Meeting Carbon Budgets – 2014 Progress Report to Parliament

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

HM Government

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Foreword

Next year will see the world gather in Paris to secure a new legally binding global agreement with emissions reductions commitments from all countries. This will be a pivotal moment in the fight against climate change. In Europe, we are pressing hard for an ambitious and cost-effective framework and for reform of the Emissions Trading System, and we will continue to do so.

Through our actions, the UK is demonstrating that it is possible to reduce emissions and sustain economic prosperity.

Through the 2008 Climate Change Act, we have set ourselves legally binding emissions reductions targets so that the UK plays its part in the global fight against climate change. The Carbon Budgets system ensures we stay on track and the progress reports of the Committee on Climate Change (CCC) are vital. This is not the Government marking its own score card. This is an independent assessment of how far we've come and how far we have to go.

The good news is that the CCC has confirmed we succeeded in meeting the first major milestone since the Climate Change Act was passed – we met the first carbon budget (2008-2012). This is just the first step – but our achievements as a country over the first carbon budget period give confidence that we have the commitment and capacity to continue to reduce emissions. It is essential that we do so in a way that makes sense for UK consumers and UK businesses.

Since 2012 our achievements have continued. The Energy Act 2013 is part of the new carbon reducing architecture. It creates the first low carbon electricity market in the world – delivering certainty to investors so we can build a secure, climate friendly energy system at the lowest cost to UK taxpayers.

We have already made a good start. We are attracting record amounts of investment in renewables and our low carbon business sector is booming. Almost £29bn of investment in renewables was delivered from 2010 to 2013 and we estimate up to £50bn more will be delivered by 2020. Electricity generation from renewable sources has more than doubled since 2010 – it previously supplied 6.8%, but now supplies around 15% of the UK's electricity generation. We're a world leader in offshore wind, wave and tidal technology. We are pressing ahead with plans for a new fleet of low-carbon nuclear power stations. And the UK is the only country in Europe with two carbon capture and storage projects in development supported by up to £1bn of government funding.

From renewable heat to energy efficiency, products policy to vehicle emissions, the UK is acting to reduce emissions while

supporting growth. Maintaining momentum and support will be key, because this is an intergenerational effort spanning decades. We will need to sustain the political consensus around our carbon budgets and this is made easier by the consensus that exists across society.

The review of the fourth carbon budget we undertook this year revealed strong support not just from environmental groups, but from businesses. The message was clear: carbon budgets are the best way to provide everyone with certainty for the transition to the low-carbon economy – and make sure the UK makes that transition at the least cost, while reaping the greatest benefits. I am proud that we have maintained an ambitious fourth carbon budget – which sets the UK on the right path to our 2050 target to reduce emissions by 80%.

The CCC is also right in saying we have a huge challenge still ahead. We will need to step up carbon reductions in all areas of the economy – our buildings, transport, industry and power sectors will all need to change, and the pace of emissions reductions will need to grow significantly to meet our commitments over the 2020s. But we can be proud of our achievements in this early stage of the journey.

Edward Davey
Secretary of State for Energy and Climate Change

Background to the response

The 2008 Climate Change Act introduced a legally binding target to reduce greenhouse gas emissions by at least 80% below the 1990 baseline by 2050. The Act also introduced carbon budgets, which set the trajectory to ensure the targets in the Act are met. These budgets represent legally-binding limits on the total amount of greenhouse gases that can be emitted in the UK for a given five-year period.

The first three carbon budgets, which cover the period 2008-2022, were set in May 2009 and will require greenhouse gas emissions to be reduced by at least 34% below the 1990 baseline by 2020. The fourth carbon budget, which covers the period 2023-2027, was set in June 2011 and requires emissions to be reduced by 50% against 1990 levels. We must set the fifth carbon budget (2028–2032) in law by 30 June 2016.

In December 2011, the Government published the Carbon Plan, which sets out proposals for achieving the emissions reductions committed to in the first four carbon budgets.

The Act established clear and regular accountability to Parliament. The independent Committee on Climate Change (CCC) was established as part of the Act and is required to produce annual reports on progress towards meeting the carbon budgets and the 2050 target. The Government must in turn lay a response to these reports before Parliament by 15 October in the same year.

The CCC published their sixth progress report (Meeting the Carbon Budgets – 2014 Progress Report to Parliament) on 15 July.[1] The report analyses emissions over the course of 2013 and the impact of Government policies. The report also provides a comprehensive assessment of how the first carbon budget (2008–2012) was met.

This response sets out the Government's assessment of the progress made in each sector of the economy, and provides a detailed response to each of the specific recommendations contained within the CCC's report, derived from their main conclusions. Annex A contains a full list of the CCC's recommendations.

[1] The progress report can be found here: http://www.theccc.org.uk/publication/meeting-carbon-budgets-2014-progress-report-to-parliament/

Executive summary

This document lays out the Government's response to the CCC's 2014 Annual Progress Report to Parliament. The CCC's 2014 report has an expanded remit – as this is the report published in the second year after the first carbon budget period ended, the report contains a retrospective look at the action taken over the first carbon budget period. As usual, the report also reviews the Government progress in meeting future carbon budgets.

We welcome the CCC's confirmation that the first carbon budget was met, as well as the CCC's reflections on the policies put in place to deliver this significant reduction. In 2014, final emissions figures confirmed that over the first carbon budget period, UK emissions were 23.6% lower than 1990 emissions.

The UK's provisional data also shows that the UK's emissions have continued to fall since 2012, with around 2% reductions from 2012 to 2013 – driven by decreased use of fossil fuels for electricity generation.

The UK's commitments under the Climate Change Act remain a central pillar of the UK's global leadership on climate change. This year, as efforts build towards the Paris conference in 2015, the Government particularly welcomes the CCC's assessment of the economic benefit of carbon budgets to the UK. Since the Climate Change Act was passed in 2008, we have seen a number of countries pass similar domestic legislation – most recently Denmark, whose Climate Change Act was passed by Parliament in June. Globally, almost 500 climate laws have now been passed in 66 of the world's largest emitting countries.[2]

By reducing emissions by 80% by 2050, the UK will have reduced its emissions to a level consistent with a global effort to keep warming to 2°C. Setting a series of carbon budgets helps to ensure the UK makes that transition in the most cost-effective way possible – providing certainty to investors and businesses, and guiding the development and implementation of policies across the economy.

The CCC's report also lays out their views on meeting future budgets. We welcome the approach that the CCC has taken – which recognises that the Government's projected policy impacts see UK emissions fall to meet the second and third carbon budgets. This will mean that by 2020, greenhouse gas emissions in the UK will have fallen by at least 34% relative to 1990 baseline levels.

The CCC's report looks in some detail at the policies required to meet these future budgets – noting that in some cases, the Government will need to continue to support policy implementation to ensure that the expected emissions savings are realised in practice. We agree with this conclusion. Monitoring the delivery of policies as they are implemented, to ensure that expected emissions reductions are realised in practice,

[2] GLOBE (2014) Climate Legislation Study, http://www.globeinternational.org/studies/legislation/climate

is an important part of ensuring the UK's emissions stay within legislated limits.

