Government Response to the Third Annual Progress Report of the Committee on Climate Change

October 2011

HM Government

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Foreword by the Secretary of State

The Government welcomes the Committee on Climate Change's (CCC) third annual report on progress towards meeting our carbon budgets. I would like to thank the Committee for continuing its tradition of robust analysis and independent advice.

As the report makes clear, important progress has been achieved. Despite a small increase between 2009 and 2010, overall greenhouse gas emissions have fallen by more than 25% since 1990. However, if we are to reach our ultimate destination – an 80% reduction in emissions by 2050 – the pace of carbon cuts must increase during future budget periods.

The good news is that we already have a comprehensive package in place to deliver the reductions we need. And we expect that the UK will outperform the first three budgets, in line with the Committee's recommendation. Our latest projections – published alongside this response – show that we will undercut them by 96, 132 and 87 $MtCO_2e$ respectively.

This projected over-achievement would put the UK in a strong position to deliver even greater reductions, allowing us to keep pace should the EU move to a more ambitious emissions target – a move we continue to encourage.

Since the CCC's last progress report, we have taken important steps towards a cleaner future. From energy efficiency to carbon capture and storage, we are beginning to correct the market and policy failures that lead to spiralling carbon emissions in the first place.

Acting on the Committee's advice, we have set an ambitious fourth carbon budget. Meeting it will mean halving our net emissions by 2025.

Our electricity market reform white paper, published in July, set out our plans to secure the next generation of clean energy infrastructure.

The Renewable Heat Incentive is a world first, creating an unprecedented market in renewable heat. Carbon capture and storage projects are breaking new ground. The designation of the Energy National Policy Statements helps us to plan better for the low carbon revolution.

The Green Deal is our pioneering programme that will improve the energy efficiency of homes and businesses right across the UK, and the Green Investment Bank will channel substantial private investment into low carbon technology.

Together, these policies will help deliver a green and prosperous future for the UK.

They will make our homes more efficient to heat, and our power plants cleaner to run. They will reduce the risks for investors in low carbon technology by setting out a clear and stable investment framework.

Crucially, they will also help us reduce our carbon emissions over the decades to come. And that, after all, is why the CCC was created in the first place.

I welcome this progress report. I am grateful for the professionalism and dedication with which it was prepared; and I look forward to another year of working toward its ultimate aim: a cleaner, more sustainable economy.

Chris Huhne
Secretary of State for Energy and Climate Change

Chapter 1: Introduction and background

1.1 The Government is fully committed to delivering commitments under the Climate Change Act 2008 ('the Act'), the world's first long-term legally binding national framework to tackle the cause and mitigate the effect of climate change. At the heart of the Act is a legally binding target to reduce the UK's greenhouse gas (GHG) emissions to at least 80% lower than the 1990 baseline by 2050, to be achieved through action at home and abroad. To drive progress towards this target, the Act introduced five year '*carbon budgets*', that define the emissions pathway to achieve the 2050 target, starting in 2008. Carbon budgets drive the transition to a low carbon economy by ensuring the Government puts in place policy measures to achieve emissions reductions consistent with the pathway set by carbon budgets.

1.2 Each carbon budget lasts five years. The first three were set in May 2009 and will require GHG emissions to be reduced by at least 34% against 1990 levels by 2020. Table 1 below sets out the UK's legislated carbon budget levels.

1.3 The fourth carbon budget, which will run from 2023-2027, was set in June 2011 at 1,950 $MtCO_2e$ and requires emissions to be reduced by 50% against 1990 levels. The level of the fourth carbon budget will be reviewed in 2014 to ensure

Table 1: Legislated Carbon Budgets:

	First carbon budget (2008-12)	Second carbon budget (2013-17)	Third carbon budget (2018-22)	Fourth carbon budget (2023-27)
Legislated carbon budget levels ($MtCO_2e$)	3,018	2,782	2,544	1,950
Percentage reduction from baseline[1]	22.9%	28.9%	35.0%	50%

[1] These percentages have changed since 2009 when legislated and quoted in the Low Carbon Transition Plan ('The UK Low Carbon Transition Plan – National Strategy for Climate and Energy'; DECC (2010); www.decc.gov.uk/en/content/cms/what_we_do/lc_uk/lc_trans_plan/lc_trans_plan.aspx) owing to a update in the GHG Inventory which revised total 1990 baseline UK GHG emissions from 777.4 $MtCO_2e$ to 783.1 MtCO2e. This number is the denominator in this calculation, hence whilst the budget levels (in $MtCO_2e$) have not changed, the 1990 baseline and percentage reductions have.

consistency with the EU Emissions Trading System. If, at that time, our domestic commitments place us on a different emissions trajectory than the EU ETS trajectory agreed by the EU, we will, as appropriate, revise up our budget to align it with the actual EU trajectory.

1.4 The Act also established clear and regular accountability to Parliament. It requires the independent Committee on Climate Change (CCC) to report by 30 June each year on progress towards meeting carbon budgets and the 2050 target. The Government must in turn lay a response to this progress report before Parliament by 15 October in the same year.

1.5 Except where clearly stated, this response reflects the views of the UK Government. Devolved Administration views are set out on pages 41-48.

1.6 The CCC's third annual progress report, entitled *Meeting Carbon Budgets – 3rd Progress Report to Parliament*, was published on 30 June 2011.[2]

1.7 The CCC's key messages are that:

- Meeting long-term carbon budgets requires an acceleration in the rate of emissions reduction;
- Emissions in 2010 were within the limits of the first carbon budget, but this was primarily due to the impact of the recession in 2009, which reduced emissions by 9%. The CCC believe there is a need to outperform the currently legislated first three budgets in order to make the fourth carbon budget feasible, and to do this without the purchase of offset credits.
- There was mixed progress against the CCC's indicators in 2010:
  - An increase is needed in the rate of improvement in building insulation and investment in renewable heat;
  - Good progress was achieved on improving the efficiency of new cars and boiler replacement;
  - Progress in adding renewable power generation was broadly on track whilst moving forward with Carbon Capture and Storage (CCS) remains an urgent priority.
- Effective implementation of Electricity Market Reform and the Green Deal will be crucial in driving emission reductions required to meet carbon budgets. In particular the CCC recommends that:
  - The Government should announce new electricity market arrangements based on long term contracts ("contracts for differences"). It also stresses the need for a smooth transition from current arrangements to support renewable generation in order to avoid an investment hiatus.
  - As part of the Green Deal, the Government should commit to ambitious targets to insulate all lofts and cavity walls by 2015, and two million solid walls by 2020; and that energy companies should be required to deliver these targets or equivalent emissions reductions under the proposed Energy Company Obligation.

[2] http://www.theccc.org.uk/reports/3rd-progress-report.

Chapter 2: Economy-wide emissions

2.1 The provisional emissions estimates for 2010 published earlier this year[3] on the performance of UK greenhouse gas (GHG) emissions against UK emission reduction targets show the following[4]:

- Territorial emissions, which exclude the impact of trading within the EU Emissions Trading System (EU ETS), increased by **2.9%** to 577.9 $MtCO_2e$ from 561.8 $MtCO_2e$ in 2009;
- The net UK carbon account, which includes the impact of emissions trading, increased by **1.8%** to 585.6 $MtCO_2e$ in 2010 from 575.4 $MtCO_2e$ in 2009.

2.2 The Government agrees with the CCC that the increase in emissions resulted primarily from a rise in residential gas use, combined with fuel switching away from nuclear power to coal and gas for electricity generation. The fact that 2010 was, on average, the coldest year since 1986 resulted in a rise in residential gas use. Separately, power sector emissions increased, largely due to outages at nuclear power stations leading to reduced nuclear electricity generation and an increase in coal and gas electricity generation.

2.3 Table 2 below summarises these results alongside equivalent figures for 2009 and shows the percentage change in emissions relative to the carbon budgets baseline[5]:

Table 2: UK GHG emissions in 2009 and 2010 (provisional) and percentage reduction against the carbon budgets baseline

Target	Scope	Baseline	Emissions ($MtCO_2e$)		Change from baseline (%)	
			2009	2010 (p)	2009	2010 (p)
Carbon Budgets	Excluding the impact of trading within the EU ETS	783.1	561.8	577.9	–28.3%	–26.2%
	Including the impact of trading with the EU ETS		575.4	585.6	–26.5%	–25.2%

[3] Territorial emissions and the net UK carbon account estimate for 2010 are provisional and may be subject to change. More details on the provisional emissions figures for 2010 can be found here: http://www.decc.gov.uk/en/content/cms/statistics/climate_stats/gg_emissions/uk_emissions/2010_prov/2010_prov.aspx

[4] http://www.decc.gov.uk/en/content/cms/statistics/climate_stats/gg_emissions/targets/targets.aspx. The provisional emission estimates referred to in the rest of this document follow from this publication.

[5] The carbon budgets baseline consists of emissions of carbon dioxide, methane and nitrous oxide in 1990, and of F-gas emissions in 1995. Unlike the Kyoto target baseline, the carbon budgets baseline is not fixed and can change every time the inventory is updated.

2.4 Table 2 shows that the net UK carbon account decreased by 25.2% relative to the carbon budgets baseline. The first carbon budget requires that total UK GHG emissions do not exceed 3,018 $MtCO_2e$ over the five-year period 2008-12, which is approximately 23% below the carbon budgets baseline level on average over the period.

The DECC energy and emissions model

2.5 The CCC has stated that while the overall approach of the DECC emission projections model was sensible, the model did not fully capture the impacts of the recession. The CCC report noted that DECC was undertaking a review of its Emission Projections Model and made a number of recommendations on areas to be considered in the review.

2.6 DECC has published new emission projections in its Updated Energy and Emission Projections publication.[6] The new projections reflect new input assumptions as well as improvements to the methodology used to project energy demand following its review of the model. In terms of the impact of the recession, DECC emissions projections take into account the direct impact of the most recent Office for Budget Responsibility projections of GDP. The Updated Energy and Emission Projections publication provides detailed information on the assumptions and drivers of DECC new energy and emission projections as well as improvements to the methodology.

Pace of emission reductions

2.7 The Government's latest projections suggest that the UK is on track to meet its first three legislated carbon budgets with current planned policies. We expect to reduce emissions to below our first three carbon budgets by 96,132 and 87 $MtCO_2e$ respectively on central forecasts. This forecast of over-achievement, is consistent with the CCC's call for outperformance of our legislated carbon budgets.

2.8 The Government agrees with the CCC that acceleration will be required in the pace of emissions reductions to meet longer-term carbon budgets and that implementation of policies and measures across all sectors of the UK economy

Table 3: October 2011 Emission Projections[7] – expected performance against the first three carbon budgets:

	First carbon budget (2008-12)	Second carbon budget (2013-17)	Third carbon budget (2018-22)
Carbon Budget levels ($MtCO_2e$).	3018	2782	2544
Central emission projection ($MtCO_2e$).	2,922	2,650	2,457
Projected performance against first three carbon budgets ($MtCO_2e$). Negative implies under budget.	–96	–132	–87
Uncertainty Range (high to low emission projection in $MtCO_2e$).	–73 to –124	–73 to –172	–19 to –142

[6] http://www.decc.gov.uk/en/content/cms/about/ec_social_res/analytic_projs/en_emis_projs/en_emis_projs.aspx

[7] http://www.decc.gov.uk/en/content/cms/about/ec_social_res/analytic_projs/en_emis_projs/en_emis_projs.aspx

will be necessary to ensure that emissions continue to fall at the right pace, particularly in light of GDP growth as the economy continues to recover from recession.

2.9 It is important to stress, however, that the Government already has a comprehensive package of policies and measures in place to deliver the emissions reductions necessary to meet our first three carbon budgets to 2022. We expect to see continued progress as our policies take effect along with the impact of policies already introduced over the last few years, that will similarly continue to drive down emissions.

2.10 We are determined to drive the transition to a secure, low carbon, affordable energy system in the UK and combat the challenge of climate change. To that end we proposed, and Parliament approved, the fourth carbon budget in June this year in line with the CCC's recommended level of 1,950 $MtCO_2e$. This will mean halving emissions over the 2023-2027 fourth budget period from 1990 levels, contingent on equivalent action across the EU in the Emissions Trading System.

2.11 Meeting this target will be challenging but achievable. It will require a transition to a greener, more energy efficient economy, with more and better insulated homes, more power coming from low carbon sources and more utilisation of electric vehicles. It is a framework not just for action on climate change but, vitally, for growth and prosperity. It also, importantly, demonstrates our commitment to addressing climate change to the international community.

2.12 We also note that in the CCC's view, the level of ambition in the cross Government draft Carbon Plan published in March this year[8] is broadly consistent with the level of ambition set out in the CCC's indicator framework which covers abatement measures and policy milestones for meeting our carbon budgets. The updated Carbon Plan will be published later this autumn.

2.13 To ensure that emission reductions are delivered and the pace is accelerated going forward we are working on a range of initiatives including the following:

2.14 This year's Budget[9] built on a strong green Spending Review[10] settlement and provided a clear, long term signal to energy investors through the introduction of a carbon price floor for electricity generation and commitment to ensuring that the Green Investment Bank has the necessary resources to help the UK move towards a low carbon economy.

2.15 In July this year, the Government published *Planning our Electric Future: a White Paper for secure, affordable and low- carbon electricity*.[11] The White Paper sets out key measures to attract investment, including the introduction of a new system of Contracts for Difference, as called for by the CCC, to reduce the impact on consumer bills, and create a secure mix of electricity sources including gas, new nuclear, renewables, and carbon capture and storage. *The Renewables Roadmap*.[12] published alongside the White Paper outlines a plan of action to accelerate renewable energy deployment to meet the target of 15% of all energy by 2020 whilst driving down costs.

2.16 The Government is introducing the Green Deal – an innovative financing mechanism that will enable households and businesses to invest in energy efficiency improvements that are expected to pay for themselves through estimated savings from energy bills. We are also rolling out Smart Meters in the UK to every home in less than a decade and are introducing the Renewable Heat Incentive (RHI) – a financial incentive to support renewable heating, such as air and ground source heat pumps, in commercial and domestic buildings.

2.17 Developers of major energy projects in England and Wales will now have greater certainty on how planning applications will be considered following the designation of the Energy National

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[8] http://www.decc.gov.uk/en/content/cms/tackling/carbon_plan/carbon_plan.aspx

[9] http://www.hm-treasury.gov.uk/2011budget.htm

[10] http://www.hm-treasury.gov.uk/spend_index.htm

[11] http://www.decc.gov.uk/en/content/cms/legislation/white_papers/emr_wp_2011/emr_wp_2011.aspx

[12] http://www.decc .gov.uk/en/content/cms/meeting_energy/renewable_ener/re_roadmap/re_roadmap.aspx

Policy Statements in July. This will provide greater confidence for industry investment decisions in energy infrastructure.

