HM Government

Carbon Plan

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FOREWORD

This Carbon Plan sets out a vision of a changed Britain, powered by cleaner energy used more efficiently in our homes and businesses, with more secure energy supplies and more stable energy prices, and benefiting from the jobs and growth that a low carbon economy will bring.

But it does more than that. It shows exactly how we will deliver that vision and play our part in the global effort to tackle climate change and build a green economy through specific, practical action across government, month by month and department by department. We want the public to tell us where we can be even more ambitious, and hold us to account on delivering what we say, when we say. Together, we can make our vision a reality.

Doing this means change across the whole economy, but most critically and fundamentally in three areas, namely:

- in the way we generate our electricity, where we must see a dramatic shift away from fossil fuels and towards low carbon alternatives – renewable energy, new unsubsidised nuclear power and fossil fuel power stations fitted with Carbon Capture and Storage;

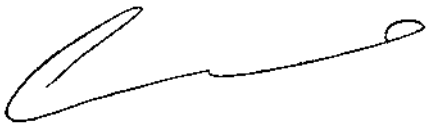
- in the way we heat our homes and businesses, where a step change is needed in how well our homes are insulated and in the use of low carbon energy alternatives, such as heat pumps;

- and in the way we travel. This means better public transport, reducing emissions from petrol and diesel engines and moving towards alternative technologies such as electric vehicles.

Becoming a low carbon economy will be one of the greatest changes our country has ever known. But it is a change for the better, for our economy, our society, and for the planet. This Carbon Plan shows how, together, we can make it happen.

David Cameron
Prime Minister

Nick Clegg
Deputy Prime Minister



Chris Huhne
Secretary of State for
Energy and Climate Change

CHAPTER 1:
THE CHALLENGE OF CLIMATE CHANGE – OUR APPROACH

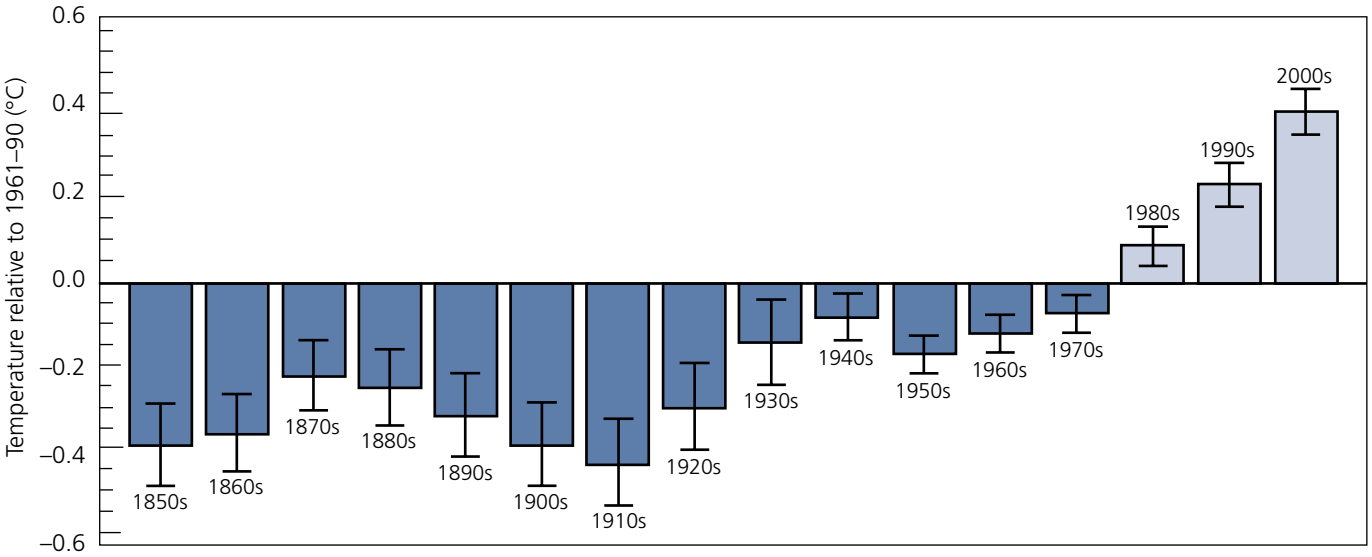
1.1 Climate change is one of the greatest threats to both UK and global security and prosperity. There is an overwhelming scientific consensus that climate change is happening, and that it is very likely to be primarily the result of human activity. There is now almost 40% more carbon dioxide in the atmosphere than there was before the industrial revolution, a level not experienced for at least the last 800,000 years. Consequently, the global average temperature continues to rise, and 2000–09 was the warmest decade on record since at least the 1850s (see figure 1.1).

1.2 Without action to curb emissions, there is a very high risk of global warming reaching well beyond 2°C relative to pre-industrial times. Such unmitigated global warming would increase the risk of accelerated or irreversible changes in the climate system, such as initiating melting of the Greenland and West Antarctic ice sheets, leading to major sea level rise, or the release of large natural stores of methane from oceans or melting permafrost, which could cause further warming. The UK Met Office's Hadley Centre has produced an interactive map[1] outlining some of the impacts that may occur if the global average temperature rises by 4°C (7°F) above the pre-industrial climate average.

1.3 Government's approach to avoiding the risk of dangerous climate change has at its heart the Climate Change Act 2008, which requires Government to reduce greenhouse gas emissions by:

- cutting emissions by at least 34% by 2020 and 80% by 2050 – below the 1990 baseline;
- setting and meeting five-yearly carbon budgets for the UK during that period; and

Figure 1.1: Observed global average temperature relative to 1961–90



Source: Met Office

[1] http://webarchive.nationalarchives.gov.uk/20100623194820/http:/www.actoncopenhagen.decc.gov.uk/en/ambition/evidence/4-degrees-map/

- requiring that those carbon budgets be set three budget periods ahead – so that it is always clear what the UK's emissions will be for the next 15 years – and setting the trajectory towards the 2020 and 2050 targets.

1.4 This is a firm, long-term and legally binding framework that requires Government to ensure that the transition to a low carbon economy really happens. But it leaves important choices about *how* we make that change.

Our principles

1.5 Within the overarching framework set by the Climate Change Act, the Government is committed to a number of principles that will guide our approach:

- **Take a whole-government approach:** Tackling climate change and demonstrating leadership through action is the responsibility of every part of government, cental and local, and the wider public sector.

- **Be facilitative:** Government's role should be to set the legal and market frameworks and to provide the information to enable businesses, households, local areas and communities to play their part.

- **Be inclusive:** Our efforts to cut greenhouse gas emissions should not be forced through top down by Government. We should make this change by enthusing our whole society, in line with our commitment to localism.

- **Be fair:** There will inevitably be costs to Government, business and individuals in making such a significant change. These costs will be lower than the alternative of dealing with the cost of unmitigated climate change and offset by maximising the growth opportunities from a low carbon transition, but they will still be real, and the Government is committed to preventing any unnecessary burden and to sharing the costs fairly.

- **Act sustainably:** This Carbon Plan is underpinned by the Government's continued commitment to sustainable development, to be open and transparent in its operations and to look to the long term to tackle economic, environmental and social challenges. The Government is committed to taking a sustainable approach to decarbonising our economy and finding the right balance between environmental benefits, impacts, costs and the need for a secure low carbon energy supply. The Government will give further details of its approach in the Natural Environment White Paper.

- **Be outward-looking:** Climate change is a global problem and requires a global solution. Action in the UK and our support for practical action overseas will help demonstrate our commitment to other countries, and will stand alongside our commitment to negotiating for a global deal on climate change.

Our approach in the UK

1.6 In 2010 the Government published *2050 Pathways Analysis*, which looked in detail at the changes the UK would have to make in order to reduce greenhouse gas emissions by at least 80% by 2050. The report showed many different ways in which this *could* be done, but most fundamentally it showed that it *can* be done.

1.7 While there are many possible pathways, there are some common themes that emerge across the various solutions explored in the report. These themes, combined with wider evidence, suggest that while every sector of our economy will need to change between now and 2050, there are three areas – which are together responsible for 80% of the UK's greenhouse gas emissions[2] – in which change is most critical:

- **Generating our electricity:** Under many scenarios explored in *2050 Pathways Analysis*, demand for electricity is likely to double by 2050 compared to today. Changes in other sectors are likely to mean greater reliance on electricity for applications such as transport and heating, pushing up demand. At the same time, our existing power plants are coming to the end of their lives, with around a quarter set to close within the next decade alone. To cope with this, we will need a new generation of secure, low carbon electricity, powered by a mix of renewable energy, new nuclear power and fossil fuel power stations fitted with new Carbon Capture and Storage (CCS) technology capable of locking away carbon dioxide emissions, and reusing as far as possible the waste heat that is generated. Much of this change is likely to need to happen between now and 2030, requiring in excess of £110 billion of investment in generation, transmission and distribution over the next decade.[3]

- **Heat for our homes and businesses:** Almost half of the UK's greenhouse gas emissions are from the energy used to generate heat,[4] with the vast majority of our homes still relying on fossil fuel powered gas boilers and with much of our building stock still poorly insulated and inefficient. There is a huge opportunity here, not only to cut greenhouse gas emissions and emissions of harmful pollutants, but also for households and businesses to save money, with the most significant and cost effective opportunities likely to come from better insulation and from replacing inefficient heating systems. We need to ensure that the homes and buildings being built now and in the future are as energy efficient as possible, and the Government is committed to introducing ambitious energy efficiency standards for

2 The 2009 final UK greenhouse gas emissions figures, available at: www.decc.gov.uk/en/content/cms/statistics/climate_change/gg_emissions/uk_emissions/2009_final/2009_final.aspx

3 DECC (2010) *Electricity Market Reform: Consultation Document*, www.decc.gov.uk/assets/decc/Consultations/emr/1041-electricity-market-reform-condoc.pdf

4 DECC (2010) *Energy Consumption in the UK: Overall Data Tables*, www.decc.gov.uk/en/content/cms/statistics/publications/ecuk/ecuk.aspx, tables 1.4 and 1.14.

new homes and buildings. In the short term, this means ensuring that all fossil fuel boilers are as efficient as possible, but we also need to move towards lower carbon alternatives such as air and ground source heat pumps and consider decentralised options like Combined Heat and Power and district heating.

- **Powering our cars and vehicles:** Transport is a major contributor to the UK's energy demand and greenhouse gas emissions, as well as other polluting emissions, with the majority of those emissions coming from the oil-based fuels we rely on for road transport. We can all play a part in changing this by taking advantage of public transport and looking at innovative alternatives to travel such as video conferencing for some business meetings. A big impact will come from improvements to conventional engine technology and from developing vehicle technologies that allow us to use low carbon fuels to power our road vehicles. A step change is needed over the coming decades to move away from oil-based fuels and towards ultra-low carbon alternatives such as electric vehicles.

1.8 The greatest and most urgent change is needed in these three areas – but it is far from the only change needed.

1.9 As we act to reduce greenhouse gas emissions from our use of electricity, homes, businesses and travel, the impact of other sectors of the economy will become ever more important. Emissions from sectors such as agriculture, waste and industrial processes are likely to grow steadily as a proportion of the UK's total emissions and it will be essential that appropriate policy action is taken across all of those sectors.

1.10 The Government believes that this change can be enabled, among other things, by reform to make the tax system greener, including by increasing the proportion of tax revenue accounted for by environmental taxes.

1.11 There are significant business opportunities associated with the transition to a low carbon economy, and our carbon budgets provide a clear and credible long-term framework to incentivise private sector investment in energy saving and low carbon technologies. Being more efficient with energy means reducing waste, reducing costs and being more competitive. In 2009 the UK share of the low carbon and environmental goods and services sector was worth £112 billion, with over 900,000 people employed in the low carbon sector and its supply chain; by 2015, it is expected that there will be at least 1 million.[5]

1.12 The Government will also need to ensure that we stimulate innovation and develop the necessary skills and technologies in

[5] In 2008/09 the global market for low carbon and environmental goods and services was worth £3.2 trillion and is forecast to grow by approximately 4% per year over the next five years. Refer to Innovas, for the Department for Business, Innovation and Skills (2010) *Low Carbon and Environmental Goods and Services: An Industry Analysis – Update for 2008/09*, www.berr.gov.uk/assets/biscore/business-sectors/docs/10-795-low-carbon-environmental-goods-analysis-update-08-09.pdf

the UK. This will require significant public and private sector investment in all stages of the innovation process, from research, through development and demonstration, to deployment. The Government directly supports innovation and works through the Research Councils, Technology Strategy Board, Energy Technologies Institute and Carbon Trust. The Government will ensure that the low carbon business opportunities of the future are underpinned by our strengths in science, research and innovation.

Our approach internationally

1.13 The UK has a direct national interest in ensuring that the world tackles climate change, given the potentially devastating impact that unchecked climate change could have in this country. The UK accounts for just 2% of global emissions, so our long-term security and prosperity depends on effective international action. The UK's approach will focus on deploying UK and EU economic, technical, diplomatic and development assets to influence global political and economic conditions to secure action from other countries to limit greenhouse gas emissions; helping developing countries to build the climate resilience of their economies and move towards low carbon growth in the future; and working for a comprehensive global climate change agreement. In taking this forward, the Government is committed to working closely with partners in the private sector, non-governmental organisations and civil society.

1.14 This Carbon Plan sets out four key priorities for UK action internationally:

- **Developing leadership within the European Union:** As the largest single market in the world, the EU has the opportunity to demonstrate to the rest of the world that a low carbon economy is firmly in our economic and energy security interests. Within the EU we will support the rapid transition to a low carbon European economy, including through the development of a robust EU low carbon roadmap to 2050 (and the steps we will take to 2020) and by encouraging the EU to adopt a 30% emissions reduction target for 2020. Externally we will play our part in ensuring that the EU takes a leading role in international negotiations, through its relations with other major economies, and by delivering on its obligations to provide climate finance to support developing countries.

- **Building the case for global ambition with key countries and international institutions:** Globally, we need to work to ensure that all major countries see the move to low carbon economies as essential to their long-term security and prosperity. Developed countries need to take the lead in taking action to cut emissions and supporting others to act: we will maintain our strong relationship with the US, Japan and other developed countries on these issues, where we face shared challenges around how to decarbonise our economies in ways that support long-term growth and prosperity. The Government is committed

to strengthening bilateral partnerships with major emerging economies, including India, China, Brazil and South Africa, and we will use these relationships to develop further our collaboration on low carbon growth. We will also work to support the wide range of developing countries that want to be more ambitious in tackling climate change. And we will continue to seek effective international action through the G8, G20 and other international fora.

- **Supporting the development of low carbon, climate resilient economies:** The UK will support developing countries to take practical action to shift to low carbon, climate resilient development paths, including through scaling up the deployment of low carbon technologies and building confidence in long-term private investment in low carbon. Recognising the growing importance and urgency of taking practical action to tackle climate change, the UK has made significant commitments to support other countries, establishing a £2.9 billion International Climate Fund (ICF). The ICF will reduce international poverty by supporting low carbon growth and development, adaptation to climate change, and action to tackle deforestation while protecting biodiversity. And the UK will work to share expertise and new ideas with other countries about how to further develop carbon markets and open up low carbon investment opportunities for private finance.

- **Ensuring progress within the international climate change negotiations:** The UN Climate Change Conference in Cancun restored international confidence, following the disappointments of the previous conference in Copenhagen, in the effectiveness of multilateral action under the UN Framework Convention on Climate Change (UNFCCC). We will continue to work towards a comprehensive, legally binding international climate change agreement under the UNFCCC, seeking further progress by the next major UN Climate Change Conference in Durban, South Africa, in late 2011. We will continue to support work to build consensus and trust between developed and developing countries on how to move forward in the negotiations.

Cross-government management of the delivery of emissions reductions

1.15 All of the above represents a huge programme of change that will transform our economy and our way of life. But it also represents a practical task which the Government is committed to managing effectively and transparently. The right way to do this is through well planned and measurable action right across the UK, including action taken by the Devolved Administrations in Northern Ireland, Scotland and Wales. This Carbon Plan shows how every part of government will work together to deliver that action. It sets out, department by department, specific

milestones in every sector of the economy for the action that the Government will take, alongside the key actions that each department will take to support the UK's work internationally. The Government is committed to meeting those milestones and will publish quarterly online updates to show whether it has done so and, if not, what corrective action it will take.[6]

1.16 As set out in this Carbon Plan, reducing greenhouse gas emissions in the UK and thus meeting legally binding carbon budgets under the Climate Change Act is a cross-government responsibility. A number of departments across Whitehall lead on the majority of policies that reduce emissions, but all departments are involved as a minimum through the reduction of emissions from their own buildings and estate.

1.17 To ensure that the sum of the policies and enabling actions to reduce emissions are sufficiently ambitious and successfully implemented, a robust carbon budget management framework has been put in place to hold departments to account for their actions. The approach comprises the following stages:

- Through collaborative discussion and analysis, the preferred policies and measures to meet carbon budgets are agreed across government. The resulting information on emissions savings estimates by policy provide a tool for assisting in tracking progress and risks to delivery and act as a benchmark for what we expect policies to deliver.