The CCC has highlighted specific policies (which it highlights as "at risk") where the implementation will need to be fully completed in order to realise the expected emissions reductions. We will pay close attention to the specific recommendations of the CCC in this area as we track policy savings through time.

The CCC and Government both agree that more abatement will be needed over the 2020s to reduce emissions to the level required by the fourth carbon budget. Government's latest projections suggest that current policies alone will not deliver sufficient emissions reductions over this period – with a gap of 133 $MtCO_2e$ between current policies and the budget cap over the fourth carbon budget period.

Much of the CCC's report focuses on how these additional emissions cuts can be realised. We appreciate the CCC's reflections on what has been successful over the first carbon budget period, and their recommendations for how to build on this success. The CCC notes that given the lead time to develop policy, the Government should begin to make policy decisions now. In many cases, the CCC's recommendations relate to policy decisions that would have a financial impact beyond 2015 – and will therefore need to be considered by the Government as part of its spending plans for the next Parliament. Having sight of the recommendation at this stage is helpful in informing such discussions, but we appreciate that in a number of cases the CCC has signposted its decisions for a future date.

The CCC has made a number of recommendations by sector, which are covered in Chapters two to seven of this response. The final chapter of the report (Chapter eight) includes progress made in the devolved administrations.

Buildings (Chapter 2)

Greenhouse gas emissions from domestic and non-domestic buildings were 100.7 $MtCO_2e$ in 2012 – 10.5% higher than in 2011 and 4.1% lower than 1990 levels. Over the first carbon budget, building emissions reduced by 3.7%. Provisional estimates for 2013 show that CO_2 emissions, which account for the majority of emissions in the buildings sector, increased by 2.5% to 97.0 $MtCO_2$.

The CCC highlights the significant emissions reduction potential in buildings – from energy efficiency measures and deployment of low-carbon heat. The Government shares this view.

In domestic buildings, the report highlights that there has been five years of good progress in improving insulation rates – but recommends the near-term framework should be strengthened, following the recent redesign of the Energy Company Obligation (ECO). Since the CCC's report was launched, the Government has laid out more detail on the future of ECO in the Government response to the consultation on the future of ECO.

The CCC also recommends simplifying the policy framework in non-domestic buildings. The already-planned reviews of the CRC Energy Efficiency Scheme and Energy Savings Opportunity Scheme in 2016 could provide an opportunity to consider the potential for a broader simplification of existing energy efficiency policies aimed at the commercial sector.

The CCC report reiterates the importance of low-carbon heat – and suggests that the support available through the Renewable Heat Incentive (RHI) be combined with an approach targeted at overcoming financial and non-financial barriers to uptake. The Government shares this view, and Chapter 2 lays out the approach that the Government is

taking in addressing them to fully realise the potential of the RHI.

This chapter also covers the Government's response to CCC's recommendations on fuel poverty, central government targets and Zero Carbon homes.

Power (Chapter 3)

Greenhouse gas emissions from power were 159.1 $MtCO_2e$ in 2012 – 9.8% higher than in 2011 and 22.3% lower than 1990 levels. Over the first carbon budget, power emissions reduced by 8.4%. Provisional estimates for 2013 show that CO_2 emissions, which account for the majority of emissions in the power sector, decreased by 9% to 145.2 $MtCO_2$.

The CCC singles out Electricity Market Reform (EMR) as a notable success over the first carbon budget period, and we agree with this conclusion. Implementation of EMR is proceeding at pace: since the CCC report was published in July, the final budget for the first Contracts for Difference (CfD) allocation has been published; both the CfD for Renewables and the Capacity Market have received State Aid clearance; Parliamentary approval for the implementing secondary legislation has been granted and the regulations have come into force; and the EMR delivery bodies have been granted full powers. As well as cutting carbon emissions, this is delivering benefits for the UK: by 2020, up to 250,000 jobs in low carbon generation could be supported by the UK's Electricity Market Reform.

The CCC also recommends that the Government should take action to give certainty on ambition for the power sector during the 2020s – and has made a number of recommendations for ways that the Government could do this by 2016. In the past year, the Government introduced powers in law through the Energy Act 2013, that enable a 2030 binding decarbonisation target range to be set for the UK's electricity sector.

We understand the CCC intends to provide advice on both the decarbonisation target, and options to support deployment of offshore wind and Carbon Capture and Storage (CCS), in its advice on a fifth carbon budget, due by the end of 2015.

Taking the decision on setting a target in 2016, in light of this advice, allows it to be informed by the level of economy-wide emissions reductions that will have to be achieved by 2030 under the fifth carbon budget.

The CCC also makes a number of recommendations about demand side response, interconnection and storage which are covered in Chapter three of this response.

Transport (Chapter 4)

Greenhouse gas emissions from domestic transport were 117.5 $MtCO_2e$ in 2012 – 0.4% lower than in 2011 and 3.0% lower than 1990 levels. Over the first carbon budget, domestic transport emissions reduced by 6.9%. Provisional estimates for 2013 show that CO_2 emissions in the transport sector, decreased by 0.2% to 116.1 $MtCO_2$.

The CCC report recognises that there has been good progress in improving the fuel efficiency of conventional vehicles, and Government agrees. Since 2001 the average emissions of new cars has fallen by 28%.

The CCC has recommended continued work to overcome the financial and non-financial barriers associated with uptake of ultra-low emission vehicles. Government has committed £500m support for the sector to 2020 and in April 2014, the Office of Low Emissions Vehicles (OLEV) published *Investing in ultra low emission vehicles in the UK, 2015*

to 2020[3] which sets out key elements of the Government's proposed package of support. Chapter four lays out more detail, as well as responding to the CCC's recommendations on airports and freight transport.

Industry (Chapter 5)

Greenhouse gas emissions from industry (energy supply, industrial combustion and industrial processes) were 125.2 $MtCO_2e$ in 2012 – 2.7% lower than in 2011 and 45.5% lower than 1990 levels. Over the first carbon budget, industry emissions reduced by 18.3%. Provisional estimates for 2013 show that CO_2 emissions, which account for the majority of emissions in the industry sector, increased by 1% to 107.7 $MtCO_2$.

The Government is committed to continuing to support emissions reductions in the industrial sector whilst ensuring that UK industry remains competitive. Since the last Government response to the CCC, DECC, BIS, industry and academia have continued to work collaboratively on the development of long term decarbonisation and energy efficiency roadmaps for the eight most heat intensive sectors in the UK. We agree with the CCC that these roadmaps should enable the Government and industry to identify and set out the opportunities for reducing emissions in industry while remaining competitive.

