

The Government is committed to delivering a strong economy based not just on high and stable levels of growth and employment but also on high standards of environmental stewardship. Climate change is a very significant challenge, and the recently published Stern Review on the Economics of Climate Change has highlighted how long-term global prosperity will be undermined if early and coordinated international action is not taken.

This Pre-Budget Report sets out the next stage in the Government's strategy for tackling climate change both domestically and globally, including:

- **promoting the development of a global carbon market** through the expansion and strengthening of the EU Emissions Trading Scheme and linking it to schemes outside the EU;
- **taking further steps towards realising carbon capture and storage technology**, including tendering for consulting engineers to help enable a decision in 2007 on whether to support a UK-based demonstration plant;
- **an increase in all rates of air passenger duty**, with effect from 1 February 2007, in recognition of the environmental costs of air travel;
- **an inflation-based increase of 1.25 pence per litre (ppl) in the rate of road fuel duty with effect from midnight tonight**; and the same increase of 1.25 ppl in duty for rebated fuels, maintaining the differential with main fuel duty rates;
- **a package of measures to encourage the development of the biofuels market** and innovative types of biofuels;
- **an ambition for all new homes to be zero carbon within a decade with a time-limited stamp duty exemption** for the vast majority of new zero-carbon homes;
- **legislation to ensure householders installing microgeneration are not subject to income tax** on any payment for surplus electricity exported back to the grid; and
- **the extension of the Landlords Energy Saving Allowance** to 2015 and to corporate landlords.

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

- **confirmation that the standard rate of landfill tax will increase by £3 per tonne to £24 per tonne with effect from 1 April 2007**. The Government will also consider the case for steeper increases in the tax from 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, set out in *Long-term opportunities and challenges: analysis for the 2007 Comprehensive Spending Review*, published on 27 November 2006.¹ 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 will require 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 plan to adapt;
- *rising levels of waste* – both municipal and 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* – ecosystems with greater biological diversity are more adaptable and resilient to external shocks and changes. Globally, between 10 per cent and 30 per cent of mammal, bird and amphibian species are currently threatened with extinction, and some estimates place the rate of extinction as high as 1,000 times the typical historical background rate. Biodiversity also plays an important regulatory role domestically, underpinning the healthy functioning of the environment.

7.3 Some of these environmental challenges are global, requiring coordinated international action. Notably, the UK accounts for only 2 per cent of global carbon dioxide emissions and this figure is expected to fall to 1.5 per cent by 2020. So the UK is working internationally to reduce emissions in a coordinated way and to encourage the development of sustainable technologies to help achieve this. At the same time, however, domestic action is also needed to enable the UK to meet these environmental challenges. The Government believes this can be done in a way that actively supports increased productivity and growth. Key to this is improving the flexibility of individuals and businesses to respond to changing circumstances through both current policy measures and longer-term innovation and technological change.

Government intervention 7.4 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 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 in which environmental costs are fully internalised in economic decisions.

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

Principled approach 7.5 HM Treasury set out detail about how environmental policy should be developed in its 2002 publication, *Tax and the Environment*. In the 2005 Pre-Budget Report, the Government reiterated the principles that underpin the decision as to whether government intervention is needed and, if so, what the action should be:

- the decision to take action must be evidence-based;
- any intervention to tackle environmental challenges must take place at the appropriate level;
- 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).

Box 7.1: Action since 1997 to tackle environmental challenges

On climate change:

- the EU Emissions Trading Scheme to which the UK's contribution will reach savings of 8 million tonnes of carbon (MtC) below business as usual per year by 2010;
- the climate change levy and climate change agreements which will deliver emissions reductions of over 6 MtC per year by 2010;
- the Renewables Obligation in the electricity supply sector which will save 2.5 MtC per year by 2010;
- the Energy Efficiency Commitment to improve energy efficiency in homes which will deliver annual savings of at least 1.9 MtC per year by 2010; and the Warm Front and other fuel programmes which will save 0.4 MtC per year by 2010;
- new building regulations which will save 1.5 MtC per year by 2010;
- the Low Carbon Buildings Programme and reduced VAT rates to support microgeneration;
- the Landlords Energy Saving Allowance and reduced VAT rates for energy-saving materials;
- the UK Energy Research Partnership to support research and development;
- the Renewable Transport Fuel Obligation which will save 1 MtC per year by 2010;
- reformed vehicle excise duty and company car tax to encourage the take up of low-polluting cars, which will save around 0.5 MtC per year by 2010; and
- differentials in fuel duties to encourage the use of less-polluting fuels, such as biofuels.

On managing waste and protecting our natural resources:

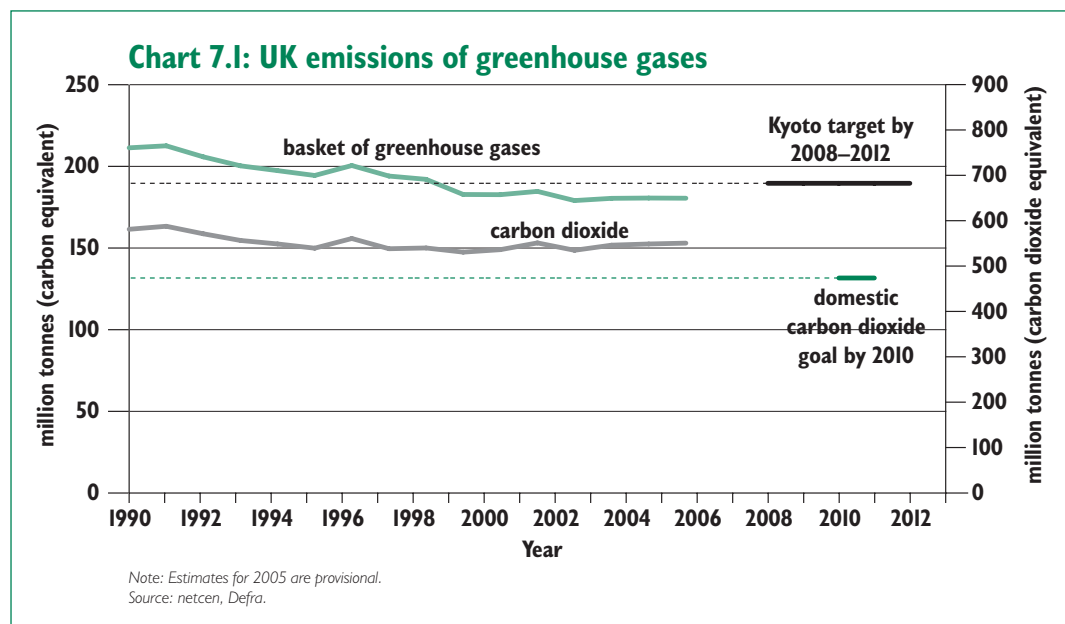
- significant increases in the standard rate of landfill tax;
- the Landfill Allowance Trading Scheme to incentivise local authorities to reduce waste going to landfill in the most cost-effective way;
- a £1.28 billion PFI programme for new waste management infrastructure;
- the aggregates levy to encourage the more sustainable use of aggregates; and
- a voluntary initiative to tackle pollution from pesticides used in agriculture.

7.6 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 effective where there are a limited number of polluters, or where market failures make product standards for energy or water efficiency the most cost-effective instrument of behavioural change. Spending measures might have a role to play where the polluter cannot afford to reduce the pollution or where the equity or distributional issues make tax or similar measures unacceptable. Fiscal measures can tackle negative externalities by internalising environmental costs into prices and encourage 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'.

7.7 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 our wider economic and social objectives, including macroeconomic stability, business competitiveness, social inclusion and reducing fuel poverty. Within this principled framework for decision-making, the Government has taken significant steps to tackle environmental challenges since 1997, using both fiscal and non-fiscal instruments. Examples of measures introduced are set out in Box 7.1.