- Departments are held accountable for delivery of their carbon reduction policies and/or activities that support or enable carbon reduction through a framework of regular monitoring and reporting against their actions and indicators of progress.

- The Government will report publicly on progress against the actions in the Carbon Plan on a quarterly basis and will provide more detailed updates by sector via its response to annual progress reports by the Committee on Climate Change (in October each year).

- This approach to carbon budget management primarily applies to BIS, DCLG, Defra, DECC, DfT and HMT, which lead or have an impact on the majority of policies. The wider actions of all departments are constantly kept under review, with particular attention to new government initiatives that may have a knock-on effect on emissions, including those that may lead to an increase in emissions.

- This 'draft' Carbon Plan is intended to set out and seek input into the format and content of the final 'live' Carbon Plan. A 'live' Carbon Plan will be published in October 2011 (to take into account the fourth carbon budget covering the period

6 Updates will be published at: www.number10.gov.uk and www.decc.gov.uk

2023–27[7]) and will be refreshed annually thereafter. Comments and suggestions on the approach and on how the final Carbon Plan can be strengthened should be sent to CarbonPlan@decc.gsi.gov.uk by 31 July 2011.

1.18 The following summary table sets out the actions for which each government department is responsible, and where in this document further detail on these actions, and the milestones through which they will be implemented, can be found. This table covers actions by UK government departments only; actions relating to the Devolved Administrations are listed in Chapter 13.

Department	Policy area	Chapter
DECC	Reform the electricity market (with HMT)	2
	Facilitate new nuclear development without public subsidy by 2018	2
	Drive deployment of renewable energy across the UK	2
	Demonstrate the use of clean fossil fuels through commercial scale CCS technology in the UK	2
	Use energy better through rolling out smart electricity and gas meters across Britain	3, 4
	Reform the electricity grid to ensure sufficient capacity and access to connect new forms of energy generation	2
	Drive greater energy efficiency in households and business through the Green Deal (with DCLG/Defra)	3, 4
	Drive greater energy efficiency in central Government Departments and the public sector (with CO and all Departments)	8
	Develop leadership within the European Union (with FCO/HMT)	9
	Build the case for global ambition with key countries and international institutions (with FCO/DFID)	10
	Support the development of low carbon climate resilient economies (with DFID/Defra/HMT)	11
	Ensure progress within international negotiations (with FCO/DFID)	12
DfT	Support new low emission vehicle technologies	5
	Progress high speed rail and rail electrification	5
	Develop a framework for sustainable aviation and shipping	5
	Promote the use of sustainable biofuels (with DECC)	5
	Encourage travel behaviour change to reduce emissions	5
	Support technical standards for electric vehicle charging systems	9

7 Which must be set in law by 30 June 2011.

Department	Policy area	Chapter
Defra	Tackle emissions from farming	7
	Increase woodland cover and sustainable forest management	7
	Improve scientific understanding of agricultural emissions	7
	Improve sustainability in public procurement	8
	Protect the natural environment	8
	Develop a roadmap to a green economy (with DECC/BIS)	4
	Set the path towards a zero waste economy	6
	Support efforts to harness energy from waste	6
	Reduce emissions from fluorinated/HFC gases	10
	Support International action on energy efficiency and environmental protection	9, 10
	Support the development of low carbon climate resilient economies (with DECC/DFID/HMT)	11
	Promote sustainable production of biomass and biofuels	5, 7
BIS	Work through the Research Councils, Technology Strategy Board and Energy Technologies Institute to ensure that low carbon innovation is underpinned by the UK's world class science, research and innovation	4
	Establish the Green Investment Bank (with DECC)	4
	Increase business and investor confidence in the low carbon transition (with DECC/Defra)	4
DCLG	Encourage local communities to host renewable energy projects (with DECC)	2
	Improve the energy efficiency of residential and commercial buildings (with DECC)	3, 4
	Deliver zero carbon new homes from 2016 and zero carbon new non domestic buildings from 2019	3, 4
	Improve the content, format and quality of Energy Performance Certificates to support the Green Deal and extend Display Energy Certificates to commercial buildings (with DECC)	3, 4
	Publish and present to Parliament a simple and concise National Planning Policy Framework covering all forms of development	2
	Implement planning reform, including for major infrastructure	2
HMT	Reform the electricity market (with DECC)	2
	Increase the proportion of tax revenue accounted for by environmental taxes	4
	Develop leadership within the European Union (with DECC/FCO)	9
	Support the development of low carbon climate resilient economies (with DECC/DFID/Defra)	11
CO	Drive greater energy efficiency in central Government Departments and the public sector (with all Departments) and improve sustainability of procurement	8

Department	Policy area	Chapter
FCO	Develop leadership within the European Union (with DECC/HMT)	9
	Build the case for global ambition with key countries and international institutions (with DECC/FCO)	10
	Ensure progress within international climate negotiations (with DECC/DFID)	12
DFID	Build the case for global ambition with key countries and International Institutions (with DECC/FCO)	10
	Support the development of low carbon climate resilient economies (with DECC/HMT/ Defra)	11
	Ensure progress within international climate negotiations (with DECC/FCO)	12

CHAPTER 2:
SECURE, SUSTAINABLE LOW CARBON ENERGY

2.1 Secure supplies of electricity are something we take for granted, lighting our homes, powering our appliances and keeping our workplaces running. But the majority of that electricity is generated through burning fossil fuels, meaning that energy supply is responsible for 35% of the UK's greenhouse gas emissions – more than any other sector of the economy.[8]

2.2 At the same time, there are big changes on the horizon. Demand for electricity is likely to rise due to our efforts to cut greenhouse gases elsewhere in the economy, for example as we use electricity much more for powering transport and heating our homes. And alongside this, around a quarter of the UK's current electricity-generating power plants are set to close over the next decade due to age or stricter environmental regulations.

2.3 This means we cannot continue as we are. The UK needs clean, safe and affordable energy to heat our homes and power our businesses, and we need to identify a sustainable route for making the transition to low carbon energy. Electricity power plants of all types take years to plan and build, and many have a working lifespan of 40 years or longer, making it essential that we plan for the long term. The Government is committed to finding a sustainable pathway for the decarbonisation of our electricity system. Rising future demand means that we need to replace our ageing electricity infrastructure with low carbon alternatives – a combination of renewable energy, new nuclear power and fossil fuel power stations fitted with Carbon Capture and Storage (CCS) technology. This represents a vast challenge, with an estimated £110 billion[9] or more of investment likely to be needed by 2020 in electricity generation infrastructure and in the transmission and distribution network needed to transport that electricity to end users. Around 30% of our electricity is likely to need to come from renewables alone by 2020 in order to meet our legally binding EU target to source 15% of the UK's energy from renewable sources by that date.[10]

Reforming the electricity market

2.4 The current electricity market structure has served us well in maintaining secure energy supplies since the 1990s, encouraging competition and supporting some of the lowest electricity prices in the EU. But the changing nature of the UK's energy and climate change challenges means we now need a different structure. The reality is that the estimated £110 billion of investment needed in electricity infrastructure represents roughly double the rate of capital investment seen over the last decade, and it is likely that new

8 The 2009 final UK greenhouse gas emissions figures, available at: www.decc.gov.uk/en/content/cms/statistics/climate_change/gg_emissions/uk_emissions/2009_final/2009_final.aspx

9 DECC (2010) *Electricity Market Reform: Consultation Document*, www.decc.gov.uk/assets/decc/Consultations/emr/1041-electricity-market-reform-condoc.pdf

10 Redpoint (2010) *Electricity Market Reform: Analysis of Policy Options*, www.decc.gov.uk/assets/decc/Consultations/emr/1043-emr-analysis-policy-options.pdf, Chapter 3.

entrants to the market will need to be encouraged in order for this to be possible. Gas generation remains the lowest cost and lowest risk investment under the current market structure, and change will be needed to bring forward investment in renewables, nuclear and CCS at the right speed and scale and to enable a cost effective roll-out of these technologies.

2.5 To address these challenges, the Government has published a consultation on Electricity Market Reform,[11] presenting a review of the way that the market framework affects investment decisions and proposing a new framework to incentivise investment in low carbon generation and the maintenance of secure supplies in a cost effective way while also keeping energy bills affordable. That consultation set out four main proposals to reform the market in order to achieve these aims:

- **Carbon price support:** Greater long-term certainty is needed around the additional cost of running polluting plant. Supporting the carbon price will encourage investment in low carbon technologies. By strengthening the carbon price for electricity generators, it will increase the cost of fossil fuel generation, making lower carbon power more attractive.

- **Feed-in tariffs:** Long-term contracts would provide more certainty on the revenues from low carbon generation and make clean energy investment more attractive still. A 'contract for difference' model for low carbon generation is proposed (guaranteeing a certain price to generators for their electricity, and contracting for the Government to meet the difference between this and the current market price), as this should control costs for consumers, provide stable returns for investors and maintain the market incentives to generate when electricity demand is high. However, because of complex design and implementation issues, the Government is also consulting on a premium feed-in tariff (a fixed payment which generators receive on top of the market price) as a credible alternative.

- **Capacity payments:** These are targeted payments to encourage security of supply through the construction of flexible reserve plants or demand reduction measures (for instance, contracting with companies to reduce energy usage at times of high demand – so-called 'negawatts'). Capacity payments will ensure that an adequate safety cushion of capacity remains as the amount of intermittent and inflexible low carbon generation increases.

- **Emissions Performance Standard:** A back-stop to limit how much carbon the most carbon-intensive coal-fired power stations can emit. An Emissions Performance Standard will reinforce the existing requirement that no new coal plant is built without demonstrating CCS technology.

[11] DECC (2010) *Electricity Market Reform: Consultation Document*, www.decc.gov.uk/assets/decc/Consultations/emr/1041-electricity-market-reform-condoc.pdf

2.6 Following that consultation, the Government will publish a White Paper later in 2011 setting out proposals to reform the electricity market.

Towards a new energy infrastructure

2.7 The reforms to the electricity market set out above will be essential to transforming the UK's electricity infrastructure and bringing forward the investment needed in low carbon generation. Ahead of this reform, the Government has already set in place a range of measures to encourage investment in renewables, nuclear power and CCS.

2.8 UK Trade & Investment (UKTI) has developed a framework for inward investment in energy focusing on key low carbon technologies which offer the best short and medium-term opportunities for foreign direct investment into the UK. For key sectors such as offshore wind, onshore wind, nuclear, microgeneration in biomass and photovoltaics, and Carbon Capture and Storage, prospectuses have been set up and UKTI's network is targeting companies operating in these sectors with a view to them investing in the UK.

2.9 The most substantial single measure driving decarbonisation in the power sector is the EU Emissions Trading System (EU ETS). This is an EU-wide 'cap and trade' scheme, under which a single total cap is set for the greenhouse gas emissions of all scheme participants (in relevant sectors, defined by intensity of energy use, and including the vast majority of electricity generation), with that cap decreasing over time. Companies and organisations covered by the system are given or sold allowances that permit emissions up to the total set by the cap, and are able to buy and sell these allowances, effectively creating a market price for carbon and encouraging emission reductions to be made in the most cost effective way.

2.10 In addition, the UK Government has set in place a system of three major financial incentives to support sustainable renewable energy deployment:

- the Renewables Obligation, under which electricity suppliers are required to source a proportion of their energy from renewable generation;[12]
- feed-in tariffs, which provide a financial incentive for the generation of small-scale (less than 5MW) low carbon electricity; and
- the Renewable Heat Incentive, which will support the generation of renewable heat and which will start to be implemented in 2011.

2.11 We will also need low carbon electricity from a new generation of civil nuclear power, built without public subsidy. The Government will support this by creating an enabling framework to facilitate new nuclear development from 2018. This

[12] The future of the Renewables Obligation and how it relates to the proposed system of feed-in-tariffs is being considered as part of the Electricity Market Reform project.

will include setting the arrangements for assessment by the nuclear regulators of the safety, security and environmental impact of new nuclear reactors, putting in place regulation to ensure that operators meet the full costs of decommissioning and their full share of waste management costs, and submitting the National Policy Statement for new nuclear power to Parliament for approval by May 2011.

2.12 Lastly, if the UK's energy supplies are to remain secure and affordable, fossil fuels will remain part of its energy mix for some time to come, with a role to play in balancing the intermittency of high levels of renewable electricity generation.

2.13 In the longer term, for fossil fuels to continue to form a substantial part of the energy mix we will need commercial-scale deployment of CCS technology. CCS has the potential to capture up to 90% of the emissions from coal and gas-fired electricity generation and lock the carbon dioxide away securely in underground geological formations. The Government has already announced up to £1 billion of funding for the UK's first commercial-scale demonstration of this new technology on coal. The Government will complete a process to identify further CCS projects to be supported by public investment by May 2012, and has made subsequent demonstrations eligible to CCS projects on gas.

Reform of the electricity grid

2.14 Delivering the level of change needed in the UK's energy generation and use will require major changes to the way in which we transport energy around the country. The electricity grid allows us to transport power from where it is generated to the end user, via a transmission network that moves electricity over long distances at high voltages and a number of lower voltage regional distribution networks that feed electricity into homes and businesses. It is a fundamental asset and vital to the UK's economic and national security.

2.15 The Government is working to ensure that the right framework is in place for the investment that will be needed in our grid infrastructure, including work to connect new forms of electricity generation, so that the grid has the capacity and capability to deal with energy demand and with changes to the way we generate energy (such as more widely geographically distributed generation) as new and more diverse sources of energy are connected.

2.16 The Government is facilitating this transformation by:

- ensuring that the planning regime for major national infrastructure, including the National Policy Statements that will be submitted to Parliament for approval by May 2011, is designed both to support the development of electricity networks and to minimise unnecessary barriers and potential delays in connecting up the new energy infrastructure;

- creating a new 'connect and manage' regime, which was announced in July 2010 to accelerate grid connection time. All arrangements to ensure effective operation and communication are in place;

- ensuring that the competitive offshore transmission regime maximises the opportunity for strategic transmission infrastructure development; and

- paving the way towards a 'smarter' electricity grid in the UK, which will increase the efficiency and reliability of the network, enable flexible demand management and the use of electric vehicles, and support integration of more local and wind-powered generation.

Planning reform

2.17 Reform of the planning system will be vital for delivery of infrastructure. For major infrastructure, the Government proposes to replace the Infrastructure Planning Commission (IPC) with a Major Infrastructure Planning Unit within the Planning Inspectorate, restoring the responsibility for taking decisions to government Ministers while retaining the IPC's fast-track process for examining major infrastructure projects.

2.18 For projects that fall below the threshold for major infrastructure,[13] the Localism Bill introduced a number of measures to reform the planning system and put power back into the hands of communities. The Government has also announced its intention to publish a National Planning Policy Framework, which will set out the national economic, environmental and social priorities for planning, including on climate change. The important role played by planning in meeting the challenge of climate change will be reflected in the Framework and we will make it clear that planning has a big part to play – both in cutting emissions and in adaptation. Alongside these planning reforms, the Government has committed to allowing communities that host renewable energy projects to keep the additional business rates they generate. This will be taken forward through the Local Government Resource Review.

Construction of CCPilot100+ post-combustion capture project at Ferrybridge, Yorkshire

[13] Set out in the Planning Act 2008.

Actions

Start date	End date	Description	Department responsible
Started	Mar 2011	Consult on electricity market reforms, potentially including the following proposals; a) Support for a carbon price to ensure that energy prices reflect their carbon content and encourage investment in low carbon generation; b) A mechanism to reduce revenue uncertainty for low carbon generation, e.g. by establishing a full system of Feed in Tariffs; c) Introducing a new capacity mechanism, improving security of supply by incentivising or requiring sufficient capacity in the energy system; An Emissions Performance Standard that will prevent new coal power stations being built unless equipped with CCS	DECC
Started	Apr 2011	Legislate in Finance Bill 11 (reforms to the Climate Change Levy) to introduce a carbon price floor mechanism in 2013	HMT
Started	Apr 2011	Work with HMT on the reform of the Climate Change Levy to help support the carbon price, with legislation brought forward by HMT in the Finance Bill 2011 as appropriate	DECC
Started	Apr 2011	Work with the Department for Communities and Local Government to allow communities that host renewable energy projects to keep the additional business rates they generate	DECC
Started	May 2011	Establish the governance arrangements and design the business and operating model of the new [Green Investment Bank]* institution	BIS
Started	May 2011	Submit National Policy Statements (making the case for new energy infrastructure) to Parliament for ratification	DECC
Started	May 2011	Review the role of Ofgem in delivering Government's aims for independent regulation of the energy sector	DECC
Started	Jun 2011	Energy National Policy Statements designated, working with the Department of Energy and Climate Change	DCLG**
Started	Jun 2011	Set arrangements for the independent assessment of the safety, security and environmental impact of new reactor designs	DECC
Started	Jun 2011	Develop regulations for new Renewable Heat Incentive scheme to provide financial support for renewable heat, and lay before Parliament	DECC
Started	Jul 2011	Work with CLG to deliver the local government resource review, including exploring options for local authorities to retain locally collected business rate revenues	HMT

* Where actions have been previously published in Departmental Business Plans in November 2010, the description wording and dates have not been changed. Square brackets denote explanatory wording added for clarity, which was not in the original Business Plan text.