The Government also agrees with the CCC that Carbon Capture and Storage (CCS) is likely to be a key technology for decarbonisation in specific industries. The Government is making good progress on developing CCS – but we accept that more needs to be done. That is why, in 2014, we have continued to increase our activity in this area and to develop our approach to industrial CCS deployment. More information is provided in Chapter five, which also responds to the CCC's recommendations on compensating at-risk industries and overcoming barriers to capital investment.

Agriculture and Land Use (Chapter 6)

Greenhouse gas emissions from agriculture and land use were 49.5 $MtCO_2e$ in 2012 – 0.3% lower than in 2011 and 32.1% lower than 1990 levels. Over the first carbon budget, agriculture and land use emissions reduced by 2.2%.

The UK has developed a policy framework to reduce all GHG emissions from the agriculture, forestry and land management sector to enable the sector to fulfil its potential in contributing to climate change mitigation. Many of these actions explicitly relate to production efficiency, sustainably increasing the productivity of the sector by improving resource use efficiency.

Central to the approach is working directly with the sector to raise awareness and encourage behaviour change. The Task Force published its Greenhouse Gas Action Plan in 2010 which details 15 on-farm measures that reduce emissions whilst improving the efficiency of agriculture. This supports the product roadmaps published by the agricultural sector levy bodies and contributes to the Government's growth plan for agriculture.

The CCC recommends the effectiveness of this plan is robustly monitored, and we agree with this recommendation.

[3] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/307019/ulev-2015-2020.pdf

Waste and F-gas emissions (Chapter 7)

Greenhouse gas emissions from waste and F-gas emissions were 21.6 $MtCO_2e$ in 2012 – 4.8% lower than in 2011 and 54.2% lower than 1990 levels. Over the first carbon budget, waste and F-gas emissions reduced by 22.6%.

Methane from landfill waste contributes the vast majority of emissions in the waste sector. The first approach to reducing emissions is therefore to seek to prevent excess waste, which will also contribute to a broader sustainable economy. The CCC has recommended strategies for particular biodegradable wastes, all of which are already identified as priority materials within the Waste Prevention Programme for England. Chapter seven provides more detail.

The Government is committed to reducing F-gas emissions, and strongly supports the world-leading EU regulation which will deliver an 80% cut in F-gas consumption over the next 15 years, bringing an annual emission reduction of between 8 and 9 $mtCO_2e$ by 2035.

Devolved administrations (Chapter 8)

The CCC is right in stating that the devolved administrations have an important role to play in achieving the UK's carbon budgets. The devolved administrations have also set their own ambitious targets for reducing greenhouse gas emissions and are making good progress in a number of areas. Chapter 8 sets out their progress to date and areas where further action is being taken.

Chapter 1: Economy-wide emissions and forward look at government strategy

The UK has met the first carbon budget

1.1 The past year has provided the first major milestone for carbon budgets since the Climate Change Act was passed in 2008. In February 2014, the UK's 2012 greenhouse gas inventory was published,[4] confirming that the UK had met the first carbon budget. Figure 1 shows that over the first carbon budget period (2008–12), the UK emitted 2,982 $MtCO_2e$, which is 36 $MtCO_2e$ below the first carbon budget cap of 3,018 $MtCO_2e$. On average this means emissions were 23.6% lower than 1990 base-year emissions.

The fourth carbon budget will be retained

1.2 When the fourth carbon budget was set in 2011, the Government announced it would review progress in 2014. The focus of the review was on whether the UK's domestic commitments placed the UK on a different trajectory from the one agreed by our partners in the EU under the EU Emissions Trading System.

1.3 The CCC provided detailed advice in November and December 2013 to inform the review, recommending that the budget be retained at its existing level.

Figure 1: Progress against the first carbon budget

First carbon budget ($MtCO_2e$)		Actual emissions including EU ETS $MtCO_2e$						Overall emissions below budget
Level of first carbon budget (total emissions, 2008–12)	Equivalent average emissions p.a.	2008	2009	2010	2011	2012	Cumulative emissions to date (2008–12)	2008–2012
3,018	604	616	595	605	579	587	2,982	36

Source: UK greenhouse gas emissions statistics, DECC
https://www.gov.uk/government/statistics/final-uk-emissions-estimates

[4] The inventory can be found here: https://www.gov.uk/government/statistics/uk-greenhouse-gas-inventory

1.4 The Government review concluded in July 2014. Following detailed consideration of the evidence, and the broad support from businesses and other stakeholders for the budget to be retained, the Government decided that no amendment of the budget was required at this time, and that the budget would be retained at its existing level.[5] This decision commits the UK to halving its total greenhouse gas emissions over the fourth carbon budget period (2023–27), compared to 1990 levels.

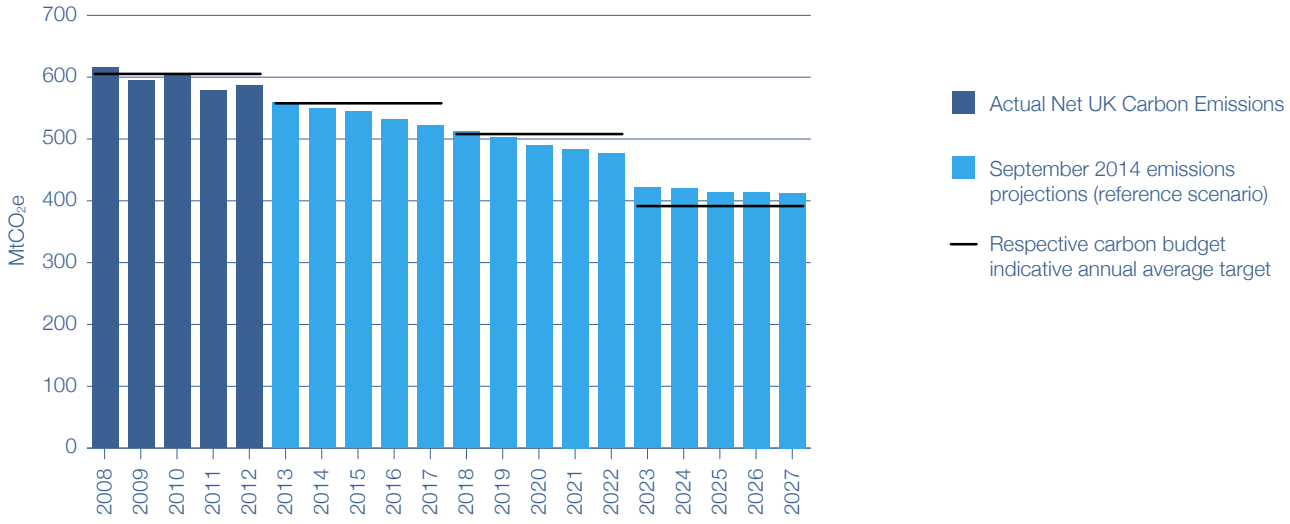
Emissions reductions are expected to continue over the second and third carbon budget periods

1.5 The Government's latest projections indicate that the UK is on track to meet its second and third legislated carbon budgets with current planned policies. The Government expects to reduce emissions to below the level required by these budgets by 76 and 80 $MtCO_2e$ respectively on the reference scenario forecasts. Figure 2 shows the progress against the first four carbon budgets.