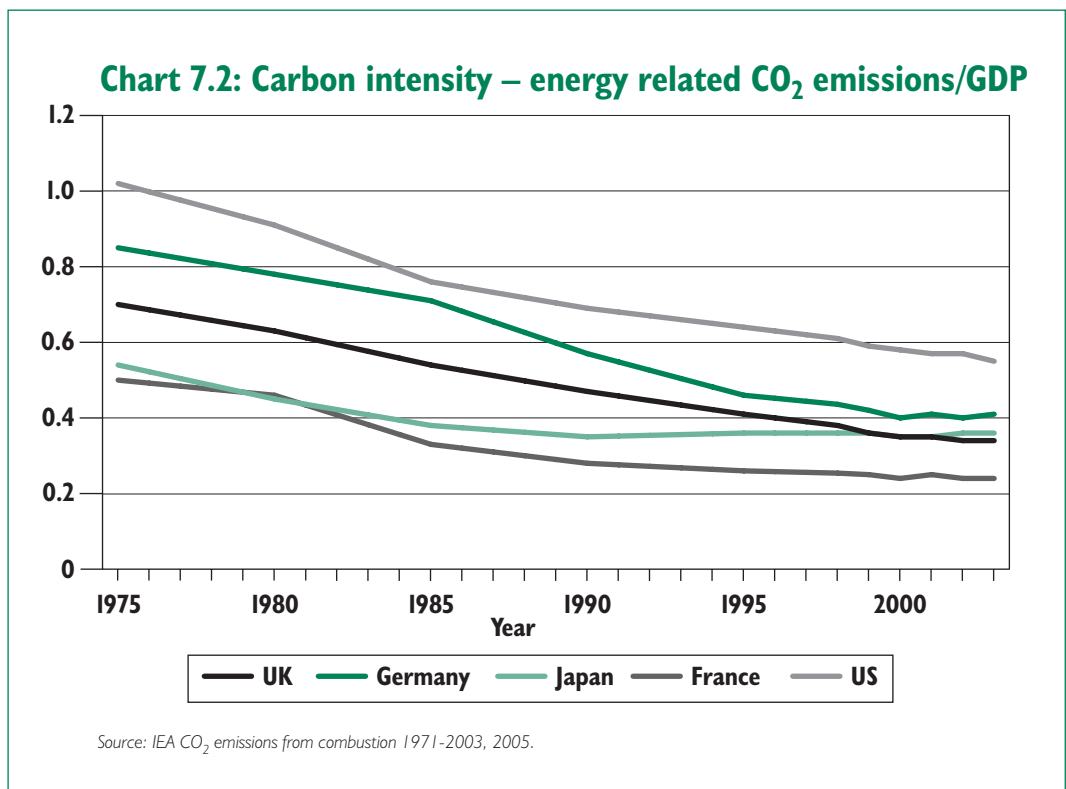
Progress to date

7.8 This package of innovative measures, using both tax and non-tax instruments, has resulted in the UK making significant progress on all its environmental priorities, while maintaining strong economic growth.



7.9 On climate change:

- UK greenhouse gas emissions fell by 14.5 per cent between 1990 and 2004. The UK is the only G7 country already meeting its Kyoto commitment to reduce greenhouse gas emissions by an average of 12.5 per cent compared with 1990 levels over the years 2008 to 2012. Following the measures announced in the Climate Change Programme Review, projections suggest that by 2012 the UK could reduce its emissions by between 23 to 25 per cent from 1990 levels, going far beyond its Kyoto commitment; and
- carbon intensity, which measures the level of carbon emissions against gross domestic product (GDP), has improved by 55 per cent since the early 1970s at a rate of 2 per cent per year.



7.10 Good progress has also been made in other areas. On air quality, between 1997 and 2003, nitrous oxide emissions were reduced by 22 per cent and sulphur dioxide emissions were reduced by 41 per cent. Between 1997-98 and 2005-06, the volume 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, there was a reduction in sales of virgin aggregate in Great Britain of around 18 million tonnes and an estimated increase in recycled aggregate of around 8 million tonnes. 62 per cent of England’s rivers were of good chemical quality in 2004, compared with 43 per cent in 1990. 70 per cent were of good biological quality, up from 60 per cent in 1990.

TACKLING THE GLOBAL CHALLENGE OF CLIMATE CHANGE

Stern Review on the Economics of Climate Change

7.11 The Stern Review on the Economics of Climate Change,² announced by the Prime Minister and 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 Stern Review brings together the latest science on climate change and employs economic methods to assess both the human and environmental impacts of, and responses to, climate change. It examines the consequences of climate change in developed and developing countries, and promotes understanding of the costs and benefits involved in meeting the challenge.

Box 7.2: The Stern Review on the Economics of Climate Change

- The scientific evidence is overwhelming: climate change is a serious threat and demands an urgent response. Global atmospheric temperatures have risen by about 0.7 degrees Celsius over the last 100 years, with the majority of this rise occurring since the 1970s. Depending on the amount of greenhouse gases emitted and the sensitivity of the climate system, the Intergovernmental Panel on Climate Change (IPCC) predicts that global average temperatures could rise by between 1.4 and 5.8 degrees Celsius by the end of the century.
- Climate change on this scale would have very serious impacts on world output, human life and the environment, with all countries affected. The IPCC estimates that the global economic costs of an increase in average global temperature of 2.5 degrees Celsius could be between 1.5 and 2 per cent of global GDP per year. If we do not act, the overall costs of climate change would be equivalent to losing at least 5 per cent of global GDP now and forever.
- The risks can be substantially reduced if greenhouse gas levels in the atmosphere can be stabilised between 450 and 550 parts per million carbon dioxide equivalent. This will require global emissions to be at least 25 per cent below current levels by 2050.
- Climate change mitigation is a global public good and demands an international response, based on a shared understanding of long-term goals, to support large reductions in greenhouse gas emissions around the world. The costs of taking action can be limited to around 1 per cent of global GDP if there is coordinated multilateral action.
- Three elements of policy are required for an effective global response: pricing of carbon – through tax, trading or regulation – with economic efficiency pointing towards a common global price; support for innovation and research, development and deployment of low-carbon technologies; and actions to encourage behaviour change and energy efficiency in the move to a low-carbon economy. In addition, action to reduce deforestation and enable adaptation to climate change is also important.

7.12 The Government welcomes the Stern Review. Its key conclusions are in line with the Government's existing policy, including its focus on achieving agreement on a post-2012 international framework to address climate change; using multilateral emissions trading as a primary means of pricing carbon in the economy; encouraging the development and deployment of new technology both in developed and developing countries; and incentivising behavioural change especially on energy efficiency.

²Stern Review on the Economics of Climate Change, October 2006, Cambridge University Press

Tackling climate change through international action

7.13 The Stern Review shows that coordinated international and multilateral action is essential to keep costs manageable and avoid damaging competitiveness. Through the UN Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol, the world has an international framework within which all governments can work together towards global emissions reductions in an equitable manner. At the Nairobi meeting on the Framework Convention in November 2006, governments agreed a work plan to help developing countries consider the impacts of climate change and how they can best adapt to it. In addition there was further agreement on clean energy investment and deforestation, and ongoing discussions on the future Framework.

International leadership 7.14 The UK Government championed climate change through its G8 and EU presidencies during 2005 and will continue to take the lead internationally on this issue. The Gleneagles Summit in July 2005 achieved significant progress as G8 leaders formally recognised that climate change is a serious and long-term challenge, caused by human activity, which demands an urgent response. The Gleneagles Communiqué and Plan of Action set out a range of agreed actions and principles for tackling climate change. The G8 also committed to work together on a range of global energy issues and recognised the importance of engaging with developing countries to ensure that they can meet their energy needs in a sustainable way. Indeed, the leaders of a number of fast-growing economies – China, India, Brazil, South Africa and Mexico – also attended the G8 Summit and agreed to join G8 countries in taking forward a Dialogue on Climate Change, Clean Energy and Sustainable Development. The commitment to delivering the Gleneagles Plan of Action on Climate Change, Clean Energy and Sustainable Development was reconfirmed at the second Ministerial Dialogue held in Monterrey, Mexico on 3-4 October 2006.

Clean energy investment framework 7.15 The Clean Energy Investment Framework, which is designed to facilitate greater public and private investment in cleaner, more efficient energy, is a direct response by the multilateral development banks to the Gleneagles Action Plan. It complements the Clean Development Mechanism which stimulated investment flows from developed to developing countries of €1.9 billion in 2005, up from €400 million in 2004. The focus of the Framework is 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 for a target of \$20 billion public and private investment to be set by the banks and looks forward to the full implementation of the Framework. In partnership with the World Bank, the World Economic Forum and the World Business Council on Sustainable Development, a conference will be held in early 2007 to bring the private sector into the Framework.

Pricing carbon through emissions trading 7.16 The Stern Review highlights the role of a common carbon price signal across countries and sectors to ensure that emissions reductions are delivered in the most cost-effective way. 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 whilst allowing emissions to be reduced at least cost. The EU ETS is the UK's principal pricing instrument and a key component in a comprehensive UK framework to effectively mitigate climate change.