2.18 We are leading by example having exceeded the Prime Minister's pledge to cut Government HQ emissions by 10% in one year, and achieved a nearly 14% reduction in emissions. The Government has made a commitment to go further and reduce emissions by 25% by 2015.

2.19 The Government is also committed to improving energy efficiency standards at the point of new build and when building work is carried out to existing properties. In October 2010 changes to the Building Regulations introduced a 25% improvement on previous standards for new buildings. The current review of Building Regulations is looking at strengthening standards again in 2013. This in line with policy for zero carbon and considering provisions for the existing stock in support of the Government's emerging policies on retrofit, including the Green Deal.

2.20 Moreover, over the next decade, we expect efficiency improvements to conventional road vehicles to continue to provide the most significant reductions to transport's overall carbon impact. In the longer term, ultra low emission vehicles are likely to play a greater role and that is why we have confirmed a £400m programme to support the uptake of these vehicles. This includes provision of £300m consumer incentives over the lifetime of the Parliament to help consumers and businesses purchase an electric, plug in hybrid or hydrogen fuelled car. The Government also published the Plug-In Vehicle Infrastructure Strategy on 30 June 2011 to set out the framework for the development of recharging infrastructure in the UK.

2.21 Earlier this year the Government published the *Review of Waste Policies*[13], which looked at nearly all waste policy and delivery in England, and set a long-term direction towards a zero waste economy, where all resources are valued. The Review contains over 60 actions for Government, business and wider society that will help push the management of waste up the waste hierarchy and reduce the carbon impact of waste.

2.22 Internationally, we are committed to driving global action by working towards our international goals on climate change; and are working with our partners in Europe to help secure a move to an EU 30% target from the current target to reduce emissions by 20% by 2020. If the EU strengthens its target, and following negotiations amongst Member States, we will tighten our second and third carbon budgets as the CCC has called for.

2.23 Later this autumn we will be publishing a strategy that will set out scenarios for meeting the fourth carbon budget, as required under the Climate Change Act 2008. It will also articulate our vision to 2050 to achieve the 80% reduction target and include an updated Carbon Plan which will outline shorter-term actions the Government commits to undertake and key milestones to keep us on track to delivering our ambitious climate change goals.

[13] http://www.defra.gov.uk/publications/files/pb13540-waste-policy-review110614.pdf

Chapter 3: Power sector emissions

Emission trends

3.1 Our provisional estimates show that emissions from power stations increased by 3.9% between 2009 and 2010, largely due to outages at nuclear power stations leading to reduced nuclear electricity generation and an increase in coal and gas electricity generation. For the energy supply sector as a whole, including oil and gas production, coal mining and oil refining, there was a 3.2% increase in emissions over the period.

Electricity Market Reform

3.2 The Government published its White Paper on Electricity Market Reform (EMR), *Planning our electric future: a White Paper for secure, affordable and low carbon electricity*[14], on 12 July. The White Paper sets out the Government's commitment to transform the UK's electricity system to ensure that our future electricity supply is secure, low carbon and affordable.

3.3 Together the package of reforms will:

- provide a more efficient and stable framework for investors, ensuring that the cost of capital required for new low carbon generation capacity is lower. This varies by technology but the overall effect of the cost of capital reductions from Electricity Market Reform will be a potential saving of £2.5 billion over the period to 2030;
- encourage investment in proven low carbon generation technologies, but also allow new technologies such as CCS to get off the ground and allow them to become cost-effective and compete without support. This is vital to our ability to adjust to different scenarios for fossil fuel prices;
- boost competition within the market as it will provide the framework for independent generators and new investors to invest in low carbon generation. The ability of new entrants to come to the market will also be supported by action from Ofgem to improve liquidity;
- lead to competition within and between different low carbon generation technologies for their appropriate role in the energy mix, as we move to technology-specific auctions for contracts towards the end of the decade, and technology-neutral auctions further in the future;
- introduce an appropriate policy framework in the electricity sector to contribute towards delivery of the fourth carbon budget; and
- achieve our aims at least cost to the consumer.

3.4 Furthermore, the reforms are designed to achieve electricity decarbonisation in line with the fourth carbon budget, and to meet the electricity share of our legally-binding renewables target.

[14] http://www.decc.gov.uk/en/content/cms/legislation/white_papers/emr_wp_2011/emr_wp_2011.aspx

3.5 The CCC suggested four key areas for consideration in developing a White Paper on electricity market reform. These four areas are covered below.

Feed-in Tariff with Contracts for Difference/Quantity-based approach/ Technology policy

3.6 The Government agrees with the CCC that the new arrangements should be based on long-term contracts which will provide greater revenue certainty to investors, bringing forward higher levels of investment at lower costs to the consumer. At the heart of our strategy to reform the electricity market is a new system of long-term contracts in the form of Feed-in Tariffs with Contracts for Difference (FiT CfD), providing clearer, more stable and more predictable revenue streams for investors in low carbon electricity generation. This is expected to be a cheaper, more robust mechanism than Premium Feed in Tariffs and provides greater certainty that we will meet our carbon emissions targets. These new contracts could be delivered by a range of possible delivery organisations – including private sector bodies. As has been set out, future strategy will be evaluated periodically, with the first assessment in 2016 considering whether the new contract structure is delivering the benefits and advantages over the existing system that are expected.

3.7 With regard to the CCC's point on the new arrangements being technology neutral, FiT CfDs will provide long-term support for all forms of low carbon electricity generation and will vary the key features of the FiT CfD to develop an approach that is best suited to each of the low-carbon generation types. It will be appropriate, however, to provide extra support to early stage technologies on 'infant industry' grounds. In time, low carbon technologies can compete against each other on a level playing field to find their place in the energy mix.

3.8 We recognise the CCC's preference for a quantity-based approach in relation to FiT CfDs, and are factoring this in to our considerations. As set out in the White Paper, the Government remains attracted to a competitive price setting process. Further details will be published later this year.

3.9 We also welcome the CCC's technical considerations for contract design and will consider these as we develop further our proposals prior to bringing forward legislative provisions early in the second parliamentary session.

Complementary levers:

Carbon Price Floor

3.10 To enable a secure low carbon transition in the UK power sector and to encourage investment, the Government believes that there is a strong rationale to provide greater certainty and support to the carbon price faced by the sector. Therefore, we have moved to providing a stronger carbon price to promote investment in low carbon generation over the longer term, to allow investors to include it as part of their investment appraisal.

3.11 The carbon price floor is aimed at promoting stability and certainty in the carbon price to encourage investment in low carbon generation now. Investment decisions are taken years in advance. This measure gives an early and credible long-term signal, through a linear trajectory starting in 2013, to investors that we are serious about encouraging investment in low carbon electricity generation now to meet the investment challenge of the future.

3.12 We have designed the price floor to also enable a more long-term and credible carbon price within the tax system. We believe it will work in conjunction with the FiT CfD to provide more certainty of revenues to generators and make investment in low carbon technology more attractive.

3.13 The primary legislation was passed in the Finance Act 2011. The Government has set out the price floor and the tax rate will be set in advance to ensure a minimum price of carbon in the electricity generation sector.

Emissions Performance Standard

3.14 The Government sought views on two options for the level of the Emissions Performance Standard (EPS):

- a level equivalent to 600g CO_2/kWh, consistent with demonstrating post-combustion CCS on a new, supercritical coal-fired power station; and
- a level equivalent to 450g CO_2/kWh, with specific exemptions for plant forming part of the UK's CCS demonstration programme or benefiting from European funding for commercial-scale CCS projects.

3.15 We concluded that an EPS for fossil fuel plant, set at the tighter annual limit of CO_2 equivalent to 450g/kWh (at base-load), should be introduced.

3.16 Our intention is that the EPS will act as a regulatory backstop to limit how much carbon new fossil fuel plants can emit, and sit alongside the other policies set out in the consultation to act as a suite of measures to drive decarbonisation.

3.17 The EPS must, however, be introduced in a form that provides long-term certainty to investors over regulatory measures, and offers them a sufficiently clear understanding of the regulatory environment that will govern their plant. Fossil fuels, including gas, will continue to play an important role in our energy mix as we make the transition to a low carbon economy. Gas, in particular, will be needed to provide vital flexibility to support increasing amounts of low carbon generation and to maintain secure and affordable electricity supplies. It is therefore critical that we are able to give investors sufficient confidence to build the plants we will need over the coming years, whilst also ensuring that we fulfil our decarbonisation objectives. We will therefore set the level of EPS that will apply to the plants for a clear and pre-determined period. Many, although not all, responses to the consultation considered that this 'grandfathering' was a critical provision in providing investment certainty and maintaining security of supply.

3.18 We recognise that, in the future, it may be appropriate to use a tighter EPS. For example, this may be appropriate once the commercial and technical viability of CCS technology, as well as costs, are better understood. The Government will review key aspects of the EPS, including its level, as part of decarbonisation reporting required under section five of the Energy Act 2010.

Nuclear new build

3.19 The CCC recognised that there has been good progress against its indicators for new nuclear development.

3.20 Since publication of the CCC's third progress report, the suite of National Policy Statements for energy infrastructure were designated on 19 July 2011. Planning permission for preparatory site works at Hinkley Point C was granted by West Somerset Council on 28 July and the stated intention of the developers is to submit an application to the Infrastructure Planning Commission in autumn 2011 to build a new nuclear power station on the site.

3.21 The timetable for completion of the Generic Design Assessment (GDA) for reactor designs has been affected by the events at the Fukushima nuclear plant in Japan. Regulators and industry have agreed to extend the timetable for GDA to take into account Dr Mike Weightman's final report into the incident in Japan. Regulators have stated that they expect to issue interim statements of design acceptability by the end of the year, a delay of six months.

Renewables

3.22 The CCC noted that progress against forward indicators for renewables was generally on track in 2010. However, going forward a significant acceleration in the pace of investment is required to achieve renewable targets.

[15] http://www.hse.gov.uk/nuclear/fukushima/final-report.pdf

Onshore wind

3.23 *The Renewables Roadmap* ('the Roadmap'), published alongside the EMR White Paper sets out an action plan to accelerate the UK's deployment and use of renewable energy, whilst driving down the cost of renewable energy over time.[16] The Roadmap suggests a central range of between 10 and 13 GW of onshore wind deployed by 2020. In addition to more than 4 GW of onshore wind already installed, the current pipeline of development projects shows there is a further 11 GW of capacity currently under construction, awaiting construction, or in the planning process across the UK.[17] Assuming historic consent rates, the existing pipeline could deliver a further 8.9 GW which, taken with that already installed, would provide a level of growth consistent with the high end of this range.

Offshore wind

3.24 The Roadmap shows a central range of between 11 and 18 GW of offshore wind deployed by 2020. In addition to the 1.5 GW of current operational capacity, there are almost 6 GW of Round 1 and 2 offshore wind projects currently in construction, awaiting construction, or in planning. Given the very low historical dropout rates for offshore wind, the deployment pipeline taken together with the capacity currently in operation represents 7 GW.

3.25 We agree that a significant ramp up in the pace of offshore wind development will be needed for the second budget period. However, there are a further 35 GW of projects, including extensions to Round 2 sites, developments in Scottish Territorial Waters, and Round 3 zones currently being scoped by developers. The Roadmap highlights specific actions to remove the current constraints to rapidly increased deployment and drive down costs. In particular:

- Establishing an industry Task Force to set out a path and action plan to reduce the costs of offshore wind, from development, construction and operations to £100/MWh by 2020;
- Delivering a co-ordinated portfolio of investment in offshore wind innovation including support of up to £30m in 2011-15 to reduce costs through technology development and demonstration;
- Providing focused support to enable development of the supply chain with the provision of up to £60m funding for the development of wind manufacturing facilities at ports and the Scottish Government's provision of £70m to strengthen port and manufacturing facilities in Scotland;
- Providing developers with certainty about the level and surety of Government financial support through the Renewables Obligation Banding review, and ensuring a smooth transition from the Renewables Obligation to the new EMR mechanisms;
- Working with developers and investors through the Offshore Wind Developers Forum to identify the investment capital required for offshore wind and whether further Government action is appropriate. Offshore wind will be a strong candidate for support from the Green Investment Bank; and
- Managing the potential impacts of offshore developments with other users of the sea and broader environmental considerations.

Marine generation

3.26 The Roadmap recognises that wave and tidal stream technologies are still at a relatively early stage of development. There is one operational 1.2 MW tidal stream turbine in Strangford Narrows in Northern Ireland and a number of tidal stream and wave energy devices, ranging up to 1 MW, deployed at the European Marine Energy Centre in Orkney for further testing.

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[16] http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/renewable-energy/2167-uk-renewable-energy-roadmap.pdf

[17] We cannot be certain that all the projects in the pipeline will be consented or commissioned or that they will progress quickly enough to contribute when needed.

3.27 Progress has been made in pre-commercial deployment in recent years, with several large scale prototypes now in testing and active plans from the industry to deploy small arrays in the next four years. Following the Strategic Environmental Assessment of Scottish waters by the Scottish Government, The Crown Estate has awarded commercial leases in the Pentland Firth and Orkney waters for 1.6 GW of marine generation, the first of its kind anywhere in the world. Further leasing rounds for other parts of Scotland have since been set in motion, a Marine Infrastructure Study will be undertaken shortly within Welsh waters to identify waters suitable for the deployment of prototype to commercial devices, and The Crown Estate recently launched a discussion process with the renewable energy industry on the design and development of offshore wind and tidal energy in Northern Ireland.

3.28 The Roadmap suggests that as commercial deployment of wave and tidal stream has yet to begin, up to 300 MW could be deployed by 2020, with much larger scale commercial deployment in the period after 2020. It identifies a number of priority actions, including:

- Delivery of a co-ordinated, targeted programme of marine innovation support over the next four years, including up to £20m of support from DECC for pre-commercial array demonstration;
- Establishment of an offshore renewables Technology and Innovation Centre, and new programmes to support research and development that will reduce the cost of marine energy;
- Work through the UK Marine Energy Programme to assist the sector in obtaining investment funding;
- Work with the sector to develop Marine Energy Parks through the publication of guidance by March 2012 and;
- Finalising the outcome of the Strategic Environmental Assessment consultation and input to policy on use of the sea.

Biomass

3.29 Biomass could play a significant role in decarbonising our energy system. However we agree with the CCC that the long-term availability of sustainable biomass, and therefore its potential role in electricity generation, is a key issue given the need to ensure the sustainable nature of the biomass supplies whilst also considering competing uses in the bio-economy such as the existing wood using industries.

3.30 Our analysis, set out in the Roadmap, indicates that under the central range the market has the potential to deploy up to 6 GW biomass electricity capacity by 2020. We anticipate that the majority of this growth will be met from conversion of coal plant, along with dedicated biomass generation, biomass waste combustion and anaerobic digestion. Landfill and sewage gas, which are significant in the baseline, have already been largely exploited. The upper end of the central range has a peak in 2011-2013 reflecting the short-term conversion of specific plants to biomass usage during this period. We see the short-term conversion of some coal plants to biomass together with co-firing as important transitional technologies. This would create the robust demand needed to bring forward new sustainable biomass supply chains on a timely basis, yet their expected short life span, of under 10 years, would mean as each plant closes, biomass supplies would be released back to the market for use elsewhere.