** DECC lead.

Start date	End date	Description	Department responsible
Started	Jul 2011	Deliver proposals for long term change to how local authorities are funded through the local government resource review, including local retention of business rates, giving councils greater freedoms, while retaining fairness in the local government finance system	DCLG
Started	Apr 2012	Publish National Planning Policy Framework	DCLG
Started	Apr 2012	Introduce as part of the national planning framework a strong presumption in favour of sustainable development	DCLG
Started	May 2012	Run process to identify further CCS projects to be supported by public investment	DECC
Started	Apr 2013	Conduct four-yearly review of Renewables Obligation (RO) Banding (levels of financial support for different technologies) to ensure that the RO provides the correct level of support to maintain investment in large-scale renewable energy generation	DECC
Apr 2011	Apr 2011	Complete Order and Regulations for financing of waste and decommissioning associated with new nuclear build	DECC
Apr 2011	Apr 2011	Publish final statutory Funded Decommissioning Plan guidance and a final Waste Transfer Pricing Methodology for the transfer to government of new-build operators' spent fuel and Intermediate Level Waste for final disposal	DECC
Apr 2011	Jul 2011	Respond to Committee on Climate Change recommendations on the role of renewables beyond 2020 and potential pathways to 2030	DECC
May 2011	May 2011	Publish White Paper setting out reforms to the electricity market	DECC
May 2011	May 2011	Design National Policy Statements with clear and effective guidance on onshore grid infrastructure to enable network development to take place in an environmentally sustainable and timely manner	DECC
May 2011	May 2011	Submit energy National Policy Statements (making the case for new energy infrastructure) to Parliament for ratification	DECC
Jun 2011	Jun 2011	Implement the Renewable Heat Incentive Scheme	DECC
Dec 2011	Dec 2011	Award contract for first [UK Carbon Capture and Storage]* demonstration project	DECC
Apr 2012	Apr 2012	Transfer relevant functions from the IPC [Infrastructure Planning Commission]* into the Major Infrastructure Planning Unit	DCLG
Apr 2012	Apr 2013	Undertake first major review of Feed-in Tariffs for small scale renewable energy, consult and implement changes	DECC
Dec 2012	Dec 2012	Publish proposals for tackling the regulatory, legal, planning and technical barriers to co-ordinated offshore grid development in the North and Irish seas	DECC

* See first note on page 21.

CHAPTER 3:
SAVING ENERGY IN HOMES AND COMMUNITIES

3.1 The UK's 26 million homes are responsible for 14% of its greenhouse gas emissions.[14] The majority of these emissions are as a result of burning fossil fuels. In particular, gas use dominates domestic sector energy consumption, making up 81% of consumption for heat purposes and 68% of overall domestic consumption.[15]

3.2 In seeking to reduce these emissions, the Government will focus its effort on two key priorities, which together are likely to have the greatest impact:

- increasing the energy efficiency of our housing stock. This includes ensuring that new-build houses are as energy efficient as possible, with a move to zero carbon homes from 2016 (and zero carbon non-domestic buildings from 2019) but we will make the most difference most quickly through efforts to retrofit existing housing, prioritising the most cost effective measures such as cavity wall and loft insulation; and

- helping people make the choice to move away from a reliance on fossil fuel-based space and water heating and towards low carbon alternatives. These include air and ground source heat pumps at domestic level, and Combined Heat and Power or a form of network heating in those communities where it makes sense.

3.3 Other measures will also play an important part, such as helping people understand more about the source and impact of the energy they are using and the emissions it creates, engaging and enabling people and communities to make choices to use less energy. But it is the two areas outlined in paragraph 3.2 that are the most significant – and the most urgent.

3.4 There will be no one-size-fits-all solution to reducing greenhouse gas emissions from our homes. For instance, while most homes in the UK rely on gas boilers for their heating and hot water, there are also around 4.8 million homes that are not connected to the gas grid and that use other options, such as heating oil or electric heaters.[16] While a rural farmhouse may benefit from improved loft insulation and installation of a ground source heat pump, a modern tower block might be able to reduce its emissions more cost effectively by fitting cavity wall insulation throughout and being connected to a form of network heating for all the flats in the block, even where this still relies on (more efficient) fossil fuel supply. Or, better still, the tower block could be connected to a source of heat from a local power station or a large source of renewable heat such as a biomass boiler. The Government's aim is to set the right legal and financial framework and provide the right information to help reduce greenhouse gas emissions from

[14] The 2009 final UK greenhouse gas emissions figures, available at: www.decc.gov.uk/en/content/cms/statistics/climate_change/gg_emissions/uk_emissions/2009_final/2009_final.aspx

[15] DECC (2010) *Estimates of Heat Use in the United Kingdom*, www.decc.gov.uk/assets/decc/statistics/publications/trends/articles_issue/562-trendssep10-heat-use-article.pdf

[16] Department of Energy and Climate Change analysis.

our homes, and help people benefit from reduced energy bills as a result.

More efficient homes – saving energy through the Green Deal

3.5 From 2012, the Government will set in place the Green Deal, which will enable households (and businesses – see chapter 4) to invest, at no upfront cost, in home energy efficiency improvements that are expected to pay for themselves through energy bill savings.

3.6 A new Energy Company Obligation will support delivery at scale of cost effective measures that require additional assistance to be taken up through the Green Deal, such as solid wall insulation. This will drive down costs but also promote investment and innovation within the energy efficiency industry. Additionally the Energy Company Obligation will provide extra support for low income vulnerable households. This will enable people who might face more challenges to take advantage of the Green Deal.

3.7 To ensure that consumers can feel confident in the firms that will install these efficiency measures, the Government will establish an installer certification framework, ensuring that installers operate to high technical and customer service standards. We will also ensure that the products installed meet specified standards and that advice services are in place to give consumers more information about steps they can take to improve the sustainability of their home more broadly.

Making the move to low carbon heat

3.8 The way in which we heat and cool our homes will need to change significantly if we are to meet our carbon reduction and renewables targets. We will need a gradual shift away from fossil fuel-based options such as heating oil and gas boilers and towards low carbon alternatives such as air and ground source heat pumps, solar thermal heating, biomass boilers and use of 'wasted' heat from industrial and commercial processes.

3.9 To help support this change, the Government is setting in place a Renewable Heat Incentive scheme, to provide support to homes and businesses choosing to install renewable heat technologies. This scheme will act to drive down the emissions that result from heating our homes and will also play an important part in meeting the UK's EU target to source 15% of its energy from renewable sources by 2020.

Building new homes to high environmental standards

3.10 Around a third of homes that will be in use by 2050 are yet to be built. The Government is committed to ensuring that new-build homes are zero carbon

from 2016 and do not add extra carbon dioxide emissions to the atmosphere, while ensuring that the costs of building new homes do not prevent suitable and sustainable development.

3.11 The Government is committed to successive improvements in national new-build standards through changes to Part L of The Building Regulations 2010 (conservation of fuel and power). In October 2010 the new regulations introduced a 25% improvement on 2006 carbon emissions standards. The next review will look at strengthening standards again in 2013 in line with developing policy for zero carbon, and consider provisions for the existing stock in the light of the Government's emerging policies on retrofit, including the Green Deal.

3.12 The Government wants to support and enable communities in their wish to adopt higher environmental standards for new homes including through:

- ensuring that there are robust sustainability standards for local authorities to use if they want to set higher standards than those in the national regulations in their local plans. For example, the Code for Sustainable Homes provides standards for the sustainable design and construction of new homes (including water efficiency) that meet or exceed those set out in The Building Regulations 2010; and
- supporting eco-towns and eco-developments where there is local support and a wish to adopt higher standards of sustainability and design.

Box 3.1: Vanguard Areas

The Big Society is already happening in many local communities – for example, in the 'vanguard' areas announced by the Prime Minister in July 2010. The Department for Communities and Local Government is working with the vanguard areas to help them overcome the barriers they experience. This includes barriers to taking action to reduce greenhouse gas emissions, including with the London Borough of Sutton on sustainable energy, and with Eden Valley, Cumbria on the development of a groundbreaking community hydro scheme and anaerobic digestion.

Changing consumer behaviour

3.13 The Government understands that reducing energy use and emissions in the residential sector will only be possible by developing solutions that address the barriers to action – whether through the provision of better information or removing the hassle associated with action – enabling people to take decisions that save money and reduce emissions.

3.14 The Government's smart meters programme, involving the installation of around 50 million smart gas and electricity meters,[17] will provide consumers with real-time information about energy use, enabling them to monitor and manage their

[17] DECC and Ofgem (2010) *Smart Metering Implementation Programme: Prospectus*, www.decc.gov.uk/en/content/cms/consultations/smart_mtr_imp/smart_mtr_imp.aspx

energy consumption, and can pave the way for a transformation in the way in which energy is supplied and used. Consumers will receive accurate bills; switching between suppliers will be smoother and faster; and improvements in the delivery of energy efficiency advice, including the purchasing and end use of energy efficient products, will be supported.

3.15 Energy suppliers will be able to offer a wider range of services and tariffs to manage their customer relationships better. Smart meters will also be an important step towards the development of a smart grid, delivering improved network efficiency and responsiveness. The Government will also examine the operation of the energy performance of buildings regimes and make resulting enhancements to the Energy Performance Certificate (EPC) so that they become the basis for advising households on Green Deal measures and payback periods.

Smart meter display in kitchen

Actions

Start date	End date	Description	Department responsible
Started	Mar 2011	Examine the operation of the energy performance of buildings regime to ensure it is capable of supporting Green Deal delivery	DECC/DCLG
Started	Apr 2011	Analyse consultation responses and develop plan for subsequent phases of the [Smart Meters]* programme	DECC
Started	Jun 2011	Work with potential providers to facilitate early precursor offers to the Green Deal	DECC
Started	Sep 2011	Develop accreditation process to ensure public confidence in Green Deal measures	DECC
Started	Jan 2012	As part of broader sustainability information available under the Green Deal, develop advice on water efficiency	Defra
Started	Apr 2012	Improve the Content, format and quality of Energy Performance Certificates (EPCs) to support the Green Deal, and ensure requirements are complied with	DCLG/DECC
Started	Jul 2012	Subject to consultation, work with industry to confirm technical specifications and begin roll out of smart meters across Britain	DECC
Started	Oct 2012	Develop policies to increase demand for the Green Deal, alongside core finance offer	DECC
Started	Oct 2012	Enable the Green Deal by developing proposals for reviewing take-up and possible regulation of the private rented sector, providing access to Energy Performance Certificate data and linking the EPC to Green Deal legislation	DCLG/DECC
Started	Oct 2012	Encourage local authorities to become involved in delivering energy efficiency in their areas and social landlords to take action to improve the energy performance of their stock, using the Carbon Emissions Reduction Targets and the Green Deal to augment Decent Homes funding where appropriate, to stimulate the Green Deal and provide greater certainty to suppliers	DCLG/DECC
Apr 2011	Apr 2011	Subject to consultation, publish detailed implementation plan leading to full roll out [of Smart Meters],* beginning in summer 2012	DECC
Oct 2011	Jan 2012	Consult on secondary legislation to enable the Green Deal, including the new obligation on energy companies	DECC
Dec 2011	Mar 2012	Consult on revisions to Part L 2013 [conservation of fuel and power]* of the Building Regulations	DCLG
Jan 2012	Jan 2012	Lay secondary legislation [to enable Green Deal]* before Parliament	DECC
2016	Ongoing	Introduction of zero carbon build standard for new homes	DCLG

* See first note on page 21.

CHAPTER 4:
REDUCING EMISSIONS FROM BUSINESS AND INDUSTRY

4.1 Around 17% of the UK's greenhouse gas emissions come from our businesses and industrial processes.[18] These emissions are produced in different ways, including from industrial processes or from heating – and cooling – office buildings. In addition to heat-related emissions, greenhouse gas emissions are produced by chemical reactions in industrial processes, or from leaks of fluorinated gases from equipment like refrigerators and air conditioners. Making these processes greener and more efficient will be an important part of the move towards a low carbon future.

Helping businesses increase their energy efficiency

4.2 The energy used in our businesses and in industrial processes will always be an important part of our economy. The Government is committed to improving energy efficiency to help deliver the UK's climate objectives at the lowest cost. The Government will focus its support where there is a need to help business overcome barriers to investing in energy and carbon saving. By improving resource efficiency, using less energy and water and minimising waste, UK businesses could save around £6.4 billion per year – 1.9% of UK gross operating surplus (profit).[19]

4.3 The Government will work to take account of the nature of the commercial property sector (e.g. addressing the differences between domestic and commercial energy supply contracts) to ensure that businesses can benefit from the business element of the Green Deal, which will enable them to access the benefits of savings on their energy bills without the need to provide upfront finance (see chapter 3).

4.4 The Government will also ensure that energy efficiency savings are achieved in large organisations that participate in the Carbon Reduction Commitment Energy Efficiency Scheme, through using the financial and reputational drivers of the scheme. The energy reporting required by the scheme ensures that organisations are aware of their energy use, and that senior management is responsible for this reporting. The Government is currently discussing options with participants for simplifying the scheme, to deliver improvements most effectively with minimal burden on business.

4.5 More effort is also needed to reduce the emissions of new business buildings. Around 40% of the non-domestic floor space that will exist in 2050 is yet to be built.[20] The Government is committed to reducing carbon emissions from new buildings through successive changes to The Building Regulations and to enabling new non-domestic buildings to be zero carbon from 2019. The next review of

[18] The 2009 final UK greenhouse gas emissions figures, available at: www.decc.gov.uk/en/content/cms/statistics/climate_change/gg_emissions/uk_emissions/2009_final/2009_final.aspx

[19] Oakdene Hollins and Grant Thornton (2007) *Quantification of the Business Benefits of Resource Efficiency: A Research Report Completed for the Department for Environment, Food and Rural Affairs,* http://randd.defra.gov.uk/Document.aspx?Document=EV02036_6754_FRP.pdf

[20] Carbon Trust (2009) *Building the Future, Today*.

the regulations will look at strengthening standards in support of developing policy for zero carbon and will consider provisions for the existing stock in the light of the Government's emerging policies on retrofit, including the Green Deal.

Helping businesses reduce their emissions

4.6 Government will work with business to reduce emissions through mechanisms including:

- the EU Emissions Trading System (see chapter 2), which will be responsible for the greatest reduction in emissions from both the power and business sectors;
- the EU regulatory framework on fluorinated greenhouse gases (F gases), which has been fully implemented in the UK;[21]
- Voluntary Business Energy Efficiency Agreements with energy suppliers to provide energy efficiency advice, energy audits and services;
- Carbon Trust advice on energy efficiency to businesses and public sector organisations;
- the Enhanced Capital Allowance (ECA) scheme for energy efficiency, which enables businesses to claim 100% of the tax-deductable allowance in the first year on their spending on plant and machinery from a designated list of more energy efficient products. A parallel ECA scheme promotes water efficiency in the non-domestic sector, which is important because the UK water system accounts for about 6% of UK greenhouse gas emissions;[22] and
- the Waste and Resources Action Programme (WRAP), which provides technical support to businesses and advice to consumers to help promote resource efficiency, increasing business and investor confidence in the transition to a low carbon economy.

4.7 Having the right information will be key. Energy Performance Certificates and Display Energy Certificates (DECs) provide businesses with information on the energy performance of buildings and their energy consumption. The Government is currently developing options for extending DECs to commercial buildings and working with industry on their take-up.

4.8 Smart meters can also facilitate improved energy efficiency for business. Advanced metering with some smart functionality is already used in the non-domestic sector, particularly at larger sites. Under the Government's smart metering proposals, new metering will be installed at the remaining 2.2 million smaller electricity

[21] The framework seeks to minimise leaks from certain types of equipment using F gases, the most common being refrigeration and air conditioning units.

[22] www.energysavingtrust.org.uk/Water/Water-and-energy

sites and up to 1.5 million smaller gas sites on the same timetable as that set for a domestic smart meter roll-out (see chapter 3).[23]

4.9 The Government will continue to encourage companies to measure and report their greenhouse gas emissions, as there is evidence showing the benefits to companies and to other stakeholders from public disclosure of emissions data.[24] The Climate Change Act 2008 requires the Government to make regulations by April 2012 requiring company directors' reports to include information about greenhouse gas emissions (or to explain to Parliament why such regulations have not been made). The Government will be announcing a way forward on this matter in the first quarter of 2011.

4.10 Investors and business will be the engine of the transition and it is important that they appreciate and capitalise on the opportunities and challenges that this presents. This year the Government will publish a roadmap to a green economy, which will seek to create more transparency, certainty and longevity for business and investors to give them the confidence that they need to drive the transition. Innovation will be important in a range of low carbon sectors, including hydrogen energy, wave and tidal, nuclear, automotive and Ultra-Low Emission Vehicles, and the built environment. Government supports innovation and particularly low carbon innovation through sponsorship of the UK Research Councils, Technology Strategy Board and Energy Technologies Institute. Through these investments we are ensuring that businesses have a strong underpinning of science, research and innovation to develop the low carbon business opportunities of the future.

