 ppl in 2010-11. In line with the Alternative Fuels Framework, the Government will announce the level of the duty differential for 2010-11 in Budget 2008 but expects that the emphasis will move from the duty incentive towards the buy-out price as the principal support mechanism in future years. The Government's intention is that the level of the RTFO buy-out price should be sufficiently high to ensure that obligated suppliers do not routinely resort to using it, and so will keep the level of the buy-out price under review.

- Modernisation and deregulation of biofuels 7.49** At Budget 2006 the Government announced that it would review the definition of biodiesel in the Hydrocarbon Oil Duties Act 1979 to ensure that environmentally friendly fuels continue to receive recognition through the duty system. The review concluded that the definition should be kept under active review as new fuels and approaches emerge. HM Revenue and Customs (HMRC) also issued at the 2006 Pre-Budget Report further guidance on testing biodiesel against the current definition. **Following consultation, HMRC will relax requirements for small biofuels producers to register and submit returns and reduce the requirement for all but the largest producers from monthly to quarterly returns.**
- Biogas duty differential 7.50** The Government recognises that using gas produced from a renewable source (“biogas”) can deliver significant climate change and environmental benefits. Biogas used as a road fuel already benefits from a duty incentive of over 40ppl. **The Government today announces that it will extend the duty incentive for biogas at least at its current level until 2011-12, providing certainty to the industry.** Future decisions on the biogas duty incentive will take account of the incentives offered for biogas through the Renewable Transport Fuel Obligation, alongside other issues.
- High blend biofuels 7.51** Bioethanol is typically used in blends of 5 per cent. However it can be used in blends of up to 85 per cent (E85), if the vehicle has been either designed specifically, or has been modified to use the fuel. **Following the commitment in the 2006 Pre-Budget Report to consider the case for introducing an incentive in company car tax to support the take-up of vehicles capable of using high-blend bioethanol E85, the Budget announces a 2 per cent company car tax discount for such vehicles from April 2008.**
- Biomass in fuel production 7.52** The Government will also continue to support innovative types of biofuel production, especially where these could result in biofuels with greater life cycle emissions benefits, or fuels which can be mixed with fossil fuels at higher blends. As announced at the 2006 Pre-Budget Report, the Government has extended the 20ppl fuel duty differential to the use of biomass in conventional fuel production to encourage the development of this technology.
- Extending biofuels to other uses 7.53** Following the announcement in the 2006 Pre-Budget Report of action to encourage the use of biofuels off-road, the Government has laid legislation to reduce the duty rate for biofuels mixed with rebated gas oil in approved pilot projects. It expects two such projects in the railway sector to begin shortly and will monitor the results closely. **To further encourage the off-road use of biofuels, the Government today announces that it intends to permanently reduce the current duty rate for biofuel/rebated gas oil mixtures with the new rate to be determined in the light of the outcome of the pilots and other factors.**
- Enhanced Capital Allowances for biofuels 7.54** At Budget 2006 the Government applied for State aid approval for an enhanced capital allowance (ECA) scheme to support the most carbon-efficient biofuels plant. Following discussions with the European Commission over the summer the Government launched a further stakeholder discussion process with interested parties in October 2006 to update them on progress and gather views on the best way forward. The consultation process is now complete, and **in light of the responses, the Government will re-apply for State aid clearance and, subject to that, will introduce a 100 per cent first-year allowance for biofuels plant that meet certain qualifying criteria, and which make good carbon balance inherent in their design, as proposed. In addition, as announced in Chapter 3, the Government will also introduce a payable enhanced capital allowance for companies not in taxable profit to ensure both profit and loss making firms have an incentive to invest in the cleanest biofuels plant.** The Government will continue to monitor the development of innovative and lower-carbon biofuels production methods, and consider the most effective form of on-going support.

International collaboration on biofuels 7.55 The UK has initiated a joint taskforce with Brazil, South Africa and Mozambique to promote the development of a sustainable regional biofuels industry in Southern Africa. This will bring together key partners, including the World Bank and local industries, with leading experts from Brazil, to promote the production and use of biofuels in the region and to enhance South-South technology transfer. And, in advance of the EU-US Summit on 30 April this year, **the Government will propose the establishment of an EU-US taskforce to facilitate the exchange of skills, knowledge and research and development on biofuels, including the development of 'second-generation' biofuels.**

Road fuel gases 7.56 Road fuel gases, such as compressed natural gas (CNG) and liquefied petroleum gas (LPG), can deliver carbon and air quality benefits over conventional road fuels. **In line with the Alternative Fuels Framework and previous practice, the Government today announces that it will maintain the CNG differential with main road fuels in 2009-10, and will decrease the LPG differential by a further 1ppl.** Changes will be made to both rates before then in line with announcements at previous Budgets and Pre-Budget Reports.

Sulphur-free fuels 7.57 Sulphur-free fuels offer local air quality benefits, while helping new engine technologies work more efficiently. Following consultation by the Department for Transport (DfT), regulations will be brought forward to ensure the widespread availability of sulphur-free diesel and sulphur-free 'super' grades of petrol. The regulations will enter into force in late 2007. In advance of that, HMRC will bring forward deregulatory changes to the definition of ultra-low sulphur diesel in the Hydrocarbon Oil Duties Act 1979, to assist the industry in delivering sulphur-free fuels at lower cost.

Overcoming barriers and changing behaviour

7.58 The third essential element in the policy framework identified by the Stern Review are measures to overcome barriers and encourage long-term behavioural change, particularly on energy and fuel efficiency where there may be remaining market failures such as asymmetries of information. The policy response must ensure delivery of cost-effective measures which would not otherwise have been delivered by carbon pricing, thereby enabling a lower carbon price.

International action on energy efficiency 7.59 The UK is committed to action at EU and international levels to raise the efficiency of energy using products and is leading the international task force established at Gleneagles to reduce stand-by power to 1 Watt (the IEA 1-Watt initiative). As there is a clear advantage in coordinating action at an EU level, the UK Government welcomes the inclusion of the EU Energy Efficiency Action Plan in the Commission's broader Strategic Energy Policy for Europe agreed at the March 2007 summit, and will be encouraging the Commission to maintain this level of ambition in implementing these measures later this year.