1.6 The Government has put in place a comprehensive package of policies that are driving emissions reductions across the economy, including:

- reforming the electricity market;

Figure 2: Progress against the first four carbon budgets



Source: UK greenhouse gas emissions statistics and Updated Emissions Projections, DECC https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2014
Note: This chart is for illustrative purposes only.

5 The written Ministerial statement can be found here: https://www.gov.uk/government/publications/the-carbon-plan-reducing-greenhouse-gas-emissions--2

- supporting continued take-up of energy efficiency measures through the Green Deal and Energy Company Obligation; and
- building a market for renewable heat through the Renewable Heat Incentive.

1.7 The Government is also continuing to push for the European Union to agree an ambitious 2030 package.

1.8 But the Government is not complacent. Current policies alone will not be enough to meet our legally binding commitments in future. Based on current planned policies there is an expected shortfall of 133 $MtCO_2e$ over the fourth budget – reflecting the fact that detailed policy mechanisms have yet to be developed for this period. In the 2011 Carbon Plan,[6] the Government set out a number of scenarios for bridging the shortfall.[7]

1.9 The Government recognises that addressing this shortfall will present challenges: emissions reductions will need to gather pace across the economy.

1.10 This year's progress report from the CCC provides helpful recommendations to inform the Government's approach to addressing this challenge.

1.11 The CCC has provided detailed advice, and specific recommendations, structured by sectors. The Government's response considers each sector in turn, responding to each of the CCC's recommendations. The CCC also makes three cross-sectoral recommendations, which are addressed in this chapter.

Response to cross-sectoral recommendations

Recommendation 1

Continue to push for a combination of EU ETS reform and ambitious emissions targets for 2020 and 2030 that will put the EU on the cost-effective path to meeting its target for at least an 80% emissions reduction by 2050 relative to 1990 and will deliver an EU ETS price that is sufficient to incentivise emissions reduction activities in the power sector. The regulatory regime should also allow for negative emissions (e.g. from use of bioenergy with CCS) to count towards required emissions reduction.

1.12 The Government agrees that it is important to push for a combination of EU Emissions Trading System (ETS) reform and ambitious emissions targets for 2020 and 2030. Since the publication of the CCC's report, the June European Council took stock of the progress made towards a final decision in October on the 2030 Climate and Energy Framework, and confirmed that the target greenhouse gas emission reductions will be fully in line with the agreed ambitious EU objective for 2050. The Government also continues to push for the EU to raise the 2020 emissions reduction target to 30%.

1.13 The Government will continue to work with EU partners, in particular through the 'Green Growth Group' (a group of climate, energy and environment ministers from 14 like-minded Member States), to help ensure that the European Council is able to take a final decision on an ambitious, flexible and cost-effective 2030 Climate and Energy Framework.

1.14 The UK has long pushed for reform of the EU ETS so that it can help bring forward low carbon investment to meet our long term emissions reductions targets in the most

6 The Carbon Plan can be found here: https://www.gov.uk/government/publications/the-carbon-plan-reducing-greenhouse-gas-emissions--2

7 The revised estimation reflects a number of factors, including revised population projections, fossil fuel price projections, inventory corrections and revisions to estimated savings from policies.

cost-effective way. The European Council made it clear that a reformed EU ETS must play a central role in delivering the EU's climate and energy objectives for 2030.

1.15 On 16 July, the day after the publication of the CCC progress report, the Government published a blueprint setting out our vision for the future of the EU ETS including its next phase, beginning in 2021. The UK Vision for Phase IV of the EU ETS[8] advocates proposals focused on three priority areas: strengthening the system by tackling the surplus of allowances; protecting sectors at risk of competitive disadvantage; and improving efficiency while cutting unnecessary red tape.

1.16 As part of the discussions on reforms to the EU ETS for the period beyond 2020, the Government will also consider the treatment of negative emissions arising from the combined use of biomass and Carbon Capture and Storage (CCS), as recommended by the CCC.

Recommendation 2[9]

By 2016, publish a strategy to develop CCS in both power and industry, including CO_2 infrastructure development, minimum levels of deployment over the period to 2030, and an approach to funding for projects beyond current policy (including higher levels of deployment dependent on cost reduction).

1.17 The Government is committed to the establishment of a CCS industry in the UK. The Government remains committed to working with the CCS industry to deliver cost-competitive CCS by 2030.

1.18 Power CCS projects are complex, multi-billion pound infrastructure projects. The UK CCS Commercialisation competition makes available £1 billion capital funding, together with additional operational funding through the UK Electricity Market Reform (EMR), to support the design, construction and operation of the UK's first commercial-scale CCS projects. The Government's EMR announcement on 2 October signalled that we expect there to be more than £1bn of LCF funding available by 2020/21 for allocation to renewable and CCS projects. The Government plans to allow additional support from consumers via Contracts for Difference (CfDs) once we are satisfied the terms are right, subject to value for money and affordability.

1.19 The two projects being taken forward in the £1bn funded CCS Commercialisation Competition are the White Rose Project in Yorkshire and the Peterhead Project in Scotland. The Government will continue to encourage developers to complete their Front-End Engineering and Design (FEED) studies and provide that confidence as quickly as possible. It is important to note that to maximise confidence in delivery, the projects are expected to undertake a significant amount of work over the remaining months to the end of 2015. During this period both projects will also need to obtain the necessary planning permission and consents which includes extensive public consultations; and detail their commercial structures for delivering the projects including engagement with the investment and finance communities. Until FEED is complete, projects carry unacceptable and/or unquantifiable levels of risk for either the Government or the developers to take a decision to invest.

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8 The vision can be found here: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/329841/EU_ETS_vision_for_phase_IV_final_version.pdf

9 Industrial CCS is covered in the Industry chapter (recommendation 24)

1.20 Successful CCS deployment will require a close partnership between the Government and developers. Prospective CCS developers will need to bear proportionate risks to ensure that the development and deployment of CCS does not impose undue burdens on energy consumers.

Recommendation 3

On biomass sustainability for transport, power and heat: continue to push for Indirect Land Use Change (ILUC) impacts to be fully taken into account in EU biofuel sustainability criteria; in the 2016/17 review of UK bioenergy strategy, add to the UK's criteria for biomass sustainability a requirement that all biomass is sourced from forests that can demonstrate constant or increasing carbon stocks, and push for this to be reflected in standards at the EU level.

EU biofuel sustainability criteria

1.21 The UK supports harmonised sustainability criteria across the EU for larger producers and users of solid biomass and biogas that should draw both on the existing criteria for biofuels and bioliquids and well-established national and global controls to promote sustainable forestry. This would create a simpler and more coherent market, benefiting both buyers and sellers.