4.11 Direct emissions from industrial processes contribute 2% to the UK's greenhouse gas emissions.[25] As part of the Energy Intensive Industries Strategy, the Government is conducting in-depth analysis with key energy intensive sectors into the cumulative effect of various energy and climate change measures and the abatement potential in the short, medium and long term, as well as the barriers that businesses face in realising this. The strategy will use this evidence, together with a review of the existing policy measures that impact on these sectors, to develop policy recommendations for maximising abatement potential while ensuring future competitiveness.

[23] DECC (2010) *GB Wide Advanced/Smart Meter Roll Out to Small and Medium Non-Domestic Sites: Impact Assessment*, www.decc.gov.uk/assets/decc/Consultations/smart-meter-imp-prospectus/222-ia-smart-roll-out-non-domestic.pdf

[24] Defra (2010) *The Contribution that Reporting of Greenhouse Gas Emissions Makes to the UK Meeting its Climate Change Objectives: A Review of the Current Evidence*, www.defra.gov.uk/environment/business/reporting/pdf/corporate-reporting101130.pdf

[25] The 2009 final UK greenhouse gas emissions figures, available at: www.decc.gov.uk/en/content/cms/statistics/climate_change/gg_emissions/uk_emissions/2009_final/2009_final.aspx

Box 4.1: GrowHow – increasing energy efficiency

GrowHow is the UK's only manufacturer of ammonium nitrate fertiliser which, as the main synthetic fertiliser currently used in England, is essential to maintaining levels of food production. The production of ammonia and nitric acid, the constituents of fertilizer, is both energy and carbon intensive and, as a result, GrowHow is the UK's largest industrial consumer of natural gas. GrowHow is investing £35 million, voluntarily and ahead of legal obligations, to increase energy efficiency and reduce greenhouse gas emissions (GrowHow already supplies surplus carbon dioxide to a greenhouse complex next to their Billingham site) in the run-up to 2013, including a current £9 million project on nitrous oxide abatement.

Green Investment Bank

4.12 The Government is establishing a Green Investment Bank to provide funding for investments in infrastructure projects that support economic growth and our environmental objectives in areas where private sector investment is currently constrained. The Government will publish further details on its proposals for the governance arrangements and design of the business and operating model of the new institution by May 2011.

4.13 The Green Investment Bank will tackle risk that the market currently cannot adequately finance and will look to catalyse further private sector investment and facilitate the entrance of new types of investor into green infrastructure, so that the impact on the finance gap for low carbon investment is many times the scale of the public contribution.

4.14 The Green Investment Bank will be capitalised initially with £1 billion of funding allocated from departmental budgets together with additional significant proceeds from the sale of government-owned assets, subject to a final design that meets the tests of effectiveness, affordability and transparency. The institution will be able to reinvest the proceeds from its investments.

Action

Start date	End date	Description	Department responsible
Started	Mar 2011	Consultation on and implementation of first stage of simplification of Carbon Reduction Commitment Energy Efficiency scheme. Informal dialogue on wider simplification continues	DECC
Started	Sep 2011	Develop accreditation process to ensure public confidence in non-domestic Green Deal measures	DECC
Started	Dec 2011	Put staff and back office systems in place [for the Green Investment Bank]*, in preparation for the launch of the incubation phase	BIS
Started	Jan 2012	Develop advice on water efficiency as part of broader sustainability information available under the Green Deal	Defra
Started	Oct 2012	Extend Display Energy Certificates to commercial buildings	DCLG/DECC
Started	Oct 2012	Develop policies to enable application of Green Deal to the commercial sector, alongside household offer	DECC
Apr 2011	Apr 2011	Publish report outlining abatement potential, barriers and opportunities for key energy intensive sectors	BIS/DECC
Apr 2011	Apr 2011	Provide certainty and clarity for business and investors by launching a roadmap to a green economy with BIS and DECC, including by using insights from behavioural science	Defra
Apr 2011	May 2011	Publish a Natural Environment White Paper setting out measures to: protect wildlife, promote green spaces and wildlife corridors; value natural capital, complementing national accounts; and produce an analysis of the state of the UK's natural asset base (the National Ecosystems Assessment)	Defra
May 2011	May 2011	Design of Green Investment Bank complete and published	BIS
May 2011	Dec 2011	Continue market testing for the role of the Green Investment Bank beyond the incubation phase	BIS
Oct 2011	Jan 2012	Consult on secondary legislation to enable the Green Deal, including the new obligation on energy companies	DECC
Dec 2011	Mar 2012	Consult on revisions to Part L 2013 [conservation of fuel and power]* of the Building Regulations	DCLG
Jan 2012	Jan 2012	Lay secondary legislation [to enable Green Deal]* before Parliament	DECC
Sep 2012	Sep 2012	Green Investment Bank operational	BIS
May 2013	May 2013	First annual data released on the funds in and size of investments made by the Green Investment Bank	BIS
2019	Ongoing	Enable all new non domestic buildings to be zero carbon	DCLG

* See first note on page 21.

CHAPTER 5:
TOWARDS LOW CARBON TRANSPORT

5.1 Transport is an engine for economic growth, moving goods and workers around the country, allowing people to access employment, services, friends and family, leisure activities and their wider communities. But it is also a major source of greenhouse gas emissions. Domestic transport accounts for 22% of UK greenhouse gas emissions.[26] The vast majority of this came from road transport, which accounts for 20% of UK greenhouse gas emissions.

5.2 If we are to tackle greenhouse gas emissions and other harmful emissions from transport, it is therefore imperative that we develop and improve vehicle technologies that allow us to use less fuel or lower carbon fuels. The Government will work hard to support both the development and introduction of new vehicle and fuel technologies such as electric and other Ultra-Low Emission Vehicles (ULEVs), and ongoing improvements in the fuel efficiency of all modes of transport.

5.3 This must be the greatest priority, but other changes will play an important part as well. The Government will work to support sustainable travel choices and alternatives to travel, and to promote sustainable distribution of goods and sustainable low carbon approaches to other forms of transport, including rail, aviation and shipping.

Supporting new low emission vehicle technologies

5.4 The Government is convinced that the introduction of ULEVs will play an important role in decarbonising transport. The Spending Review confirmed provision of over £400 million to support the development of the ULEVs market. A consumer incentive (the Plug-in Car Grant) will be available to facilitate the purchase of ULEVs while the market is in its infancy. This will help to create a more level playing field between new and existing vehicle technologies, until market scale drives purchase costs of newer technologies down to a more competitive level.

[26] The 2009 final UK greenhouse gas emissions figures, available at: www.decc.gov.uk/en/content/cms/statistics/climate_change/gg_emissions/uk_emissions/2009_final/2009_final.aspx. UK domestic emissions only. Including international shipping and aviation, the total is 27%, with 19% representing road transport.

Box 5.1: Supporting the take-up of ultra-low emission cars

The Government announced the first nine electric and ultra-low emission cars eligible for the grant of up to £5,000 from 1 January 2011, as well as confirming a total of eight Plugged-in Places projects around the country. These projects have successfully bid for a share of a £30 million fund aimed at encouraging a new network of electric vehicle recharging points in streets, homes and sites such as car parks and commercial retail and leisure facilities. The first nine cars to become eligible for the grant are: the Mitsubishi i-MiEV; the Smart Fortwo electric drive; the Peugeot iOn; the Nissan Leaf; the Tata Indica Vista; the Citroën CZero; the Vauxhall Ampera; the Toyota Prius Plug-in Hybrid; and the Chevrolet Volt.

The successful Plugged-in Places consortia are based in: the Midlands; Greater Manchester; East of England; Scotland; Northern Ireland; London; Milton Keynes; and the North East.

5.5 In addition to the environmental and energy security benefits of ULEVs, there are opportunities for the continued development of the UK's automotive industry. The automotive sector is of significant importance to the UK economy, supporting research and development, technological innovation, skills and a supply chain that is a mainstay of the wider manufacturing sector.

5.6 The Government has made provision of around £80 million to support a programme of research and development. This includes supporting the Technology Strategy Board's Low Carbon Vehicles Innovation Platform, which invests jointly with industry in research and development to help UK-based businesses maximise the economic benefits associated with a rapidly developing ULEV market. As part of this funding, the Government has contributed to a total award of £24 million for six projects to help develop the UK's low emission vehicle capability. The projects include the development of new engines for plug-in hybrid cars to improve vehicle performance, and materials that reduce vehicle weight.

5.7 A new wave of low carbon public transport will be encouraged by the Green Bus Fund, which will incentivise bus operators and local authorities to buy new hybrid and electric vehicles, with around 170 vehicles expected to be purchased by March 2012.

5.8 The encouragement of a growing ULEV market in the UK can provide manufacturers and the associated supply chain with the incentives to invest in the high-tech manufacturing technologies demanded by the market, including range extender engines, batteries for automotive use (e.g. Nissan's planned battery plant in Sunderland), electric motors, mechanical storage (flywheels) and fuel cells.

5.9 However, if we are to see large-scale take-up of electric vehicles as a major form of road transport, developing charging infrastructure will also be vital and the Government has committed to mandating a national recharging network. By June 2011, the Government will produce a strategy setting out how it will promote

the provision of nationwide recharging infrastructure. Grant funding of £30 million will support eight towns and cities to roll out charging infrastructure at specific sites across the UK. This will see up to 8,500 charging points installed across the UK by March 2013. The Government will also work with the EU to ensure the early adoption of new common standards for charging infrastructure.

5.10 Alongside supporting the introduction of ULEVs in the UK, the Government will continue to push at EU level for ambitious but realistic vehicle emission standards for carbon dioxide. In 2009 the EU introduced a regulation setting mandatory new car carbon dioxide targets, which introduced an EU-wide target of 130g/km.[27] Similar regulation is currently being agreed by the EU for vans.[28] The UK welcomes in principle the agreement that has now been reached on the new van carbon dioxide regulation, which is expected to be ratified by the European Parliament and the Council in early 2011.

High speed rail and electrification

5.11 While decarbonising road transport is likely to have the most significant greenhouse gas impact, and so be our greatest priority for change, it will also be important that people have viable, low carbon alternatives, including rail.

5.12 High speed rail could potentially treble the maximum capacity on the crowded London to Birmingham rail corridor and will help to support economic growth and a low carbon economy. The Government believes that high speed rail is best placed to provide significant and sustainable additional capacity to meet increasing demand for travel between the UK's largest and most productive conurbations over the next 20–30 years. It would also comprise a step-change improvement in journey times and connectivity.

5.13 The Government supports a Y-shaped network, linking London and Birmingham (2026), with the Manchester and Leeds legs following in the mid-2030s. The network will include direct links with High Speed 1 (the line from London St Pancras to the Channel Tunnel) and Heathrow. The Government will now consult on this strategy before confirming its decisions later this year.

5.14 High Speed Two (HS2) Ltd's report[29] found that, even allowing for the substantial additional demand accommodated by HS2 on the congested West Coast corridor, there would be no significant change to overall transport carbon emissions. The

[27] Sales-weighted average emission targets of 130g/km from 2012, with full compliance by 2015. This represents an 18% reduction on 2007 levels. A further provisional target of an average of 95g/km for all new cars has also been set for 2020, representing a 40% reduction on 2007 levels. The European Commission's review of the 95g/km target for new cars by 2020 is due to be complete by 1 January 2013.

[28] This regulation is due for formal ratification by the European Parliament and Council in early 2011 and it appears likely to introduce average targets for new vans of 175g/km from 2014, with full compliance in 2017 (a 14% reduction on 2007 levels) and 147g/km by 2020 (a 28% reduction on 2007 levels).

[29] High Speed Two Limited (2010) *High Speed Rail London to the West Midlands and Beyond: A Report to Government by High Speed Two Limited*, www.dft.gov.uk/pgr/rail/pi/highspeedrail/hs2ltd/hs2report/

wider Y-shaped high speed network to the north of the country could also provide an attractive alternative for many journeys that would otherwise be made by short-haul aviation.

5.15 The Government supports further electrification of the rail network. Electric trains are cleaner, quieter and more reliable than diesels, as well as providing more seats. They are also cheaper to buy, operate and maintain. By 2016, electrification of the lines between London and Reading, Didcot, Newbury and Oxford (on the Great Western Main Line) and of those between Liverpool, Manchester, Preston and Blackpool (in the North West) will allow the current diesel trains to be replaced with electric trains.

5.16 The Great Western electrification is expected to cost up to £600 million, and the package of electrification in the North West will cost up to £300 million.[30] The extent of further electrification for intercity services on the Great Western Main Line is dependent on the intercity train option chosen. The Government will continue to consider the case for further electrification schemes, including on the Midland Main Line.

5.17 Alongside electrification, the Government will continue to work with the rail industry to improve the energy efficiency of new and existing trains and the efficiency of the railway as a system, for example through better traffic management and by reducing electrical losses.

Sustainable aviation and shipping

5.18 Over time, as other parts of the economy – including road transport – reduce their carbon emissions, aviation and shipping are likely to become proportionately more significant as sources of greenhouse gas emissions. The Government believes that a global deal, rather than national solutions, is the most effective way to tackle emissions from these sectors given their international nature. However, it also recognises the value of regional measures until a global solution is in place. International aviation and shipping emissions are not, at present, included within the scope of the 2050 reduction target required by the Climate Change Act 2008, but the legislation obliges the Government to include these emissions within the target before the end of December 2012, or to explain to Parliament why this has not been done.

5.19 The Government will continue its preparatory work to include aviation in the EU Emissions Trading System (EU ETS) in 2012. The aviation EU ETS carbon dioxide cap has been set so that net aviation emissions cannot increase beyond 97% of average 2004–06 levels in 2012 or beyond 95% of average 2004–06 levels from 2013 to 2020. Growth in aircraft emissions above these levels will only be possible if operators purchase allowances from other sectors within the EU ETS or the wider market.

[30] Figures reflect the capital costs of electrification, which will be funded by Network Rail and supported by the Government.

5.20 Internationally, the UK is participating in work at a global level to agree a carbon dioxide standard for aircraft, and at European level the UK is actively involved in making air traffic management operations more efficient through the Single European Sky programme.

5.21 The Government has cancelled plans for a third runway at Heathrow and set a commitment to refuse permission for additional runways at Gatwick and Stansted. The June 2010 Budget included a commitment by HM Treasury to explore changes to the aviation tax system.

5.22 The Government has made clear its intention to create a sustainable framework for aviation in the UK, which supports economic growth and addresses aviation's environmental impacts. The Government will issue a scoping document in March 2011, setting out the questions it is seeking to answer, with a view to publishing a draft policy framework for consultation in March 2012, followed by formal adoption of the framework in March 2013.

5.23 At the same time as pursuing measures to constrain emissions from aviation, the Government will continue to pursue global action on shipping through the International Maritime Organization (IMO), which is considering a range of mechanisms to reduce international shipping emissions. The European Commission also intends to bring forward a proposal to address international shipping emissions at a regional level if no international measure has been agreed in the IMO, or through the United Nations Framework Convention on Climate Change, by the end of 2011. The UK will work with the Commission and other Member States to develop a proposal for effective regional action.

Promoting the use of sustainable biofuels

5.24 Up to now most transport biofuels have been developed for use in road transport and in the longer term they could also play a significant role in reducing carbon dixoxide emissions from aviation. To inform decision making, the Government is currently working on a number of projects to analyse the availability and costs of different sustainable biofuels for use in aviation. Such information will be needed to decide on the most appropriate use, across different transport modes, of limited resources. The Government will consider the future potential use of biofuels in aviation and road transport in drawing up plans, later this year, for reducing carbon emissions in the decade beyond 2020.

5.25 The European Renewable Energy Directive (RED) requires the UK to source 10% of transport energy from renewable sources by 2020. Biofuels are expected to form the major contribution to this target, although electric vehicles and rail will also play a part. The Fuel Quality Directive (FQD) requires the UK to deliver a 6% reduction in lifecycle greenhouse gas emissions from

our fuels by 2020. The RED and the FQD contain mandatory sustainability criteria for biofuels; these include that biofuels must deliver greenhouse gas savings of at least 35% when compared with fossil fuels, and that they must not be sourced from areas of high biodiversity or from high carbon soils (such as rainforests or wetlands). The Government remains concerned about the potential Indirect Land Use Change (ILUC) impacts of biofuels and has called on the European Commission to come forward with proposals to address ILUC within the RED and the FQD. The European Commission is now undertaking further assessment of whether and how to address ILUC in European legislation, which will conclude by July 2011.

5.26 The Renewable Transport Fuel Obligation[31] (RTFO) currently obligates fossil fuel suppliers who supply at least 450,000 litres a year to supply a specified percentage of their fuels for road transport in the UK from renewable sources. The RTFO provides a mechanism which allows obligated suppliers to meet their obligations in the most cost effective way, ensuring that the UK can meet these targets in a low cost manner. The Government will shortly be consulting on amendments to the RTFO to meet the requirements of the RED and the FQD.

Changing behaviour to reduce emissions

5.27 Changes to the way in which transport is fuelled are likely to be the most significant contributor to reducing greenhouse gas emissions from transport. But a significant impact can also come from changing the way we manage our supply chains and the way we travel, and from finding alternatives to needing to travel at all.