3.31 The Roadmap identifies the need to build robust supply chains of sustainable feedstocks as one of our five key priorities for optimising the contribution from biomass electricity. To ensure sustainability of the biomass, we introduced sustainability criteria to the Renewables Obligation (RO), which includes a minimum GHG emissions saving compared to fossil fuel and general restrictions on sourcing material from land important on carbon or biodiversity grounds. From April 2011, all bioliquids used for electricity generation must meet the criteria to receive support under the RO. For generators using solid or gaseous biomass, there is a short transition period of reporting on performance against the criteria, with support formally linked with meeting the criteria from April 2013.

3.32 In addition, the Government is developing a Bioenergy Strategy. This will set out our strategic

direction on the role of bioenergy to 2020 and beyond, taking into account the role of biomass electricity in the context of its potential alternative uses such as in heat and transport as well as other non-energy sectors. It will set out an expectation of sustainable biomass from domestic sources and imports, taking into account available evidence on the full life cycle carbon impact of biomass while also considering to the best degree possible Indirect Land-Use Change (ILUC) effects. The strategy is due for publication by the end of the year.

Planning

3.33 We agree with the importance that the CCC places on an effective planning system. Planning has a critical role in delivering the infrastructure we need to reduce our carbon emissions, to ensure continued security of energy supply and help our economy to grow. It is equally important for safeguarding our natural and cultural heritage and allowing individual communities the opportunity to shape their local environment. However, planning can be slow, bureaucratic, and too complex for local residents and business to use effectively.

3.34 In England, we have embarked on an ambitious programme of reform to deliver a simpler, swifter and more positive local planning system: both in its outlook and operation. DCLG published in July a central plank of these reforms: the *draft National Planning Policy Framework*.[18] This brings together national planning policy, including for renewable energy developments of 50 MW or less, into a concise and consistent format. The new framework is designed to be user-friendly and accessible, providing clear policies on making robust local and neighbourhood plans and development management decisions.

3.35 The framework confirms the important role of the planning system in tackling climate change, and making the transition to a low carbon economy, and sets out how the planning system should support the delivery of renewable energy. Local planning authorities will be expected to apply the new presumption in favour of sustainable development and approve planning applications for renewable energy if the impacts are acceptable.

3.36 Earlier this year, in the *Plan for Growth*[19] published alongside the Budget, the Government announced a range of measures to speed up the processes in England that applicants have to go through to obtain planning permission. These measures include a 'Planning Guarantee' that no planning application should take longer than one year to reach a decision, including any appeal, and reducing the information required to accompany planning applications. Both of these will be subject to full consultation later this autumn.

3.37 We are helping people generate their own electricity through new permitted development rights for small scale renewables. The permitted development rights announced by DCLG in September this year will remove the need for a planning application for domestic micro wind turbines and air source heat pumps.

3.38 We are also, through the Localism Bill currently in Parliament, reforming the major infrastructure planning regime to ensure accountable and timely decisions are taken. Under the Localism Bill the Government has announced plans to close the Infrastructure Planning Commission and transfer its functions to a new Unit within a more efficient and effective Planning Inspectorate. The new Unit will consider applications for energy infrastructure over 50MW and advise the Secretary of State for Energy and Climate Change, who will determine applications within 12 months of the start of their acceptance for examination. The Government will review the effectiveness of this regime once a range of cases have been through it.

3.39 In July the six National Policy Statements (NPSs) for Energy were approved by the House of Commons and designated by the Secretary of State for Energy and Climate Change. Designation of the Energy NPSs will ensure that we have a clear, robust and legitimate framework for decisions on major energy infrastructure projects.

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[18] http://www.communities.gov.uk/planningandbuilding/planningsystem/planningpolicy/planningpolicyframework/

[19] hhttp://cdn.hm-treasury.gov.uk/2011budget_growth.pdf

3.40 Alongside these reforms, the Government recognises that communities hosting renewable energy installations play a vital role in meeting a national need for secure, clean energy, and believes it is right that communities should be able to benefit from hosting renewable energy projects. That is why the Government has committed to allowing communities that host renewable energy projects to keep the additional business rates they generate. Proposals to allow local authorities to retain their business rates revenues, including from new renewable energy projects, are set out in the consultation paper *'Local Government Resource Review: Proposals for business rate retention' and 'Technical Paper 8: Renewable energy'*.[20]

Carbon Capture and Storage (CCS)

3.41 The Government agrees with the CCC that development of CCS must be progressed quickly. We expect to launch a call for further CCS projects later this year. This will be open to gas projects as we announced last year and we are intending to select projects on the basis of their contribution to delivering programme objectives as well as considering value for money and affordability. It is essential that the CCS programme is grounded in a strategic context and we will therefore also be publishing the CCS Roadmap later this year.

[20] http://www.communities.gov.uk/publications/localgovernment/resourcereviewtechnicalpaper8

Chapter 4: Buildings emissions

Emission trends

4.1 As the CCC has noted, direct residential emissions increased by 13% between 2009 and 2010. Direct emissions from the business and the public sector increased by 2% and 5% respectively over the same period. We will be able to see the year on year change in indirect emissions in these sectors over the same period when 2010 end-user emissions estimates are published in March 2012.

The Green Deal and Energy Company Obligation

4.2 The Energy Bill includes provision for a 'Green Deal' which we believe will revolutionise the energy efficiency of British properties. Put simply, the Government is establishing a framework to enable private firms to offer consumers energy efficiency improvements to their homes, community spaces and businesses at no upfront cost, and recoup payments through a charge in instalments on the energy bill. The Golden Rule principle, a key consumer protection mechanism means estimated savings must be equal to or greater than expected costs.

4.3 At the heart of the Government's proposals is the 'Green Deal Plan', an innovative financing mechanism which will allow consumers to pay back through their energy bills. This means consumers will be able to see the Green Deal charge alongside the reductions in energy use which generate savings on their bill. It also means that if they move out and cease to be the bill-payer at that property, the financial obligation won't move with them but will move to the next bill payer: the charge is only paid whilst the benefits are enjoyed. In this way, the Green Deal will differ from existing lending – it is not a conventional loan since the bill-payer will not be liable for the full capital cost of the measures, only the charges due whilst they are the bill-payer. This is a market mechanism, funded by private capital.

Financing through extending mortgages

4.4 The CCC suggests that there may be an opportunity for reducing costs through financing energy efficiency improvement through extending mortgages. The costs of Green Deal finance in the medium term, through achieving secure long-term receivables may be similar to the costs of many long-dated mortgages especially for those without significant equity. DECC believes that Green Deal finance is likely to provide a far more attractive proposition to most customers than remortgaging will provide because:

- Mortgages are secured on the property – a householder's property is at risk without repayments. Green Deal receivables would not be secured against the property;
- A mortgage on a given property ultimately requires repayment in full, irrespective of whether the mortgagee moves property. With the Green Deal, financial payment would only due whilst you are the bill-payer so if you move on you do not have to make the remaining repayments;
- The Green Deal will be about accredited measures and certified installers backed up by considerable consumer protection, as well as finance to support uptake. It will be a

straightforward and integrated package which will reduce drop-out rates due to hassle or inertia; and

- The direct link created between the energy savings and the finance charge in the Green Deal is designed to incentivise take-up. Financing through a mortgage would not achieve this, unless repayments were collected via the electricity bill.

4.5 In addition, as the CCC recognises, mortgage finance is clearly not an option available to everyone who could have a Green Deal. This is because the Green Deal will be available to those without mortgages (including those owner occupiers who have paid off their mortgage), and many mortgagees would lack the equity in the property to extend. In some cases the size of the Green Deal offered would not meet the minimum additional borrowing level required for remortgaging.

4.6 However the policy deliberately allows households, with sufficient equity in their properties to choose to remortgage in order to finance energy efficiency measures, and DECC is keen to support all viable financing options to support energy efficiency.

The Energy Company Obligation (ECO)

4.7 The Government agrees with the CCC's assessment that the ECO should be ambitious. We believe the key to realising this ambition is to provide the energy companies with a large degree of flexibility, thereby enabling them to deliver the most cost-effective carbon savings they can. Therefore, we propose setting an ambitious target based on overall outcomes, rather than imposing a rigid framework to deliver a specific number of measures.

4.8 Designing the ECO to include support for hard to treat properties that require significant investments such as Solid Wall Installation (SWI) will drive the market, increase consumer awareness, scale up delivery rates and drive down costs. This will ensure that core technologies such as solid wall insulation enter the mainstream and deliver on their potential to substantially reduce domestic CO_2 emissions.

Low income and Vulnerable households

4.9 ECO's other primary objective will be to support the delivery of measures which help vulnerable households on low incomes to heat their homes more affordably, including efficient heating systems, cavity wall and loft insulation. Together, these provisions and consideration of the structure of the scheme as a whole will help to mitigate the impact of costs passed through to consumers of ECO and contribute to DECC's efforts to tackle fuel poverty. At the same time, the Warm Home Discount scheme will provide rebates on energy bills for many low income, vulnerable households to further mitigate the impact of increasing energy bills.

Working in partnership

4.10 We also agree that the ECO could be delivered in partnership with large retailers and other private sector participants and are currently exploring ways of encouraging energy companies to provide their subsidy via whichever Green Deal delivery routes are most cost effective. We are also keen to build on the strengths of the Carbon Emissions Reduction Target (CERT) and the Community Energy Savings Programme (CESP) to design a framework that is sufficiently flexible to enable partnerships with local authorities. This could bring economies of scale and the sort of local community buy-in that could be crucial to encouraging take-up by individual householders.

Additional incentives

4.11 In the last budget, the Government committed to acting to encourage and incentivise take-up so that the Green Deal will appeal to households, businesses and prospective providers alike, before it is introduced in 2012. We are considering a range of options, though private companies are expected to develop their own incentives as part of usual commercial practice.

Non-financial barriers

4.12 The CCC recommended that all households should be provided with a free energy audit setting out opportunities for energy efficiency improvement that would address non-financial barriers (e.g. lack of information, hassle costs) and therefore increase consumer demand.

The Green Deal policy already reflects the CCC's recommendations under the Green Deal and Smart Meters policies. We already identified opportunities to provide relevant and complementary information and signposting to consumers, for example, raising awareness of Smart Meter rollout during a Green Deal assessment.

4.13 Also, there are a number of standardised products available free in the market already, for example online carbon calculator tools. These tools are already cross-marketed in a number of ways including by Local Authorities and water companies who have an interest in broader sustainability issues.

4.14 In addition the Government has developed a free online tool – the EPC Adviser – which enables householders to model a package of energy efficiency improvements based on their EPC and see the effect on their carbon emissions and fuel bills. EPC Adviser can be accessed at http://epcadviser.direct.gov.uk/epcadviser.html

Role of Local Authorities and other social landlords

4.15 Local authorities (LAs) have an important role to play in supporting the Green Deal and many are already planning how they can do so. Some LAs and other social landlords are actively looking to become early Green Deal providers themselves, including a number which are already undertaking pilot retrofit projects in advance of the Green Deal, which will help both landlords and suppliers to prepare for the Green Deal launch. Others are considering forming partnerships, for example with energy providers and other private sector organisations to deliver the Green Deal in their area. LAs already have a significant track record of partnership with energy companies and others to deliver energy efficiency improvements both to individual households and on a community wide basis, and we expect they will build on this best practice under the Green Deal. In practice, there will be strong natural incentives and varied opportunities for all social landlords to engage with and deliver the Green Deal, in particular the ability to attract new and additional sources of finance into their local areas to benefit local residents and businesses.

4.16 We are working with the Local Government Group, and directly with many LAs, to promote Green Deal delivery and wider carbon reduction activity, particularly in the context of the Memorandum of Understanding between DECC and the Local Government Group and the development of local government's proposed new Nottingham Declaration.

4.17 Under the Home Energy Conservation Act 1995 (HECA) local authorities are required to report from time to time to the Secretary of State for Energy and Climate Change on the measures they plan to take to improve the energy efficiency of residential accommodation in their areas. The forthcoming Green Deal will fundamentally change the landscape for improving household energy efficiency and we will work with local government in England to revitalise HECA, including developing a fresh and light touch approach to reporting, consistent with the UK Government's localism agenda. HECA is being repealed in Scotland, and alternative methods will be put in place there.

4.18 Furthermore, the Department of Communities and Local Government (DCLG) is working with the sector to develop permissive guidance to support LAs to develop local strategies for action on climate change. The guidance will provide voluntary advice to LAs, in a localist context, on how they can achieve their ambitions for cutting local carbon emissions.

Private rented sector

4.19 The CCC recommend that there is no reason to delay implementing regulation of F and G rated properties in the Private Rented Sector. It argues that improvements would be relatively low-cost in most cases (i.e. loft and cavity wall insulation, new boilers).

4.20 We consider that the Green Deal, which will be available from late 2012, tackles huge barriers to the uptake of energy efficiency in the Private Rented Sector as it overcomes the 'split incentive' whereby previously the landlord paid, but the tenant benefited. In addition, the Energy Bill contains provisions for a minimum standard for Private Rented Sector housing from 2018, and we intend for this to be set at EPC band 'E'. Landlords would be required to reach the minimum standard or carry out the maximum package of measures under the Green Deal and Energy Company Obligation (even if this does not take them to 'E'). Some exemptions would be set out in secondary legislation and could include, for example, listed buildings. A full impact assessment will be carried out in advance of secondary legislation, to analyse the impact of regulations, and we are committed to ensuring there are no net negative costs on landlords.

4.21 The Government will work with the sector well ahead of 2018 to encourage uptake of energy efficiency measures through the Green Deal. As a matter of law, the possibility of bringing in regulations earlier than 2018 is left open in the Energy Bill. However, the stated Government intention is for the regulations to come into force in 2018.

4.22 The CCC calls for Government to consider extending regulations to cover a higher proportion of the Private Rented Sector stock. A greater proportion of Private Rented Sector housing has the lowest energy efficiency rating than is the case in other tenures.

4.23 As part of these Private Rented Sector regulations, from 2016, landlords would not be able to unreasonably refuse their tenants' requests for consent to energy efficiency improvements. This will apply to all tenants, regardless of the energy efficiency of their properties. Therefore, these regulations would cover a higher proportion of the domestic Private Rented Sector than the minimum standard alone. The Government would also have the power to increase the minimum energy efficiency standard required through secondary legislation, if there was clear evidence to do so.

Renewable heat measures

4.24 The CCC notes that there has been very limited investment in renewable heat technologies, but that this is in line with their indicator framework, where increased investment is expected as new policies are introduced.