1.22 Within the transport sector, as part of the wider support for increased deployment of 'advanced' biofuels, the Government, announced in August 2013 that £25 million of capital funding to enable the construction of a demonstration-scale waste to fuel and other advanced biofuel plant in the UK. Funding will follow a competition to identify the most promising and suitable industry proposals with project(s) now expected to commence in 2015.

Preservation of carbon stocks in the UK

1.23 We agree with the CCC that the proposed Renewables Obligation (RO) sustainability criteria do not currently directly address the preservation of land carbon stocks except where the reported use of the land changes.[10] While the RO will close to new entrants in 2017, we will seek to bring this issue specifically into the criteria for bioenergy in the coming years, with a review of the effectiveness of our approach in 2016/17 as part of the planned UK Bioenergy Strategy Review. The Review will include consideration of the sustainability criteria that should apply to new biomass generation coming forward from April 2019. In this respect the UK can draw on the work it has already carried out in developing its Biomass Emissions and Counterfactual model which looked at whole life cycle carbon implications of using biomass for energy. This would support wider UK Government work to improve international carbon accounting and management practices.

Preservation of carbon stocks in the EU

1.24 The UK supports the intention of the European Commission to continue its work towards achieving more transparent international accounting systems at the global level and to identify and apply sustainable forest management criteria.

[10] As set out in the Government Response to the consultation on proposals to enhance the sustainability criteria for the use of biomass feedstocks under the Renewables Obligation (RO).

Chapter 2: Buildings emissions

Emission trends

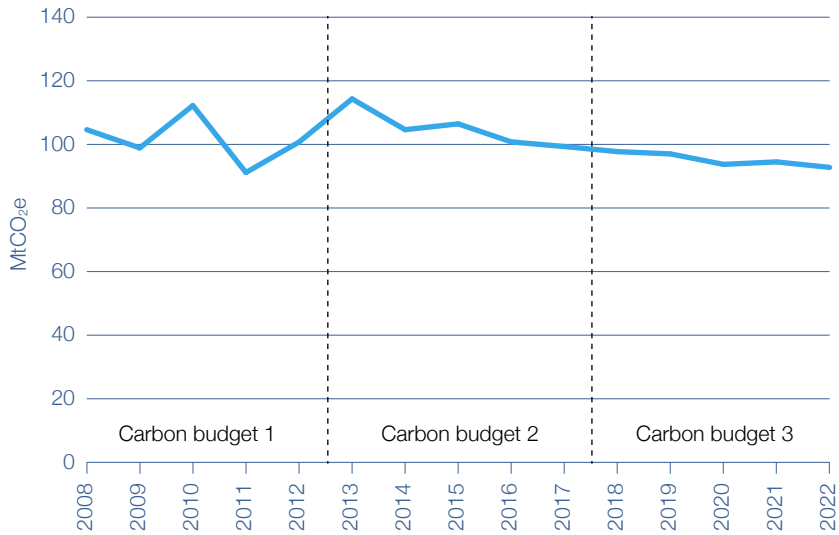
2.1 Greenhouse gas emissions from domestic and non-domestic buildings were 100.7 $MtCO_2e$ in 2012 – 10.5% higher than in 2011 and 4.1% lower than 1990 levels. Figure 3 shows that over the first carbon budget, building emissions reduced by 3.7%. Provisional estimates for 2013 show that CO_2 emissions, which account for the majority of emissions in the buildings sector, increased by 2.5% to 97.0 $MtCO_2$.

Policy approach

2.2 The Government agrees with the CCC that there is significant emission reduction potential from energy efficiency measures and the deployment of low-carbon heat.

2.3 We are reducing our dependency on imported fossil fuels by helping consumers and businesses become more energy efficient through policies such as the Green Deal and ECO.

Figure 3: Buildings emissions in the first carbon budget (2008–12) and projections for the second and third carbon budgets (2013–22)



Source: Emissions projections derived from Updated Emissions Projections, DECC https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2014
Note: This chart is for illustrative purposes only.

2.4 We have also introduced the Domestic Renewable Heat Incentive (RHI), to provide long-term financial support to households to switch to renewable heat. The Domestic RHI is targeted at (but not limited to) homes off the gas grid. Since its introduction, over 10,000 households are receiving support from the Domestic RHI.

2.5 The Domestic RHI will help to develop the market, creating supply chains from manufacturers of technologies through to installers. The Government is looking more widely at what measures might be required in order to begin the wider transition to low carbon heating from the next decade onwards.

2.6 The Government's ambition is for the UK to be a world leader on energy efficiency. Around 99% of our homes already have some basic loft insulation, 69% have adequate loft insulation and 71% of properties with cavity walls have cavity wall insulation. However, challenges remain around tackling fuel poverty and harder-to-treat properties.

2.7 We aim to improve the energy efficiency of 1 million homes between January 2013 and March 2015. We had already made significant progress towards this target by the end of June 2014 with over 750,000 homes improved through the Energy Company Obligation (ECO), Green Deal and other home energy efficiency incentives.

2.8 In addition, the Green Deal Home Improvement Fund (GDHIF) made up to £120 million available in 2014 to households to install packages of energy saving measures like solid wall insulation and new boilers. The fund has been hugely popular with over 21,000 active applications to the end of August 2014, enabling more homes to be improved.

2.9 This is in addition to testing a "street by street" approach to improving energy efficiency through the 24 Local Authority-led Green Deal Communities projects with £88.4 million of funding in 2014-15. These projects aim to deliver Green Deal energy efficiency measures in up to 30,000 households across the country on a street by street basis with a focus on hard to treat properties, e.g. those needing solid wall insulation.

2.10 On 7 October, an additional £100 million was announced for household energy efficiency, which is in addition to the £450 million allocated to household energy efficiency over three years, which was announced in December 2013.

2.11 The Government has made a continued commitment to ECO, and intends to extend it until 2017. The changes we are making will help to reduce pressures on consumer bills and ensure ECO provides value for money for energy consumers; while continuing to help tackle fuel poverty, support the development of a sustainable supply chain for energy efficiency measures and improve the energy efficiency of our housing stock.

Response to recommendations

Recommendation 4

Strengthen the near-term framework for energy efficiency improvement in residential buildings: increase ambition on insulating lofts and cavity walls while finalising the Energy Company Obligation (ECO); maintain fiscal incentives to 2017; by the end of 2014, publish proposals for minimum energy performance standards for the private-rented sector.

ECO

2.12 The Government laid secondary legislation to make changes to the Energy Company Obligation (ECO) up to 31 March 2015 on 22 July. This is intended to come into force by the end of 2014 subject to Parliamentary approval. Further legislation to

make changes to ECO up to 31 March 2017 will be laid in the autumn. The Government's response to the consultation on the future of ECO[11] was published on 22 July 2014.