5.28 The Government's Local Transport White Paper[32] promotes sustainable transport choices at a local level. For instance, funding of £560 million for the Local Sustainable Transport Fund will enable local bodies to deliver sustainable transport solutions that support local economies and reduce greenhouse gas emissions. Projects supported by the fund are likely to incorporate a range of sustainable transport measures, including public transport, walking and cycling. The Government has also recently announced plans to work with industry to encourage greater uptake of eco-driving training and fuel efficiency measures for bus, coach and lorry drivers and the wider freight sector, and its intent to review progress made through such industry-led measures and reconsider the case for government intervention in 2012.

5.29 The Government also supports the transfer of freight from road to rail and water, where it is practical and economically and

[31] The RTFO came into effect in April 2008, with an obligation level of 2.5% in the first year. For 2010/11 the obligated level is set at 3.5%, and this increases annually to a level of 5% in 2013/14.

[32] Department for Transport (2011) *Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen*, www.dft.gov.uk/pgr/regional/sustainabletransport

environmentally sustainable to do so. This includes support through grants, such as Mode Shift Revenue Support grants, which are provided to rail and water freight operators to assist with the operating costs of running a rail or water freight service where this is more expensive than road and where there are environmental benefits to be gained. In 2009/10 alone, such support enabled over 800,000 lorry journeys to be removed from Britain's roads, generating carbon dioxide savings of over 130,000 tonnes. We recently confirmed future budgets for operational grants of £20 million for 2011/12 and £19 million for 2012/13. It is currently the Government's intention to provide much the same level of funding in 2013/14 and 2014/15.

5.30 Modern technology can provide fast and effective alternatives to travel, and can also provide greater flexibility, resulting in a number of benefits to staff and businesses – for example improved staff motivation, access to a wider staff pool and access to a wider job market – as well as reduced emissions. Information and communications technology solutions can substitute the need to travel by allowing people to work at home, to attend meetings remotely through video conferencing or to do their shopping online.

Actions

Start date	End date	Description	Department responsible
Started	Mar 2011	Award grants to successful bidders to help [bus operators and local authorities]* buy new low carbon buses	DfT
Started	Mar 2011	Explore the potential to replace Air Passenger Duty with a per-flight duty	HMT
Started	Apr 2011	Consolidate existing support mechanisms for low and ultra-low emission vehicle research and development	DfT
Started	Apr 2011	Reform the way transport projects are assessed and funding prioritisation decisions are made so that the benefits of low carbon proposals are fully recognised: Review and revise DfT guidance on appraising transport projects; Review and revise DfT processes for assessing schemes and supporting Ministerial decisions	DfT
Started	Jun 2011	Develop nationwide strategy to promote the installation of electric vehicle infrastructure, including a decision on whether to use an energy Regulated Asset Base and/or changes to planning/building regulations	DfT
Started	Jan 2012	Implement the inclusion of aviation within the EU Emissions Trading System	DfT
Started	Mar 2012	Review strategy to support transition from early ultra-low emission vehicle market to mass market	DfT
Started	Mar 2012	Push for early EU adoption of electric vehicle infrastructure standards	DfT
Mar 2011	Mar 2011	Publish scoping document for sustainable framework for UK aviation	DfT
Apr 2011	Mar 2013	Release second round funding to successful bidders [for Plugged-in Places pilots programme to encourage the establishment of electric vehicle recharging infrastructure]*	DfT
Jun 2011	Jun 2011	Address the role of Renewable Transport Fuel in the UK Renewables Roadmap	DfT/DECC
Jul 2011	Jul 2011	Release details on the number of low carbon buses ordered via the Green Bus Fund	DfT
Jul 2011	Jul 2011	Publish the Government's response to the Committee on Climate Change recommendations on aviation growth compatible with climate change targets	DfT
Oct 2011	Oct 2011	Release details on the initial tranche of projects to be supported by the Local Sustainable Transport Fund	DfT
Dec 2011	Dec 2011	Complete transposition of GHG Saving requirements of the Fuel Quality Directive	DfT
Dec 2011	Dec 2011	Complete transposition of transport element of the Renewable Energy Directive	DfT
Jan 2012	Jan 2012	Review progress from industry-led schemes to reduce fuel consumption and emissions from the freight sector and re-consider the case for Government intervention	DfT
Mar 2012	Jul 2012	Consult on sustainable aviation framework for UK	DfT
Dec 2012	Dec 2012	Decide on inclusion of international aviation and shipping in UK carbon budgets	DfT
Mar 2013	Mar 2013	Adopt sustainable aviation framework	DfT

*See first note on page 21.

CHAPTER 6:
CUTTING EMISSIONS FROM WASTE

6.1 Around 3% of the UK's total greenhouse gas emissions come from waste.[33] Around 89% of these emissions come from landfill sites where biodegradable wastes decompose to produce methane and carbon dioxide gas. Our near-term priority must be to reduce the amount of waste going to landfill in the first place. In the longer term, generation of energy from waste is likely to become an increasingly important source of low carbon energy.

Transition to a 'zero waste' economy

6.2 Significant progress has been made through instruments such as the landfill tax to halve the amount of waste going to landfill over the last 10 years. Building on this progress, Government is currently reviewing waste policies in England to put us on the path to creating a 'zero waste' economy: not an economy where no waste is produced, but one where nothing is actually 'wasted' and all resources are fully valued – financially and environmentally. This will involve reducing the amount of waste we produce and finding better use for the waste we do produce through reuse, recycling and making use of a range of technologies such as anaerobic digestion (see figure 6.1) to produce energy from waste.

6.3 Government is also working closely with the Environment Agency and industry to explore ways to increase the amount of methane that is captured from landfill sites. This includes closed landfill sites that are still giving off methane and looking at the role new technologies can play in capturing this and converting it to valuable energy.

Box 6.1: Local Authority Waste Separation Scheme

In 2008, the London Borough of Bromley introduced a trial scheme to separately collect food waste and increase the frequency of paper collection. The final stage of the trial covered 27,500 properties, with food waste and paper collected every week, and residual waste, glass, cans and plastics collected every other week. The trial showed an 11% reduction in overall waste produced and a 45% reduction in residual waste being collected (and therefore disposed of to landfill). All separately collected biodegradable waste was sent for recycling or conversion into energy. This represented an increase in kerbside recycling from 24% to 52%. The scheme was rolled out across the Borough in October 2010 and Bromley is expecting a household recycling rate above 55% as a direct result.

6.4 The Government will continue to increase its knowledge of waste emissions, in particular quantities of methane generated, captured and emitted from landfill sites. This will improve the level of certainty about the evidence base for the waste sector and strengthen the model used to calculate the waste contribution to the national greenhouse gas inventory.

[33] The 2009 final UK greenhouse gas emissions figures, available at: www.decc.gov.uk/en/content/cms/statistics/climate_change/gg_emissions/uk_emissions/2009_final/2009_final.aspx

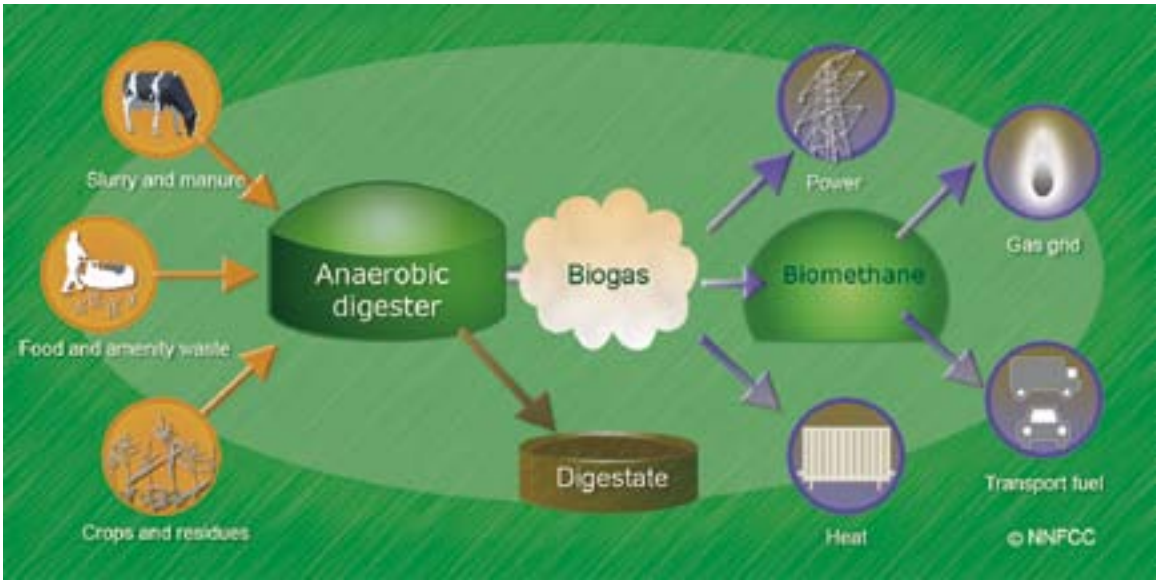
Harnessing energy from waste

6.5 For waste that cannot be prevented, reused or recycled, energy from waste technologies can provide a valuable resource through heat, electricity and transport fuels. Energy can be generated from waste through a variety of both established and emerging technologies such as combustion with Combined Heat and Power, anaerobic digestion, gasification and pyrolysis.

6.6 The Government will set the future policy framework for energy from waste and will publish a full anaerobic digestion strategy in May 2011 as part of the review of waste policies.

Figure 6.1: Anaerobic digestion – producing energy from waste

Anaerobic digestion (AD) is the process whereby plant and animal material (biomass) is converted into useful products by micro-organisms in the absence of air. Biomass is put inside sealed tanks and naturally occurring micro-organisms digest it, releasing methane that can be used to provide clean renewable energy. The material left over at the end of the process is rich in nutrients so it can be used as fertiliser. It is a proven technology and there are a growing number of anaerobic digestion plants in the UK processing our waste and producing energy. Almost any biomass can be processed, including food waste, crop residues, slurry and manure. The plants can accept waste from our homes, supermarkets, industry and farms, meaning less waste goes to landfill.



Box 6.2: Sheffield City Centre District Heating Scheme

Sheffield has an award-winning city centre district heating scheme[34] which delivers low carbon heat to over 140 buildings (including offices, hospitals, hotels and residential premises) through over 45km of underground pipes, providing all their heating and hot water needs. At the heart of the scheme is the city's energy from waste plant which treats 225,000 tonnes per year of household waste and provides up to 21MW of electricity to over 22,600 homes. This enables Sheffield to send less than 15% of its waste to landfill, and save over 21,000 tonnes of carbon dioxide each year.

Actions

Start date	End date	Description	Department responsible
Started	Apr 2011	Explore voluntary responsibility deals on waste among businesses	Defra
Mar 2011	Mar 2011	Incorporate updated emissions projections for waste sector into the National GreenHouse Gas inventory	DECC/Defra
May 2011	May 2011	Agree waste goals for 2014/20 and set the path towards a 'zero waste' economy through a review of waste policies	Defra
May 2011	May 2011	Publish detailed strategy to encourage anaerobic digestion measures	Defra

[34] The scheme originated in the 1970s but the original energy from waste plant was replaced in 2006 with a facility built to the latest technical and environmental standards by Veolia Environmental Services.

CHAPTER 7:
MANAGING LAND SUSTAINABLY

7.1 The way in which we use our land has an important impact on the UK's greenhouse gas emissions. The agricultural sector is responsible for around 8% of the UK's greenhouse gas emissions, most of which come from livestock, fertilisers and fuel use in farming.[35]

7.2 Land use and land management also have an important impact on carbon balances, for example in soils and forests. Alongside agriculture, other uses of land such as forestry have the potential to make a positive difference, absorbing carbon dioxide and countering the harmful impact of emissions from other sectors.

7.3 The Government is determined that agriculture should play its part in reducing greenhouse gas emissions, working with farmers and others in the food supply chain, as well as other interested organisations, to achieve this. Internationally, the Government will continue to support efforts to secure adoption of a work programme on agriculture under the UN Framework Convention on Climate Change.

Tackling emissions from farming

7.4 The farming industry has made a commitment to lead the way in delivering greenhouse gas emission reductions within the sector to help the UK to meet its third carbon budget. The *Agriculture Industry GHG Action Plan: Framework for Action*[36] (February 2010) outlined how reductions could be made through more resource-efficient practices. As well as enabling a reduction in emissions, these practices would also improve farmers' competitiveness. Many measures involve simple changes in farming practices at minimal or no extra cost, such as:

- better use of nutrients, matching the needs of the crop;
- improving livestock productivity and efficiency; and
- better use of on-farm energy and fuel.

Box 7.1: Controlled Traffic Farming[37]

Andrew Manfield grows a mix of cereals, peas, oilseed rape and certified seed potatoes on his 200 hectares in East Yorkshire. Two years ago he switched to a Controlled Traffic Farming system, which uses GPS technology to create and maintain tracks year after year, confining traffic in fields to the smallest possible areas, with the soil between the tracks being protected. With 70% of his land now untrafficked, Andrew is beginning to reap the financial benefits. He is cutting energy costs (savings can be up to 75%), the soil organic matter and quality has visibly increased, and the system is much quicker, freeing up time for other work on the farm. He's looking forward to seeing increased yields as the system becomes established – a similar system on a Lincolnshire farm has seen the winter wheat yield increase from 3.5 to 4 tonnes per acre.

[35] Excludes carbon dioxide emissions from on-farm energy use. Total agricultural emissions, including on-farm energy use, contribute 9%. The 2009 final UK greenhouse gas emissions figures, available at: www.decc.gov.uk/en/content/cms/statistics/climate_change/gg_emissions/uk_emissions/2009_final/2009_final.aspx

[36] www.nfuonline.com/Our-work/Environment/Climate-change/GHG-emissions---reducing-agricultural-emissions/

[37] Climate Change Task Force (2010) *Agriculture Industry GHG Action Plan: Framework for Action*, source: Farming Futures, www.farmingfutures.org.uk

7.5 The industry partnership is due to publish a delivery plan shortly which will set out how it intends to put the Action Plan into practice. The Government intends to review the progress made by 2012, and will involve other interested organisations in this assessment. To support the industry's efforts, the Government is also funding a pilot project to trial methods of delivering integrated environmental advice for farmers (including advice on reducing greenhouse gas emissions), with a view to subsequent wider delivery by government and industry advisers.

Increasing woodland cover and sustainable forest management

7.6 The forestry sector can deliver significant greenhouse gas abatement through carbon sequestration in new woodlands and increased use of timber and wood products, both to store carbon and to substitute for materials with high fossil fuel emissions associated with their production.

7.7 Forestry policy in England is to be reviewed by an independent panel, which will advise on the future direction of forestry and woodland policy, on the role of the Forestry Commission, and on the role of the Public Forest Estate. The panel will report in autumn 2011, and the actions below are subject to its findings.

7.8 Government will continue to support woodland creation through Rural Development Programme funding, and the Woodland Carbon Task Force (see box 7.2). High quality UK-based forest carbon projects will be promoted through implementation of the Woodland Carbon Code, while changes to UK Greenhouse Gas Reporting Guidelines to recognise the contribution of such projects to emissions reduction are under consideration. The Government will publish a revised UK Forestry Standard supported by new Forests and Climate Change Guidelines to promote 'carbon management' in the UK's woodlands.

7.9 Increased deployment of wood-fired heating systems will be stimulated by the Renewable Heat Incentive and a £10 million Woodland Improvement Grant will focus on woodfuel preparation for harvesting.

7.10 Internationally, continuing support for the Forest Law Enforcement, Governance and Trade process and chain of custody requirements for public procurement of timber products, together with the development of biomass sustainability criteria for renewable energy production, will promote sustainable approaches to forest management globally, helping to reduce emissions from deforestation and forest degradation.

Box 7.2: The Woodland Carbon Task Force

The Woodland Carbon Task Force was set up by the Forestry Commission, with leading roles for landowners, businesses and civil society. It aims to enable a step-change in the level of woodland creation to help to deliver abatement in the land management sector. As well as working with the financial sector to develop new opportunities for investment in UK-based woodland creation, the Task Force will help to ensure that the contribution of woodland creation to carbon budgets is recognised, and develop a spatial framework to help to identify where woodland creation will have the most benefit.

Improving the science base

7.11 Government continues to carry out work to improve the science base and to reduce uncertainty levels in the agriculture sector: £12.6 million is being invested, in partnership with the Devolved Administrations, to strengthen our understanding of on-farm emissions.

Government is also working internationally through the Global Research Alliance to co-ordinate research and exchange findings.

7.12 Government will continue to strengthen the evidence base on soil carbon, including exploring the potential for land management and agricultural practices to increase permanently the storage of carbon in soils as mitigation options. Government is consulting on a future policy to reduce further and eventually phase out the horticultural use of peat where there is a much stronger existing evidence base, and peat extraction activities are already captured in the UK's greenhouse gas inventory. Forestry projections will also be further developed to better represent the variation in approaches to forest management and the nature of woodland creation across the UK.