4.25 The Government agrees. Deployment of renewable heat doubled over the period between 2006 and 2010 from 1% to 2% of total heat demand. However, renewable heat technologies are still more expensive than fossil fuel alternatives. Without action to tackle cost, it is unlikely that deployment of renewable heat will increase much beyond current levels. To accelerate the pace of investment required to meet the UK's share of the EU's 2020 renewables target, the Government announced the world's first renewable heat support scheme of its kind in March 2011. The Renewable Heat Incentive (RHI) will encourage investment and significantly increase deployment of renewable heat technologies by providing regular payments over a 20 year period, covering its additional cost in comparison to the fossil fuel alternative and a rate of return on investment. The Government intends that the scheme will open for applications by the end of November 2011.

4.26 In the central scenario phase I of the RHI is forecast to increase deployment of non-domestic installations, bringing the cumulative deployment of renewable heat in 2020 to 65 TWh.[21]

4.27 As part of the first phase of the RHI scheme, the Government has also introduced Renewable Heat Premium Payments (RHPP) for the domestic sector. We have ring-fenced funding of around £15 million, which we will use to make premium payments to households who install renewable heating.

[21] This figure is in line with the assumptions in the March 2011 Impact Assessment but includes the updated energy projection, emission factors and energy prices

4.28 The CCC also states that there has been limited progress implementing renewable heat measures in 2010, with penetration remaining at low levels of less than 2%. The CCC notes there has been some progress on developing an enabling framework (e.g. the RHI), which it considered in detail in its Renewable Energy Review. It concluded that ongoing financial support would be required alongside accreditation of installers, and that the RHI and Green Deal should be integrated.

4.29 The Government recognises that one of the most significant barriers preventing take-up of renewable heating technologies is the higher costs compared with fossil fuel equivalents. Even where an organisation wants to install a renewable heating source, often it is deemed too expensive. The RHI will help to overcome this, making renewable heating more affordable by compensating for the additional cost.

4.30 To stimulate the supply chain for qualified engineers, the Government will ensure that certain installations of 45 kWth or less must be certified under MCS or equivalent and must have been installed by Microgeneration Certification Scheme certified engineers (or equivalent) to receive the RHI or RHPP. Above this level we are not planning on accrediting installers as we believe that owners of large installations are more likely and able to obtain the necessary expertise to guide their choices to ensure high quality installations and value for money.

4.31 DECC is currently developing Phase II of the RHI which will consider support for householders and additional non-domestic technologies. We are aiming to introduce any changes to the scheme in autumn 2012 with a view to ensuring we achieve 12% of heating from renewables by 2020.

4.32 We are currently looking at the best way for the RHI and Green Deal schemes to interact, and will publish proposals as part of the consultation on Phase II of the scheme which we hope to publish by early next year.

4.33 In addition, the CCC believes that strengthened incentives will be required to achieve a major ramp-up to 12% renewable heat penetration by 2020 and that the RHI is a first step, but its success in tackling financial barriers will depend on the support that the scheme provides for specific technologies and the overall level of funding.

4.34 The Government is committed to the ambition that by 2020, 12 per cent of heating can come from renewable sources. Despite the financial pressures, in October 2010, the Government announced £864 million of new support over the spending review period to support renewable heat measures. Given the fiscal constraints, we need to ensure that this investment is spent carefully. We have therefore focused the scheme to ensure that the investment maximises the renewables and carbon savings delivered. The first phase of RHI tariffs will support the non-domestic sectors. These sectors represent the most cost-effective way of delivering renewable heat, which will help us meet our renewables targets and reduce carbon emissions. We therefore want to introduce support now so installations can start being built. A full outline of the costs and benefits of the RHI are outlined in the impact assessment, which can be found on the Department of Energy and Climate Change (DECC) website.[22]

4.35 From the initial framework, we will then introduce Phase II of the RHI, where we will build in further elements to the scheme. It is the Government's intention that that the scheme remains open to new installations until at least 2020, therefore we will have opportunities to make changes to improve its operation. We intend to monitor and evaluate the RHI closely to ensure that it delivers our ambitious plans for renewable heat. In particular we will: monitor uptake under the scheme and progress towards the 2020 renewables target. Reviews will provide an opportunity to look at tariffs for specific technologies as well as other aspects of the scheme (e.g. eligibility, metering etc). Over time, we expect the cost of renewables to fall as technologies enter the mainstream, benefit from economies of scale and become more efficient.

[22] www.decc.gov.uk/rhi.

Purchase of energy efficient appliances

4.36 We note that the CCC believes that progress at 2010 rates would forego low cost abatement opportunities and that this raised a question about policy levers to encourage their uptake both at EU and UK levels. We understand, however, that due to time constraints the CCC figures quoted for sales projections of appliances have not been fully analysed. We also feel that it is too early in the Ecodesign[23]/labelling[24] policy cycle to carry out an accurate and full analysis of the effects that these policies will have on moving the market to more efficient products. The Ecodesign requirements for cold products came into effect on 1 July 2011 and the new label including the A+, A++ and A+++ does not become compulsory until December 2011. We fully expect these to move the market to the more efficient products. In addition, the UK has been implementing national voluntary initiatives for certain products, in order to increase the uptake of more efficient products.[25]

The Carbon Emission Reduction Target

4.37 The Government agrees with the CCC that more needs to be done, and that installation numbers are lower than expected. The slow progress in 2010 was symptomatic of the suppliers' rapid progress to their Carbon Emission Reduction Target (CERT) targets set for March 2011. CERT was extended early (in summer 2011) out to December 2012, with a new significantly higher target so as to drive new activity.

4.38 The most recent Ofgem CERT figures show a real upturn in activity, with almost half a million professional insulation measures now installed to the CERT extension target. Over three million further homes are expected to be treated by end 2012. We have re-focussed the CERT obligation to provide more emphasis on insulation measures and now require 68% of a supplier's obligation to be met by professionally installed insulation. This means that we expect delivery to remain high.

Community Energy Savings Programme

4.39 The Community Energy Savings Programme (CESP) is effectively a pilot, which will end in December 2012 when the Energy Company Obligation comes on stream. Its purpose is to understand issues around delivering energy efficiency schemes across whole communities, in particular delivering multiple measures in households with a particular focus on installing solid wall insulation at scale. As such, it has given rise to a number of technical and administrative challenges both for the obligated energy companies and Ofgem as the administrator of CESP. These issues are being resolved and to date 48 schemes (out of a total of 227 submitted) have been approved by Ofgem.

New buildings: Zero carbon policy

4.40 The Government's policy is that all new homes will be required to meet a zero carbon standard from 2016, and all new non-domestic buildings from 2019.

4.41 For zero carbon homes, this means a proportion of these carbon savings must be delivered on the site of the home through a challenging minimum requirement for fabric energy

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[23] The Eco-design Framework Directive sets minimum environmental performance standards for products across the EU. This is put into UK law by the Eco-Design for Energy Related Products Regulations (SI 2010 No 2617). Eco-design regulations aim to improve the environmental performance of products by reducing the impact of a product's life-cycle on the environment. This is done through regulation or voluntary agreements.

[24] The Energy Labelling Framework Directive sets energy labelling requirements for products across the EU. It requires a standard label showing energy efficiency, and other sustainability aspects such as water consumption, are displayed on products where they are sold. Energy labels are shown on a number of products, details are on the European Commission website.

[25] The Eco-design Framework Directive encourages the development of voluntary measures, where agreements between manufacturers are likely to deliver the policy objectives faster or cheaper than regulation. For products not currently covered by the commission's workplan or where there are opportunities to increase efficiency further in the UK, Defra and the Energy Saving Trust are working together to encourage voluntary action.

efficiency, reducing the amount of energy needed to heat them; and also through use of renewable energy generation technologies. Reflecting that it is in most cases impractical to achieve the zero carbon standard solely through such means, house builders will be permitted to deliver the remaining required carbon reductions away from the home, through investment in genuinely additional carbon abatement measures. For non-domestic buildings, where there are significant differences between the way buildings are designed, heated (or cooled) and how they use electricity, we are looking at how to develop differentiated zero carbon standards (as is currently done in the Building Regulations) but with the same principles – that buildings should have efficient fabric and services, renewable energy generation technologies where this is feasible and cost-effective, and other emissions covered by off-site carbon abatement measures.

4.42 The zero carbon homes standard will require a 100% reduction in carbon emissions covered by the Building Regulations. This covers emissions from energy used through heating, hot water, fixed lighting and other building services. They do not cover emissions related to energy use from cooking or from plug in appliances ('unregulated emissions'). Previously proposed approaches to zero carbon homes would have included unregulated emissions, and the CCC questions whether the current approach brings the potential to create a 'gap' in policy coverage. However, the Government's approach to zero carbon recognises the overlap of unregulated emissions with those covered by other policies, in particular the EU Emissions Trading System (ETS). The ETS cap already bears down on emissions from electricity generation, whether this is from on-site or off-site sources. The cap-and-trade nature of the ETS policy therefore severely limits the potential for any savings of unregulated emissions as part of a zero carbon policy to contribute to national carbon budgets. The Government has not yet stated whether or not the zero carbon non-domestic standards will cover unregulated emissions, though the same arguments against their inclusion apply to non-domestic buildings – perhaps more so, as there may also be overlap with the CRC Energy Efficiency scheme.

4.43 Part L of the Building Regulations is expected to be the main regulatory vehicle for the on-site elements of the zero carbon standards, and the current review is looking at further strengthening energy efficiency standards in line with policy for zero carbon and considering provisions for the existing stock in support of the Government's emerging policies on retrofit, including the Green Deal. The review is also looking at ways to support improved compliance and performance in practice. A consultation on proposed changes to the Building Regulations for 2013 is scheduled to begin in December 2011.

Existing non residential buildings

4.44 The CCC suggests that EPCs and Display Energy Certificates (DECs) should be rolled out to all non-residential buildings to provide more comprehensive information and to incentivise emissions reduction. Although EPCs are already required for non-domestic buildings when built sold or re-let, compliance has been low. Changes will be made to the existing Energy Performance of Buildings (Certificates and Inspections) (England and Wales) Regulations 2007 to tighten the existing requirements and improve compliance. The changes to the EPB Regulations will include the extension of the current requirements to commission an EPC that apply to residential buildings to all residential and non-residential buildings when sold or rented out and the requirements for the provision of an EPC with written particulars will be extended to all buildings sold or rented out. The Government is also working with the commercial sector to encourage the voluntary take up of DECs.

Public sector buildings and local government

4.45 The CCC has suggested that setting targets or standards, e.g. minimum EPC or DEC ratings, would bring the LA approach in line with that of central government and would create more confidence that emissions reductions would follow. The CCC suggested that the new Memorandum of Understanding (MoU) approach may not be sufficient to strengthen incentives for action to improve energy efficiency especially where financial budgets have been cut.

4.46 Our work over the last 12 months has highlighted just what can be achieved across the public sector, without targets or diktats from central government. We anticipate that outputs will be published from the Local Carbon Frameworks programme on potential routes/data sources and tools for optimising carbon savings of the public sector in late autumn. Delivering these savings in the most cost effective way will be taken forward in a manner in keeping with the Government's commitment to devolve control from the centre. Consistent with this, we have a number of workstreams in hand to challenge and support LAs to take action in the following ways:

- The Local Carbon Frameworks Pilot – a £2.5 million programme in 2010/11 involving 30 LAs with the aim of growing capacity. We will publish a full evaluation and case studies; and Council Frameworks on Climate Change Baseline Data and Methodology review for the benefit of all LAs later this autumn;
- The MoU between DECC and the Local Government Group through which LAs are encouraged to set themselves targets for emissions reductions (under a new Nottingham Declaration Partnership);
- The Home Energy Conservation Act will provide an effective framework to encourage LA participation in the Green Deal;
- Publishing data on LAs areas emissions as National Statistics which can be used by Non-governmental Organisations, communities and others to challenge LA's on their carbon performance. We have also issued guidance to LAs on how they should publish data on their own estate and operations emissions.

Chapter 5: Industry emissions

Emission trends

5.1 The provisional emissions estimates show that emissions from industrial processes decreased by 2% between 2009 and 2010.

Energy efficiency improvements

5.2 The CCC suggests that the existing set of policy measures is unlikely to encourage sufficient low carbon investment in energy-intensive industry to meet future carbon budgets because of significant barriers to investment. By the end of this year we will announce a package of measures for those energy intensive businesses whose international competitiveness is most affected by our climate and energy policies. The Green Investment Bank (GIB) will also play a vital role in addressing market failures which are holding back private sector investment in low carbon infrastructure. Sectors likely to be eligible for intervention initially include non-domestic energy efficiency and waste.

5.3 In addition, the Green Deal is being designed to help resolve the issue that many organisations do not have the upfront capital to invest in energy efficiency measures. The Green Deal is open to businesses and there is no formal cap on size of investment and payback period so these can be designed to be affordable over the long term, as long as the Golden Rule is met and businesses are not paying for measures beyond the life expectancy of the measures.

Low carbon heat

5.4 The CCC notes that modelling conducted by NERA[26] for their 2009 progress report suggests a potential to reduce industry emissions by around 9 $MtCO_2e$ through energy efficiency measures in the period up to 2020 primarily through biomass and biogas, with smaller contributions from heat pumps and CHP.

5.5 Gas Combined Heat and Power (CHP) is a highly cost-effective method of saving carbon. We still expect gas good quality (GQ) CHP[27] to play a key role in helping reduce carbon emissions within the industrial sector in 2020. If the gas network, or in particular industrial gas supply, decarbonises due to an injection of biogas then the carbon saving potential for gas CHP is extended.

5.6 There are currently a range of support measures for gas GQ CHP, including exemption from the Climate Change Levy (CCL) for input fuels and electricity exports and eligibility for Enhanced Capital Allowances (ECAs).

5.7 The Government believes that Renewable CHP will be a key technology in the sector as the grid decarbonises, as it offers far more efficient use of fuel than power-only generation.

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[26] NERA Economic Consulting report http://downloads.theccc.org.uk/docs/NERA%20Renewable%20Heat%20MACC%20report%20final%20revision.pdf

[27] Good Quality denotes CHP schemes that have met the efficiency criteria set down within the CHP Quality Assurance programme, thus making them eligible for Government support.

5.8 Work commissioned for the RHI indicates a potential for up to 2 GW of renewable CHP capacity by 2020.[28] Renewable CHP is supported with an uplift under the RO, ECA eligibility, and reward for the heat under the RHI.

Renewable Heat Incentive (RHI)

5.9 As set out previously in the Buildings chapter, the RHI will encourage investment and significantly increase deployment of renewable heat technologies by providing a stream of payments over a 20 year period, covering its additional cost in comparison to the fossil fuel alternative and a rate of return on investment. The Government intends that the scheme will open for applications from the non-domestic sector by the end of November 2011. In the central scenario, phase 1 of the RHI is forecast to increase deployment of non-domestic installations, bringing the cumulative deployment of heat in 2020 to 65 TWh.[29]

Energy Intensive Industries (EIIs)

5.10 It is important to note that energy costs constitute a significant proportion of EIIs' total costs. In 2008, these industries directly accounted for around 4% of total gross value added in the UK and just over 2% of the workforce. They also create indirect value and employment down the product supply chain. While it is important that these industries play their part in the transition to a low carbon economy, it is equally important that they remain competitive and that the UK remains an attractive location for them.