Private Rented Sector

2.13 The Government launched its consultation on implementation of the Energy Act 2011's provisions for private rented sector minimum energy performance standards in England and Wales on 22 July 2014.[12] The consultation closed on 2 September 2014 and the Government is considering the responses received. Having gathered views on the proposals, the Government plans to issue its response and lay the regulations by the start of 2015.

Recommendation 5

Build on the existing approach to incentivising low-carbon heat in residential buildings: commit funding for the Renewable Heat Incentive to 2020 and commit to extending this approach beyond 2020 unless and until an alternative mechanism is in place; extend the Green Deal to cover the upfront cost of low-carbon heat technologies funded under the Renewable Heat Incentive (RHI) and consider using Government guarantees to lower the financing cost; develop measures to improve consumer confidence in renewable heat.

2.14 The Government is offering support to help householders install renewable heating technologies in their homes through the Domestic RHI. The scheme could support up to 35,000 new renewable heat installations in the first year, and 56,000 in the second year, before tariffs are reduced. Funding has been confirmed up to 2016 and further spending decisions for future years need to be considered by Government as part of its spending plans for the next Parliament.

2.15 However, the Government is taking action to provide greater certainty for large renewable heat projects and set out its position in "*Improving Support, Increasing Uptake*" which was published in December 2013.[13]

Access to funding

2.16 The Government agrees that the upfront costs of renewable heating technologies can be a barrier for consumers. Enabling occupiers to be able to access finance to support the installation of energy efficiency measures continues to be a key objective for Government.

2.17 We are also considering changes to the RHI to make financing easier. The Pay As You Save (PAYS) platform represents one means through which over 80% of households in Great Britain can potentially access finance, and the experience of the Green Deal Finance Company (TGDFC) shows that the PAYS system can work effectively. We are undertaking work to see how more use can be made of the PAYS system and also looking at other options for driving the delivery of private finance in the energy efficiency market, for example allowing someone who isn't the owner of the property to apply for the RHI or allowing the owner of the property to assign their right to RHI payments to a third party. If combined with changes to the Golden Rule,

11 The Government response can be found here: https://www.gov.uk/government/consultations/the-future-of-the-energy-company-obligation.

12 The consultation can be found here: Consultation on PRS Energy Efficiency Regulations (Non-Domestic) & Consultation on PRS Energy Efficiency Regulations (Domestic)

13 The Government Response can be found here: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/265855/Non-Domestic_Renewable_Heat_Incentive_-_Improving_Support_Increasing_Uptake_-_PUBLISHED.pdf

this could potentially increase the amount of finance available under a Green Deal plan for renewable heat measures. Making these changes to RHI payments would increase the availability of finance more generally, including Green Deal finance, and potentially decrease the risk (and therefore the cost) of finance in a similar way to a guarantee.

Non-financial barriers

2.18 We agree that addressing non-financial barriers, such as consumer confidence, is critical to the success of the RHI. The Government is continuing with marketing activities to promote the RHI and renewable heat. However, given the rural off-gas grid target market of the domestic RHI, we do not believe that a national marketing campaign would be in consumers' interests or offer value for money for the taxpayer. Instead, we are taking a carefully targeted approach. This includes adverts in selected regional press and consumer magazines aimed at the RHI target market in autumn 2014 at the start of the heating season, and a continuation of the RHI consumer-facing road shows aimed at key segments such as self-builders, that ran successfully in spring and summer 2014.

2.19 A central part of this strategy will be the development and publishing of case studies so that consumers can learn from their peers.

Information provision

2.20 We recognise that access to impartial, accurate information on renewable heating technologies and the RHI is also vital. In June 2014 we launched an updated Green Deal Advice Report which now includes estimates of RHI income where relevant, and links to an RHI Quick Guide containing further information on the scheme. Consumers can also get information on the RHI by calling the Energy Saving Advice Service,[14] or visiting the Ofgem website,[15] which contains a comprehensive set of guidance material that is continuously improved in response to customer feedback. In July 2014, we launched an RHI online payments calculator[16], which allows householders to get an estimate of how much their RHI payments will be before they apply, and to check estimates they are given by installers. This is designed to increase further confidence in installing a renewable heating system. At the beginning of October, it had already been used approximately 21,000 times.

2.21 We are developing work to improve the standard of, and build awareness of, training for renewable heat installers. Improving ease of access to training for installers could increase the take up of training and make it easier for consumers to find installers. It could allow consumers to be more confident in renewable heating technology and decrease the likelihood of individual installations being sub-standard.

Recommendation 6

Consider future options for the focus of the ECO (i.e. whether this should be on delivering more difficult energy efficiency improvements for the fuel poor or across all households). This consideration should reflect evidence on costs of solid wall insulation, costs of alternative options for reducing emissions and whether an alternative delivery mechanism could better tackle fuel poverty.

2.22 The Energy Company Obligation (ECO) has been successful – having transformed the speed and cost of delivering heating

[14] The new telephone number for the service is 0300 123 1234

[15] Information can be found here: https://www.ofgem.gov.uk/environmental-programmes/domestic-renewable-heat-incentive

[16] The calculator can be found here: https://www.gov.uk/renewable-heat-incentive-calculator

and insulation measures to homes in Great Britain. Primarily through the Affordable Warmth and the Carbon Saving Community Obligations (CSCO), ECO is supporting those unable to fully self-finance energy efficiency improvements or afford a long-term finance plan, providing them with the opportunity to benefit from warmer homes and more affordable energy.

2.23 Key to ECO's success is the delivery mechanism which has harnessed the power of the market to drive down costs. The design of the ECO has also naturally incentivised energy companies to prioritise households with the highest energy costs, where the greatest bill savings can be made.

Changes to ECO

2.24 Earlier this year the Government consulted on proposals for the next period of ECO to ensure that ECO is achieving all of its intended outcomes, with new targets for the period 2015-17 to be set in legislation later this year. In July the Government confirmed it plans to improve ECO to:

- Increase rates of delivery in areas off the gas grid – initial delivery data from ECO suggested lower rates of delivery in these areas than expected, partly because targeting under CSCO has been too tightly defined. Because there is a link between off-grid areas and severe fuel poverty, the Government wants to provide stronger incentives for higher delivery rates and make it easier for people living in rural locations to access support.
- Ensure the quality of installations, notably boilers – The Government wants ECO to support high quality installations and is therefore intending to implement provisions for minimum warranties for boiler replacements and installation works.

2.25 However, it is important to make sure that the overall costs of ECO remain controlled and do not rise unnecessarily, not least since this would have a particularly damaging impact on low-income families by adding unnecessarily to bills.

2.26 In light of this, the Government stated its intention to allow energy suppliers to count so-called 'easy-to-treat' measures as a primary measure under the Carbon Emissions Reduction Obligation (CERO). This will allow for delivery of cavity wall and loft insulation, which are much cheaper than solid wall insulation. However, the Government will continue to monitor the evidence around the costs and benefits of solid wall insulation, as the CCC recommends.

2.27 In future years beyond 2017 the Government will need to ensure the lessons learned are understood and applied to any future scheme.