7.17 EU ETS sets a limit on carbon emissions for 12,000 installations in major industrial sectors across the 25 EU Member States, including over 1,000 sites in the UK. Phase One began in January 2005 and will reduce carbon dioxide emissions in the UK by around 4.6 MtC (around 8 per cent) below the projected emissions of the installations covered by the Scheme by 2007. In November 2006, the European Commission took important decisions on ten Member States' proposed National Allocation Plans (NAP) for EU ETS Phase Two (2008-12). The UK was the only country whose NAP was approved, not rejected, by the Commission. The

Commission decided to reduce allowances permissible in all nine other Member States' NAPs and take allowance levels to below those of 2005 for those Member States. This will ensure scarcity in Phase Two and gives the scheme credibility going forward. The UK NAP for Phase Two commits the UK to contributing emission reductions of 8 MtC per year below business as usual, with 7 per cent of allowances being allocated through the use of auctioning.

7.18 In October 2006, the UK Government published its vision for the long-term future of emissions trading, with the aim of developing 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 Europe-wide emissions reduction target of 30 per cent by 2020 and then at least 60 per cent by 2050, providing greater long-term certainty for business;
- 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 to ensure a more efficient allocation; 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.

7.19 The first step towards expanding the EU ETS was reached at the meeting of EU Finance Ministers in November 2006, when the countries of the European Free Trade Area – Iceland, Liechtenstein, Norway and Switzerland – agreed in principle to the creation of a pan-European trading scheme. The UK will continue to make links with other countries to deepen and strengthen international emissions trading and **the Pre-Budget Report announces new partnerships with:**

- **the French Finance Ministry to develop joint work on economic instruments to tackle climate change, particularly around the improvement of the functioning of EU ETS; and**
- **the Government of New Zealand to develop joint work and to share advice and experience on emissions trading and other economic instruments to tackle climate change.**

Global carbon market 7.20 Over the last few years a new market in global emissions reduction has developed from trading in allowances created under the EU ETS, national 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 nascent market needs to evolve, achieving greater scale and liquidity, long-term visibility, and the convergence of currently separate schemes and elements. London is already the pre-eminent centre for this new global market. **The Government will therefore next year bring together the leading market makers in the City with the key international institutions and countries to examine the accounting, legal and institutional infrastructure, and common standards and vision required to support a mature global emissions trading market.**

International collaboration on biofuels 7.21 To further develop new low-carbon transport fuels, the UK has initiated a joint Task Force 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.

International action on energy efficiency 7.22 With global energy demand expected to grow by 60 per cent over the next 25 years as some two billion people worldwide are connected to an energy supply, energy efficiency forms a crucial element in ensuring sustainable energy supplies. The UK is committed to action at EU and international level 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 will also be encouraging the European Commission to take forward proposals in their Energy Efficiency Action Plan.

Deforestation 7.23 Around 18 per cent of global greenhouse gas emissions come from deforestation. The Stern Review highlights the importance of reducing deforestation as part of the global effort to combat climate change. Sustainable forestry management has the potential to deliver many economic benefits for local communities, as well as wider environmental gains. Forests are of great global importance for climate change and biodiversity. But they are also sovereign territory of those countries, and only those nations can decide what happens to them. Over the coming months the UK Government will therefore be working in partnership with other governments including Brazil, Papua New Guinea, Costa Rica and the Coalition of Rainforest Nations, with Germany as Presidents of the G8 and the EU, and with the World Bank and other interested parties, to explore ways of mobilising international resources to assist developing countries in sustainable forestry management.

Adaptation 7.24 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 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 more effective approaches to climate risk screening and assessment worldwide, and to improve the quality and availability of climate risk data in Africa.

Tackling climate change through domestic action

7.25 Alongside the Government's international strategy, further domestic action to tackle climate change needs to continue to support economic growth and take account of future energy market conditions which may be more difficult than in the recent past. The EU ETS, which already covers approximately half of UK carbon emissions including those from electricity generation, forms the central component in the Government's domestic policy framework to tackle climate change. Further domestic action must take account of EU commitments to the post-2012 international framework and must be carefully designed to complement the EU ETS.

Reducing emissions in the energy supply sector

7.26 In July 2006, the Government published its Energy Review³ which set out the challenges for future energy policy in meeting the UK's objectives of: a reliable energy supply; lower greenhouse gas emissions; the promotion of competitive energy markets; and adequate and affordable heating for every household in the UK. The solution to meeting these different challenges is the promotion of a diverse energy supply including renewable energy, nuclear power and fossil fuels using new carbon abatement technology to reduce emissions. 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 current fiscal measures, the Renewables Obligation, and importantly a long-term carbon price created by the EU ETS.

Carbon capture and storage 7.27 Carbon capture and storage (CCS) could reduce the carbon dioxide emissions from fossil fuel power stations by as much as 90 per cent. The Stern Review also highlighted the strategic role that CCS technology could play globally to lower carbon emissions, particularly in fast-growing economies with rising fossil fuel consumption such as China and India. Budget 2006 launched a consultation on the barriers to wide-scale commercial deployment of CCS in the UK, and the potential role of economic incentives in addressing those barriers, the responses to which are being published today. Since the Budget, the Government has set up a taskforce to examine the regulatory framework that will facilitate CCS. The UK also pressed successfully for reform in international fora: 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.

7.28 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. **The Government is announcing today that the Department for Trade and Industry (DTI) will shortly tender for consulting engineers to ensure that the Government's understanding of the costs of a CCS plant based in the UK is robust, and to help the Government assess whether supporting one through a challenge fund or other mechanism would provide value for money.** The details of any support package will be subject to further analysis and consultation. These actions will enable a decision in 2007 on whether to support a UK-based demonstration plant.

7.29 The Government is also continuing to work with the Norwegian Government through the North Sea Basin Task Force to develop a common set of principles to regulate the transport and storage of carbon dioxide beneath the North Sea. The Task Force will submit a report to the UK and Norwegian energy ministers early in 2007 which will lay the foundations for a regulatory framework to enable CCS to develop effectively, safely and in line with the Government's environmental principles. **As a next step, the UK and Norway have agreed the terms of reference for a joint study of the infrastructure needed to transport and store carbon dioxide below the North Sea and will work together on an analysis of the appropriate market framework and value chain which can help deliver this. The outcome of this and other collaborative work will be published by July 2007.** As mentioned in Chapter 5, a joint Government and industry working group will examine the fiscal implications of the current North Sea tax regime in relation to the changed and dual use of North Sea infrastructure including for CCS. The UK is also leading a joint EU-China project to build a commercially viable near-zero emissions coal (NZEC) power plant in China.

Microgeneration 7.30 Microgeneration technologies, such as solar heating and micro-wind, have the potential to contribute to both improved energy security and lower carbon emissions. In order to stimulate demand for these new and emerging technologies, the Government has

³The Energy Review: The Energy Challenge, DTI, July 2006.

introduced reduced VAT rates and the Low Carbon Buildings Programme to encourage their adoption by individuals. Budget 2006 announced an additional £50 million to fund Phase Two of the Low Carbon Buildings Programme which aims to stimulate the market for certain microgeneration technologies so that, at the programme's close, they can be commercially supplied to the market at a lower price than at present. Public sector organisations and charitable bodies will be the recipients of the grants under this scheme, which aims to be up and running by December 2006.

7.31 Surplus electricity generated by microgeneration technologies can be sold back to energy suppliers. **To further reduce the barriers to adoption of these technologies, the Government will legislate in Finance Bill 2007 to confirm 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 in their income tax return.**

Environmental technologies 7.32 As announced alongside the publication of the UK's National Allocation Plan for EU ETS Phase Two, a new Environmental Transformation Fund will be established to support renewable energy, biofuels and other non-nuclear, low-carbon technologies including CCS. Details will be announced in the 2007 Comprehensive Spending Review. Budget 2006 also announced the launch of the Energy Technologies Institute, a 50:50 public private partnership, to deliver a step change in the funding, strategic direction and outcome of UK energy science and technology. A prospectus⁴ was launched earlier this year setting out the role of the Institute and inviting expressions of interest from potential industry partners. BP, E.ON UK, Shell, EDF Energy, Rolls Royce and Scottish and Southern Energy are already involved in this unique venture and £550 million in public and private contributions has been raised so far.