Business energy efficiency 7.60 Growing awareness of climate change issues, alongside the introduction of key Government policies, has led to many more companies contributing towards emissions reductions and taking action to improve their energy efficiency. The Government is committed to implementing a coherent policy framework that supports these actions and has sought to complement the EU ETS with a range of national measures to improve business energy efficiency, in particular the climate change levy package.

Climate change levy 7.61 The UK's tax to encourage business energy efficiency – the climate change levy (CCL) – was introduced in 2001 to encourage businesses to reduce energy demand and subsequently the EU made it a requirement for all member states to tax the business use of energy. The CCL was accompanied by a 0.3 percentage point cut in employer national insurance contributions (NICs) resulting in a net reduction in tax liability for business. The levy, and parallel taxes in other EU countries, provide an important complement to the EU

ETS by incentivising firms to improve energy efficiency and so supporting achievement of the EU ETS cap. Independent analysis by Cambridge Econometrics⁴ estimated that the levy will deliver cumulative savings of 16.5 MtC to 2005. By 2010, the levy will be saving around 3.5 MtC a year, well above initial estimates, and will have reduced energy demand in the commercial and public sector by nearly 15 per cent a year compared with if the levy package had not been in place. As announced in Budget 2006, having kept CCL at its original level for its first six years, CCL rates will increase in line with inflation from 1 April 2007 to maintain the levy's environmental impact. The Government expects that the rates of the levy will at least keep pace with inflation over time. **Therefore, the Government announces today that, from 1 April 2008, the rates of CCL will increase in line with current inflation.** As stated in the 2006 Pre-Budget Report, the Government will continue to consider the case for reforms to the CCL within the context of the development of EU ETS Phase III after 2012.

Climate change levy simplification 7.62 The Government also announces today a package of changes to simplify the operation of the CCL. This includes simplifying how relief is applied to energy-intensive businesses that sign climate change agreements. This will align procedures with other reliefs, and remove an unnecessary and redundant provision, allowing levy relief to be provided where certification is received after the supply, and removing the requirement on customers to notify suppliers before it is destined for export or onward supply.

Climate change agreements 7.63 Over 50 energy intensive sectors are now able to benefit from an 80 per cent discount in CCL in return for signing climate change agreements (CCAs), under which firms agree to improve energy efficiency and/or reduce emissions. When introduced alongside the levy in 2001, CCAs were forecast to save 2.5 MtC a year but these targets have already been exceeded by an extra 2.4 MtC. Indeed, CCAs have increased carbon savings above the level that would have been achieved if all firms paid the full CCL rates. By 2010, it is estimated that CCAs will deliver savings of around 2.8 MtC per year. Regular reviews of existing CCAs by Defra continue to ensure that the energy efficiency improvements and emissions reductions delivered by the agreements are maximised.

Enhanced capital allowances and the Carbon Trust 7.64 Alongside the CCL and CCAs, the Government also introduced enhanced capital allowances for energy-saving technologies, with over 14,000 approved products now eligible for support. The Government has commissioned an independent review of the effectiveness of the ECA for energy-saving technology, which will be published later this year. **As announced in Chapter 3, the Government will also introduce a payable enhanced capital allowance for companies not in taxable profit to ensure both profit and loss making firms have an incentive for energy-saving technology.** Increased funding for the Carbon Trust, which provides businesses with advice on improving their energy efficiency as well as interest-free loans to fund capital energy-saving projects such as lighting, insulation and boilers, was also part of the CCL package. In 2004-05, the Carbon Trust worked with over 2,800 organisations, resulting in cost savings of £200 million for business.

Regional Development Agencies and the environment 7.65 Budget 2006 announced that the Financial Secretary and Richard Ellis, chair of the East of England Development Agency, would chair a group comprising of representative business organisations, Regional Development Agencies (RDAs) and the Carbon Trust, to examine how to ensure firms have access to the information they need to improve energy efficiency. In response to the findings of the group, the 2006 Pre-Budget Report announced that the Government will seek to streamline and coordinate services as part of the wider programme to reduce the complexity of business support and better tailor services to business needs. The RDAs will promote streamlined advice on resource efficiency delivered through Business Links. In total, the advice, support and incentives available from Business Links and the RDAs for environmental improvement and innovation, including for small

⁴ *Modelling the Initial Effects of the Climate Change Levy*, Cambridge Econometrics, March 2005, available at www.hmrc.gov.uk

businesses, will rise from £140 million this year to £240 million next year. **To support small and medium-sized businesses on energy efficiency, each of the nine English RDAs will pilot in 2007-08 a streamlined business resource efficiency advice service, through Business Links. This will include on-site audits of resource efficiency, delivered consistent with, and coordinated through, the Business Support Simplification Programme.**

Large non-energy intensive organisations **7.66** In the 2006 Energy Review, the Government highlighted the potential for further cost-effective carbon savings from large non-energy-intensive organisations, such as supermarkets and financial institutions. This sector of the economy is already covered by some policy measures, such as the CCL and the carbon price established by the EU ETS. A consultation was launched in October 2006 to examine measures that could improve energy efficiency in this sector and set out possible policy options, including a mandatory trading scheme and voluntary benchmarking and reporting amongst others. The consultation closed at the end of January. The Government is considering responses and will publish its conclusions in the Energy White Paper.

Household energy efficiency **7.67** Households account for over a quarter of UK energy consumption and carbon emissions. Many energy efficiency measures can reduce emissions cost-effectively but are not taken up due to a variety of market failures – particularly cavity wall, loft and hot water cylinder insulation, draught proofing, efficient boilers and heating controls. The main mechanism to encourage the take up of energy efficiency measures in this sector is the Energy Efficiency Commitment (EEC), which requires energy suppliers to achieve targets for installing efficiency measures in the household sector. Suppliers typically achieve these targets by providing discounts to homeowners on a range of energy saving materials, including loft and cavity wall insulation. Low income households can also receive energy saving products free of charge. The EEC should deliver savings of nearly 1 MtC a year by 2010. The Government believes that activity in the third phase of the EEC (2008-11) could save a further 0.9-1.2 MtC a year by 2010, while recognising that the scheme needs to remain cost-effective and practical and that the overall policy framework needs to continue to take account of wider social considerations. Alongside the EEC, the Warm Front and Decent Homes programmes provide insulation and other energy efficiency measures free to low income households and in the social housing sector. Warm front provides grants for up to a maximum of £2,700, or £4,000 if oil central heating is required. Pensioners who do not currently have central heating can receive a £300 discount when installing a new system.