5.11 There would be no advantage – either for the UK economy or in terms of global emissions reductions – in simply forcing UK businesses to relocate to other countries. All sectors of the economy need to make significant improvements in energy efficiency if we are to meet our legally binding carbon and renewables targets and this includes the EII sector.

5.12 Rising electricity costs pose a key risk to these sectors which are critical to our growth agenda. We will, therefore, take steps to reduce the impact of government policy on the cost of electricity for these businesses, thereby allowing them to continue to play their part in delivering our green industrial transformation. As noted at the beginning of this chapter, we will be announcing a package of measures for those energy intensive businesses whose international competitiveness is most affected by our energy and climate change policies later this autumn.

5.13 UK energy policy measures have cost effectiveness as a common criterion to minimise the price and bill impact on all domestic, commercial and industrial consumers. In addition, wholesale costs (excluding the cost of carbon) are currently estimated to represent around 90% of the retail gas price faced by large energy intensive users and around 70% to 80% of the retail electricity price paid by these users. Volatility in international prices for fossil fuels will therefore also be a key factor influencing these users' retail gas and electricity prices going forward. Policies which help decarbonise the UK's energy supplies, such as the carbon price floor, will therefore reduce the vulnerability of UK energy prices to movements in fossil fuel prices but will increase retail prices in the short-term.

5.14 In addition, the CCC has noted that the Green Investment Bank (GIB) offers an opportunity to address barriers to low carbon investment through the provision of dedicated finance for low carbon investments in energy intensive industries. The Government believes the case for GIB interventions in large scale commercial buildings and industrial plant and machinery across a wide range of sectors is emerging. Industrial players and large commercial property owners can have limited balance sheets, which restrict their ability to invest in a full range of cost-effective energy efficiency measures.

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[28] (AEA, 2009) Renewable CHP modelling report http://www.decc.gov.uk/media/viewfile.ashx?filetype=4&filepath=Consultations/RHI/1_20100129161127_e_@@_RenCHPmodellingreport29Jan10.pdf&minwidth=true

[29] This figure is in line with the assumptions in the March 2011 Impact Assessment but includes the updated energy projection, emission factors and energy prices.

The GIB could introduce innovative finance mechanisms to increase the amount of lower cost debt for commercial buildings, industrial energy efficiency and on-site renewable energy including for EIIs. Industrial energy efficiency and on-site renewable energy projects may be able to receive funding in the incubation phase of the GIB, from April 2012, if the projects meet the proposed 'double-bottom line' of commercial viability and 'green' impact.[30] These financing mechanisms could potentially be combined with advice to help identify further energy efficiency measures.

EU Emissions Trading System (EU ETS)

5.15 The CCC pointed out that the combination of limited price signal, and uncertainty over the EU ETS in the 2020s weakens incentives for energy intensive industries (EIIs) to prepare for and make long-term investments particularly when capital is constrained. The CCC also argues that reducing gross rather than net UK traded sector emissions is of crucial importance over the next decade, particularly given the need for decarbonisation of the power sector over the next two decades and in the context of rising carbon prices expected beyond 2020.

5.16 The Government is pushing for an EU wide move to a 30% reduction in emissions by 2020. This is consistent with a long term transition to a low carbon EU economy and would help send a stronger signal to investors. A significant part of this effort will come from the traded sector, leading to a tighter EU ETS cap which will bring higher carbon prices and create incentives to stimulate further investment in low carbon technologies.

5.17 Overall the EU ETS covers approximately 80%[31] of all emissions due to industry. This and other climate change policies may impact on the competitiveness of EIIs and lead to carbon leakage in a limited number of sectors. The EU ETS Directive provides for sectors at risk to receive 100% of their allocated allowances for free based on an efficiency benchmark. In the absence of a legally binding international climate agreement we support this as proportionate free allocation gives relief to sectors most at risk of carbon leakage, without raising barriers to international trade.

Climate Change Agreements (CCAs)

5.18 The Government agrees with the CCC that CCAs should encourage uptake of the full range of abatement options and this will be reflected in the target setting negotiations that will take place in 2012.

5.19 We have extended the CCA scheme to 2023 to provide industry with long-term regulatory certainty and to enable participants to invest in energy efficiency measures with longer payback periods.

CRC Energy Efficiency Scheme (CRC)

5.20 The CRC Energy Efficiency Scheme further incentivises take up of energy efficiency measures amongst the large energy users in the public and private sector outside the industrial trading schemes. Participants have reported their first year's data to the scheme Administrator and the first performance league table setting out the take up of early action measures by participants will be published later this autumn.

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[30] Specific criteria still being developed.

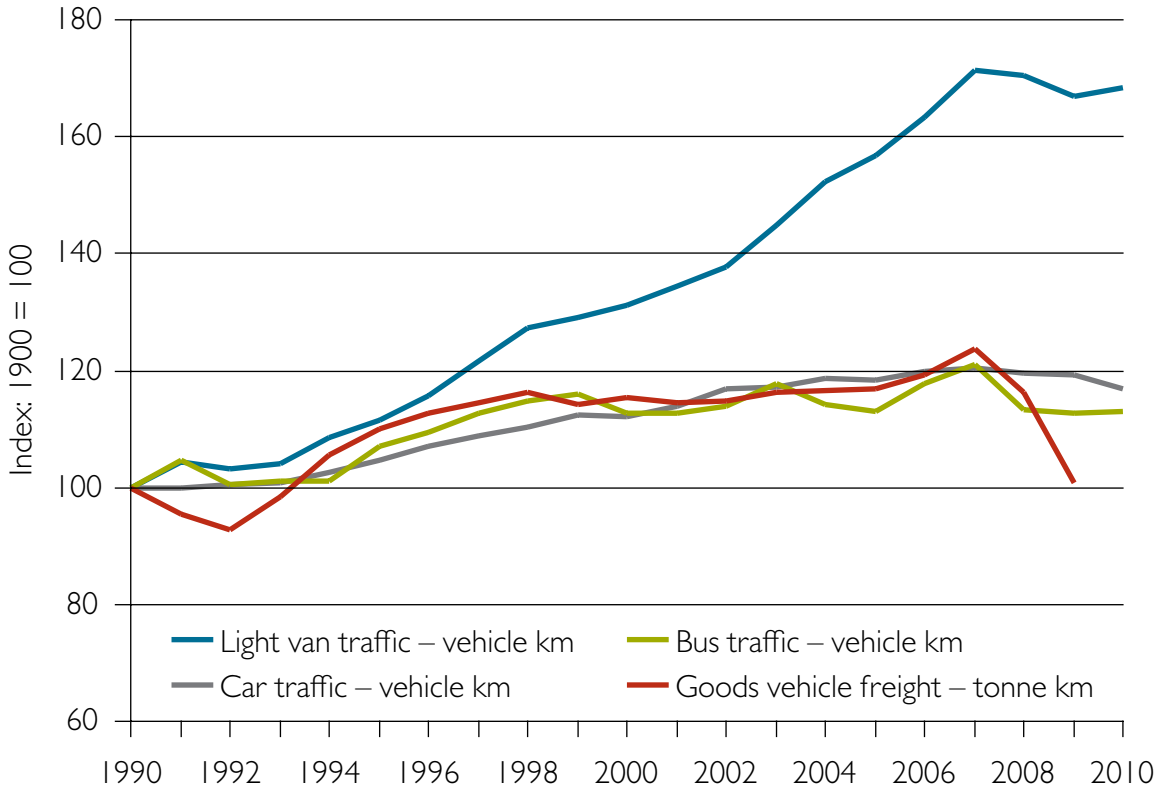
[31] The EU ETS covers approximately 70% of direct emissions from industry and all indirect emissions from electricity generation from industry.

Chapter 6: Transport emissions

Emission trends

6.1 As stated in the CCC's report, surface transport CO_2 emissions fell by around 4% in 2009. This reduction has primarily been driven by changes in the levels of transport activity, improvements to the efficiency of vehicles and the take up of alternative fuels, particularly biofuels.

Graph A: Road transport activity 1990-2010[32]



[32] Sources: DfT's National Road Traffic Survey (NRTS); and DfT's Continuing Survey of Road Goods Transport (CSRGT)

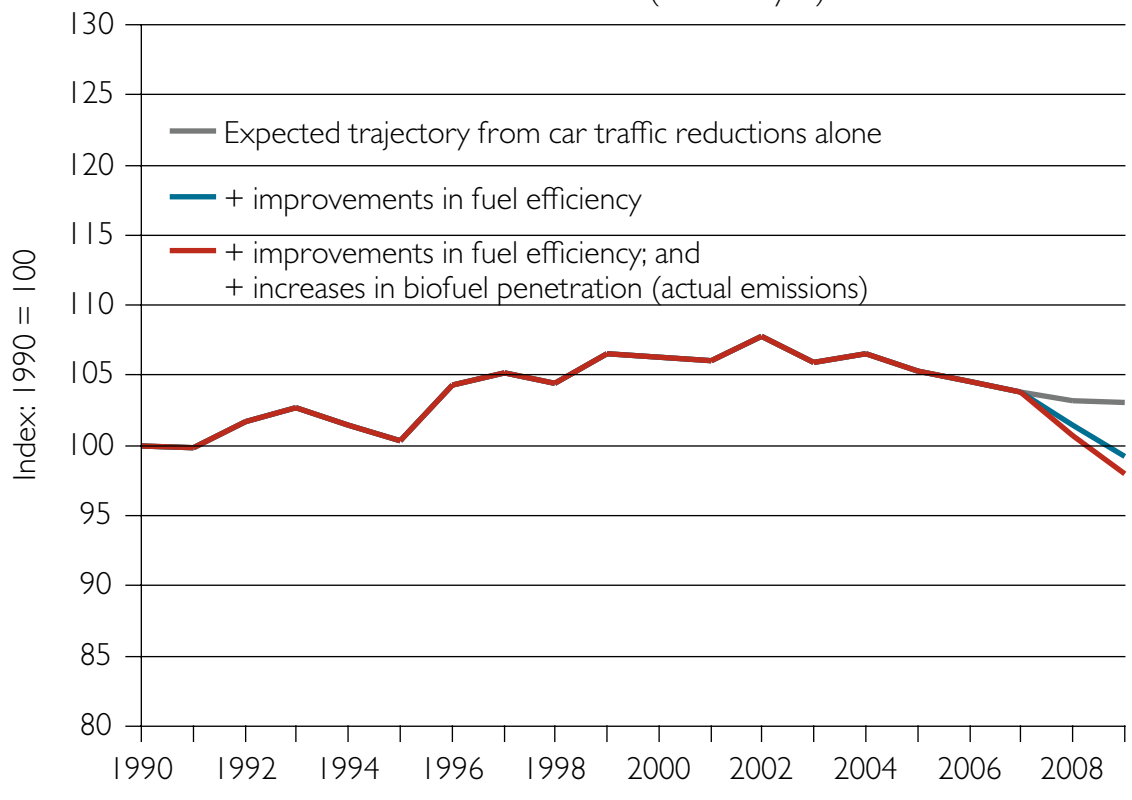
6.2 The vast majority of the UK's surface transport emissions arise from road transport activity, particularly from cars, heavy goods vehicles (HGV) and vans. Road transport activity steadily grew across these modes between 1990 and 2007 as the economy grew, before it fell back between 2007 and 2009, most likely as a result of the economic downturn (see graph A).

6.3 The fuel efficiency of new cars has also improved between 2007 and 2009 and biofuels continued to increase as a proportion of road transport fuel, in line with regulatory targets. This has led to a 5.6% reduction in the total CO_2 emissions from cars in the period 2007 to 2009. We estimate that improvements to fuel efficiency over this period accounted for 3.7 percentage points, while biofuel penetration contributed a further 1.2 percentage points to the overall reduction. The remainder can be attributed to the falling car traffic volumes chiefly as a result of the recession (see Graph B).

New car and van emissions

6.4 Improvements to the overall fuel efficiency of the car and van fleets are primarily delivered through the replacement of older less efficient vehicles with increasingly more efficient new vehicles. Given the international nature of the automotive industry our focus has been to actively support efficiency improvements through the European new car and new van CO_2 regulations.

Graph B: The estimated impact on car CO_2 emissions from improvements to car fuel efficiency and increases in biofuel penetration betweeen 2007 and 2009 (DfT Analysis)[33]



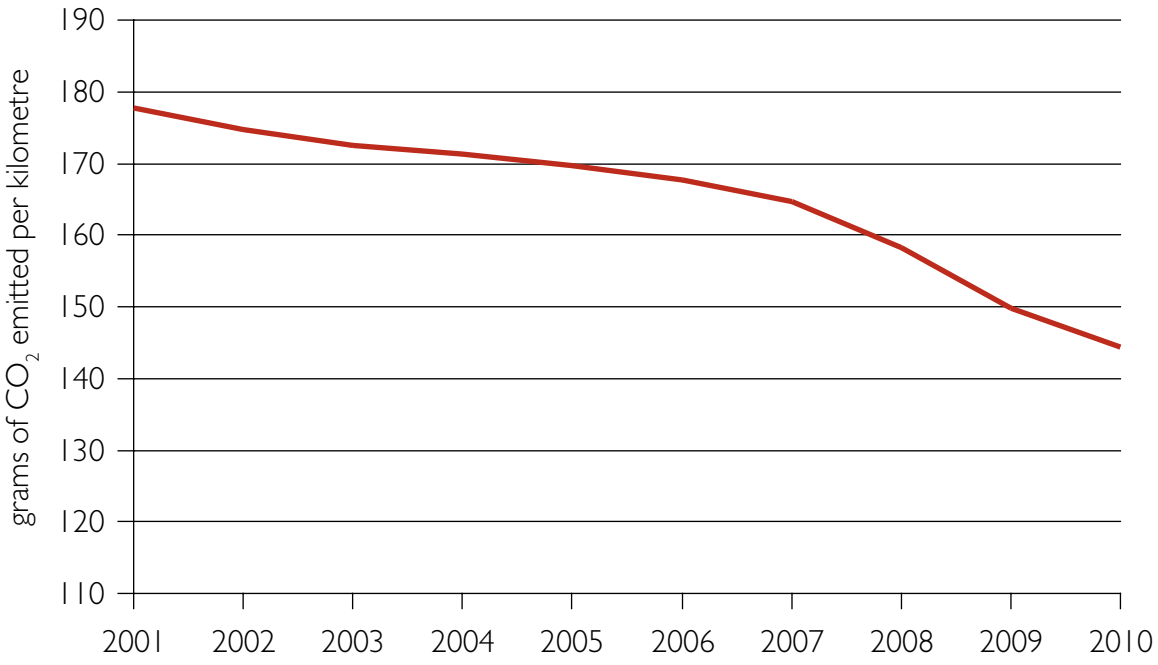
[33] DfT Analysis; National Atmospheric Emissions Inventory (NAEI); DECC energy statistics; HMRC's Hydrocarbons Bulletin

6.5 The New Car CO_2 Regulation (2009) has established a long-term framework for the development of lower emitting cars across the EU. The regulation has set a target for manufacturers to achieve average new car fuel efficiency of 130gCO_2/km by 2015 and a provisional target of 95gCO_2/ km by 2020, which would represent a 40% improvement on 2007 levels. In December 2010, the European Commission also agreed to set a mandatory target for manufacturers to achieve an average new van fuel efficiency of 175gCO_2/km by 2017. A longer term target of 147 gCO_2/km by 2020 was also specified, which would represent a 28% reduction on 2007 levels.