Actions

Start date	End date	Description	Department responsible
Started	Sep 2011	Consult on policy options to further reduce and eventually eliminate the use of peat in horticulture in England	Defra
Started	Sep 2011	Publish final version of Woodland Carbon Code, and take decision on proposed changes to GHG Reporting Guidelines to recognise carbon benefits of woodland creation	Defra/Forestry Commission
Started	Jun 2012	Launch of pilot project to develop and trial methods for delivering integrated environmental advice for farmers (including on reducing GHG emissions)	Defra
Started	2016	Investment of £12.6m to improve knowledge of on-farm emissions and thereby improving the GHG inventory for agriculture	Defra/Devolved Administrations
Jun 2011	Jun 2011	Publish revised UK Forestry Standard and new, supporting, Forests and Climate Change Guidelines	Defra/Forestry Commission
Jun 2011	Jun 2011	Publish Woodfuel Implementation Plan for England and open a Woodfuel Woodland Improvement Grant to support implementation of the Renewable Heat Incentive	Defra/Forestry Commission
Jun 2011	Jun 2011	Ministerial summit to adopt the charter of the Global Research Alliance	Defra
Apr 2012	Nov 2012	Review progress made by the farming sector in taking action to reduce GHG emissions	Defra

CHAPTER 8:
REDUCING EMISSIONS IN THE PUBLIC SECTOR

Projects undertaken by Public Sector Bodies in partnership with Salix Finance: Library lighting upgrade by Suffolk County Council; Loft insulation at a Museum by Uttlesford District Council

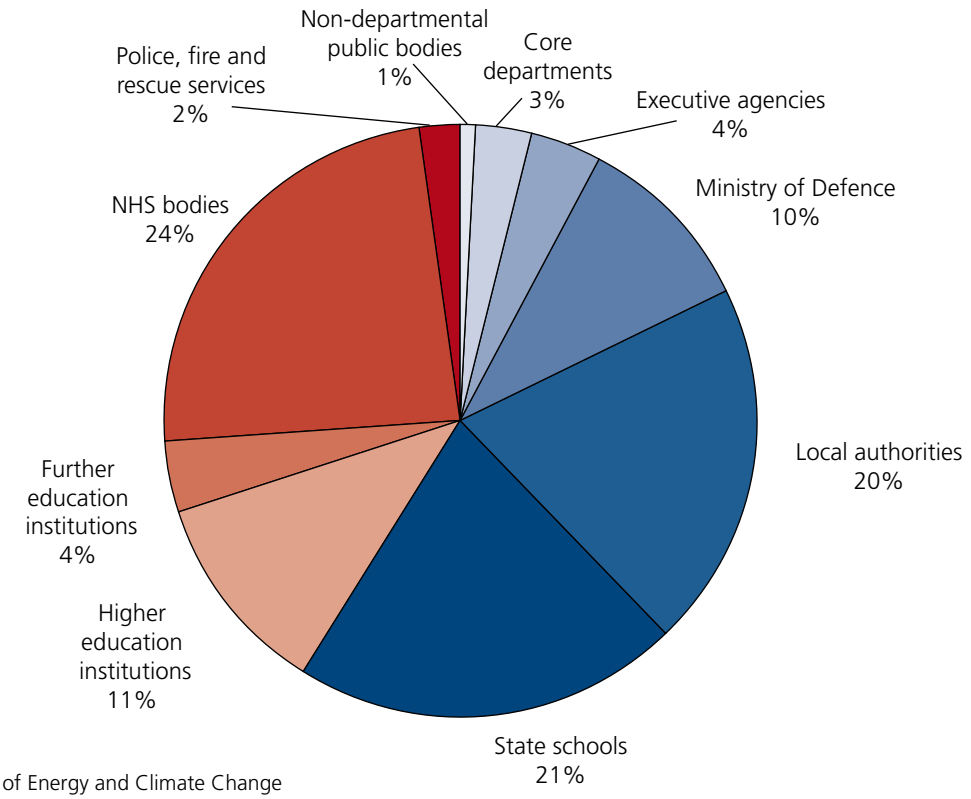
8.1 While the public sector represents only around 3% of the UK's greenhouse gas emissions, it has a responsibility to lead the way in reducing them. The Government recognises the importance of demonstrating leadership on reducing emissions; one of the Prime Minister's first announcements in office was a commitment to cut carbon emissions from the central government office estate by 10% within the year to May 2011.

Public sector operational emissions

8.2 To build on this, the Government has announced new commitments for Greening Government's Operations and Procurement, which, by 2015, commit central government to reduce greenhouse gas emissions, waste generated and water consumption, to cut domestic business travel flights by 20% (from 2009/10) and to encourage sustainable procurement.[38] The Government is also committed to engaging with its suppliers to understand and reduce the impacts of its supply chain. The new commitments are more stretching and have greater scope than the previous framework for Sustainable Operations on the Government Estate.

8.3 The Government, through Salix Finance, has a programme of energy efficiency loans

Figure 8.1: Emissions from the public sector estate 2008/09



Source: Department of Energy and Climate Change

[38] www.sd.detra.gov.uk/gov/green-government/commitments

for the public sector to help organisations to invest in energy efficiency projects which pay for themselves in less than five years. In addition, the Government is piloting a series of innovative projects through the Energy Efficiency Whitehall competition to demonstrate what can be done to cut energy bills and reduce carbon emissions. Participating departments are installing nine innovative technologies in their buildings to push forward the understanding of what can be done in office space to reduce emissions even further, ranging from phase-change ceiling tiles that can absorb heat in the day (to save on air conditioning) to innovative lighting solutions and behaviour change programmes to reward and motivate staff who reduce their emissions.

8.4 The Government supports the Carbon Trust to work with the public sector, including local authorities, hospitals, universities and central government departments, helping them to develop business cases and identify and deliver stretching carbon emission reductions.

Box 8.1: Emissions data monitoring

Provision of real-time data has enabled some innovative approaches to incentivising action on energy use, such as a competition between government departments' HQ buildings to see which could reduce consumption most in October 2010 compared with September. Daily updates of the league table were provided online, and details of the competition were communicated to staff in the reception areas of Whitehall buildings alongside energy-saving messages and displays of personal pledges from staff. Overall the Department for Work and Pensions won with a remarkable 22% energy saving. In total, departments saved around £22,000 on energy bills compared with the previous month.

Improving public procurement

8.5 With an annual public sector spend in excess of £236 billion, procurement is a powerful lever that can reduce emissions and drive innovation. The establishment of minimum and best practice product specifications for government purchasing (Government Buying Standards) has improved the environmental performance of priority products, such as construction, transport, and information and communication technology.

8.6 Many of these product groups have resource and energy efficiency requirements above the market average, reflecting the Government's commitment to leading by example in the goods and services that it purchases, and sending a strong signal to the market

on government expectations for future product performance. The Government also supplies data to the Carbon Disclosure Project (CDP).[39] A procurement exercise to ensure that Government continues to measure and make transparent the greenhouse gas emissions of its supply base is currently under way.

8.7 The Government supports the National Sustainable Public Procurement Programme, which is delivering training on sustainable procurement to public procurers, sustainability officers and project managers in central government and local authorities, the National Health Service and the higher education sector.

Box 8.2: Sustainable London 2012 Olympic Games

Government is determined that the London 2012 Olympic and Paralympic Games will be the most sustainable Games in modern times. To achieve this both the Olympic Delivery Authority (ODA) and the London Organising Committee of the Olympic Games and Paralympic Games (LOCOG) have sought to:

- design the venues and infrastructure to minimise carbon emissions and reduce waste;
- reduce carbon emissions associated with the transport of construction materials;
- take practical steps to introduce more sustainable technologies, including working with industry to identify new technologies or to drive the market to develop more sustainable solutions; and
- promote behaviour change, through the supply chain.

Key examples of this approach in action include the following:

- The velodrome has improved energy efficiency by 31% (above Part L building requirements from 2006) achieved by:
  - optimising glazed areas to allow adequate daylight;
  - thermal mass to moderate the internal environment;
  - natural ventilation providing the main cooling strategy for the building; and
  - improved insulation in the external envelope and roof.
- For the main stadium, unwanted gas pipes were reused in the stadium roof structure, the stadium bowl was made during the enabling works phase rather than the later construction phase, and the ODA worked with the industry to identify a concrete mix with 42% less carbon than standard for use in venue construction.
- The ODA has also installed renewable energy capacity on site, including biomass boilers, small-scale wind turbines[40] and photovoltaic lighting.

The positive lessons and best practice developed through the delivery of a 'low carbon Games' are creating an important knowledge legacy for both the construction and event industries, the application of which has the potential to achieve substantial savings in carbon emissions.

[39] CDP holds the largest database of primary corporate climate change information in the world. More than 3,000 organisations in some 60 countries worldwide now measure and disclose their greenhouse gas emissions and climate change strategies through CDP. https://www.cdproject.net/en-US/Pages/HomePage.aspx

[40] The ODA's intention was to install a wind turbine in the north of the Olympic Park. Following extensive work with the preferred bidder, and feedback from the industry, it was decided that the scheme was not feasible.

Encouraging and supporting local leadership

8.8 The Government is working with the Local Government Group[41] to develop an Action Plan detailing how central and local government will facilitate and remove barriers to carbon reductions at a local level. This includes looking at how to enable local authorities to act as Green Deal providers themselves, alone or in partnership with others (see chapters 3 and 4). Government is piloting Local Carbon Frameworks in nine local authority areas. These frameworks are a way of helping local authorities to quantify the action needed in their area to develop and implement stretching negotiated and locally owned targets for reducing emissions.

8.9 The Government would like to embed leadership in carbon management and transparency of performance in all public services. The Government will work in partnership with public sector bodies to overcome the barriers that can prevent the public sector from realising cost effective carbon reduction, and build on and share best practice from the excellent actions that some public sector bodies are already taking. For example, United Lincolnshire Hospitals NHS Trust is on track to reduce its carbon dioxide emissions by 30% by 2015 since 2007/08, while saving over £600,000 on its energy costs by that time.[42]

Actions

Start date	End date	Description	Department responsible
Started	May 2011	Reduce central government's emissions by 10% in twelve months: a) Monitor all departments' implementation plans on a monthly basis; b) Publish emissions data online, including real time energy use from central government; c) Publish guidance on priority actions for all government departments to manage building energy use and report against departments' activities	DECC
Started	May 2011	Develop programme of action and performance management regime to deliver 10% reduction in carbon emissions in government departments in 12 months	CO
Started	Jul 2011	Agree a stretching and cost-effective level of ambition for longer-term reductions in government and public sector emissions, including potential targets and incentives	DECC
April 2011	Mar 2015	Reduce greenhouse gas emissions, waste generated, water consumption and domestic business air travel and encourage sustainable procurement for the whole central government estate	All departments
Mar 2011	Mar 2011	Publish Government Buying Standards for transport, food, furniture, textiles, gardening services, water-using products and cleaning products and services	Defra

41 www.lga.gov.uk/lga/core/page.do?pageId=4983464
42 Case study from the Carbon Trust's Carbon Management Plans – www.carbontrust.co.uk/cut-carbon-reduce-costs/reduce/public-sector/Public-sector-case-studies/Pages/United-Lincolnshire-Hospitals.aspx

CHAPTER 9:
DEVELOPING LEADERSHIP WITHIN THE EUROPEAN UNION

9.1 The European Union (EU) has the opportunity to demonstrate to others the benefits of low carbon growth, and to strengthen economic and trading relationships with other countries which want to collaborate on low carbon development. Strong EU leadership will be crucial in building momentum internationally and, by making the transition to a low carbon economy, the EU can significantly enhance its long-term economic and energy security interests.

9.2 The UK negotiates internationally on climate change as part of the EU and recognises that Europe is stronger in the world when it works together. The Government will work to ensure that the EU develops strong common positions in the negotiations.

Building an EU low carbon economy

9.3 The Government will work with our partners in Europe to look for opportunities to secure the transition to an EU low carbon economy, encouraging greater ambition in areas including energy, transport, product standards and finance. The UK has pressed for a consistent and coherent EU low carbon vision for 2050 through the development of a low carbon roadmap to 2050, which presents a credible and cost effective emissions reduction pathway based on robust analysis, to be complemented by an energy roadmap to 2050 and a Transport White Paper.

9.4 The Government has committed to work to secure a common EU position to increase its emissions reduction target from 20% to 30% by 2020 compared with 1990 levels. We will share with other Member States evidence which shows that the costs of greater ambition are manageable and can deliver tangible economic and environmental benefits, especially when compared with a scenario of delayed action.

9.5 The Government will work in Europe to build support for electric and other low carbon vehicles, agreement of EU legislation on wholesale energy markets and the launch of a new infrastructure investment package (with significant investment for low carbon infrastructure) as part of the delivery of these ambitious plans.

9.6 Through the adoption of the new EU Energy Efficiency Action Plan, the Government will work to ensure that action at the EU level to address barriers to energy efficiency effectively supports and complements action at a national level. In particular, the Government will seek to encourage the EU to implement a fast and ambitious programme of measures (regulations and voluntary agreements) with dynamic energy efficiency and energy labelling standards for all major energy-related products. These standards will, by the end of 2012, cover all domestic and a large proportion of industrial products and should encourage those which waste the most energy to be taken off the shelves.

9.7 The Government will also support the EU to bring forward greater harmonisation of product standards.[43] The increased use and harmonisation of standards would increase the trade and use of more sustainable products, bringing both economic and environmental benefits.

9.8 To manage the risks of the consequences of climate change, the Government will seek to embed adaptation across EU policy areas and instruments.

Encouraging the EU to lead internationally

9.9 The Government will build strong bilateral relationships with EU Member States to share UK best practice and experience in the shift to a low carbon economy. Through the UK's overseas network of Embassies and High Commissions we will also support the EU's efforts to strengthen bilateral low carbon co-operation with major and emerging economies and others, co-ordinating with other Member States and sharing best practice, in particular on emissions trading and Carbon Capture and Storage.

[43] Discrepancies between technology, performance and energy efficiency standards globally act as non-tariff barriers to trade by increasing transaction costs and reducing or complicating market access.

Actions

Start date	End date	Description	Department responsible
Started	Mar 2011	Encourage the European Commission to set out a vision of a low carbon Europe and the scenarios for reaching that vision by 2050	DECC
Started	Jun 2011	Build support for the increase in the EU emissions reduction target to 30% by 2020	DECC/FCO
Started	Jul 2011	Liaise with standardisation bodies and industry, with a view to adopting European technical standards for electric vehicle charging systems	DfT
Started	Oct 2011	Support the European Commission to publish an energy roadmap to 2050 which sets out scenarios for how the power industry can be decarbonised	DECC
Started	Dec 2011	Encourage a strong EU position in the UN Framework Convention on Climate Change negotiations in Cancun and South Africa	FCO*
Started	Dec 2011	Agree a European Energy Action Plan, which includes a framework for investment in low carbon infrastructure within the EU	DECC
Started	Dec 2011	Agree EU legislation on transparency and integrity of wholesale energy markets	DECC
Started	Sep 2012	Complete review of EU regulation on fluorinated greenhouse gases and conclude possible negotiations on any proposals	Defra
Started	Dec 2012	Work with the EU to agree energy efficiency and labelling standards for remaining energy using products in residential and tertiary sectors, and some industrial products	Defra
Started	Dec 2012	Work with partners in Europe to establish standards for smart grids and meters by the end of 2012	DECC
Started	May 2015	Drive efforts within the EU to amend the Emissions Trading Scheme Directive to deliver full auctioning of allowances	DECC
Started	May 2015	Accelerate the global transition to a low-carbon climate-resilient economy, working with EU institutions and partners	FCO
Started	May 2015	Extend the internal market, energy security and liberalisation; promote global free trade with a special regard for global poverty alleviation and coordinated action to build a low carbon economy and avoid dangerous climate change: a) Implement the Energy Third Package effectively	FCO
Sep 2011	Jun 2012	EU infrastructure instrument to support projects "of European interest" (including funding for low carbon infrastructure) endorsed by Member States	DECC
Dec 2012	Dec 2012	Complete negotiations on next EU budget spending period – including agreement to increase the share of EU budget allocations for low carbon investment within a reprioritised budget	HMT
Dec 2012	Dec 2012	Publish proposals for tackling the regulatory, legal, planning and technical barriers to coordinated offshore grid development in the North and Irish Seas	DECC

* Working with DECC.

CHAPTER 10:
BUILDING THE CASE FOR GLOBAL AMBITION WITH KEY COUNTRIES AND INTERNATIONAL INSTITUTIONS

10.1 The Cancun Climate Change Conference demonstrated that over 190 governments around the world accept that man-made climate change is a reality and that the world should be coming together to tackle it. Cancun confirmed the goal of seeking to limit global temperature increases to 2°C, beyond which the risks of dangerous climate change become much greater. Many countries are actively working to reduce their emissions and prepare for the impact of climate change.

10.2 However, the action which countries have so far committed to take is not enough to ward off dangerous climate change.[44] It is vital therefore that we persuade our international partners to deliver on the commitments that they have made and, over time, take even more ambitious action. The UK needs to make the case internationally that it is in countries' best economic and wider security interests to move towards low carbon, climate resilient growth. A key part of this will be demonstrating how we are delivering at home, as described earlier in this document. But it will also depend on how we work with other countries, the private sector and civil society to demonstrate the global potential of the low carbon transition.