7.68 Later this year Energy Performance Certificates will be introduced giving all homes at the point of sale an energy efficiency rating and will provide householders with clear information and advice about how to improve it. The forthcoming Energy White Paper will set out the Government's proposals for improvements to billing information and for the roll-out of smart metering and visual display units over the next decade. Based on consultation with major banks and building societies, the Government anticipates that these measures and improved energy advice and information have the potential to create a market for 'green' financial products designed to help householders invest in energy efficiency and microgeneration installations. **Through all the above measures, the Government's intention is that, by the end of the next decade, all householders will have been offered help to introduce energy efficiency measures, with the aim that, where practically possible, all homes will have achieved their cost-effective energy efficiency potential.**

Code for sustainable homes **7.69** It is also essential that new homes are constructed to high standards of sustainability. In December 2006, the Department for Communities and Local Government introduced the Code for Sustainable Homes which, building on the higher energy efficiency standards introduced in April 2006 through building regulations, sets out new national standards for

sustainability in homebuilding and challenges developers to go further in meeting these standards⁵. To ensure that the planning system plays an appropriate role in reducing carbon emissions, the Government has consulted on a new Planning Policy Statement (PPS) on Climate Change to be published later this year. This will aim to integrate climate change considerations fully into the planning process.

Zero-carbon homes 7.70 Alongside the Code for Sustainable Homes, in December 2006 the Government published a consultation, *Building a Greener Future*⁶, setting out the Government's ambition for moving towards zero-carbon new housing. This included a commitment to progressively incorporate the Code's standards on energy efficiency into future building regulations, to ensure that, within a decade, all new homes will be zero carbon. The Pre-Budget Report announced that the Government would introduce a time-limited stamp duty exemption for the vast majority of new zero-carbon homes. **Budget 2007 announces that from 1 October 2007 all new homes meeting the zero carbon standard costing up to £500,000 will pay no stamp duty, and zero-carbon homes costing in excess of £500,000 will receive a reduction in their stamp duty bill of £15,000.** The relief will help kick-start the market for new highly efficient technologies in homes, both for the fabric of the building and in the use of microgeneration ahead of 2016, and sets a gold standard for green homes. The exemption will be time limited for 5 years until 30 September 2012, but before the end of the time limit the Government will review the effectiveness of the relief and consider the case for an extension, which could include introducing other qualifying criteria such as requiring a proportion of recycled materials and restricting carbon used in manufacture of materials and construction.

Energy Efficient Windows 7.71 Energy efficient windows have a major role to play in reducing household energy use and increasing the energy efficiency of existing homes. The Government supports the development of energy efficient glazing technology, and welcomes the introduction of the British Fenestration Rating Council's Window Energy Rating System, which has been endorsed by the Energy Saving Trust. **The Government will carefully monitor the progress of this rating system and developments in the market, and will work with the industry and manufacturers to explore the case and scope for incentives to encourage the installation of energy efficient glazing.**

Private rented sector 7.72 A particular market failure exists in the private rented sector where cost savings from energy efficiency investments are difficult for landlords to recover in increased rent. In Budget 2004, the Government took action to correct this market failure by introducing the Landlords Energy Saving Allowance (LESA), which provides an allowance of up to £1,500 for landlords who invest in cavity wall and loft insulation. LESA has since been extended to solid wall and hot water system insulation as well as draught proofing. The 2006 Pre-Budget Report announced the expansion of LESA, and **the Government will now legislate in the 2007 Finance Bill for the extension of the existing sunset clause from 2009 to 2015, the application of the allowance to per property rather than per building, ensuring smaller properties have access to the full allowance, and the addition of the acquisition and installation of floor insulation as a qualifying investment. The Government is also seeking State aid approval to extend the availability of LESA to all corporate landlords.**

Low energy lighting 7.73 The EU's Energy-using Products (EuP) Framework Directive will bring forward measures to improve the efficiency of a range of electronic and energy-using products within the EU. Under the EuP Directive, member states have agreed to establish, by 2009, new European legislation to increase the efficiency of light bulbs. **Working with UK manufacturers, retailers and trade associations, the UK Government aims to become by**

⁵ Code for Sustainable Homes, DCLG, December 2006.

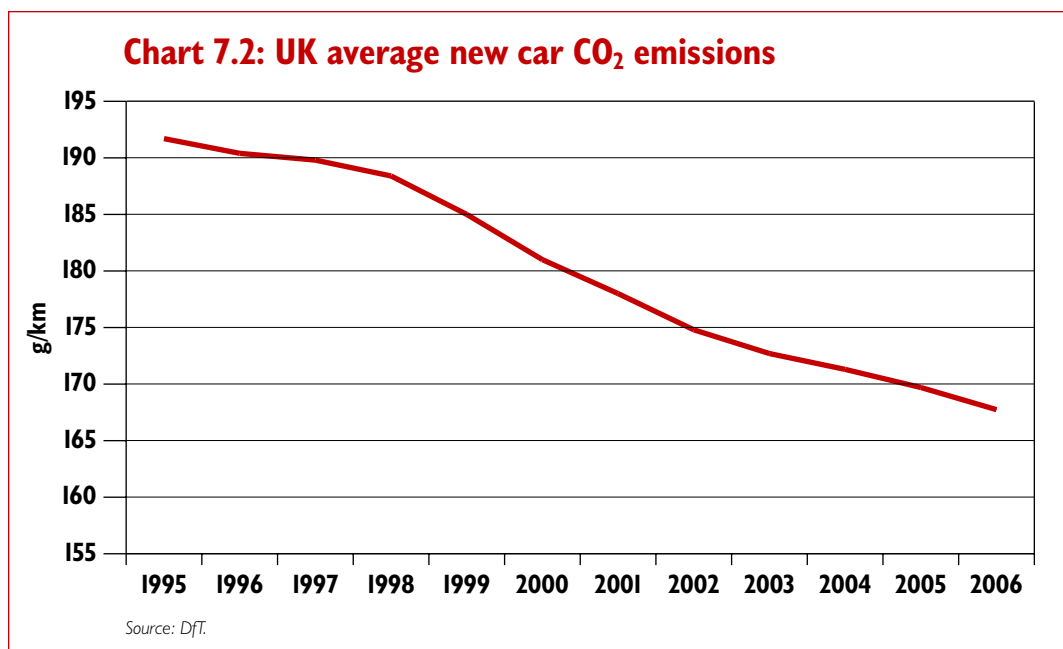
⁶ *Building a Greener Future – Consultation Document*, DCLG, December 2006.