Security of energy supply 7.33 It is crucial to the economy that reliable and competitively-priced supplies of electricity and gas are available to households and business. Last winter, a tight demand-supply balance pushed wholesale prices higher than normal. This year, import capacity is expected to increase by nearly a third, storage levels are high and wholesale prices have begun to fall. Upward pressure on utility bills is therefore expected to abate, and supply in both the electricity and gas sectors looks likely to meet demand.

Reducing emissions in the business sector

7.34 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. Since its introduction in 2005, the EU ETS has established a carbon price for approximately half the UK's carbon emissions, including all emissions from electricity in the economy. The Government has sought to complement the EU ETS with a range of national measures to improve business energy efficiency.

Climate change levy 7.35 The UK's energy tax – 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. Analysis suggests that the same level of environmental and efficiency gains would not have been made by the EU

⁴Energy Technologies Institute Prospectus, DTI, September 2006.

ETS alone. As set out in paragraph 7.25, domestic action must be carefully designed to complement the EU ETS and the Government will continue to review the case for reforms to the CCL. The context is the impact on the overall level of carbon emissions and the development of EU ETS Phase Three after 2012.

7.36 The CCL plays a crucial role in enabling the UK to meet its Kyoto targets. Independent analysis by Cambridge Econometrics⁵ estimated that the levy will deliver cumulative savings of 16.5 MtC to 2005. By 2010, it is estimated that 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 the levy package not being in place. The full impact of the CCL was set out in detail in a report published at Budget 2006. The Government expects that the rates of the levy will at least keep pace with inflation over time. **As announced in Budget 2006, having kept the CCL at its original level for its first five years, the Government confirms that CCL rates will increase in line with inflation from 1 April 2007 to maintain the levy's environmental impact. The new rates will be:**

- **Electricity** **0.441 of a penny per kilowatt hour (KWh)**
- **Gas** **0.154 of a penny per KWh**
- **LPG** **0.985 of a penny per kilogramme (kg)**
- **Solid fuels** **1.201 pence per kg**

Climate change agreements 7.37 Climate change agreements (CCAs), which allow energy-intensive firms an 80 per cent reduction on the CCL in return for delivering energy-saving measures, were introduced in 2001 alongside the levy. CCAs were originally forecast to save 2.5 MtC a year but these targets have already been exceeded by an extra 1 MtC in the period to 2002, and by 1.4 MtC in the period to 2004. 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 the Department for Environment, Food, and Rural Affairs (Defra) continue to ensure that the energy efficiency improvements and emissions reductions delivered by the agreements are maximised. Since Budget 2006, State aids clearance has been received to enable two additional sectors to sign CCAs – the Cold Storage and Distribution Federation (covering large temperature-controlled storage facilities) and the British Glass Manufacturing Federation (covering the manufacture of glass beads, laminated and safety glass). Over 50 sectors are now able to benefit from the 80 per cent discount in CCL in return for agreeing to improve energy efficiency and/or reduce emissions.

Enhanced Capital Allowances and the Carbon Trust 7.38 Alongside the CCL and CCAs, the Government has also introduced Enhanced Capital Allowances (ECAs) for energy-saving technologies, with over 14,000 approved products now eligible for support, and 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. In 2004-05, the Carbon Trust worked with over 2,800 organisations, resulting in cost savings of £200 million for business.

7.39 Budget 2006 announced that the Financial Secretary to the Treasury and Richard Ellis, chair of the East of England Development Agency, would jointly chair a task group, comprising representative business organisations, Regional Development Agencies and the Carbon Trust, to consider the scope for improving existing ways of providing information and support on energy efficiency to business. An analysis was conducted of the services available to businesses in this field, and the business organisations conducted surveys of their members' knowledge and experience of them. The group found that there are a large number of different Government-sponsored advice services which are poorly coordinated and do not

⁵ *Modelling the Initial Effects of the Climate Change Levy*, Cambridge Econometrics, March 2005, available at www.hmrc.gov.uk

necessarily match customer needs. It also identified some key barriers to greater energy efficiency uptake by business, including insufficient information and misunderstanding of costs and benefits. In response to these findings, 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 Regional Development Agencies will promote streamlined advice on resource efficiency through Business Link. In addition, the CBI, the Engineering Employers' Federation, British Chambers of Commerce and the Federation of Small Businesses have agreed to play a more active role in engaging their members, for example by using their networks to provide more information and signposting services through workshops and webpages.

Large non-energy-intensive organisations **7.40** In the Energy Review, the Government highlighted that there is the potential for further cost-effective carbon savings from large non-energy-intensive organisations such as supermarkets and large hotels. 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 which is passed through in electricity prices. In October, the Government launched a consultation on how to improve energy efficiency in this sector and set out possible policy options, including a mandatory trading scheme and voluntary benchmarking and reporting.

Reducing emissions in the household sector

7.41 Households account for over a quarter of UK energy consumption and carbon emissions. Many household energy efficiency measures can reduce emissions cost-effectively but are not taken up due to a variety of market failures. New policies have been introduced by the Government to help reduce short-term cost barriers and send effective signals to the marketplace.

Energy Efficiency Commitment **7.42** In 2002, the Government introduced the Energy Efficiency Commitment (EEC) which requires energy suppliers to achieve targets for installing energy efficiency measures in the household sector, particularly among the most vulnerable. The current phase of the EEC, over 2005-08, roughly doubles the activity of the first phase; combined, these should deliver savings of nearly 1 MtC a year by 2010. Budget 2006 announced that suppliers could count extra work carried out in this phase of EEC towards their targets in the next period. As a result, five suppliers agreed to carry out an additional 250,000 subsidised installations of home insulation under the current phase, bringing forward annual carbon savings of 35,000 tonnes and reducing household bills by around £20 million. The Government believes that activity in the third phase of EEC (2008-11) could save a further 0.9-1.2 MtC a year by 2010, whilst recognising that the scheme needs to remain cost-effective and practical and the overall policy framework needs to continue to take account of wider social considerations. **As set out in Chapter 5, the Pre-Budget Report announces new investment of £7.5 million to improve the coordination between, and effectiveness of, Warm Front and the Energy Efficiency Commitment. This will fund projects using an area-based approach to identify households and provide the right coordinated set of advice and measures for them.**

Energy services market **7.43** The development of an energy services market, where energy suppliers sell particular services rather than energy alone, could improve energy efficiency across the economy and benefit consumers. HM Treasury hosted a seminar in January 2006 to explore possibilities for encouraging the development of such a market, and an independent industry group developed proposals to feed into the Energy Review. The Energy Review set out the aim of incentivising energy suppliers to engage more actively with customers in order to deliver greater energy efficiency in the home and noted that the energy companies are willing to go in this direction – to change their whole business model – given the right policy framework.

7.44 Budget 2006 announced funds totalling £9.75 million for local authorities and energy companies to pilot new ways of reducing energy demand. A tendering process has been undertaken to select schemes that encourage improved energy efficiency in homes, such as improved billing and metering, and an update on progress will be made shortly. The results of these trials, together with further analytical work and consultation with interested parties, will inform whether, and if so how, a move towards an energy services model can be achieved. **To encourage more households to become low-carbon, and to develop the energy services model, the Government will examine the possibility of establishing new methods of financing energy audits and energy-saving measures that could over time pay for themselves in lower fuel bills.**

Code for sustainable homes **7.45** To lower the carbon impact of new development and encourage energy efficiency in housebuilding, the Department for Communities and Local Government (DCLG) will shortly publish the Code for Sustainable Homes which will set out levels for sustainability in homebuilding and challenge developers to go further in meeting these standards. The Government will also continue to drive forward improvements in the sustainability of new housing through tougher building regulations. Alongside the 2002 update to regulations, the new Part L building regulations, which came into force on 6 April 2006, will increase the energy efficiency of new homes by 40 per cent. This will mean that the fuel bills for an average three-bed semi-detached home with gas central heating built to the new 2006 building regulations will be £120 a year less than its equivalent built in 1997. These new standards (including measures for boilers announced in April 2005) will deliver a saving of 0.98 MtC per year by 2010. Going forward, and incorporating the new Code for Sustainable Homes, the Government will also be setting out a consultative timetable for progressively strengthening building regulations in England and Wales to reflect the energy efficiency levels set out in the Code.

Zero-carbon homes **7.46** **It is the Government's ambition that, as a result of this strengthening, by 2016 all new homes will be 'zero-carbon', meeting the highest Code standard for energy efficiency. To bring forward progress towards this aim, the Pre-Budget Report announces that a stamp duty exemption for the vast majority of new zero-carbon homes will be introduced in 2007.** The exemption, which will be time limited, is designed to incentivise demand for zero-carbon homes among homebuyers, recognising that in order to raise energy efficiency standards significantly beyond where they are now the industry will have to modernise production methods and innovate through employment of new materials and technologies. Full details will be published at the time of Budget 2007.