6.6 The new car target is already acting as a driver of carbon reduction for cars. The average emissions from new cars fell from 149.5 gCO_2/km to 144.2 gCO_2/km in 2010. These figures (which include emissions from biofuels) provide a measure of the efficiency of new cars entering the fleet. New car CO_2 has now fallen at an average rate of 4.3% between 2007 and 2009, compared with a rate of only 1.3% between 2001 and 2007 (as illustrated in Graph C), significantly outperforming the CCC's indicator for new car emissions

6.7 The CCC report identifies the risk that economic growth could lead to increases in travel and a change in vehicle purchasing behaviour. While we accept there is a risk, we believe that it is unlikely that the recent higher rate of improvement in the efficiency of new cars is wholly a transitory effect of the recession. We would expect that during the recession car buyers would be focusing more on the upfront cost of purchasing vehicles as well as running costs, which

Graph C: Fleet averaged new car CO_2 emissions per kilometre 2001-2010[34]



[34] DVLA database

might lead people to purchase new cars with smaller engine sizes. There was indeed a small but noticeable shift away from larger engine sizes during the recent economic downturn. However, our analysis indicates that if we remove the effects of the change in engine size distribution of new car registrations since 2007, there was still a rate of decrease in new car CO_2 emissions of 3.5% a year between 2007 and 2009.

6.8 This recent trend is encouraging, and we will continue to monitor new car emissions as the economy recovers. We will also closely monitor the progress of new van CO_2 emissions against the new targets.

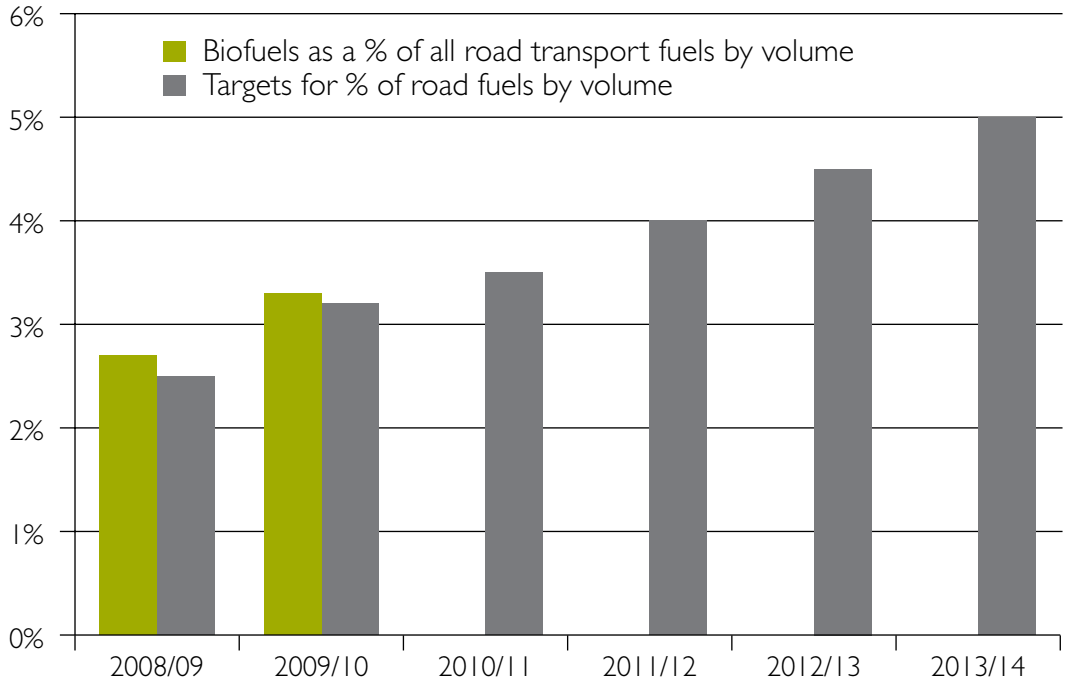
Biofuels

6.9 As the CCC report has noted, current transport biofuels penetration in the UK is driven by the Renewable Transport Fuel Obligation (RTFO), with the longer term options for meeting EU Directives still under review.

6.10 The RTFO obligates fossil fuel suppliers (who supply at least 450,000 litres a year) to produce evidence that a specified percentage of their fuels for road transport in the UK comes from renewable sources. The RTFO came into effect in April 2008, with an obligation level of 2.5% in the first year increasing annually to a level of 5% in 2013/14. The most recent verified data indicate that biofuel penetration in road transport has exceeded RTFO targets for 2008/2009 and 2009/2010 (see graph D below), while the most recent provisional data suggests that we are on track to meet the 2010/2011 target.

6.11 The Department for Transport (DfT) recently consulted on proposals to implement the transport elements of the Renewable Energy Directive (RED) and Fuel Quality Directive (FQD). The RED requires the UK to source 10% of the energy used in transport from renewable sources by 2020. The FQD requires fuel and energy suppliers to reduce the lifecycle GHG emissions of the fuel or energy that they

Graph D: Biofuels as a percentage of all road tranport fuels



supply by 6% per unit of energy by 2020. The consultation set out proposals to implement the transport requirements of the Directives through amendment to the UK's RTFO and the proposed Motor Fuel Greenhouse Gas Saving Regulations. DfT is analysing the responses received and expects to lay legislation before Parliament in autumn 2011.

Ultra Low Emission Vehicles

6.12 We welcome the CCC's acknowledgement that the Government has made major commitments to support the development of Ultra Low Emission Vehicles (ULEVs). The Government is committed to growing the market for these vehicles in the UK over this Parliament. That is why we have confirmed a budget of over £400 million at the Spending Review to support a package of measures for the introduction of ULEVs. This includes funding for a consumer incentive, infrastructure, and research and development.

6.13 The Plug-In Car Grant commenced in January 2011 to help both private consumers and businesses purchase an electric, plug in hybrid or hydrogen fuelled car. Buyers are able to receive a grant of 25% of the vehicle price, up to a value of £5,000. The grant has been designed to help make the whole-life costs of a qualifying car more comparable with petrol or diesel equivalents. There is funding provision of around £300 million to support consumer incentives over the lifetime of the Parliament.

6.14 The Government also published its Infrastructure Strategy on 30 June 2011 to set out the framework for the development of recharging infrastructure in the UK. For plug-in vehicles to be a viable solution for consumers, we want infrastructure to be targeted, convenient and safe to use. We want to see the majority of recharging taking place at home, at night, after the peak in electricity demand. This should be supplemented by workplace charging for commuters and fleets and supported by a targeted amount of public infrastructure where it will be most used. In support of this we are providing a £30m fund through the Plugged-In Places programme to install charging infrastructure in eight cities around the UK by March 2013. We have also announced measures to support businesses in establishing a network for charging infrastructure. This includes introducing permitted development rights that remove the requirement from land owners and local authorities to apply for planning permission to install charging points.

Behaviour change

Smarter choices

6.15 The CCC report acknowledges that progress has been made in the rollout of smarter choices through the creation of the Local Sustainable Transport Fund (LSTF). However, it also identifies that the challenge will be in ensuring that the funds are allocated to schemes that deliver reductions in carbon.

6.16 *The Local Transport White Paper*, published January 2011, set out the Government's vision for a sustainable local transport system that supports local economic growth and reductions in carbon emissions. The White Paper also underlined central Government's direct support to local authorities, including through the LSTF. The LSTF will provide £560 million over the lifetime of the Parliament to projects which encourage and enable people to make sustainable travel choices for local trips. It is a key requirement that the successful proposals will need to support local economic growth and help tackle carbon emissions.

6.17 On 5 July 2011, DfT announced that 39 projects across England had been awarded funding as part of the first allocation from the LSTF. They cover eight regions and a total of 37 local authorities, with many more as partners. We can confirm that all have been judged to be effective against the fund's two key objectives of creating growth and cutting carbon. The successful schemes include a variety of measures such as smart ticketing, the promotion of infrastructure for plug-in vehicles, bus and rail improvement measures, cycling and walking and are designed to link together to create a sustainable transport package that delivers economic growth. We will take a decision on the large projects and the second tranche of small projects by summer 2012.

Eco-driving training

6.18 The Government notes the CCC's views that there has been limited progress of eco-driving training. A total of 10,085 motorists were trained through the Energy Saving Trust's (EST) Smarter Driving training programme in 2010, with funding from DfT. The department will make a further £420,000 available to EST to continue to support this programme in 2011-12. EST estimates that this funding will be matched by around £400,000 of contributions from organisations taking part in the programme.

6.19 DfT has also provided funding to train 200 instructors from 65 different organisations to deliver the Safe and Fuel Efficient Driving (SAFED) bus and coach training. Between April 2009 and March 2010, a total of 1,742 drivers from 145 organisations in the bus and coach industry across England took part in the SAFED training – 1,500 of these lessons were funded by DfT.

6.20 While we accept that these figures are well below the 300,000 drivers which the CCC has set out in their indicator framework, it does not include motorists who have paid for their own eco-driving lessons, nor does it include those who have informally adopted eco-driving techniques as a way of saving fuel and money.

6.21 Elements of eco-safe driving techniques, such as smooth acceleration and forward planning, are also part of the practical driving test, which some 700,000 drivers pass every year. New driving instructors are already assessed on their ability to drive in a fuel efficient manner so as to embed the principles in their training and put them in a better position to incorporate those techniques when teaching learner drivers.

6.22 Learner drivers and riders are also assessed, during their driving test, on their ability to apply the principles of eco-safe driving and they are given specific feedback on this aspect at the end of the test. Examiners currently give candidates a copy of a leaflet giving further information on safe driving or riding for economy. The Driving Standards Agency is considering amending the content of the printed guidance they give all test candidates to increase the prominence of the eco-safe messages. In the longer term, the Government will consider whether it is possible for a candidate's eco-driving performance to play a larger role in the test.

6.23 The CCC has suggested that mandatory eco-driver training should be introduced in the HGV sector if the current voluntary approach fails to deliver. The evidence from industry and research indicates that whilst there are benefits to mandatory implementation of eco-driver training for HGV and bus drivers, the management of drivers is also important. Given this, and the Government's commitment to avoiding regulation where possible, we have challenged industry to lead their own initiatives to improve driver efficiency – rather than regulate for eco-driver training. In response to this commitment, the Freight Transport Association has developed a Logistics Carbon Reduction Scheme, which sets a challenging target for reducing emissions from over 40,000 freight-carrying vehicles. The scheme is the first of its kind in the freight sector and will include measures to monitor the uptake and success of eco-driver training. We will review the success of the industry initiatives in 2012 and will re-consider the case for Government intervention at that point.

6.24 We note the CCC's recommendation that the UK Government should support the mandating of Gear Shift Indicators by the EU. Gear Shift Indicators will be mandatory in new cars from the end of 2014 following the adoption of Regulation EC 661/2009 in 2009. EU implementing measures defining detailed requirements for the approval of Gear Shift Indicators are scheduled to be adopted by comitology very shortly. Based on the content of the most recent draft of the implementing measures, the Government expects to support these measures.

Draft National Planning Policy Framework

6.25 The draft National Planning Policy Framework published by DCLG for consultation on 25 July 2011 strongly supports sustainable transport and looks to the planning system to help secure radical reductions in greenhouse gas emissions. The Framework's transport policies expect developments that generate significant

movement to be located where the need to travel will be minimised and where the use of sustainable transport modes can be maximised. Overall, the aim is for a balance of land uses so that people can be encouraged to minimise journey lengths and a pattern of development which, where reasonable to do so, facilitates the use of sustainable modes of transport. To help achieve this, new developments where practical, are expected to give priority to pedestrian and cycle movements, have access to high quality public transport facilities and incorporate facilities for charging plug-in and other ultra-low emissions vehicles. All new developments which generate significant amounts of movement will be required to provide a Travel Plan.

Speed limits

6.26 We note the CCC's comments on speed limits and in particular their concerns that an increase in the motorway speed limit to 80mph could result in an increase in CO_2 emissions. DfT's Free Flow Vehicle Speed statistics for 2009 did indeed show an increase in the number of cars exceeding the speed limit in 2009. While the most recent figures from June 2011 indicate that this increase was reversed in 2010, it remains that about half of cars and vans do exceed the 70 mph speed limit at places where there is not recurrent congestion.

6.27 The 70 mph motorway limit was set in the 1960s. We believe it is worth considering whether it remains the right limit given current behaviour, modern vehicles and the economic, environmental and safety effects. That is why we have announced an intention to consult on raising the national speed limit on motorways in England and Wales from 70 to 80 miles per hour. One benefit of increasing the motorway speed limit to 80 mph would be to bring current behaviour inside the speed limit boundary and improve the moral legitimacy of the speed limit system. We also need to look at the economic benefits of shorter journey times as well as considering other implications such as road safety and carbon emissions. The Government plans to launch a full public consultation on the issue later this year, informed by a technical assessment of its effects.

Aviation and shipping emissions

6.28 The CCC report identifies that CO_2 emissions from aviation and shipping fell in 2009 as the recession had an impact on the demand for air travel and domestic and international goods. As the CCC has noted, this reduction in aviation CO_2 emissions is set against an overall trend that has seen aviation CO_2 emissions double since 1990.

6.29 The Government believes that global solutions and agreements are the most effective ways of tackling emissions in international sectors like aviation and shipping. We fully support the inclusion of aviation and shipping emissions in the EU ETS from 1 January 2012 and we will continue to work to secure global solutions. This approach provides an important way to ensure that the aviation sector takes strong, cost-effective action to address its climate change impacts while avoiding competitive disadvantage to the UK. We also welcome the International Maritime Organization's recent adoption of the global Energy Efficiency Design Index (EEDI), which will require new ships to be built to a minimum level of energy efficiency.

6.30 The Government is committed to creating a sustainable framework for UK aviation, to support economic recovery and help to deliver our low carbon goals. In March 2011, the Government published the *Developing a sustainable framework for UK Aviation: scoping document* to start a dialogue with stakeholders. The responses to this scoping document will help to inform the Aviation Policy Framework which will be published for consultation in March 2012 before we adopt the final framework in March 2013.