2011 the first European country to phase out the use of inefficient general lamp standard (GLS) light bulbs, where an efficient alternative exists. This will reduce UK carbon emissions by up to 1.2 MtC a year by 2020 and lead to a saving of around £30 on average household energy bills. **To encourage the purchase of low energy light bulbs, the Government has this month written to European Finance Ministers and the European Commission to recommend the introduction of a reduced VAT rate for energy efficient products.**

Consumer electronics 7.74 As announced at Budget 2006, the Government is also working in partnership with major retailers and the Energy Saving Trust in advance of EU regulation, to introduce voluntary schemes in the retail sector to encourage the purchase of more energy efficient alternatives in consumer electronics, and therefore raise the energy efficiency of electrical products. This has the potential to reduce UK carbon emissions by up to a further 1.7 MtC a year by 2020 and lead to a saving of around £45 on average household bills.

Public sector energy efficiency 7.75 The public sector has an important role to play in setting an example to encourage all individuals, households and firms to improve their energy efficiency and limit their environmental impact. All government departments are committed to producing focused action plans to reduce carbon emissions and to renew them annually. In June 2006, the Government announced that all central government's office estate is to be carbon neutral by 2012, and set new targets for energy efficiency, water, waste and biodiversity. At the local authority level, a best value energy efficiency indicator requires local authorities to address their energy consumption.

Fuel efficiency of vehicles 7.76 Chart 7.3 shows a substantial decrease in average carbon emissions from new cars per kilometre travelled every year for the last decade. Innovation in car manufacturing to improve the fuel efficiency of cars, and incentives for people to purchase less polluting vehicles have both contributed to this.



Vehicle excise duty 7.77 Vehicle excise duty (VED) for cars was reformed in 2001 and is now based on graduated carbon dioxide bands, giving a clear signal to motorists to choose more fuel efficient vehicles. Fuel efficiency labels matching the graduated VED structure were introduced into car showrooms in 2005, raising consumer awareness of the potential fuel savings that can be

achieved by choosing a lower carbon dioxide emission vehicle. In addition, on 11 March 2007, the DfT launched a climate change communications campaign to promote smarter driving by providing consumer information to encourage the purchase of greener cars.

7.78 As with fuel duty rates, the Government today announces VED rates for this year and the next two years to further sharpen environmental signals to motorists to purchase more fuel efficient vehicles and continue to support the development of low-carbon market, including:

- raising the rate for the most polluting cars (band G) to £300 in 2007-08 and £400 in 2008-09; and reducing the rate for low-carbon band B cars to £35 in 2007-08, with that rate then frozen for the subsequent two years;
- raising the rates for graduated bands C-E, cars registered before 2001 and all light goods vehicles by £5 in each of the next three years;
- raising the rates for graduated band F by £10 in 2007-08, then £5 in each of the subsequent two years;
- in 2007-08 only, freezing the rates for motorbikes in the lower band with higher bands increasing by £1-£2; and freezing VED rates for Heavy Goods Vehicles (HGV), Special Types Vehicles, Combined Transport Vehicles and all vehicle categories that are linked to the basic goods rate;⁷ and
- aligning the VED rates for petrol and diesel cars as the differential in nitrogen oxides and particulate matter emissions for new cars is expected to fall to close to zero once Euro V and VI emission standards become mandatory.
- Changes to this year's VED rates take effect from 22 March 2007. All changes in subsequent years take effect from licenses commencing 1 April in the respective year.

Company car tax 7.79 Company car tax (CCT) was reformed in 2002 and is now based on carbon emissions, encouraging the take up of more fuel efficient cars. These changes are forecast to deliver significant carbon savings of between 0.4 and 0.9 MtC per year by 2020. To further promote more fuel efficient vehicles, Budget 2006 announced that from 6 April 2008, the emissions corresponding to the lower threshold rate of 15 per cent will be reduced from 140g of carbon dioxide per kilometre to 135g of carbon dioxide per kilometre. The Government also created a new lower 10 per cent band for company cars with carbon dioxide emissions of 120g per kilometre or less from 6 April 2008. The Government today announces that the thresholds for the 2009-10 percentage charge rate will be frozen at 2008-09 levels.

7.80 Budget 2006 announced that HMRC would review the taxation of employee car ownership schemes (ECOS) and the benefits employees derive from them, with a view to possible changes. HMRC has undertaken extensive discussions with business during summer 2006 and January 2007, which demonstrated there are a number of different ECOS schemes, and that there is a noticeable interaction between the tax treatment of ECOS, tax-free mileage allowances (AMAPs) and rates of company car tax, which may have contributed to the popularity of ECOS. Furthermore, the review has suggested that the more structured ECOS schemes make extensive use of AMAPs to reduce their tax and NICs liabilities, which may provide a potential incentive to drive a greater number of business miles. **Therefore, ahead of the Pre-Budget Report, the Government will consider the case for changing the structure of AMAPs to align the tax/NICs treatment and to ensure that rates and thresholds are set at an**

⁷ The basic goods rate is equal to lorry VED band A. VED rates for the following vehicle categories are currently linked to this rate: Buses, Trade Licences, Special Vehicles, Private HGVs, Small Island Vehicles and Recovery Vehicles.

appropriate level to promote environmentally friendly business travel.