Private rented sector **7.47** A particular market failure exists in the private rented sector because cost savings from investing in energy efficiency 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. Following more detailed work on the operational delivery of the proposed Green Landlord Scheme, the Government no longer intends to reform the Wear & Tear Allowance by making it conditional on the energy efficiency of the property, but will instead expand the scope of the existing LESA. **The Government therefore announces, subject to any necessary State aids clearance: the expansion of LESA to corporate landlords; an extension to the existing sunset clause from 2009 to 2015; the application of the allowance per property rather than per building, ensuring that even smaller properties have access to the full allowance; and the addition of the acquisition and installation of floor insulation as qualifying investment.**

Product policy **7.48** Labelling, standards and other requirements for large household appliances have raised the share of A-rated fridges and freezers from 1 per cent in 1997 to 65 per cent in 2005, saving 0.45 MtC a year by 2010 compared with 1999 and enough electricity to power 750,000

homes. However smaller consumer electronics such as televisions, DVD players and digital set-top boxes emit up to 1MtC a year when on standby, costing each household around £25 a year in wasted electricity. Budget 2006 announced a new initiative, in partnership with major retailers and the Energy Saving Trust, to introduce voluntary schemes in the retail sector to encourage the purchase of more energy efficient alternatives in consumer electronics.

Reducing emissions in the public sector

7.49 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 have to produce focused action plans to reduce carbon emissions and to renew them annually. In June 2006 the Government announced that all the central government 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 and a seminar held at HM Treasury in October 2006 brought together central and local government to encourage the further dissemination of best practice and innovation. The Carbon Trust also runs a revolving loan fund to support energy efficiency investment by local authorities and other public sector organisations, delivered by Salix Finance.

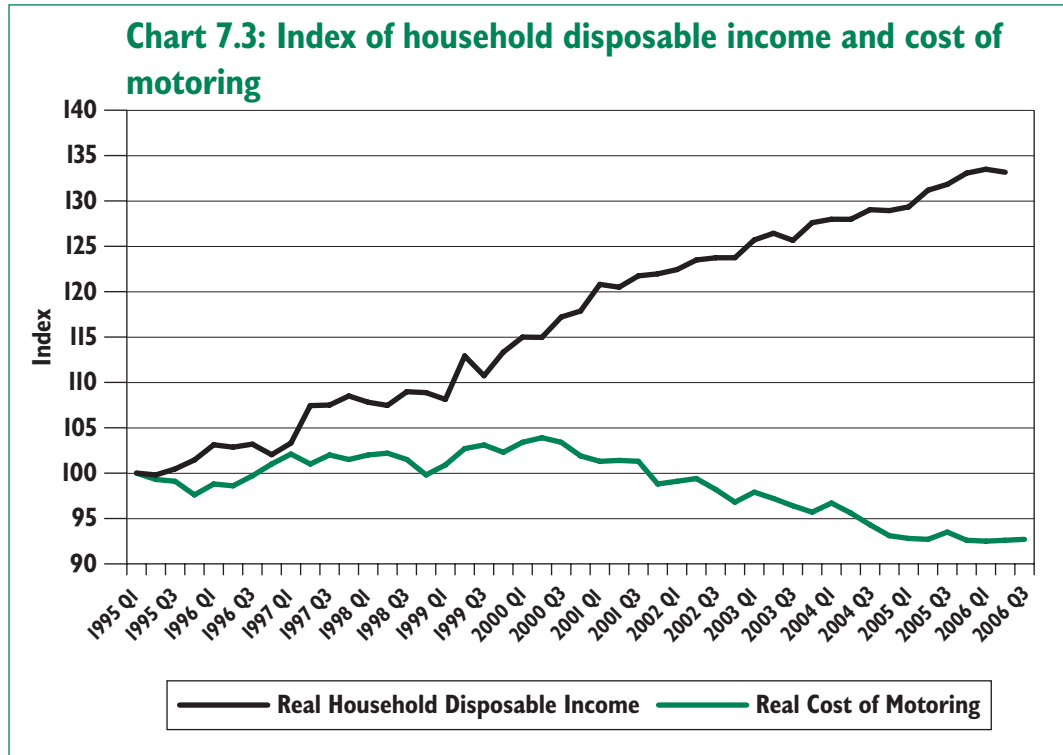
7.50 The public sector spends over £125 billion on goods and services a year and it is vital that this investment is spent in a way that is good for the environment as well as good value for money. It is a condition of funding for the Building Schools for the Future programme that all schools being rebuilt or subject to major refurbishment meet the Building Research Establishment's environmental assessment method 'very good' or 'excellent' rating for schools. **To extend our ambition for low-carbon buildings, the Government will now test even higher standards for new and refurbished schools to reduce their carbon emissions by up to 60 per cent over existing standards, and in some cases up to carbon neutrality.**

Reducing emissions in the transport sector

7.51 Transport is the second largest source of carbon dioxide emissions in the UK and, due in part to sustained economic growth, emissions are set to continue growing until around 2015, before falling thereafter. In addition, the sector is a significant contributor of air pollutants. However, environmental goals must be pursued alongside wider priorities. A safe, clean and efficient transport system underpins sustainable economic growth, boosts productivity, extends mobility and helps create a more inclusive society. The Government is committed to a long-term strategy of promoting lower-carbon transport including alternative fuels, improving fuel efficiency and giving economic incentives to individuals to make more sustainable transport choices. Both the Stern Review and the Eddington Study of Transport,⁶ published on 1 December 2006, emphasise the importance of transport prices reflecting the costs of carbon emissions and other environmental externalities, for instance through taxation, regulation and trading mechanisms. Further details on the Eddington Study can be found in Chapter 3.

Cost of motoring 7.52 The real cost of motoring has remained broadly constant for the last decade, but has fallen since a peak in 2000, largely due to falling car purchase costs. Oil market volatility has been offset by fuel duty rates that are now as low as at any time since 1997. Real costs of motoring as a share of household disposable income have fallen considerably in the last ten years, as incomes have grown on the back of sustained economic growth, while motoring costs have remained broadly constant.

⁶ *The Eddington Study of Transport*, December 2006.



Fuel duties 7.53 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. In Budget 2006, owing to sustained oil market volatility, the inflation-based increase in main fuel duty rates was deferred until 1 September 2006. However, with the risk of volatility remaining high, the Government announced in July that the increase would not go ahead in September and the position would be reviewed at the time of the Pre-Budget Report. Since pump prices peaked at 97 pence per litre (ppl) for petrol and 99 ppl for diesel in July 2006, they have fallen back on average by between 8 and 12 ppl. **The Government therefore announces today that main fuel duty rates will increase in line with inflation by 1.25 ppl from midnight tonight.** Rates remain 15 per cent lower in real terms than they were in 1999, when the fuel duty escalator was abolished. **The Government will also increase the duty rates for rebated oils, biofuels and road fuel gases, in line with the Budget announcement.** More details on rebated oils are in Chapter 5.

Sulphur-free fuels 7.54 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 early in 2007 to ensure the widespread availability of sulphur-free diesel and sulphur-free 'super' grades of petrol. In order to allow the industry the required lead time to bring forward the fuels, the regulations will enter into force in late 2007.** In advance of that, HM Revenue and Customs (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.

Haulage industry 7.55 The Government recognises the important role that road haulage plays in a successful and high-productivity economy. The Haulage Industry Task Group, set up in the 2005 Pre-Budget Report to develop a stronger evidence base to inform the Government's future policy decisions, has enhanced the Government's understanding of key issues within the sector. A report from the Task Group published alongside this Pre-Budget Report summarises the evidence gathered.⁷

⁷Haulage Industry Task Group: *Summary of Evidence*, HM Treasury in conjunction with the Road Haulage Association and the Freight Transport Association, December 2006.

7.56 As part of the Task Group process, the Government received a number of policy proposals from industry. These focused on ways to deliver a 25 ppl fuel duty reduction for use by those operators most directly affected by foreign competition. After carefully considering the full implications these policies would have on revenue, fraud and the environment, and the analysis of costs and competitive differentials set out in the Task Group report, the Government does not believe that there is a case for a duty rate reduction. Quantitative restrictions on fuel carried on incoming vehicles were also suggested. However, these would contravene European single market rules.