6.31 This process will allow us to consider a range of approaches to carbon reduction, including whether or not to adopt a unilateral UK target for aviation CO_2 emissions. It makes sense to consider this in the context of aviation's participation in the EU ETS and the forthcoming decision on whether to include international aviation and shipping emissions in the UK's wider 2050 climate change target.

6.32 We are grateful to the CCC for their report in December 2009, which set out the options for reducing CO_2 emissions from UK aviation to 2050. This report has taken us a step further towards understanding the issues. DfT published its response[35] on 25 August 2011. This response provided further analysis of options to reduce emissions from aviation and we hope this will support the development of the sustainable framework for aviation.

6.33 We look forward to receiving further advice from the CCC in its review of UK shipping emissions (autumn 2011) and its advice on the inclusion of international aviation and shipping in carbon budgets (spring 2012).

[35] http://www.dft.gov.uk/publications/reducing-co2-emissions

Chapter 7: Agricultural emissions

Emission trends

7.1 Total agricultural emissions remain on a downward trend (based on 2009 data).[36] The Government agrees with the CCC assessment that the agricultural sector is broadly on track to meet the first carbon budget.

Agriculture

7.2 The Government agrees with the CCC that reductions in emissions from agriculture will play an increasingly important role in the overall strategy for GHG reduction across all sectors of the UK economy. We welcome the CCC's careful analysis of the uncertainties and challenges in this sector which their report contains.

7.3 As the CCC has noted, emissions from agriculture are estimated to have fallen since 1990 for a number of reasons, including a reduced use of nitrogen fertilisers, changing farm practices and a decline in overall livestock numbers as a result of reforms to the Common Agricultural Policy. However, we agree that our evidence base should be improved to make our data on GHG emissions better, reduce the uncertainty of our estimates and improve our understanding of the scope for further reductions. As outlined in the Carbon Plan[37], the UK Government and the Devolved Administrations are together investing £12.6m in improving our GHG emissions inventory. This work is now underway and progressing well.

7.4 The CCC's report refers to the likely progress resulting from the industry-led Greenhouse Gas Action Plan and the scope for strengthening policy on agricultural emissions at UK and EU levels. It makes a number of recommendations for more ambitious policies to deliver emissions reductions in the medium term. Many of these points will be central to the 2012 review of the Government's approach to reducing greenhouse gas emissions from English agriculture. We will consider them very carefully as we take the review forward in collaboration with a range of interested organisations.

7.5 We note the CCC's suggestions on indicators of progress and hope to work closely with it to develop a mutually helpful indicator framework. In the meantime, we have already taken steps to broaden our understanding of the opportunities for further emissions reductions. For example:

- The project team for the Integrated Advice Pilot has been working with farmers and advisory groups to develop advice packages for us on dairy, livestock and arable farms and is planning to train selected advisors to provide the advice this autumn;[38]

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[36] Updated GHG emission projections for UK agriculture to 2030 are now available at: http://www.defra.gov.uk/publications/2011/08/02/pb13622-ghg-emission-projections/

[37] http://www.decc.gov.uk/en/content/cms/tackling/carbon_plan/carbon_plan.aspx

[38] The year long project began in February 2011 and aims to develop and test the efficacy and delivery of integrated advice on a range of objectives including climate change mitigation.

- We have commissioned a project to look at the economic and environmental impacts of the GHG Action Plan as implemented on 15 case study farms in the UK;
- We are supporting the development and implementation of sector specific roadmaps; and
- We are implementing the recently published Anaerobic Digestion Strategy.

Forestry

7.6 The Government agrees that forestry has a contribution to make to achieving the fourth carbon budget and that additional abatement can be delivered through an enhanced woodland creation programme across the UK.

7.7 Forestry is a devolved matter and, as a consequence, each country has responsibility for developing approaches and mechanisms to support woodland creation. We welcome recognition of the role of the Independent Forestry Panel in making recommendations for the direction of forestry in England. As outlined in the *Natural Environment White Paper*,[39] the level of woodland creation across the UK suggested in the *Read Report*[40] is a good basis to start their deliberations, but their conclusions, including on the timing of the programme, cannot be pre-judged.

7.8 We welcome the inclusion of forestry within the CCC's indicator framework for the first time, recognising that early action on planting is necessary. The Government is also pleased to see recognition of the capacity of forestry biomass to deliver abatement as a source of renewable energy and, also, the potential of increased use of timber in construction.

Soil

7.9 The Government agrees with the CCC that managing soils sustainably, particularly protection for our most carbon rich soils such as peat, is important. However, as the CCC rightly points out, the precise relationship between management of soils and the impact on the carbon cycle is complex. The Government is therefore conducting research to further our knowledge of emissions from peat including a review of restoration methods used in blanket peat lands to assess which methods provide the best outcomes in terms of reducing peat land methane emissions and global warming potential. We are also exploring the potential to refine further the land use component of the Land Use, Land Use Change and Forestry (LULUCF) inventory.

7.10 However, there are some things we know we can do now to reduce emissions, and indeed the CCC identified reducing the horticultural use of peat as an opportunity for abatement. The Government announced in the Natural Environment White Paper a new policy to reduce the use of peat in horticulture to zero by 2030.16 To support this, we have set up the Sustainable Growing Media Task Force chaired by Dr Alan Knight, to advise on how best to overcome the barriers to reducing peat use, exploring all available measures to achieve this goal.

7.11 The Government considers that working out sites with current planning permission will provide sufficient volumes of peat whilst the voluntary measures in the Natural Environment White Paper take effect. The Government therefore believes that there is no need to designate new sites for peat extraction and we are proposing in the draft National Planning Policy Framework that councils should refuse planning permission for peat extraction at new or extended sites.

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[39] http://www.defra.gov.uk/environment/natural/whitepaper/

[40] http://www.forestry.gov.uk/readreport

Chapter 8: Devolved Administrations

NORTHERN IRELAND

Emission trends

8.1 In 2009 emissions fell by 8% in Northern Ireland. Between 1990 and 2009, there has been a 20.3% reduction in emissions in Northern Ireland.

8.2 The Northern Ireland Executive agrees that a step change is needed to reduce emissions. That is why in June 2011, the new Cross-Departmental Working Group on Climate Change (CDWG CC) met for the first time to take forward a series of policies to ensure Northern Ireland plays its role in reducing emissions.

8.3 The CDWG CC set up specific sub-groups to look at mitigation and adaptation policy and strategy; and an analysts group of statisticians and economists to ensure that the data is robust enough to be relied upon. This group will provide annual reports on performance to the Executive to ensure Northern Ireland remains on course to deliver emissions reductions.

Agriculture

8.4 The Department of Agriculture and Rural Development (DARD) has noted the commentary and options outlined by the CCC and agree that the uncertainties associated with measurement continue to be a central concern and that monitoring arrangements would be based on an uncertain benchmark. This is why DARD is fully committed and is supporting, alongside Defra and other Devolved Administrations, the development of more accurate emission factors by 2015, to improve spatial and temporal resolutions.

8.5 The department continues to discuss the latest scientific research with the CCC to help drive DARD's commitment to delivering sectoral emissions reductions while ensuring businesses remain competitive.

Power

8.6 The Northern Ireland Executive's Strategic Energy Framework[41] seeks to achieve 40% of electricity consumption from renewable sources by 2020. At present, around 10% of Northern Ireland's electricity generation is from renewable sources – although already in the year 2011/12, one month has achieved as high as 18% generation from renewables sources.

8.7 The Department of Enterprise, Trade and Investment (DETI) is currently taking forward Action Plans for both on and offshore renewable electricity to meet the 40% target, both of which have been the subject of separate Strategic Environmental Assessments. The Offshore Renewable Energy Strategic Action Plan sets out a target of at least 600 MW of offshore wind and 300 MW tidal energy by 2020 and provides the framework for the current Northern Ireland Offshore Leasing Round. The Onshore Renewable

[41] A Strategic Energy Framework for Northern Ireland: http://www.detini.gov.uk/strategic_energy_framework__sef_2010_-3.pdf

Electricity Action Plan, which examines the role of onshore renewable technologies in meeting the 40% target by 2020, will be issued for public consultation in autumn 2011.

8.8 The Northern Ireland Renewables Obligation (NIRO) is the main mechanism for incentivising renewable electricity generation. Since its introduction in 2005, renewable electricity generation has more than trebled to the current 10% figure.

8.9 The Northern Ireland Executive is working closely with DECC on the EMR proposals but will need to consider the most appropriate form of incentivising renewables in Northern Ireland due to the different market structure under the all-island Single Electricity Market. DETI is undertaking its own work at present to analyse the impact on renewable electricity generation and cost to consumers arising from any need to move away from NIRO to a Feed-In Tariff with Contracts for Difference.

8.10 The Northern Ireland Executive, working through the British Irish Council (BIC), is supporting action under the All-islands Approach that was agreed at the June 2011 BIC Summit. This involves co-operation on projects to develop marine renewable energy within the BIC region and a programme of joint work spanning renewable energy trading across borders, interconnection and market integration.

8.11 Natural gas rollout continues with around 150,000 gas customers in Northern Ireland, and DETI launched a consultation at the end of une 2011on the potential for extending the natural gas network in Northern Ireland. If greater gas rollout were to follow, this would reduce emissions in a region where some 70% of energy consumers remain dependent on oil for their heating needs. In addition, DETI is tackling renewable heat issues through its current consultation on proposals for incentivising renewable heat technologies.

8.12 Work is ongoing by the grid owner regarding preparation of a programme of electricity grid improvements to ensure that a much higher level of renewable generation can be connected and dispatched, thus assisting with meeting the Northern Ireland 40% renewable electricity generation target.

Energy Performance Certificates

8.13 In contrast to other areas, Northern Ireland realises a compliance rate of at least 70% (and probably higher) because of the efficient enforcement regime in place.

Transportation

8.14 The Department for Regional Development places a particular focus on sustainability in relation to travel and transport. It is accepted that current transport arrangements and the high level of dependency on the private car particularly in urban areas are not sustainable. The significant increase in emissions from transport and in congestion must be addressed. Advice and proposals will be developed in this area so that the Northern Ireland Executive can take action.

8.15 A revised Regional Transportation Strategy[42] now being developed proposes a range of high-level aims and strategic objectives. One high level aim is to reduce the environmental impact of transport supported by reducing GHG emissions from transport, protecting biodiversity and reducing noise and air pollution.

8.16 The intention behind the revised Strategy is to rebalance transportation priorities and provide greater emphasis on sustainability in the travel choices Northern Ireland citizens make. Transport users must be able to make better informed choices on how they travel and see value in a seamless interchange between services, an effective supporting infrastructure and a greater awareness of the environmental consequences of their choices. The new strategic approach will be published in autumn 2011.

8.17 The total number of bus and rail journeys in Northern Ireland has increased by over 7%

[42] http://www.drdni.gov.uk/rts

in the last ten years to 77 million journeys per annum. There has been a decline in bus journeys over the last two years but there are now record numbers using rail travel. Translink, the main public transport provider, has started a major investment in techniques to reduce fuel usage on its bus fleet. Savings are achieved by educating drivers as to economic driving techniques and by using an eco-driving monitoring system to reinforce the use of these techniques. Translink plan to install the system on over 1250 buses by the end of 2012 with annual fuel savings of 8% per annum.

SCOTLAND

Emissions trends

8.18 In 2009, emissions in Scotland[43], including international aviation and shipping, were estimated to be:

- 51.0 Mt CO_2e, a 7.0% reduction on 2008 (54.8 Mt CO_2e). Between 1990 and 2009, there has been a 28.9% reduction in emissions.
- Adjusted to take into account the effect of trading, Scottish emissions reduced by 3.8% between 2008 and 2009 (from 54.0 Mt CO_2e to 52.0 Mt CO_2e). Compared with the 1990 base year[44], emissions in 2009 were 27.6% lower after accounting for trading in the EU ETS.

8.19 The unprecedented winters experienced at the beginning and end of 2010 will have an effect on our emissions, but we are already more than half way to meeting our 2020 target.

8.20 The Scottish Government's first *Report on Proposals and Policies*[45], published in March 2011, sets the strategic direction to take us to our 42% target in 2020 – and was commended to the UK as a model to which they should aspire by the WWF in evidence given to the Environmental Audit Committee in Westminster.

8.21 Scotland has shown that it is possible to hit every one of our annual targets to 2020, but we also agree with the CCC that this will not be easy, and everyone – Government, public sector, private sector and individuals – will need to play their part.

Power

8.22 The Scottish Government agrees with a number of the points made by the CCC on power sector emissions. In particular:

- A significant ramping up of deployment rates and investment in renewable generation is needed. The Scottish *Government's Renewables Routemap*[46] published recently reflects the challenge of its new target to meet an equivalent of 100% demand for electricity from renewable energy by 2020, as well as our target of 11% renewable heat. It also includes a new target for 500 MW of community and locally-owned renewable energy by 2020.
- Access to finance will be key to making a decisive shift to low carbon energy. The Scottish Low Carbon Investment Project has been set up as a public-private partnership, led by the Scottish Government, to identify investment propositions, explore different models of investment, and connect with the international investment community. The Scottish Government is also committed to working with investors to establish a Scottish Green Equity Fund to support the development of community renewable energy projects.
- Electricity Market Reform will be crucial in supporting the transition to a largely decarbonised power system. The Scottish Government broadly supports the principles underpinning the reforms but believes there are some areas in which further development or modification of the proposals is necessary. These are set out in full in the Scottish Government's

[43] http://www.scotland.gov.uk/ghg09

[44] The 1990 base year uses 1990 for carbon dioxide, methane and nitrous oxide and 1995 for hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.

[45] http://www.scotland.gov.uk/Publications/2011/03/21114235/17

[46] http://www.scotland.gov.uk/Resource/Doc/917/0118802.pdf

response[47] to the White Paper which highlights, amongst other things, the importance of avoiding an investment hiatus in the transition to the Feed-in Tariff with Contracts for Difference and opposition to any support for nuclear generation. The Scottish Government will work closely with the UK Government to ensure delivery of a coherent, effective and seamless package of reforms which fully aligns the respective powers of the UK and Scottish Parliaments.

- CCS has the potential to play an important role in decarbonising electricity generation. Scotland is at the forefront of efforts to develop CCS and the Scottish Government wants to see CCS demonstrated on two power stations (600-800 MW) by 2020.
- Biomass will make a key contribution to the delivery of the Scottish Government's target for 11% of heat to come from renewable sources by 2020 but the CCC is right to recommend a cautious approach in relation to sustainability concerns. Scottish Government policy supports the deployment of biomass in heat-only or CHP plants, particularly off-gas grid, and to a scale which maximises heat use and local supply.
- The Scottish Government supports the concerns of the CCC over the longer term availability of sustainable biomass for use in power generation and suggests that an incremental approach on the use of biomass, focussing on heat, is most appropriate. Given the concerns expressed by the CCC, the Scottish Government would question the further development of large scale biomass electricity up to 2020.