The future of energy efficiency policy

2.28 The process of improving and refining energy efficiency policy can be expected to continue in the long-term, including as part of the policy design of ECO beyond 2017. The Government will continue to assess which households receive which measures across policies such as ECO to understand how fairly these measures are provided to households on different incomes and how effectively it is delivering reductions in household emissions.

2.29 The continuing development of the Green Deal is an important part of this overall picture because it is a way of bringing private finance in to support energy efficiency. The more private finance can be made available, the stronger the case for as much subsidy as possible to be directed to those least able to afford to pay for their own improvements.

Rental properties

2.30 The Government has also published proposals to give domestic tenants the right to request their landlords carry out energy efficiency improvements from 2016 and, from 2018, the least energy efficient rental properties would not be allowed to be let until they are improved to an Energy Performance Certificate rating of Band E. Any energy efficiency improvements must be financeable without any upfront or net cost to the landlord.

2.31 And, as the CCC rightly suggests, the Government will also be considering other ways in which support for low income, high cost homes might evolve in future – for example, whether it would be possible to introduce extra safeguards for vulnerability, or incentives for delivery to vulnerable households. Changes of this kind would need to take cost impacts into account and how easy they would be to deliver, and would be subject to consultation at the appropriate time.

2.32 It should also be noted that fuel poverty is a devolved issue, and Scotland, Wales and Northern Ireland use their own definitions of fuel poverty and have their own schemes to tackle it.

Recommendation 7

Develop additional measures to tackle fuel poverty in England to supplement the Affordable Warmth element of the ECO, possibly including targeting of the RHI.

2.33 On 22 July, the Government laid before Parliament draft regulations setting out its new fuel poverty target. This legislation is subject to the affirmative resolution of both Houses of Parliament, and will therefore be debated by both Houses later this year. The new target focuses on improving the energy efficiency of fuel poor homes by ensuring that as many fuel poor homes as is reasonably practicable achieve a minimum energy efficiency standard of Band C, by 2030. This is particularly powerful as it makes explicit the link between the social justice agenda in energy and the climate change agenda – as the CCC continues to recognise, the Government's fuel poverty and carbon objectives are strongly bound together, not in conflict.

2.34 This is a challenging ambition. Currently just 4% of fuel poor households in England have an energy efficiency rating of Band C and above, compared to around 18% across all households. Around 36% of fuel poor homes are D rated, almost half (46%) are E rated, with the remaining 14% being F or G rated. The Government believes that this target is in line with the activity required to improve the energy efficiency of the wider housing stock in order to meet its carbon budgets. It will ensure the fuel poor do not get left behind in those efforts.

2.35 To get as many fuel poor homes as is reasonably practicable to a minimum of Band C will require a range of actions such as the installation of energy efficiency measures and bill rebates to help households with energy costs. It will mean trying to ensure that fuel poor homes have sufficient insulation in walls and lofts. Some homes could see the installation of a central heating system for the first time, while others could receive boiler upgrade or, potentially, have a heat pump installed.

2.36 The proportion of fuel poor homes that it is reasonably practicable to help is inherently uncertain and delivery will need to be informed by a range of factors, such as wider progress towards decarbonisation, changes in delivery costs and affordability. In particular, there is more to be done to understand how the energy efficiency landscape may evolve between now and 2030. It is possible that there will be future

technological advances that will lower costs and increase technical potential.

2.37 The Government is also mindful of the experience of previous energy efficiency programmes which has shown that some householders do not want to accept support, or to face the upheaval that some major energy efficiency interventions require. This is a challenge common to all of the Government's energy efficiency efforts and one that may recede as familiarity with technologies increases, and action on behaviour change takes hold.

Renewable heat for the fuel poor

2.38 This is particularly pertinent in relation to renewable heating, which the CCC draws attention to in terms of the RHI. Analysis suggests that renewable heating technologies might provide a cost effective solution for improving the energy efficiency of some of the coldest low-income homes. DECC is working with industry and delivery partners to support the development of the renewable heat market, to understand how best to exploit all of its potential and to overcome delivery challenges on the path to more widespread deployment. The role that renewable heat can play in alleviating fuel poverty is also part of this consideration.

2.39 Government is learning from the Renewable Heat Premium Payment scheme (RHPP) about the ability for renewable heat technologies to offer real world bill savings in the future. We have also gathered evidence on how such savings are led by the way the heating systems are understood and used. These are important factors when considering promotion and deployment of any heating technology to low income and vulnerable households, in both the short and long-term.

2.40 The Government also acknowledges that it is important to explore other ways to ensure that those on low incomes living in the coldest homes might be able to benefit from renewable heating technologies given that the structure of the RHI acts to repay the cost of the initial capital investment over time and therefore it is less suitable to support households who cannot make the upfront payment. As suggested by the CCC, DECC is considering, for example, exploring the role of third party investors and the potential for similar ownership schemes as have been seen under the Feed-in Tariff model, where both investors and households benefit.

Recommendation 8

Ensure that the Zero Carbon Homes standard requires investment in low-carbon heat unless heating requirements are very low, and only grant exemptions where a clear economic rationale for these has been demonstrated.

2.41 As part of the journey to Zero Carbon Homes the Coalition Government has significantly strengthened the energy performance requirements in the Building Regulations for new homes. New homes are now required to be on average over 30% more energy efficient than before the Government came into office and these changes mean that consumers can save an extra £200 on average a year on their fuel bills. These changes mean that new homes in this country are already amongst the most energy efficient anywhere.

2.42 Building regulations are devolved in the UK. The Government has been clear on its ambition of Zero Carbon Homes in England but this should be done in the most cost effective way. Developers and builders are best placed to know the cost effectiveness of projects and so building regulations policy is always technology-neutral. So long as heat pumps and low carbon technologies demonstrate carbon savings they would be

'allowable solutions' that the developer could use to meet the zero carbon standard.

Recommendation 9[17]

In the commercial sector: simplify and rationalise existing policies for energy efficiency improvement, with a view to strengthened incentives and decisions by the end of 2016, and publish proposals for minimum energy performance standards for the private-rented sector.

2.43 The Government has recently simplified the CRC Energy Efficiency scheme, so that it continues to incentivise energy efficiency with reduced administrative burdens. The Energy Savings Opportunity Scheme has been carefully designed for ease of compliance. The planned reviews of the CRC Energy Efficiency Scheme and the Energy Savings Opportunity Scheme in 2016 could provide an opportunity to consider the potential for a broader simplification of existing energy efficiency policies aimed at the commercial sector.

Recommendation 10

By the end of 2014, set carbon targets for central government beyond 2015.

2.44 Good progress has been made in 2013/14 under the Greening Government Commitments with an average GHG emission reduction of 20% across all central government departments. In line with normal practice the Greening Government Commitments annual report for 2013/14, which provides details of each department's performance against the Commitments, will be published by the end of 2014. A key rationale for the Greening Government Commitments is to demonstrate what is possible and lead by example. The Government is considering options for the setting of GHG emission reduction targets for the central government estate beyond the end of the current Greening Government Commitments in 2015.