7.57 The Task Group has drawn important conclusions in the area of enforcement. A higher proportion of foreign vehicles fail to comply with UK safety regulations concerning, for example, vehicle weights or driving hours, and non-compliant operators enjoy an unfair competitive advantage when they are not caught. As a direct result of the Task Group, the DfT has published a clear statement on cabotage rules and action has recently been taken against several long-standing cabotage operations. The recent launch of the South East International Transport Pilot will substantially improve the Vehicle and Operator Services Agency's capacity to tackle non-compliance by traffic in the south-east and new 'Weigh in Motion' sensors to identify overloaded vehicles will soon be in place at seven locations. **The DfT is also announcing the results of consultation on the reform of operator licensing which will significantly cut the administrative burdens for UK hauliers.**

7.58 Further work is now being undertaken by the Government to explore ways of delivering more targeted enforcement on foreign vehicles. This could be done by introducing a database covering all foreign hauliers entering and working in the UK. One way this could be achieved would be via a 'vignette' – a time-based charge for the use of UK roads designed to make foreign hauliers pay for some of the damage they cause on UK roads. If such a scheme were introduced it is very likely to be administered through the existing VED registration process in order to minimise the administrative burden on domestic hauliers. **The Government will undertake a detailed feasibility study into options for establishing a database, including through a vignette.**

Alternative road fuels **7.59** The challenge of climate change, alongside concerns around reliability of supply and oil market volatility, emphasises the importance of developing alternative fuels. The Alternative Fuels Framework, published in the 2003 Pre-Budget Report, affirmed the need for fiscal incentives to reflect environmental benefits and committed the Government to a three-year rolling guarantee for biofuel and road fuel gas duty rates, offering certainty to support investment.

Biofuels **7.60** Biofuels can be mixed with fossil-based fuels and offer significant benefits such as reducing life-cycle carbon emissions and contributing to security of supply. Fuel duty differentials for biodiesel since 2002, and bioethanol since 2005, have supported the growth of the market for these fuels. Having increased sixfold from 2003 to 2005, the biofuels market is expected to double again in 2006, increasing to around 250 million litres, or 0.5 per cent of road fuels.

Renewable transport fuel obligation **7.61** In November 2005 the Government announced it would introduce a Renewable Transport Fuel Obligation (RTFO) requiring 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: development of robust sustainability and carbon standards; development of 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.

7.62 As announced in Budget 2006, the 20 ppl duty incentive for biofuels will be maintained until 2008-09, 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 15 ppl. The combination of duty incentive and buy-out price is also guaranteed at 35 ppl in 2009-10 but will reduce to 30 ppl in 2010-11. The Government expects that the emphasis will move from duty incentive towards buy-out price as the principal support mechanism in future years. The DfT intends to consult further on key aspects of the RTFO early in the New Year, including the role high-blend biofuels could play in meeting RTFO targets, and will publish a draft of the related secondary legislation. Work is also underway, led by the Low-Carbon Vehicle Partnership, to develop carbon and sustainability assurance schemes for biofuels.

Enhanced Capital Allowances for biofuels 7.63 At Budget 2006 the Government applied for State aids approval for an ECA scheme to support the most carbon-efficient biofuels plant. Following discussions with the European Commission in summer 2006, 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 almost complete and the Government will update stakeholders on the position early in the New Year.

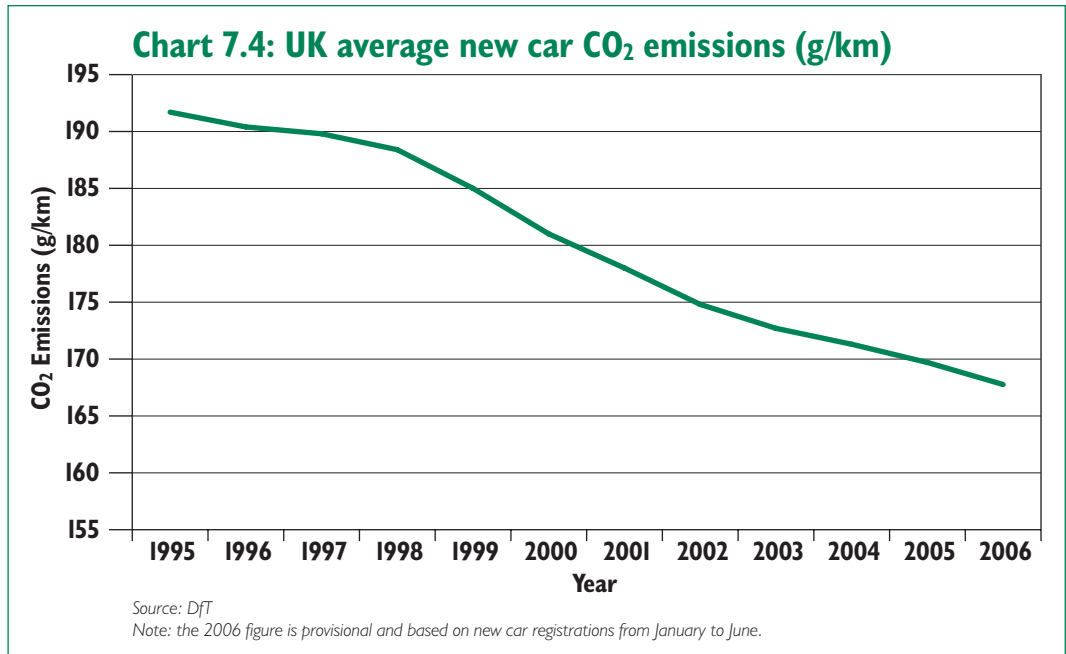
Biomass in fuel production 7.64 It is also important to support innovative types of biofuel production, especially where these could result in biofuels with greater life cycle emissions benefits, or fuels which can be mixed with fossil fuels at higher blends. The Government invited expressions of interest in a pilot project to test the use of biomass in the main refinery process. **The Government today announces that it will extend the 20 ppl fuel duty differential to enable a pilot involving the use of biomass in conventional fuel production to go ahead.**

Second generation biofuels 7.65 At Budget 2006 the Government announced that it would review the definition of biodiesel in the Hydrocarbon Oil Duties Act 1979. Following discussion with stakeholders, **the Government will amend the definition to include a new second generation biodiesel that offers potential environmental benefits, and is capable of being blended in excess of 5 per cent blends.** No further changes will be made to the definition of biodiesel in legislation at present, though the position will be kept under active review as new fuels and approaches emerge. **HMRC are today issuing further guidance on the interpretation of the definition to ensure that environmentally-friendly fuels continue to receive recognition through the duty system. HMRC will also consult stakeholders about a deregulation measure to relax return requirements for small biofuels producers.**

Extending biofuels to other uses 7.66 The environmental benefits of biofuels can also be realised where they are used off-road, and stakeholders from the railway sector have expressed an interest in conducting pilots which use biofuels in railway engines. **To support this, the Government will allow duty to be charged at 7.69 ppl for the purposes of these pilots.** As the pilots progress, the Government will consider what an appropriate long-term duty rate would be, while ensuring any potential risks of misuse are tackled.

Road fuel gases 7.67 In Budget 2006 the Government announced that, in line with the alternative fuels framework, it would increase the duty rates for compressed natural gas (CNG) by the equivalent of 1.25 ppl maintaining the differential with road fuels, and that it would increase the duty rate of liquefied petroleum gas (LPG) by the equivalent of 2.25 ppl, to reduce the differential with main road fuels by 1 ppl. However, rates for both CNG and LPG were frozen alongside the decision on main rates, with the position to be reviewed in the 2006 Pre-Budget Report. **The Government will now implement its Budget 2006 announcement on LPG and CNG with effect from midnight tonight. The Government will also consider the case for extending the current duty incentive for renewable natural gas (biogas), equivalent to almost 40 ppl, and will update the position at Budget 2007.**

Lower-emission vehicles 7.68 As Chart 7.4 shows, average carbon emissions from new cars have fallen every year for the last decade. Innovation in car manufacturing to improve the fuel efficiency of cars has been vital to this, supported both by a voluntary agreement between the European Commission and manufacturers to reduce emissions, and by the measures the Government has taken to incentivise the purchase and development of less polluting vehicles.