Working with other countries

10.3 To build political and economic momentum worldwide for low carbon, climate resilient growth, the UK is committed to working with a wide range of developed and developing countries both bilaterally and through international fora such as the G20.

10.4 It is for developed countries to take the lead in cutting their own emissions and providing support to developing countries to take action. Chapter 9 describes how the UK is seeking to promote greater EU ambition, including through a 30% emissions reduction target by 2020. But we will also work closely with the US, Japan, Australia and other developed countries to share expertise on how to meet the common challenge of decarbonising our economies in ways which support long-term growth and prosperity. For example, later this year the Government will be working with UK businesses to share with US counterparts their experience of identifying new low carbon opportunities. We will also welcome a US Congressional Delegation to the UK to debate these issues.

10.5 The Government is committed to strengthening bilateral relationships with the major emerging economies, which have a critical part to play in securing action on a scale sufficient to limit global temperature increases to 2°C.

10.6 In 2010, the Prime Minister led major UK delegations to both India and China, reaching agreements on collaboration

[44] UN Environment Programme analysis suggests that there is a gap of between 5 and 9 gigatonnes of carbon dioxide equivalent to levels consistent with 2°C, depending on how the pledges are implemented. www.unep.org/publications/ebooks/emissionsgapreport/

on low carbon development. We want to further strengthen and deepen these bilateral relationships. For example, the Memorandum of Understanding on low carbon co-operation signed with China in January this year provides for further UK co-operation in a number of China's low carbon provinces and cities over the next three years. Working closely with the Government of India, we will continue to support the work of the UK/India Business Leaders Climate Group, which has demonstrated the potential of the private sector in the UK and India to develop innovative ways of tackling climate change in a pro-business way. And we will seek to strengthen bilateral low carbon collaboration with Brazil, South Africa, Mexico, Indonesia and other emerging economies.

10.7 We also want to work closely with the wide range of developing countries with the potential to demonstrate the effectiveness of low carbon, climate resilient growth and which want to be ambitious in tackling climate change. Chapter 12 describes how the UK is supporting the work of the Cartagena Dialogue for Progressive Action, which brings together a range of developed and developing countries which have the twin objectives of seeking an international, legally binding climate change agreement and of becoming or remaining low carbon economies. The Dialogue has demonstrated a growing consensus about the opportunities for countries of all sizes in actively pursuing the low carbon transition.

10.8 The UK's work to secure effective action from other countries will rely heavily on our overseas diplomatic network to engage and support a progressive dialogue with national and local governments around the world. As part of this dialogue, the UK will listen to and learn from other countries and share its own expertise and knowledge, including from UK domestic policy making and implementation, as a means of demonstrating that sustainable growth is possible.

Aligning climate and commercial diplomacy

10.9 Enhanced trade in environmental goods and services and in low carbon solutions can make a significant contribution both to tackling climate change and to leading economies out of recession. More open, flexible economies are expected to be better placed to cope with climatic shocks and to adapt to trend changes in the climate. Overall, only a global commitment to green growth can ensure sustainable increases in living standards. Achieving emission reductions consistent with limited global temperature increases to 2°C will require the dissemination and deployment of technology at an unprecedented rate, for which open markets and trade will be vital. The Government has recently published the Trade and Investment

White Paper[45] which sets out our support for a strengthened framework for international trade, and we will work towards mainstreaming low carbon growth into all high level trade and business engagement. UK businesses have low carbon goods, services and solutions that are in demand by countries seeking a low carbon growth pathway. UK Trade & Investment will champion businesses in these countries and set out support for exporters in its new strategy.

10.10 The Government will also gather evidence on the contribution that the production of goods and services that are consumed in the UK is making to carbon emissions in other countries. The Government will develop plans to reduce the most significant emissions – for example through discussion with UK businesses and other interested groups about the management of emissions through supply chains.

Working through multilateral fora and international institutions

10.11 Alongside our work to engage with other countries, the Government will play a full part in multilateral groups and fora that offer further opportunities for countries to work together to address climate change and drive up the levels of global ambition. For example:

- In the G8, the UK will seek to encourage developed countries to demonstrate how they are delivering the mitigation and Fast Start climate finance commitments that they have already put forward and, collectively, maintain their commitment to ambitious outcomes in the UN Framework Convention on Climate Change (UNFCCC) negotiations.

- In the G20, the UK will work with all the major economies, building on the agreements reached at the Seoul Summit, to work for an ambitious outcome in the UNFCCC and take forward the recommendations of the UN Secretary General's Advisory Group on Climate Finance (see box 12.2). More widely, we will support continued efforts towards an international green economy. This includes progressing G20 commitments to phase out inefficient fossil fuel subsidies. Eliminating fossil fuel subsidies worldwide could reduce global greenhouse gas emissions by 5.8% (2 gigatonnes) by 2020 and 10% or more by 2050. Reducing such subsidies would strengthen incentives for investment in energy efficient technologies and non-fossil energy supply. Switching these subsidies to international climate finance could provide around $10 billion per year to support clean energy growth.[46]

[45] Department for Business, Innovation and Skills (2011) *Trade and Investment for Growth*, www.bis.gov.uk/assets/biscore/international-trade-investment-and-development/docs/t/11-717-trade-in-investment-for-growth

[46] High-level Advisory Group on Climate Change Financing (2010) *Report of the Secretary General's High-level Advisory Group on Climate Change Financing*, www.un.org/wcm/webdav/site/climatechange/shared/Documents/AGF_reports/AGF_Final_Report.pdf

- We will encourage the International Energy Agency to show how the low carbon transition is both possible and economically beneficial.

- We will support initiatives under the Clean Energy Ministerial (CEM) process which encourage greater global deployment of low carbon technology; the UK will host the CEM meeting in 2012.

10.12 The Government will also work to support the effectiveness of international institutions, for example the International Renewable Energy Agency (IRENA), the International Partnership for Energy Efficiency Co-operation (IPEEC) and the Global Carbon Capture and Storage Institute (GCCSI), by ensuring that they have a clear mandate and responsibilities to work with both developed and developing countries in order to reduce the barriers to investment in renewables, energy efficiency and CCS.

10.13 The Government will also encourage greater international action on greenhouse gases through existing international mechanisms including, in principle, the proposal to use the Montreal Protocol on Substances that Deplete the Ozone Layer to phase down the production and use of hydrofluorocarbon (HFC)[47] internationally, thereby encouraging both developed and developing countries to move to less harmful alternatives and so avoid increased HFC emissions. The EU already has a framework of controls in place to minimise HFC emissions. However, there is concern that, as developing countries implement their obligations under the Montreal Protocol, they will turn to HFCs.

Actions

Start date	End date	Description	Department responsible
Started	Mar 2011	Launch new energy dialogues with China and Brazil	DECC
Started	April 2011	Gather evidence on the contribution that goods and services produced for consumption in the UK are making to carbon emissions in other countries	Defra
Started	Oct 2011	Re-prioritise the work of the International Energy Agency at the ministerial meeting to increase focus on low carbon technologies and non-members	DECC
Started	Dec 2011	Continued in principle support for phase-down of hydrofluorocarbon production and use, using the Montreal Protocol	Defra

[47] HFCs are greenhouse gases that are covered by the Kyoto Protocol and were invented as replacements for ozone-depleting substances that are being phased out by the Montreal Protocol.

Start date	End date	Description	Department responsible
Started	Dec 2011	Subject to funding, UK Climate Security Envoy to have engaged with US, Canada, Japan, African Union and Australia on national and global security risks of climate change	FCO/MOD/ DECC
Started	Dec 2011	Agree action plan for co-operation with Norway on oil and gas, Carbon Capture and Storage and renewables	DECC
Started	Dec 2011	Support the Government of India in its work to improve industrial energy efficiency, including through the PAT scheme and building of capacity to enable Indian industry to take full advantage of the scheme	DECC/DFID
Started	May 2015	Low carbon campaign in priority markets of India, China, Brazil and West Coast North America, in addition to support for low carbon exporters in other markets	UKTI
Mar 2011	Mar 2011	Ministers to lead UK business delegation to US to promote low carbon economic opportunities	DECC/FCO
Mar 2011	Mar 2011	Establish coalition of low carbon business leaders in South East Asia	FCO
Mar 2011	Dec 2012	Work with the Convention on Biological Diversity to improve synergies between climate change and biodiversity policy, including on biodiversity safeguards in 'REDD+'* strategies to reduce emissions from deforestation	Defra
Apr 2011	Apr 2011	Agree an action plan with China's National Development and Reform Commission to implement the UK/Chinese Memorandum of Understanding on Low Carbon Co-operation (signed January 2011), taking forward a three-year programme of collaboration in three Chinese low carbon pilot cities and provinces	DECC/FCO
May 2011	May 2011	Secure continued commitment to ambitious action on international climate change via the G8 summit	DECC/FCO
Oct 2011	Oct 2011	Ministerial visit to India as part of continued co-operation on low carbon growth, trade and investment	DECC/FCO
Nov 2011	Nov 2011	Work through G20 to reconfirm commitments to low carbon growth, provision of climate finance and reduction of fossil fuel subsidies	FCO/DECC
Apr 2012	Apr 2012	UK hosts Clean Energy Ministerial meeting, securing further progress on practical collaborations on key low carbon technologies	DECC
May 2012	May 2012	Take part in UN Conference on Sustainable Development ('Rio+20') – discussions on Green Economy in the context of sustainable development and poverty eradication and institutional frameworks	Defra

* Reducing emissions from deforestation and forest degradation, and enhancing forest carbon stocks in developing countries.

CHAPTER 11:
SUPPORTING THE DEVELOPMENT OF LOW CARBON, CLIMATE RESILIENT ECONOMIES

11.1 The International Energy Agency projects that, under business-as-usual scenarios, fossil fuel consumption and therefore global emissions will continue to grow. Oil and coal demand in non-OECD countries in particular is projected to grow. Because of the rate at which emissions are growing in major emerging economies, even if developed countries reduced their emissions to zero by 2050, it would still not be enough to keep average global temperature increases below 2°C. Ensuring that global greenhouse gas emissions peak and start to decline by 2020 will require both deep emission cuts by industrialised countries and mitigation action from within developing countries.

11.2 The poorest and most vulnerable communities are likely to be hardest hit by future climate change and are least able to cope. Failure to adapt in good time could have serious consequences in reversing progress towards, or the ability to sustain, the Millennium Development Goals.[48] We have a responsibility to support the poorest and most vulnerable to adapt to the impacts of climate change. The wider national security and political instability risks of climate change mean that it is in the UK's interests to support and engage in building climate resilience regionally and globally. Climate change could exacerbate threats to the UK's national security such as overseas conflict, migration, disease and food and water insecurity.

11.3 We therefore need to encourage practical action to reduce emissions and move to low carbon, climate resilient growth paths in a range of countries, using a diverse range of interventions. But it is important to recognise that developing countries will need support and incentives to help them to take action on the scale needed and to respond to the challenges that climate change poses. The Government will work with key countries to make the low carbon, climate resilient transition a reality; assist countries with planning their low carbon transition and building the capacity they have to deliver this; demonstrate the potential of innovative approaches and new technologies, such as Carbon Capture and Storage (CCS) and offshore wind; and provide support to help developing countries to leverage the necessary finance to meet or exceed their commitments and move to low carbon growth paths.

International climate finance

11.4 Over the next four years the UK is committing £2.9 billion to support developing countries in taking action on both mitigation and adaptation. How the UK deploys the £2.9 billion International Climate Fund (ICF) announced in the 2010 Spending Review will be at the heart of the UK's strategy to support practical action on the ground. It will fully fund the remainder of the UK's £1.5 billion

[48] The United Nations Millennium Development Goals are eight goals that all 191 UN Member States have agreed to try to achieve by the year 2015. The United Nations Millennium Declaration, signed in September 2000, commits world leaders to combat poverty, hunger, disease, illiteracy, environmental degradation and discrimination against women. The goals are derived from this Declaration, and all have specific targets and indicators.

Fast Start finance pledge, which included £300 million to reduce emissions from deforestation. The Government will focus UK climate finance on helping developing countries to reduce poverty by adapting to climate change, reducing their emissions through low carbon development and reducing deforestation. The ICF will be delivered through a range of bilateral and multilateral funding mechanisms. The Green Climate Fund, which was agreed at Cancun and needs to be designed during 2011, has the potential to be a very important route for disbursing climate finance effectively.

11.5 The UK will continue to use its position on the Boards of Multilateral Development Banks to encourage them to increase their lending in areas important for climate change, such as renewable energy and forestry.

Reducing the barriers to carbon investment overseas

11.6 We will need to engage other governments, the private sector and international financial institutions to help to provide additional finance and to reduce the barriers to low carbon investment overseas. The Government will also work with other countries to support the development of the right regulatory, legislative and market frameworks and identify opportunities to support business-to-business collaboration with UK and overseas businesses. The Capital Markets Climate Initiative – launched by Government in September 2010 (see box 11.1) – will help to identify propositions for mobilising private capital and engage businesses on the case for low carbon investment in developing countries.

Box 11.1: The Capital Markets Climate Initiative

The Capital Markets Climate Initiative was launched in 2010 to create a forum where governments and the private sector can come together to:

- identify tangible and deliverable propositions that can help to mobilise private capital on a large scale for low carbon investments in emerging and developing economies;
- make the case that:
  - low carbon growth will create significant new business opportunities in developing countries;
  - private capital to support critical low carbon investment is key to sustainable growth and development; and
  - together, governments and the private sector are willing to assist developing countries to increase private investment that promotes low carbon growth;
- show the facilitative role that financial centres can play in mobilising capital on a large scale.

11.7 With 81%[49] of the world's carbon market transactions taking place in London, the City has confirmed its place as a global carbon finance hub. The Government will draw on this expertise to support the development and reform of the carbon

[49] Calculations from World Bank (2009) *State and Trends of the Carbon Market 2009* and European Climate Exchange.

market to help to drive and finance emissions reductions internationally. The Government is also supporting the design and implementation of trading schemes in countries such as India (UK–India collaboration on the PAT scheme). The aim is to build capacity and share expertise to promote emission reductions.

11.8 The Government will also work with developing countries to help to design and deliver their nationally appropriate mitigation actions. Assisting countries with identifying the opportunities that lie in their economy for green action and putting together strong business cases should lower the barriers and catalyse investment.

Building capacity for low carbon development

11.9 The UK will support developing countries to take a more integrated approach to their planning, moving away from a project-by-project approach towards mainstreaming low carbon and climate resilience into national plans and planning processes. The Government is supporting the Climate Investment Funds, which are trust funds that aim to deliver large-scale finance to support at least 45 developing countries in realising their plans for low carbon, climate resilient development.

11.10 The Government will support work on low carbon development plans which are important tools for countries to identify the most appropriate policy, legal, institutional and investment decisions for their circumstances. The Government is working to share the knowledge and skills that it and partner organisations have accumulated.

11.11 The Government is also supporting the Climate and Development Knowledge Network (CDKN), which links poor countries with a network of experts, giving easy access to research and policy information. The UK is contributing £46 million of funding over five years, including some Fast Start funding prior to 2020. CDKN has already supported the Government of Rwanda to develop its national strategy on climate change and low carbon development. The strategy will develop a roadmap for future climate resilient and low carbon growth in Rwanda. The network and its partners are drawing input from a range of stakeholders, including ministries, the private sector and civil society, to develop the strategy.

11.12 Some 17% of global emissions are caused by deforestation and 90% of the world's poorest people rely on forests for some of their livelihood or derive benefit from their resources. The Government will continue to support activities designed to tackle deforestation through active participation in multilateral initiatives

such as the Forest Carbon Partnership Facility, the Forest Investment Programme and the Congo Basin Forest Fund; supporting the development of robust national programmes with adequate financing; and working through the REDD+ Partnership and other fora to share lessons on tackling forest loss and degradation, including on addressing the drivers of deforestation, and ensuring that safeguards are put in place for people and biodiversity.

Actions

Start date	End date	Description	Department responsible
Started	Mar 2011	Develop a new programme to improve forest management and tackle illegal logging in order to reduce deforestation	DFID
Started	Mar 2011	Complete projects under the Sustainable Development Dialogues with China, Brazil, India, South Africa and Mexico. Including projects on tackling illegal logging with China and Brazil and climate change adaptation in Mexico	Defra
Started	Apr 2011	Develop further detail on how the UK's Fast Start funding will be deployed	DECC/DFID
Started	May 2011	Pilot Strategic Climate Programme Reviews in six countries to ensure that climate issues are addressed in DFID country business plans	DFID
Started	Jun 2011	Develop methodologies and indicators to track impact and value for money, on adaptation, low carbon development and protecting forests	DFID*
Started	Dec 2011	Agree action plan for co-operation with Norway on oil and gas, CCS and renewables	DECC
Started	Dec 2012	Establish the Capital Markets Climate Initiative to use private sector expertise to assess new and innovative approaches for leveraging private finance to tackle climate change in developing countries	DECC**
Started	Dec 2012	Deliver £300 million of UK Fast Start finance to reduce emissions from deforestation	DECC†
Started	Dec 2014	Support, together with commitments from other donors, for the Global Environment Facility (GEF)	DFID*
Started	Apr 2015	Support for a range of programmes at country level through DFID's bilateral programme to support poor countries to adapt to climate change, protect forests and support low carbon development	DFID/DECC
Started	Apr 2015	Support the Climate and Development Knowledge Network (CDKN) to enable developing countries to access the best climate change knowledge, research and data to enable them to build resilience to climate change, adopt low carbon growth and tackle poverty	DFID

* Working with DECC.
** Working with DFID.
† Working with DFID and Defra.
* Working with DECC.