Company car fuel 7.81 The company car fuel benefit charge – paid by employees who drive company cars and receive free fuel for private use – was reformed in 2003 to align it with the environmental principles of the company car tax system. **Budget 2007 announces that the fixed figure on which the company car fuel benefit charge is based will be maintained at £14,400 in 2007-08.** As announced in the 2005 Pre-Budget Report, the VAT fuel scale charge, which is a simplified scheme for taxing the private use of road fuel, will, from 1 May 2007 be based on a car's carbon dioxide rating. **Budget 2007 announces that the VAT fuel scale charge will increase in line with fuel pump prices from 1 May 2007.**

Capital allowances for cars 7.82 As outlined in Chapter 5, the Government has been developing proposals for modernising relief for capital expenditure on business cars with the aim of providing incentives to business to purchase cleaner cars. This could build on the existing 100 per cent first-year allowance for very low emission cars and recent reforms to VED and company car tax. More detail is released in a consultation update document, *Modernising tax relief for business expenditure on cars*, and the Government will continue to engage with business.

Vehicle emission standards 7.83 The Euro IV emissions standards for small vans became mandatory from 1 January 2007, and therefore, newly registered vans are no longer eligible for the reduced rate of VED. However, the discount will remain for the lifetime of vans meeting the Euro IV requirements registered before 1 January 2007. The EU has recently reached agreement in principle on the Euro V and VI emission standards for cars and small vans, with the regulation likely to come into force towards the end of the year. Euro V and VI will become mandatory from 1 January 2011 and 1 September 2015 respectively. **The Government will consider the case for incentivising the early uptake of Euro V and subsequently Euro VI technology through company car tax and other instruments.** An incentive for Euro VI take-up cannot be provided until Euro V is mandatory.

7.84 As announced at 2006 Pre-Budget Report the Government has considered options for providing incentives for the early uptake of lorries and buses that meet the Euro V emission standard before it becomes compulsory in November 2009. **The Government announces today that a renewed scheme of Reduced Pollution Certificates for lorries and buses that meet the Euro V standards before they become mandatory in 2009 will come into force from October 2007.** The nature of the scheme will be similar to the one that existed prior to October 2006 for Euro IV vehicles. Details of Government support to improve the targeted enforcement on hauliers who break road safety and other laws is in Chapter 3.

Air passenger duty 7.85 The Government believes that air passenger duty plays a valuable role in ensuring that passengers understand and acknowledge the environmental costs of their actions. The resultant behaviour change can deliver significant climate change benefits: the decision announced in the 2006 Pre-Budget Report to increase the rates of air passenger duty from 1 February 2007 will deliver climate change savings equivalent to around 0.75 MtC per year by 2010-11. The aviation industry has suggested to Government that the way in which air passenger duty defines different classes of travel may not always send the appropriate environmental signal and may cause market distortions, for example for “business class only” flights and “premium economy”-type seats. The Government is open to introducing changes to the definition, but only if it can be done on a broadly revenue neutral basis. The Government will discuss further with industry how this can be achieved.

Adaptation

International adaptation 7.86 The Stern Review also emphasises the importance of adaptation as some impacts of climate change are no longer avoidable. In particular, assistance to developing countries is crucial in ensuring that the changing climate does not adversely impact on growth nor undermine poverty reduction in these regions, as they will be most affected by the effects of climate change. The UK has already contributed £10 million over three years to the Special Climate Change Fund and the Least Developed Countries Fund for Climate Change. The UK also has schemes underway to develop coherent approaches to climate risk screening and assessment worldwide, and to improve the quality and availability of climate risk data in Africa.

Domestic adaptation 7.87 Climate change will have mixed effects on the UK. The UK will experience hotter, drier summers and warmer, wetter winters, which could lead to increased frequency of flooding. The Government's Foresight report identified a range of costs from 2 to 27 times current spending levels by the 2080s, depending on emissions trajectories and the choices made about the balance between defences to mitigate flooding and the costs of dealing with floods when they do happen. The Government is working with the Association of British Insurers on a project looking at what more can be done to encourage greater uptake of property-level flood protection measures and resilient repair of properties after a flood – both important adaptations for preparing the country's housing stock for the impacts of increased flood risk. In addition, the Government is also currently developing an Adaptation Policy Framework, which consider how to ensure a more comprehensive approach to adaptation policy across Government, and bring greater transparency to this area.

IMPROVING WASTE MANAGEMENT

7.88 Since 1997, the Government has introduced a number of measures to develop more sustainable waste management practices, reduce the UK's reliance on landfill and ensure that waste producers consider the full costs of the disposal of waste when making decisions, including increasing the standard rate of landfill tax and introducing the Landfill Allowance Trading Scheme for local authorities. These measures aim to ensure that the UK will meet its international obligations, including those under the EU Landfill Directive. Defra will publish a comprehensive review of its Waste Strategy this May.

Landfill tax 7.89 The landfill tax increases the price of waste sent to landfill, encouraging more sustainable ways of managing waste. The tax – working alongside other measures – has been successful with overall quantities of waste recorded at landfill sites registered for the tax falling from around 96 million tonnes in 1997-98 to around 72 million tonnes in 2005-06, a reduction of around 25 per cent. The UK is on track to meet its 2010 targets under the Landfill Directive, although subsequent targets in 2013 and 2020 remain challenging.

7.90 The standard rate of landfill tax applying to active wastes (those that give off emissions) has been increased by £3 per tonne in each of the last two years as part of the Government's aim of reaching a rate of £35 per tonne. As announced at the 2006 Pre-Budget Report, the rate will increase by a further £3 per tonne to £24 per tonne from 1 April 2007. The Government also stated it would consider whether the standard rate needed to increase more steeply from 2008, or go beyond the £35 per tonne commitment. **In order to encourage greater diversion of waste from landfill and more sustainable waste management options, the Government today announces that, from 1 April 2008 and until at least 2010-11, the standard rate of landfill tax will increase by £8 per tonne each year. The lower rate applying to inactive waste will also increase from £2 to £2.50 per tonne from 1 April 2008.**

7.91 Revenue from the increasing rates of landfill tax has been recycled to business in England through Defra's Business Resource Efficiency and Waste programme (BREW). The Government acknowledges the good work of many of the projects funded by BREW and this programme will continue in 2007-08. **Additional tax revenue from business as a result of the increase in the landfill tax escalator announced in this Budget will be recycled to business through the reductions in corporation tax also announced today** (set out in more detail in Chapter 3). Spending plans for BREW and other environmental programmes will be set out as part of Defra's settlement in the 2007 Comprehensive Spending Review (CSR) later this year. The Government has also recycled additional revenue from local authorities, as a result of increases in landfill tax, back to the sector to help fund improvements in local waste management. A joint waste review, carried out by Defra, DCLG and HM Treasury, working closely with local authorities, is identifying ways in which local and central government can work together to improve waste management over the 2007 CSR period. This work will inform Defra's Waste Strategy and the steps taken in the CSR to enable local authorities to improve waste management and help meet the shared commitments in this area.