Vehicle excise duty 7.69 Vehicle excise duty (VED) for cars was reformed in 2001 and is now based on graduated carbon dioxide bands which give a clear signal to motorists to choose less polluting vehicles. Fuel efficiency labels – matching the graduated VED structure – were introduced into new car showrooms last year, raising consumer awareness of the potential fuel savings that can be achieved by choosing a lower carbon dioxide emission vehicle. DfT will build on this by launching a communications campaign to promote consumer information on purchasing greener cars and smarter (eco) driving on 30 January 2007, and to promote the benefits of business travel planning. To strengthen environmental incentives, the Government announced further reforms to VED in Budget 2006, including: the introduction of a new top band (band G) for the most polluting new cars; and reducing the rate for cars with the very lowest carbon emissions to zero, to support the development of the low-carbon market. The Government will continue to consider the case for improving VED incentives for fuel-efficient vehicles.

Company car tax 7.70 Company car tax (CCT) was reformed in 2002 and is now based on carbon emissions, encouraging the take up of environmentally friendlier 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 environmentally friendly vehicles, Budget 2006 announced that from 6 April 2008 the emissions corresponding to the lower threshold rate of 15 per cent would 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. At Budget 2007, the Government will set out the company car tax thresholds for 2009-10. **The Government will also consider the case for an incentive in company car tax to support the take-up of ‘flex-fuel’ vehicles, capable of using high-blend bioethanol E85.**

7.71 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 have undertaken extensive discussions with business which have indicated that: there are a number of different ECOS schemes, some of which have been designed to provide an ongoing benefit to employees that is currently not taxed or subject to NICs; and that the carbon emissions of an average ECOS car are around 20g per kilometre higher than an average company car. Furthermore, there is a noticeable interaction between the tax treatment of ECOS, tax-free mileage allowances and rates of company car tax, which may have contributed to the popularity of ECOS. HMRC will hold further discussions with industry in early 2007. Following these discussions, the Government will consider whether changes are necessary in order to strengthen environmental incentives and protect Exchequer revenues.

Company car fuel 7.72 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. The figure on which the charge is based is currently set at £14,400. 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. HMRC will publish details of the new regime in good time to allow business to familiarise themselves with it and make any necessary computer system changes.

Capital allowances for cars 7.73 As outlined in Chapter 5, the Government has been consulting on options for modernising relief for business expenditure on cars, including the provision of 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. The Government will continue discussions with business, and present more detailed proposals in Budget 2007.

Vehicle emissions standards 7.74 New 'Euro V' emissions standards for cars and small vans are currently being negotiated within the European Union and the Government will consider the case for incentivising their early uptake through company car tax and other instruments, ahead of the formal requirement to fit the technology. Euro IV emissions standards for vans will become mandatory for all vans registered after 31 December 2006 and, as announced in Budget 2006, the reduced rate of VED for Euro IV vans will be removed for vans registered after that date, but remain for the lifetime of vans meeting the requirements registered before that date.

7.75 Since October 2006 the Euro IV standard for Heavy Goods Vehicles (HGVs) and buses is mandatory and newly registered vehicles are no longer eligible for a reduced pollution certificate (RPC). However, vehicles which obtained an RPC before that date will retain the benefit for the life of the vehicle, as long as they continue to meet the normal testing requirements. The incentive is also still open to those who fit pre-October 2006 registered vehicles with the qualifying technology. The Government is actively reviewing options for providing similar incentives for the early uptake of the Euro V emissions standard, before it comes into force in November 2009.

Reducing emissions from aviation

Emissions from aviation 7.76 Globally, carbon dioxide from aviation is responsible for around 1.6 per cent of total greenhouse gas emissions,⁸ but this level is set to increase as other sectors reduce emissions while demand for air travel rises. The UK aviation sector currently accounts for around 5.5 per cent of the UK's total carbon dioxide output and this could rise to as much as 15 per cent by 2030. Aircraft are also responsible for high-altitude emissions of nitrogen oxides (NOx), and for the formation of cirrus clouds and contrails. The total climate change effect of all aviation emissions is estimated to be at least two to four times greater than the effect of carbon dioxide emissions alone.

7.77 Government policy on aviation needs to strike the right balance between economic, social and environmental factors. The UK aviation industry brings considerable economic benefits to the UK. It contributes around £11 billion per year to the economy, with far greater indirect contributions from other industries reliant on air transport. It also directly employs over 200,000 people and indirectly many more. Today, a third by value of all UK exports are carried by air, enabling UK companies to reach new international markets in an increasingly globalised world economy. The Government's policy, as set out in the 2003 White Paper *The Future of Air Transport*,⁹ is to ensure that aviation continues to benefit the UK economy by enabling the industry to expand in an environmentally sustainable way, and that aviation should pay the external costs it imposes on society at large, in line with the 'polluter pays' principle.

7.78 The Eddington Study stresses the important role of international gateways such as airports in contributing to the productivity and competitiveness of the UK economy, and the costs imposed by congestion in and around airports. The study also supports Government policy by arguing that, as a point of economic principle, transport planning must take account of likely carbon prices and that transport prices must fully reflect environmental externalities. At the same time, the study is clear that barriers to the natural growth of aviation, once those prices are in place, would impose a significant economic cost on the UK economy.

7.79 To avoid the economic consequences of constraining aviation growth, further expansion of UK airport capacity is needed. Heathrow plays a unique role in the UK as a hub airport, and demand for capacity already significantly exceeds supply, leading to less competition, greater congestion, reduced choice and higher prices for passengers. Where there are net benefits from doing so, the Government supports the expansion of UK airports, including at Heathrow, and will identify the necessary mitigation measures to allow relevant limits on air quality and noise to be met.

Aviation in the EU ETS 7.80 The growing impact of aviation on the environment is an international issue, and, in line with the Stern Review, the Government is pressing for international action to tackle it. The Government believes the inclusion of aviation in the EU ETS is the most efficient and cost-effective way to aid the sector in meeting its external costs and playing its part in tackling climate change. The Government remains committed to this goal and continues to press at the EU level for the inclusion of aviation in EU ETS as soon as possible. The European Commission is due to publish a draft legislative proposal shortly.

7.81 However the Government is also aware of the challenges in introducing emissions trading to this sector, and recognises that these challenges may lead to delay. The Government continues to believe, as set out in previous Budgets and Pre-Budget Reports, that its focus on EU ETS does not preclude consideration of additional economic instruments to ensure aviation plays its part in meeting the challenge of climate change. In particular, the UK continues to argue for change on an international level to the exemption of aviation kerosene from fuel tax. This strategy has delivered real results, but the process will inevitably take time.

⁸ *Aviation and the Global Atmosphere*, Intergovernmental Panel on Climate Change, 1999.

⁹ *The Future of Air Transport*, DfT, December 2003.

Air passenger duty 7.82 In the light of this, the Government recognises the role that air passenger duty can play in tackling the climate change impact of aviation. **The Government will therefore increase air passenger duty rates (APD) with effect from 1 February 2007. The intra-EU economy rate will rise from £5 to £10 and the non-economy rate from £10 to £20. The long-haul economy rate will rise from £20 to £40 and the non-economy rate from £40 to £80.** This will deliver carbon savings of around 0.3 MtC a year by 2010-11. When the effect of non-carbon dioxide emissions is taken into account this has a climate change impact equivalent to saving around 0.75 MtC per year by 2010-11. **To ensure consistency within the air passenger duty system, the scope of the European rates of air passenger duty will also be widened to include all of the signatories to the European Common Aviation Area Agreement, with effect from 1 February 2007.**

IMPROVING WASTE MANAGEMENT

7.83 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 the EU Landfill Directive. Defra is due to publish a review of its Waste Strategy in early 2007 and, as part of the 2007 Comprehensive Spending Review, the Government will assess the findings and consider whether there is a case for further incentives to encourage investment in more sustainable alternatives to landfill.

Landfill tax 7.84 The landfill tax increases the price of waste sent to landfill, encouraging more sustainable ways of managing waste. The standard rate of landfill tax applying to active wastes (those that give off emissions), currently £21 per tonne, has been increased by £3 per tonne in each of the last two years as part of the Government's medium to long-term aim of reaching a rate of £35 per tonne. The landfill tax has been very successful: overall quantities of waste recorded at landfill sites registered for the tax fell 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. **The Government today announces that from 1 April 2007 the standard rate of landfill tax will increase by a further £3 per tonne to £24 per tonne. The Government will also consider whether the standard rate of landfill tax needs to increase more steeply from 2008 onwards, or go beyond the £35 per tonne already committed to for the medium to long-term, in order to encourage greater diversion of waste from landfill and more sustainable waste management options.**

Enhanced Capital Allowances for waste 7.85 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 of new waste treatment facilities (for example, refuse derived fuel). The Government continues to engage with stakeholders to assess the case and appropriate mechanism to incentivise investment in this area.