Start date	End date	Description	Department responsible
Started	Apr 2015	Complete the disbursement of £2.9bn of climate finance	DECC/DFID/ HMT/Defra
Apr 2011	Apr 2011	Secure multi-country and business commitments on overcoming the barriers to deployment of Carbon Capture and Storage at the Clean Energy Ministerial to be held in Abu Dhabi	DECC
Apr 2011	Dec 2012	Encourage, through a range of initiatives, governments in designing and delivering low carbon development	DECC
Sep 2011	Sep 2011	Capital Markets Climate Initiative event to engage private sector on barriers to low carbon, climate resilient investment	DECC
Sep 2011	Sep 2011	Carbon Sequestration Leadership Forum – Ministerial meeting	DECC
Sep 2011	Dec 2013	Roll out Strategic Climate Programme Reviews in all programme countries to ensure that climate issues are addressed in DFID country business plans	DFID
Nov 2011	Nov 2011	Publish second EU report on progress of Fast Start funding	DECC/DFID/HMT
Nov 2012	Nov 2012	Publish final EU report on Fast Start funding	DECC/DFID/HMT

CHAPTER 12:
ENSURING PROGRESS WITHIN INTERNATIONAL CLIMATE NEGOTIATIONS

12.1 A global, comprehensive, legally binding agreement to limit greenhouse gas emissions remains the most effective and cost efficient way of delivering the scale of emissions reductions needed to prevent the most serious impacts of climate change. An internationally agreed framework is also the best way to provide the reassurance that countries need in order to drive up the collective level of ambition; provide greater certainty that governments will deliver on their commitments both to reduce emissions and to provide climate finance; build private sector confidence to make long-term low carbon investments; and build a collective picture of progress in reducing global emissions. International agreement on the scale and nature of support for adaptation is a vital part of such a global deal.

Making progress through the UNFCCC

12.2 The Government is committed to working through the United Nations Framework Convention on Climate Change (UNFCCC) to make progress towards a legally binding global agreement to reduce emissions consistent with the goal of limiting global temperature increases to 2°C, and to provide financial support to developing countries for mitigation and adaptation. In doing so, the Government will continue to build on the existing body of rules on mitigation, reporting and accounting which have already been agreed through the international negotiating process.

12.3 The Cancun Climate Change Conference restored confidence in the capacity of the multilateral system to deliver results. Moreover, the international community, through the outcomes of the meeting in Cancun, has begun to build on the agreements already reached on a number of key issues which will, in time, be reflected in a future global deal (see box 12.1 below).

12.4 The challenge now is to build on and strengthen these agreements. Although securing a comprehensive global agreement on climate change remains difficult, the Government is committed to building on the momentum achieved at Cancun to make as much progress as possible in developing the detailed rules to shape domestic action around the world in the coming years.

12.5 Over the next few months we will be working with our partners to develop consensus around negotiating priorities for Durban. Our current assessment is that key priorities are likely to include the following:

- **Ensuring that all countries are well placed to deliver on the mitigation pledges they have put forward:** Cancun provides for a series of workshops on developed and developing country pledges. These will be important opportunities to test the assumptions which countries are making in their domestic plans and to give us a better overall picture of where we stand on progress towards the 2°C goal.

Box 12.1: The outcome of the UN Climate Change Conference (COP 16/CMP 6)[50]

Cancun agreed a substantial package of decisions, at the very top of UK expectations. Although it will still be challenging to reach a truly global and comprehensive climate agreement, in Cancun, real progress was made on issues important for both developed and developing countries. Parties:

- agreed for the first time within the UN that emissions should peak as soon as possible and that we should limit temperature increases to 2°C;
- anchored emissions reduction pledges from the Copenhagen Accord into the UN system so they can be properly assessed in light of the 2°C objective;
- agreed a system of measurement, reporting and verifying emissions so we can see how countries are living up to their promises;
- established the Green Climate Fund and will start to work on its detailed design so it can help developing countries to move to a low carbon economy and adapt to climate impacts;
- agreed to reduce emissions from deforestation, the ground rules for delivering this and for monitoring progress;
- agreed upon new mechanisms to help developing countries to access low carbon technology, and adapt to climate change; and
- built an Adaptation Framework and established the Adaptation Committee, as well as a process to look at the issue of loss and damage.

- **Developing the detail of how measurement, reporting and verification of countries' mitigation targets and actions will be undertaken:** We will look to develop the guidelines and procedures which will enhance transparency and build confidence that countries are delivering on their commitments. A key priority will be to develop the detailed arrangements for the review of developed country actions, and international consultation and analysis for developing countries.

- **Further international action to tackle deforestation:** We will look to secure a methodological approach to REDD+ and ongoing high level ambition on finance and action.

- **Ensuring that accounting rules are developed which underpin the environmental integrity of the actions countries are taking:** For example, we will want to work with other countries to develop effective rules governing the treatment of surplus Assigned Amount Units, and in respect of land use, land-use change and forestry.

- **Putting in place the detailed design arrangements to support developing countries in taking action:** The Government is keen to see good progress in 2011 on the detailed design of the Green Fund, with recommendations for consideration at COP 17. We will also

[50] Conference of the Parties (COP) to the UN Framework Convention on Climate Change, Meeting of the Parties to the Kyoto Protocol (CMP).

work to ensure the effective operation of the technology mechanism and adaptation committee agreed at Cancun.

- **New market mechanisms:** We will pursue agreement within the UNFCCC on the establishment of new market mechanisms to support cost effective emissions reductions. This will be an important tool for securing enhanced ambition globally in future years.

12.6 The Government welcomes the agreement reached at Cancun to establish a Review from 2013 to report by 2015 on international progress towards the 2°C goal; the adequacy of that goal, taking into account the latest science; and the effectiveness of the international architecture to support global action. The UK will work closely with our partners to develop consensus about the scope of the Review, including its potential to underpin further ambition in future years.

12.7 A key issue at the next UN Climate Change Conference at Durban will be around the legal form of future international agreements to tackle climate change. The EU has signalled its willingness to consider a second commitment period under the Kyoto Protocol in the context of a wider global framework engaging all major economies.

12.8 The Government will work closely with the Government of South Africa and others to make as much progress as possible on each of these issues at Durban.

12.9 In addition, as part of the wider drive to create the conditions necessary to support a global deal, the Government will continue to reinforce the need for action and encourage convergence on a range of issues to support the formal UNFCCC negotiations. We will continue to be an active participant in the Cartagena Dialogue for Progressive Action, working with a range of countries that want to be ambitious on climate change and building trust between developed and developing countries on a range of issues in the negotiations. This work demonstrated its value in the role that participant countries played in building consensus necessary to secure a positive outcome at Cancun.

12.10 Also, the Government will continue to engage actively in multilateral fora, including the G8 and the G20 (see chapter 10) as well as the International Civil Aviation Organization (ICAO), the International Maritime Organization (IMO), the Major Economies Forum and the Global Research Alliance on Agricultural Greenhouse Gases, to secure international action which complements progress within the UNFCCC.

Box 12.2: The High Level Advisory Group on Climate Change Financing

The UN Secretary General established the High Level Advisory Group on Climate Change Financing (AGF) in February 2010 to consider how we can meet the goal we set in Copenhagen of mobilising, by 2020, $100 billion a year of public and private finance to assist poorer countries with the climate challenge. The Group's report, published in October 2010, concluded that the goal was challenging but feasible. Now that the AGF has reported, we are committed to identifying ways in which we can work with others to take this work forward. The Secretary of State for Energy and Climate Change was a member of this group.

Supporting others to participate

12.11 With over 190 countries involved in the formal UN negotiations, often with divergent interests, reaching political consensus on a global deal is challenging.

12.12 An effective global deal will only be achieved if all countries can fully participate in the negotiations. The Government will establish an Advocacy Fund, which will support the very poorest countries to take part in international negotiations by providing access to legal, technical and logistical support.

Actions

Start date	End date	Description	Department responsible
Started	Sep 2011	Develop and launch an Advocacy Fund [to help the very poorest developing countries take part in international negotiations]*	DFID
Started	Dec 2011	Design a new international Green Fund with international partners	DECC**
Started	Dec 2011	Work for a comprehensive global agreement on climate, including securing significant progress at the UN Framework Convention on Climate Change negotiations in Cancun and South Africa	FCO†
Mar 2011	Mar 2011	Member States endorse EU negotiating positions for UNFCCC meetings in April and June	DECC
Sep 2012	Mar 2013	Monitor and evaluate the impact and value for money of the Advocacy Fund [to help the poorest countries take part in international negotiations]*	DFID
Dec 2012	Dec 2012	Work through the UNFCCC negotiations to make progress towards a global deal on reducing emissions and the provision of climate finance	DECC
2013	2015	Support work through the UNFCCC to review progress towards the 2 degree target and its adequacy in the light of latest science	DECC
Dec 2013	Dec 2013	Negotiations under ICAO and IMO to encourage reduction in emissions from aviation and maritime sectors	DfT

* See first note on page 21.
** Working with DFID and HMT.
† Working with DECC.

CHAPTER 13:
ACTION IN NORTHERN IRELAND, SCOTLAND AND WALES

13.1 This is a UK-wide Carbon Plan. Some matters which relate to climate change and energy policy in Northern Ireland, Scotland and Wales are the responsibility of the Devolved Administrations, and therefore decisions on these matters are made in the light of each administration's particular circumstances. Which areas are devolved and which are not vary in each case, but in general terms each Devolved Administration has programmes on low carbon economic development, fuel poverty, energy efficiency, and environmental, agricultural and rural policy. Energy is particularly complicated; for example, Northern Ireland's energy system is closely linked to that of the Republic of Ireland. This chapter sets out the actions that the Devolved Administrations in Northern Ireland, Scotland and Wales are taking in relevant policy areas, outlining just some of the range of activity being undertaken in each sector of the economy.

Northern Ireland

13.2 The Northern Ireland Executive has committed to reduce emissions by 25% relative to 1990 levels by 2025. The Executive and the Northern Ireland Assembly have also consented to the extension of the Climate Change Act 2008 to Northern Ireland, and are contributing to UK carbon budgets and targets. The Department of the Environment (DOE) has led the development of a cross-departmental Action Plan to reduce greenhouse gas emissions. This has recently been agreed by the Northern Ireland Executive.

Actions

Start date	End date	Description	Department responsible
Started	Mar 2011	Consider Planning Policy Statement 1 (Sustainability) which is being undertaken to take account of, and give support to, planning reform implementation	DOE
Started	Apr 2011	Complete public consultation on draft Regional Development Strategy	Department for Regional Development (DRD)
Mar 2011	Mar 2011	Rethink Waste Capital Fund – £5.25m for initiatives which will boost waste recycling, reuse and prevention	DOE
Mar 2011	Mar 2011	Publish draft Regional Transportation Strategy for public consultation	DRD
Mar 2011	Mar 2011	Publish Sustainable Development Implementation Plan	Office of the First Minister and Deputy First Minister

Start date	End date	Description	Department responsible
Mar 2011	May 2011	Publication of Greenhouse Gas Emission Reduction Action Plan	DOE
Mar 2011	Jun 2011	Achieve emissions reductions from new buildings through a progressive tightening of thermal standards required under building regulations. Dept of Finance & Personnel (DFP) to take this forward in two stages – 2011 and 2013	DFP
Mar 2011	Sep 2011	Queen's University, Belfast and the University of Ulster will complete quality-related research into 'Clean Energies', 'Energy Storage' and 'Sustainability Measurement and System Evaluation'	Department of Employment and Learning (DEL)
Mar 2011	Dec 2012	Achieve renewable electricity target of 12% as part of the Department of Enterprise, Trade and Investment (DETI) Strategic Energy Framework (SEF)	DETI
Mar 2011	Mar 2015	Refine agricultural greenhouse gas inventories	DRD
Jan 2011	2020	Achieve renewable electricity target of 40% as part of the DETI Strategic Energy Framework (SEF)	DETI
Jan 2011	2020	Achieve heat from renewable sources target of 10% as part of the DETI Strategic Energy Framework (SEF)	DETI
Jan 2013	Mar 2013	Achieve emissions reductions from new buildings through a progressive tightening of thermal standards required under building regulations. Department of Finance & Personnel (DFP) to take this forward in two stages – 2011 and 2013	DFP

Scotland

13.3 The Climate Change (Scotland) Act 2009 sets an interim target to reduce Scottish greenhouse gas emissions by at least 42% by 2020 relative to 1990 levels, and a target to achieve an 80% reduction by 2050 against the same baseline. The Scottish Act also requires that annual targets are set at progressive intervals for the period 2010–50, and creates a statutory framework for monitoring and reporting on progress.

13.4 Annual targets for 2010–22 were agreed by the Scottish Parliament on 7 October 2010. A draft Report on Proposals and Policies setting out how these targets can be delivered was subsequently published on 17 November. The draft Report is set in the context of Scotland's role in leading the way to a low carbon society, explaining what is meant by a low carbon society and economy, and why Scotland is ideally placed to be at the forefront of this transition. The final Report on Proposals and Policies will be published after a 60-day period for Parliamentary scrutiny, as required by the Scottish Act.

13.5 The Scottish Government is currently developing a Low Carbon Management Framework that will further embed the responsibility to develop and monitor policies to reduce emissions across the

whole of Scottish Government policy development and delivery. This will include the development of a 'scorecard' of activity milestones and indicators against which progress will be monitored.

Actions

Start date	End date	Description	Department responsible
Mar 2011	Mar 2011	Publication of Land Use Strategy which will set out a vision and long-term objectives for an integrated approach to sustainable land use in Scotland	Scottish Government
Mar 2011	Mar 2011	Publication of a report setting out Scottish Government's position on potential use of regulation to enforce energy efficiency standards in the private sector	Scottish Government
Mar 2011	Mar 2011	Work with the Carbon Trust to produce on the procurement of energy efficient, low carbon buildings in the public sector	Scottish Government
Apr 2011	Apr 2011	Legislation in force on permitted development rights for microgeneration in domestic and nondomestic properties	Scottish Government
May 2011	Jun 2011	Advice from the Committee on Climate Change on Scottish targets and associated matters	Scottish Government
Oct 2011	Oct 2011	Annual targets to be set for 2023–2027 (with successive batches at five-year intervals thereafter). Report on Proposals and Policies to meet targets to be published as soon as reasonably practicable thereafter	Scottish Government
Dec 2011	Dec 2011	Limit on use of carbon units to be set for 2013–17 (with successive batches at five-year intervals thereafter)	Scottish Government
Dec 2011	Dec 2011	Target to generate 31% of final electricity demand from renewables	Scottish Government
Jan 2012	Jan 2012	Report on progress requested from the Committee on Climate Change (and annually thereafter)	Scottish Government
Mar 2012	Mar 2012	Scottish Government response to Committee on Climate Change progress report (and annually thereafter)	Scottish Government
Oct 2012	Oct 2012	Scottish Government report on whether annual target met (and annually thereafter)	Scottish Government
Jan 2013	Jan 2013	Implementation of outcomes of review of new-build domestic energy standards for 2013 – intention of further improvement to achieve a 60% reduction in emissions compared to 2007	Scottish Government
Dec 2013	Dec 2013	50% of waste collected from households to be recycled, composted and prepared for reuse	Scottish Government

Wales

13.6 The Welsh Assembly Government has made a commitment for Wales to reduce greenhouse gas emissions by 3% each year in areas of devolved competence from 2011 against a baseline of average emissions during 2006–10. It has also committed to a 40% reduction in emissions by 2020 against a 1990 baseline. These commitments, along with sectoral emissions targets and a package of measures for delivery, are set out in Wales' Climate Change Strategy and accompanying Delivery Plans, which were published in October 2010. By 2025, the Welsh Assembly Government also wishes to see Wales producing more electricity each year from renewables, especially from marine resources, than the electricity that is consumed by the nation each year.

Start date	End date	Description	Department responsible
Oct 2011	Oct 2011	UK Climate Change Committee advice to Assembly Government on delivery of Climate Change Strategy and review of actions (and annually thereafter)	Welsh Assembly Government
Dec 2011	Dec 2011	Climate Change Commission for Wales report on Assembly Government delivery of Climate Change Strategy (and annually thereafter)	Welsh Assembly Government
Jan 2012	Jan 2012	Assembly Government report to National Assembly for Wales on delivery of Climate Change Strategy and refresh of Delivery Plans (and annually thereafter)	Welsh Assembly Government
Sep 2012	Sep 2012	Final greenhouse gas emissions inventory figures for 2010, enabling confirmation of 2006–10 average emissions baseline (against which the 3% target is measured)	Welsh Assembly Government
Sep 2013	Sep 2013	Greenhouse gas emissions inventory figures for 2011, enabling accurate reporting of progress for first year of 3% target (and annually thereafter)	Welsh Assembly Government