7.92 The Government has published today a consultation document regarding the support provided to encourage the remediation of contaminated land (further detail can be found in chapter 3). As part of this consultation, **the Government is seeking views on whether the existing exemption from landfill tax for waste arising from contaminated land should end, with the revenue redirected into other measures such as enhanced land remediation tax relief.**

Landfill Communities Fund **7.93** The Landfill Communities Fund, previously known as the Landfill Tax Credit Scheme, redresses some of the environmental costs of landfill by improving the environment in the vicinity of landfill sites. Budget 2006 announced an increase in the value of the fund to £60 million a year. It also issued a challenge to private and voluntary sector partners in the fund to use the additional money to support opportunities for young people to volunteer on environmental projects. **The Government today announces that the value of the fund will be increased by £5 million to £65 million for 2007-08. It will also be amending the regulations in order to reduce the administrative burden on environmental bodies and simplify the operation of the fund. The Government will consider the case for further increases in the value of the Landfill Communities Fund from 2008-9 onwards.**

Enhanced Capital Allowances for waste **7.94** The Government has continued to examine the potential to introduce an ECA scheme to support new waste management facilities. This work has focused on developing options to encourage investment in developing markets for the outputs (for example, solid refuse fuel) of new waste treatment facilities. **The Government today announces that it intends to review the classes of equipment that can qualify for ECAs for good quality heat and power (CHP) to ensure that the scheme includes all necessary equipment for CHP facilities to use solid refuse fuel.**

IMPROVING WATER EFFICIENCY AND QUALITY

Investment in water-efficient technologies **7.95** Enhanced capital allowances to support business investment in designated water efficient technologies were introduced in 2003 and currently cover more than 700 approved products. **For 2007, the Government will add a further three technology classes: vehicle wash water reclaim units, efficient industrial cleaning equipment, and water management equipment for mechanical seals.** The Government has also agreed to consult on a proposal to oblige water companies in areas of serious water stress to consider compulsory metering alongside other measures in drawing up long-term plans for managing water resources. **As announced in Chapter 3, the Government will also introduce a payable enhanced capital allowance for companies not in taxable profit to ensure both profit and loss making firms have an incentive for utilising water-efficient technology.**

Water pollution from agriculture 7.96 The Government is currently assessing a range of possible policy options to tackle diffuse water pollution from agriculture (DWPA), and remains committed to ensuring that the costs of such pollution do not fall on water customers. The Government will consult later this year on the most cost-effective options for dealing with DWPA and continues to keep options for using economic instruments under review. The Government has also embarked on a rolling two-year programme to develop the voluntary initiative to tackle pollution from pesticides.

PROTECTING THE UK'S COUNTRYSIDE AND NATURAL RESOURCES

- Biodiversity 7.97** The Government is committed to ensuring that the UK's natural resources are managed prudently. In particular, it aims to improve biodiversity and land use. The conservation of biodiversity is one of the goals of the Government's Environmental Stewardship scheme, a recently introduced agri-environment scheme which provides funding to farmers and other land managers in England who deliver effective environmental management on their land. Nearly 28,000 Environmental Stewardship agreements, covering over 4 million hectares of English farmland, are now in place.
- Aggregates levy 7.98** The aggregates levy was introduced in 2002 to ensure that the external costs associated with the exploitation of aggregates are reflected in the price of aggregate, and to encourage the use of recycled aggregate. There is strong evidence that the levy is achieving its environmental objectives, with sales of primary aggregate down and production of recycled aggregate up. In Budget 2006, the Government confirmed that it expects that the levy rate will at least keep pace with inflation over time. **The Government announces today that the levy will increase from £1.60 per tonne to £1.95 per tonne from 1 April 2008, to take account of inflation since the introduction of the levy. The Government also announces the introduction of an exemption from the levy for aggregate arising from the construction and maintenance of railways, tramways and monorails.** This is in line with the exemption already in existence for aggregate to build and maintain highways and waterways.