Landfill Communities Fund 7.86 The Landfill Communities Fund – formerly the Landfill Tax Credit Scheme – was introduced in 1996 to redress some of the environmental costs of landfill by improving the environment in the vicinity of landfill sites. Budget 2006 announced that the Government would increase the value of the scheme and issued a challenge to the private and voluntary sector partners in the scheme to use the additional money to fund opportunities for young people to volunteer on environmental projects.

IMPROVING WATER EFFICIENCY AND QUALITY

Investment in water-efficient technologies **7.87** *Long-term opportunities and challenges: analysis for the 2007 Comprehensive Spending Review* pointed to the need to strike the best balance between maintaining adequate supplies of water and managing consumer demand. ECAs to support business investment in designated water efficient technologies were introduced in 2003 and currently cover more than 900 approved products. 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.

Water pollution from agriculture **7.88** 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 shortly on the most cost-effective options for dealing with DWPA and continues to keep options for using economic instruments under review. The pesticides voluntary initiative remains in place and the Government continues to consider potential improvements to it.

PROTECTING THE UK'S COUNTRYSIDE AND NATURAL RESOURCES

Biodiversity **7.89** 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 new agri-environment scheme which provides funding to farmers and other land managers in England who deliver effective environmental management on their land. Over 25,000 Environmental Stewardship agreements, covering 3.4 million hectares of English farmland, are now in place.

Aggregates levy **7.90** 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 continues to be 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 will continue to work with industry stakeholders and consider the appropriate level for future rates at Budget 2007.

Aggregates levy sustainability fund **7.91** The aggregates levy sustainability fund was introduced alongside the aggregates levy to reduce the impact of aggregates production. **The Government today announces that the fund will be extended for a further year (2007-08).** Decisions on the future of the fund beyond 2007-08 will be taken as part of the 2007 Comprehensive Spending Review.

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

Sustainable Development Indicator and recent trend data	Recent Government measures / announcements
Tackling climate change	
<p>Targets Joint Defra/DfT/DfT PSA – 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>Progress UK greenhouse gas emissions were 14.6 per cent below 1990 levels in 2005¹. Carbon dioxide emissions fell by 5.3 per cent during this period.</p>	<ul style="list-style-type: none"> • Climate Change Programme, DETR, November 2000. • UK Emissions Trading Scheme, Defra, August 2001. • Energy Efficiency Commitment, Defra, April 2002 and April 2005. • Renewables Obligation, Defra, April 2002 and December 2003. • Energy White Paper, DTI, 2003. • Energy Efficiency – the Government's Plan for Action, Defra, April 2004. • EU ETS Phase I began January 2005, EU ETS Phase II consultation in July 2005. EU ETS Phase II NAP agreed in November 2006. • Energy Efficiency Commitment Two introduced April 2005. • Energy Efficiency Innovation Review, December 2005. • Energy Review, DTI, July 2006. • Climate Change Programme Review, March 2006. • Package of fiscal measures, including climate change levy (see Table 7.2).
Air quality	
<p>Targets Joint Defra/DfT PSA – to improve air quality by meeting the Air Quality Strategy for seven key air pollutants between 2003 and 2010.</p> <p>Progress Results for 2005 show average UK urban background levels of particulate pollution (PM₁₀) decreased from 31 micrograms per cubic metre in 1996 to 22 micrograms in 2005. Urban ozone levels increased from 48 micrograms per cubic metre to 57 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 22 in urban areas and from 41 to 40 in rural areas between 1996 and 2005².</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, 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>Targets 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>Progress Around 27 per cent of household waste in England was recycled or composted in 2005-06. Active waste disposed to landfill has fallen from 50.4 million tonnes in 1997-98 to 47.3 million tonnes in 2005-06.</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 February 2006. • Landfill tax and related measures (see Table 7.2).
Regenerating the UK's towns and cities	
<p>Targets DCLG PSA 5: 60 per cent of housing development to be on previously developed land. DCLG PSA 1: Work with departments to help meet PSA floor targets to deliver neighbourhood renewal and tackle social inclusion. DCLG PSA 8: Deliver cleaner, safer and greener public spaces.</p> <p>Progress 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. • Planning Policy Statement 1 placed sustainability for the first time as a core principle of the planning system, February 2005. • SR04 made available £525 million 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. • 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, February 2005. • 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).
Protecting the UK's countryside and natural resources	
<p>Targets Defra PSA – positive trends in the Government's headline indicators of sustainable development (includes wildlife, river water quality, land use). Water Framework Directive – requires achievement of good chemical and ecological status in surface water by 2015.</p> <p>Progress</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. • In 2006, Sites of Special Scientific Interest land in target condition rose to 72 per cent. 	<ul style="list-style-type: none"> • Rural White Paper, DETR, November 2000. • Strategy for Sustainable Farming and Food, Defra, December 2002. • Regulations transposing the Water Framework Directive came into Force January 2004. • Developing measures to promote catchment-sensitive farming (Defra-HMT consultation), June 2004. • Defra consulting on pesticides strategy. • 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). • Pesticides Strategy, 2006.

¹ The six main greenhouse gases are: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.

² Air quality indicator for sustainable development: Defra, 2006.

³ Land use change in England. Residential Development to 2004 (January 2006).

Table 7.2: The environmental impacts of Budget measures

Budget measure	Environmental impact
Climate change and air quality	
UK's National Allocation Plan for EU Emissions Trading Scheme	The UK's plan for Phase One of the EU ETS will deliver around 4.6 MtC reductions from installations covered by 2007. The UK's plan for Phase Two (from 2008–2012) will deliver emissions savings of 8 MtC compared with business as usual.
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 the Carbon Trust, is estimated to deliver annual emissions savings of over 7.5 MtC a year by 2010.
Fuel duty	Revalorising fuel duty rates reduces emissions by around 0.1 MtC per year compared to freezing rates.
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 (20 ppl differential); • bioethanol (20 ppl 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 typically by around 50 per cent per litre of biofuel used. Biofuels are projected to account for around 0.5 per cent of road fuels in 2006, reducing carbon emissions by around 0.1 MtC a year.
The Renewable Transport Fuel Obligation (RTFO)	RTFO introduced from 2008-09 is expected to save 1 MtC per year by 2010. ³
Rebated fuels	Maintaining the differential with main road fuels supports the strategy to reduce 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)	Sharpening of environmental signals will help deliver small reductions in CO ₂ emissions. 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. 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 changes 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 Increasing the rate in line with fuel prices in 2007-08 will deliver a small additional reduction in CO ₂ emissions.
VAT fuel scale charge	Reforms are expected to deliver small reduction in CO ₂ .
Air passenger duty (APD)	Changes to rates will result in a reduction of 0.2 to 0.5 MtC per year 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 the changes have a climate change impact equivalent to saving 0.4 to 2.0 MtC a year emitted on the ground, with a central estimate of 0.75 MtC per year by 2010-11.
Landlords Energy Saving Allowance (LESA)	The extension of LESA will lead to a 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 MtC 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
Energy Efficiency Commitment (EEC)	Phase 1 (2002-2005) is estimated to have reduced emissions by 0.35 MtC per year by 2010. Phase 2 (2005-2008) is expected to bring in an additional 0.62 MtC annual saving by 2010.
Warm Front (previously called the Home Energy Efficiency Scheme)	Estimated annual carbon savings of 0.32 MtC a year by 2010.
Voluntary initiative on consumer electronics	Annual emissions from household goods are estimated to be 1 MtC. An early estimate suggests savings of up to 65 per cent can be achieved at low cost to manufacturers, retailers and consumers, with 0.1-0.2 MtC potentially saved in 2010. Actual savings will depend on final agreement.
Microgeneration – £50 million to enable the installation of microgeneration technologies in 30,000 buildings	Carbon savings by 2010 of around 0.01 MtC per year.
'Smart' meter pilot	An estimated 0.2 MtC could be saved in 2010 from better metering and billing.
Improving waste management	
Landfill tax	Between 1997-98 and 2005-06, the total quantity of waste disposal to landfill sites registered for landfill tax fell by 25 per cent, while the amount of active waste disposal to landfill by 14 per cent. ⁷
Landfill communities fund	Landfill tax credits scheme (now the landfill communities fund) has provided £730 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 2003. 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, in calendar years.