8.23 However, the Scottish Government disagrees that there is a need for nuclear new-build in Scotland. Scotland's future energy needs can be met without the need for new nuclear power stations and it is important that investment in nuclear generation does not come at the expense of investment in Scottish renewable generation.

Renewable energy development is being slowed by planning processes

8.24 The CCC noted that Devolved Administrations have an important role to play in approving planning applications. Scotland tends to have higher approval rates than the UK average, but average decision making times are longer. The Scottish Renewable Routemap highlights the need to continue to streamline systems and work for greater speed and transparency, without sacrificing the proper consideration of the impacts of developments on the local environment.

Renewable heat

8.25 The Scottish Government has, in partnership with the UK Government, opted for Scotland to be part of the UK wide RHI, that will pay large producers of renewable heating for every unit of energy produced.

8.26 Householders will also receive support for the installation of renewable heat technologies such as heat pumps, solar thermal or biomass boilers under the Renewable Heat Premium Payment.

8.27 We recognise that District Heating can be much more efficient than traditional heating and, under the right conditions, can cut emissions and help eliminate fuel poverty for many people. That is why the Scottish Government will be establishing an Expert Commission on the Delivery of District Heating that will advise on the steps needed to ensure a major move to district heating in Scotland.

8.28 Until recommendations and further financial support is established, our recently launched District Heating Loan scheme will be an important resource for taking this forward.

Residential energy efficiency programmes

8.29 While we agree much remains to be done, the Scottish Government has made significant progress on residential energy efficiency since 2009:

[47] http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Infrastructure/Grid-Connections/EMR-consultation-UK

- Over 56,000 insulation measures have been installed through our area-based insulation schemes.
- Our Energy Assistance Package has helped almost 200,000 households and saved £12.5m a year on fuel bills.
- We are continuing to support the kind of area-based schemes and boiler replacement programmes highlighted by the CCC – through our Boiler Scrappage and Universal Home Insulation Schemes.
- We are working with DECC and engaging with stakeholders to ensure that new UK Government programmes – the Green Deal and Energy Company Obligation – meet the needs of Scottish households.
- We are also exploring other innovative funding opportunities, including European funding, and considering options for regulation of energy efficiency standards in existing housing.

Energy assessments for non-residential buildings

8.30 Section 63 of The Climate Change (Scotland) Act 2009 provides for the development of regulations requiring owners of non-domestic buildings to obtain an assessment of the emissions and energy performance of their building and also to require owners of such buildings to take steps, identified by such assessments, to improve that performance.

8.31 Where it is not practical to implement improvements to buildings, we will consider a strategy for reporting operational carbon and energy performance of the buildings. This is likely to include year on year measurement of actual or metered fuel energy use. A consultation on this issue is programmed for autumn 2011. Following this, the first set of regulations are likely to be made during 2012.

8.32 Building regulations were introduced in October 2010 to deliver a 30% reduction in emissions from new buildings associated with space and hot water heating, cooling, lighting and ventilation. A further review of standards is programmed, leading to outcomes in both 2013 and 2016.

Energy Performance Certificates (EPCs)

8.33 In Scotland we introduced Energy Performance Certificates (EPCs) for new buildings in 2007 and EPCs for the sale and rental of buildings. EPCs have been required for large public buildings since January 2008, together with the phased implementation of a requirement for inspection and assessment of air conditioning systems over 12 kW.

8.34 The European Directive under which EPCs were brought forward has been revised and the implications of these amendments to Scotland will be subject to public consultation in autumn 2011.

Agriculture and land use

8.35 The CCC recommended that the UK creates woodlands at a rate of at least 21,000 hectares a year from 2015. We are playing our full part and we have committed to increase planting to 10,000 hectares a year in Scotland.

8.36 The Farming For a Better Climate[48] initiative, delivered by Scottish Agricultural College, promotes on-farm emissions reduction measures in five key action areas. It also highlights the business benefits and cost savings associated with measures that reduce on-farm GHG emissions.

Action on transport

8.37 We are currently assessing the feasibility of delivering more intensive roll out of fuel-efficient driving as proposed in the Report on Proposals and Policies in March, as one element of a broader package of work.

[48] http://www.scotland.gov.uk/Topics/farmingrural/Agriculture/Environment/climatechange/Advice

8.38 In Scotland, prosecutions for exceeding the 70mph speed limit fell from 117,256 in 2008-09 to 113,523 in 2009-10. We are considering proposals to increase compliance levels.

8.39 The final evaluation of the *Smart Choices, Smarter Places* programme in Scotland will be available in 2012. This report will help inform future policy development.

8.40 The Low Carbon Vehicle Procurement Support Scheme for Public Bodies in 2010/11 delivered over 150 low carbon vehicles to Scotland and 80 electric charging points. We are currently working with LAs to identify further installations to expand the charging network. These will include those delivered through the UK Government's Plugged in Places scheme which is worth a total of £3.1 million to Scotland over 2011/12 – 2012/13.

WALES

Emission trends

8.41 In 2009, emissions in Wales fell by 13.6% to 42.6 Mt CO_2e. Between 1990 and 2009 there has been a 23.3% reduction in emissions in Wales.

8.42 The Welsh Government agrees that a step-change is needed to reduce emissions in Wales and is taking action to achieve this. The Welsh Government published the *Climate Change Strategy for Wales* in October 2010. The Strategy confirms the Welsh Government's principal target to reduce GHG emissions in areas of devolved competence by 3% per year from 2011 against a baseline of average emissions between 2006 and 2010. The Welsh Government is also committed to achieving at least a 40% reduction in all emissions in Wales by 2020 against a 1990 baseline, and a range of sector emission reduction targets.

8.43 The Strategy outlines our commitment to responding to climate change, the areas where we will act, and how we will work with delivery partners to reduce GHG emissions and enable effective adaptation in Wales. It also makes clear the critical contribution that people, communities, organisations and businesses across Wales that is needed to deliver on this agenda.

8.44 We published Delivery Plans alongside the Climate Change Strategy. The Emission Reduction Delivery Plan confirms a range of specific measures to reduce GHG emissions in the transport, public, business, agriculture, waste, residential sectors. A full public engagement strategy to encourage and incentivise sustainable living and behaviours is also being implemented to further reduce emissions.

Agriculture

8.45 *The Climate Change Strategy for Wales* includes a range of specific measures for agriculture aimed at fully addressing the abatement potential of that sector.

8.46 Glastir is a 5 year whole farm sustainable land management scheme available to farmers and land managers across Wales. From 2012, Glastir will replace all existing agri-environment schemes to ensure that future environmental challenges can be met.

8.47 Glastir Woodland Creation opened in October 2010 with enhanced grant rates, a reduced application process and a wide eligibility (almost 1.3 million hectares) and has set an annual target from 2010 of 3000 ha of woodland creation over the next 20 years. Initial indications are that farmers are receptive to undertaking more woodland creation on land they own but that significant uptake will require further Common Agricultural Policy led changes post 2013. Further measures are in hand to stimulate additional woodland creation with an aspiration to achieve an annual 5000 ha as per the recommendations of the Welsh Government's Land Use and Climate Change Group.

8.48 Consideration is being given to actions to optimise the maintenance of the current woodland sink with the other public policy objectives for Welsh woodland. Glastir will direct financial support to farmers for the additional costs of the environmental and landscape benefits they provide on behalf of the taxpayer.

8.49 Soils, soil carbon management and climate change are key issues for Glastir and have been integral in the development of Glastir. There are

rules designed to protect soil under the Whole Farm code of Glastir. In the All Wales Element and the Targeted Element of the scheme there are several options that have the management of soil carbon as a key output.

Transport

8.50 The Climate Change Strategy includes specific measures for the transport sector focused on improving public transport and encouraging widespread behaviour change.

8.51 The Sustainable Travel Centres project was launched in 2009. The scheme aims to better facilitate the integration of transport interchanges between bus services and railway stations as well as linking these to park-and-ride, park-and-share facilities, and cycling routes. Centres are up and running in Cardiff and Mon a Menai and funding has recently been announced for more across Wales.

8.52 Work has started on developing the Smarter Choices agenda in order to influence behavioural change through the provision of better and more accessible information about sustainable transport services and facilities. The Welsh Government is supporting the Energy Saving Trust to provide advice to households and individuals on emission reduction. Encouraging smarter driving is one of the key messages of this campaign.

8.53 A wide range of improvements to rail and bus services are being taken forward, which are central to greater levels of modal transfer. There are also a range of measures in place to improve the management of our road infrastructure which will help improve traffic flows and reduce carbon emissions; these include better traffic management, including variable speed limits on the busiest parts of the network. Work is also underway to support the freight industry to reduce emissions through the promotion of best practice and advice.

Residential energy efficiency

8.54 The Welsh Government is improving energy efficiency in Welsh homes through Nest, our fuel poverty programme and *arbed*, our strategic area based energy efficiency scheme. Both schemes, but particularly *arbed*, will trial renewable heat technologies in homes including air source heat pumps and solar hot water.

8.55 *Phase 1 of arbed* provided £30 million of funding for homes, skills and green jobs. This funding upgraded the energy efficiency of existing housing stock in some of the most deprived parts of Wales and also provided a boost to jobs, skills and regeneration. Phase 2 of *arbed* is under development.

8.56 Together with our partners the *arbed* scheme has installed solid wall insulation in nearly 2,900 social and private homes installed over 1,800 solar PV panels in social housing, provided solar heated hot water to 1,000 households including several sheltered housing schemes and provided heat pumps and improved insulation levels to 121 households off the gas network.

8.57 At least 6,000 homes have benefited from *arbed*. Combined with the Welsh Government's Home Energy Efficiency Scheme (the precursor scheme to Nest) and Boiler Scrappage Scheme, a total of 25,000 Welsh homes were improved and made cheaper to heat in 2010-11.

8.58 Nest, our new fuel poverty scheme was launched in April 2011 with an annual budget of £18.5 million. Nest will target those people living in the most inefficient properties and living on the lowest income.

Non-residential energy efficiency

8.59 The Welsh Government does not have regulatory functions in respect of Display Energy Certificates, Energy Performance Certificates or the regulation of energy efficiency measures. However, we are committed to the promotion of energy efficiency measures in the non-residential sector through grants, loans and communication.

Marine energy

8.60 The Welsh Government recently published the findings of its 3 year project, the *Marine Renewable Energy Strategic Framework* (MRES). The MRES project has investigated the potential marine energy resource areas within Welsh Territorial Waters by device type, identified the associated constraints tied to those areas and considered potential scenarios for the

sustainable development of the available resource. The findings show that even when the various environmental and technological constraints are taken into account, there is still the potential for Welsh waters to produce enough energy to power up to two million homes per year.

8.61 The MRES acknowledges the current stages of the emerging technology and need for further research, especially gaining knowledge from 'deploy and monitor' demonstrators. Recently the Welsh Government and DECC announced the granting of the necessary consents for a 1.2 MW tidal demonstrator device in Ramsey Sound off Pembrokeshire. This will be the first deployment of a marine device in Wales and the first to operate on a 'deploy and monitor' approach, allowing the device to operate around the clock.

8.62 Building on the MRES, the Welsh Government will be undertaking a Marine Energy Infrastructure Study with Halcrow Group Ltd. The aim of the study is to identify specific sites within Wales suitable for deployments – from prototype to commercial scale.

8.63 We will continue discussions with The Crown Estate on moving towards a leasing round for commercial wave and tidal developments. We recently signed a Letter of Intent with The Crown Estate which formalised our intention to work together to support Wales' capacity for marine energy manufacturing. This is the first agreement of its kind between The Crown Estate and a Devolved Administration. It will ensure that deployment of marine renewable energy devices is not delayed by infrastructure requirements at ports in Wales, and will see The Crown Estate using their knowledge and expertise to assist Welsh ports in realising their potential.

8.64 Wales has a strong tradition in environmental science. The Low Carbon Research Institute (LCRI) has been set up to unite and promote energy research in Wales to help deliver a low carbon future. The Low Carbon Research Institute Marine consortium (LCRI Marine) is a partnership of Swansea, Aberystwyth, Bangor, Cardiff, Swansea Metropolitan Universities and Pembrokeshire College. Experts in each institution are collaborating in a multidisciplinary way to undertake £7m of applied research and development.

Monitoring implementation of the Climate Change Strategy

8.65 In addition to the work underway to implement the measures, we are now putting in place a comprehensive monitoring framework to measure progress towards our emission reduction targets.

8.66 We are developing a suite of indicators to track implementation of the measures contained in the Delivery Plan to ensure that they are delivering the anticipated emission savings. The monitoring framework is similar to that being followed by the UK Government. We will also be monitoring external factors that drive emissions, such as wider economic performance, so that performance in delivering our commitments can be reported within the context of wider emission trends.

8.67 The Welsh Government intends to publish its first annual progress report on delivery of the Climate Change Strategy in March 2012. This report will evaluate the progress being made towards the targets and will review and update the current suite of emission reduction measures. We have requested detailed advice from the CCC to inform this report as indicated in the CCC's progress report.

Glossary

CAP	Common Agricultural Policy
CCAs	Climate Change Agreements
CCC	Committee on Climate Change
CCS	Carbon Capture and Storage
CERT	Carbon Emissions Reductions Target
CESP	Community Energy Saving Programme
CHP	Combined Heat and Power
DCLG	Department for Communities and Local Government
CfD	Contracts for Difference
CO_2e	Carbon Dioxide equivalent
CPC	Certificate of Professional Competence
CRC	Carbon Reduction Commitment Energy Efficiency Scheme
DECC	Department of Energy and Climate Change
DEC	Display Energy Certificate
Defra	Department for Environment, Food and Rural Affairs
DSA	Driving Standards Agency
DfT	Department for Transport
ECO	Energy Company Obligation
EIIs	Energy Intensive Industry sectors
EMR	Electricity Market Reform
EPS	Emissions Performance Standard
EPC	Energy Performance Certificates
EU	European Union
EU ETS	European Union Emissions Trading System
FITs	Feed-in Tariffs
GDP	Gross Domestic Product
GHG	Greenhouse gas
IPC	Infrastructure Planning Commission
kWh	kilowatt hour
kWth	Kilowatt Thermal
GW	Gigawatt
MCS	Microgeneration Certification Scheme
$MtCO_2e$	Million tonnes of carbon dioxide equivalent
MW	Megawatt
NPSs	National Policy Statements
Ofgem	Office of the Gas and Electricity Markets
OND	Office for Nuclear Development
ORED	Office for Renewable Energy Deployment
PDR	Permitted Development Rights
PPS	Planning Policy Statement
RED	Renewable Energy Directive
RES	Renewable Energy Strategy
RHI	Renewable Heat Incentive
RHPP	Renewable Heat Premium Payments
RTFO	Renewable Transport Fuel Obligation
RO	Renewables Obligation
TWh	Terawatt hour

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