Table 7.1: The Government's policy objectives and Budget measures

Sustainable Development Indicator and recent trend data	Recent Government Measures
Tackling Climate Change	
<p><i>Targets</i> Joint Defra/DTI/DIT PSA target – reduce greenhouse gas emissions to 12.5 per cent below 1990 levels in line with Kyoto commitment and move towards a 20 per cent reduction in carbon dioxide emissions below 1990 levels by 2010.</p> <p><i>Progress</i> UK greenhouse gas emissions were 15.3 per cent below 1990 levels in 2005.¹ Carbon dioxide emissions fell by 5.4 per cent during this period.</p>	<ul style="list-style-type: none"> • Climate Change Programme, Defra, March 2006. • UK Emissions Trading Scheme, Defra, August 2001. • Energy Efficiency Commitment, Defra, April 2002 and April 2005. • Renewables Obligation, DTI, April 2002 and December 2003. • Energy Review, DTI, July 2006. • Energy Efficiency – the Government's Plan for Action, Defra, April 2004. • EU ETS Phase I began January 2005, EU ETS Phase II UK National Allocation Plan (NAP) published March 2007. • Energy Efficiency Commitment 2 introduced April 2005. • Bio-energy Capital Grant Scheme, Defra, Dec 2006. • Package of fiscal measures, including climate change levy (see Table 7.2).
Air Quality	
<p><i>Targets</i> Joint Defra/DIT PSA – to improve air quality by meeting the Air Quality Strategy for seven key air pollutants between 2003 and 2010.</p> <p><i>Progress</i> Results for 2006 show average UK urban background levels of particulate pollution (PM₁₀) decreased from 31 micrograms per cubic metre in 1996 to 24 micrograms in 2006. Urban ozone levels increased from 48 micrograms per cubic metre to 61 micrograms over the same period, due to the reduction in other urban pollutants which tend to suppress ozone. The average number of days with moderate or higher air pollution decreased from 48 to 41 in urban areas and increased from 41 to 57 in rural areas between 1996 and 2006².</p>	<ul style="list-style-type: none"> • Air Quality Strategy DETR January 2000 and Addendum, Defra February 2003, and Review, Defra 2004-06, Review of Air Quality Strategy due April 2006. • Implementation of Integrated Pollution, Prevention and Control regime, Defra 2002-2007. • Air Transport White Paper, DfT, December 2003. • Ten Year Plan for Transport, DETR July 2000, and Future of Transport White Paper, July 2004. • Continued support for local air quality management system. • Negotiation and implementation of EU air quality directives and international agreements 2004-06. • Review of the Transport Energy Grant Programmes, DfT 2004-06. • Fiscal measures including fuel differentials for less polluting fuels (see Table 7.2).
Improving Waste Management	
<p><i>Targets</i> Defra PSA – enable at least 25 per cent of household waste to be composted or recycled in 2005-06. Landfill Directive target to reduce the volumes of biodegradable municipal waste disposed of at landfill to 75 per cent of 1995 levels by 2010, 50 per cent by 2013, and 35 per cent by 2020.</p> <p><i>Progress</i> Around 27 per cent of household waste in England was recycled or composted in 2005-06. 12.4 million tonnes of BMW was sent to landfill in 2005/6, 81% of England's total allowance for this first year of the Landfill Allowances Trading Scheme.</p>	<ul style="list-style-type: none"> • Waste Strategy 2000, DETR, May 2000. • Waste Implementation Programme, Defra, 2002. • Reform of the Waste Minimisation and recycling challenge fund. • Landfill allowance (trading) schemes enacted by the Waste and Emissions Trading (WET) Act 2003. • Business resource and efficiency waste programme (BREW) 2004. • Waste Strategy review consultation published by Defra in Feb 2006. • Landfill tax and related measures (see Table 7.2).
Regenerating the UK's towns and cities	
<p><i>Targets</i> ODPM PSA 5: 60 per cent of housing development to be on previously developed land. ODPM PSA 1: Work with departments to help meet PSA floor targets to deliver neighbourhood renewal and tackle social inclusion. ODPM PSA 8: Deliver cleaner, safer and greener public spaces.</p> <p><i>Progress</i> In 2004, 72 per cent of new housing was on previously developed land, including conversions increasing from around 54 per cent in 1990.³ Latest data shows the gap between the most deprived areas and the rest of the country has narrowed on several key indicators, including health, crime and education. There are currently 22 Urban Regeneration Companies in the UK.</p>	<ul style="list-style-type: none"> • Sustainable Communities "building the future" launched in February 2003. • Feb 2005 Planning Policy Statement I placed sustainability for the first time as a core principle of the planning system. • SR04 made available £525m a year through the Neighbourhood Renewal Fund to tackle deprivation in the most deprived areas and maintained commitment to New Deal For Communities programmes. • SR04 announced Safer and Stronger Communities Fund providing single funding stream to improve liveability. • National Nuisance Vehicle Strategy launched in November 2004. • Feb 2005 English Partnerships launched pilot programme with 12 local authorities to tackle England's legacy of derelict and brownfield land, to bring 66,000 hectares of brownfield land into beneficial use. • Budget 2005 announced the Local Enterprise Growth Initiative to increase investment and enterprise in the most deprived areas. • Package of fiscal measures including contaminated land tax credit (see Table 7.2).
<p>¹ The six main greenhouse gases are: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. ² Air quality indicator for sustainable development, 2006 (provisional): statistical release, Defra, 2006. ³ Land in use change in England. Residential Development to 2004 (January 2006).</p>	

Table 7.1: The Government’s policy objectives and Budget measures (continued)

Sustainable Development Indicator and recent trend data	Recent Government Measures
Protecting the UK’s countryside and natural resources	
<p><i>Targets</i></p> <p>Defra PSA – positive trends in the Government’s headline indicators of sustainable development (includes wildlife, river water quality, land use).</p> <p>Water Framework Directive – requires achievement of good chemical and ecological status in surface water by 2015.</p> <p><i>Progress</i></p> <ul style="list-style-type: none"> • Farmland birds almost halved between 1977 and 1993. However, declines have reduced in recent years and 2004 populations were virtually unchanged from 1993. • Woodland birds fell by about 24 per cent between 1975 and 1992. Since then, however, populations have remained broadly constant. • In 2005 about 64 per cent of rivers in England were rated as having good chemical quality and approximately 71 per cent of English rivers were of good biological quality. 	<ul style="list-style-type: none"> • Rural White Paper, DETR, November 2000. • Cap Reform Agreement 2003. • Strategy for Sustainable Farming and Food, Defra, December 2002. • Environmental Stewardship Schemes, Defra, 2005. • Regulations transposing the Water Framework Directive came into force 2 January 2004. • Developing measures to promote catchment-sensitive farming (Defra-HMT consultation), June 2004. • England Rural Development Programme. • Environmental Stewardship, England’s new agri-environment scheme, launched March 2005. • Aggregates levy and aggregates levy sustainability fund (see table 7.2). • Pesticide Strategy, 2006. • In 2006, Sites of Special Scientific Interest land in target condition rose to 72 per cent.

Table 7.2: The environmental impacts of Budget measures

Budget measure	Environmental impact
Climate Change and Air Quality	
Climate change levy package	Climate change levy is estimated to deliver annual emissions savings of over 3.5 million tonnes of carbon (MtC) by 2010 ¹ . Climate change agreements are estimated to deliver annual emissions savings of 2.8 MtC by 2010. Total CCL package including CarbonTrust, is estimated to deliver annual emissions savings of over 7.5 MtC by 2010.
Fuel duty	Fuel duty increases announced for 2007-10 expected to result in carbon savings of 0.16 MtC a year by 2010-11.
Fuel duty differentials including: – to facilitate a market switch: <ul style="list-style-type: none"> • From leaded to unleaded; • From low sulphur to ultra-low sulphur diesel (ULSD); • From low sulphur to ultra-low sulphur petrol (ULSP). – to encourage growth in the use of more environmentally-friendly fuels: <ul style="list-style-type: none"> • Road fuel gases; • biodiesel (20ppl differential); • bioethanol (20ppl differential). 	The shift to ULSP from ordinary unleaded is estimated to have reduced emissions of nitrogen oxide by 1 per cent, carbon monoxide by 4 per cent and volatile organic compounds by 1 per cent per year ² . The shift to ULSD from ordinary diesel is estimated to have reduced emissions of particulates by 8 per cent and nitrogen oxides by up to 1 per cent per year. The road fuel gas differential has reduced emissions of particulates and nitrogen oxides, which has helped to improve local air quality. The increased use of biodiesel and bioethanol will reduce CO ₂ emissions overall typically around 50 per cent per litre of biofuel used.
Support for biofuels	The Renewable Transport Fuel Obligation (RTFO) to be introduced from 2008-09 is expected to save 1 MtC by 2010 ³ .
Rebated fuels	Maintaining the differential with main road fuels in 2007-08 will reduce levels of fraud, and will deliver small CO ₂ and local air pollution benefits through increased use of less polluting fuels and less use of rebated fuels, which are more polluting.
Vehicle excise duty (VED)	The sharpening of environmental signals will help deliver 0.1-0.17 MtC reduction in CO ₂ emissions by 2020. Numbers of vehicles in 3 lowest CO ₂ emission graduated VED bands is forecast to grow significantly in the longer term in part due to VED reform.
Company car tax (CCT)	CO ₂ emissions savings of reformed CCT system estimated to be 0.2 to 0.3 MtC in 2005, forecast to rise to between 0.4 and 0.9 MtC per year by 2010 ⁴ .
Company car fuel benefit charge	The number of company car drivers getting free fuel for private use has fallen by around 600,000 since 1997, partly as a result of reforms to the company car tax system in April 2002 and changes to the fuel benefit rules in April 2003, helping to reduce levels of CO ₂ emissions, local air pollutants and congestion ⁵ .
VAT fuel scale charge	The reforms are expected to deliver a small reduction in CO ₂ .
Air passenger duty (APD)	Doubling of rates announced in 2006 Pre Budget Report will result in a reduction of carbon of 0.2 to 0.5 MtC by 2010/11, with a central estimate of 0.3 MtC. When the effect of non-CO ₂ emissions at high altitude is taken into account doubling rates has a climate change impact equivalent to saving 0.5 to 1.25 MtC emitted on the ground, with central estimate of 0.75 MtC.
Landlords Energy Saving Allowance (LESA)	Small reduction of carbon emissions.
Reduced rate of VAT on professionally-installed energy saving materials and microgeneration (from 17.5% to 5%)	Small reduction of carbon emissions.
Reduced rate of VAT on domestic fuel and power (from 8% to 5%)	Estimated to increase carbon emissions by 0.2 million tonnes by 2010 ⁶ .

¹ Modelling the Initial Effects of the Climate Change Levy, Cambridge Econometrics, available at www.hmrc.gov.uk.

² Using NETCEN emissions models – further detail on methodology used is provided in NETCEN's January 2000 report 'UK Road Transport Emissions Projections'.

³ Department for Transport modelling.

⁴ HMRC modelling.

⁵ HMRC modelling.

⁶ HMRC modelling.

Table 7.2: The environmental impacts of Budget measures (continued)

Budget measure	Environmental impact
Household energy efficiency	The Energy Efficiency Commitment from 2002-2008 is expected to reduce emissions by around 1 MtC a year by 2010. The next phase, from 2008-2011, could save an additional 1.2 MtC a year by 2010, with subsequent supplier obligation saving an additional 3-4 MtC a year by 2020. Improving home insulation could contribute about 2 MtC a year. Other measures also have a significant impact e.g. building regulation improvements in 2002 and 2006 are expected to reduce emissions by about 1.5 MtC a year by 2010.
Warm front and other fuel poverty programmes	Estimated carbon savings of 0.4 MtC a year by 2010.
Zero-Carbon Homes	Overall savings from both the regulation and tax incentive estimated to be 1.2 MtC by 2020.
Energy efficient initiatives for consumer electronics and low energy lighting	Phasing out the use of inefficient GLS lightbulbs could reduce UK carbon emissions by up to 1.2 MtC a year by 2020. Encouraging more energy efficient consumer electronics has the potential to save up to 1.7 MtC a year by 2020.
Low Carbon Buildings Programme	Carbon savings by 2010 around 0.01 MtC per year.
Carbon capture and storage	Carbon capture and storage demonstration expected to deliver savings of between 0.25-1.0 MtC per year by 2020.
Improving Waste Management	
Landfill tax	Between 1997-98 and 2005-06, the total quantity of waste disposed to landfill sites registered for landfill tax fell by 25 per cent, while the amount of active waste disposed to landfill fell by 14 per cent ⁷ . The Landfill tax is expected to save up to 0.2 MtC a year by 2010.
Landfill communities fund	Landfill tax credits scheme (now the landfill communities fund) has provided £759 million for projects since its introduction.
Regenerating the UK's towns and cities	
Contaminated land tax credit	Bringing forward remediation of contaminated land.
Capital allowances for flats over shops	Bringing empty space over shops back into the residential market, while reducing the pressure for new greenfield development.
Reforms to VAT on conversion and renovation	Reduced pressure on greenfield site development.
Protecting the UK's countryside and natural resources	
Aggregates levy and aggregates levy sustainability fund	An 8 per cent reduction in sales of aggregates between 2001 and 2005. Reductions in noise and vibration, dust and other emissions to air, visual intrusion, loss of amenity and damage to wildlife habitats.
Enhanced capital allowances for water efficiency technologies	More sustainable use of water by business.

⁷ Data at www.uktradeinfo.com.