[17] Proposals for minimum energy performance standards for the private-rented sector is covered in the response to recommendation 4.

Chapter 3: Power emissions

Emission trends

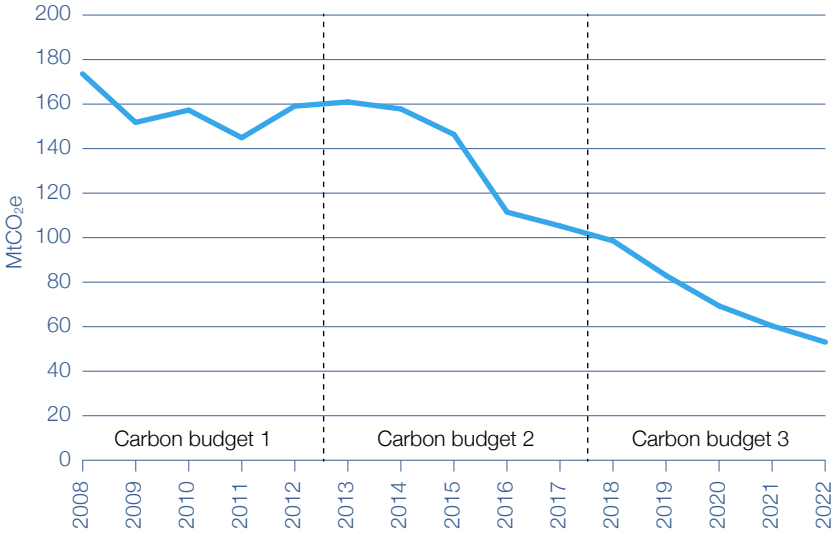
3.1 Greenhouse gas emissions from power were 159.1 $MtCO_2e$ in 2012 – 9.8% higher than in 2011 and 22.3% lower than 1990 levels. Figure 4 shows that over the first carbon budget, power emissions reduced by 8.4%. Provisional estimates for 2013 show that CO_2 emissions, which account for the majority of emissions in the power sector, decreased by 9% to 145.2 $MtCO_2$.

Policy approach

3.2 Under the Coalition Government electricity from renewable sources has more than doubled, and it represented a record 14.9% of electricity generated in 2013 (Figure 5). Renewables now provide enough power for over 12 million homes. The UK is now one of the best places in the world to invest in renewable energy and is the best place to invest in offshore wind and marine energy.

3.3 Since 2010, an average of £7bn has been invested each year in UK-based renewable energy. In 2013 alone, almost

Figure 4: Power station emissions in the first carbon budget (2008–12) and projections for the second and third carbon budgets (2013–22)



Source: Emissions projections derived from Updated Emissions Projections, DECC https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2014
Note: This chart is for illustrative purposes only.

£8bn was invested across the range of renewable technologies, a record high.[18]

Electricity Market Reform

3.4 The CCC singled out Electricity Market Reform (EMR) as a particular success over the first carbon budget period. The Government agrees with this assessment: reforming the electricity market will attract investment in low carbon electricity generation at an affordable cost to consumers while maintaining security of supply.

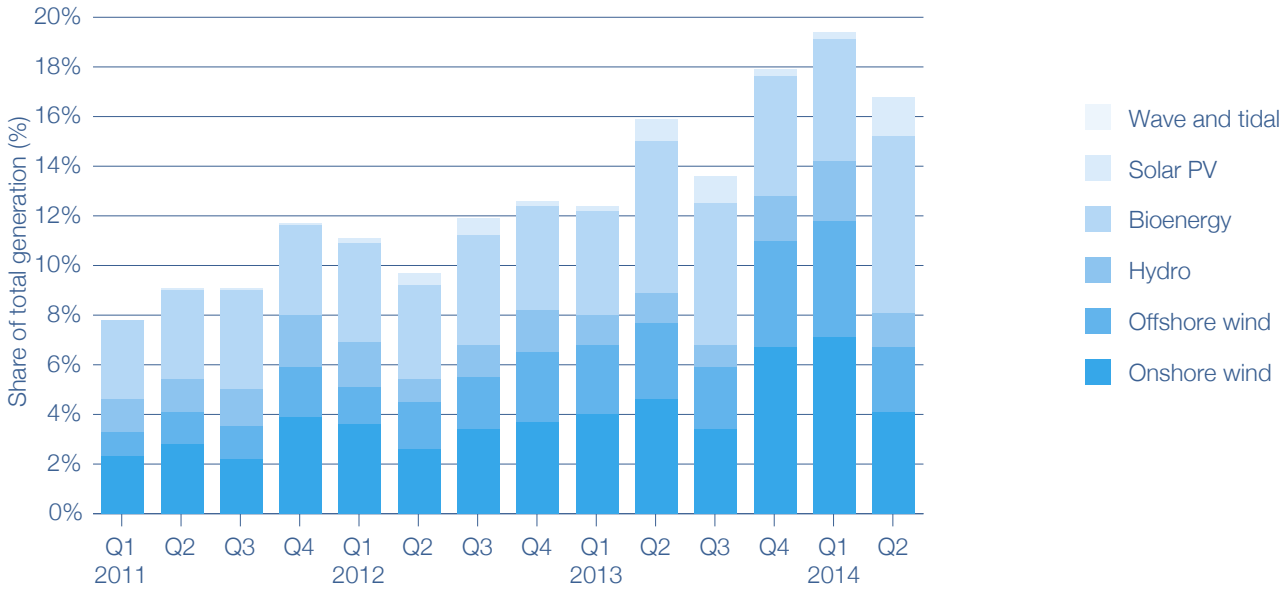
3.5 EMR provides support for low carbon technologies in the short to medium term, working towards a long term vision of a competitive market where all low carbon technologies can compete fairly on price with all other forms of generation, including fossil fuel plants, with a decreasing role for the Government over time.

3.6 At the same time, EMR will help ensure security of supply: the Capacity Market will provide an insurance policy against future blackouts or price spikes – for example, during cold, windless periods – and so help ensure that consumers continue to receive reliable electricity supplies at an affordable cost.

3.7 As well as reducing carbon emissions, EMR is delivering benefits for the UK: by 2020, up to 250,000 jobs in low carbon generation could be supported by the UK's Electricity Market Reform.

3.8 The CCC has used its progress report to propose that the Government works to give certainty on ambition for the power sector during the 2020s – and has made a number of recommendations for ways that the Government could do this by 2016.

Figure 5: Renewables share of electricity generation since 2011



Source: Energy Trends, September 2014, chapter 6, available at: https://www.gov.uk/government/statistics/energy-trends-section-6-renewables

[18] Data from: https://www.gov.uk/government/publications/delivering-uk-energy-investment-2014

3.9 In the past year, the Government introduced powers in law through the Energy Act 2013, that enable a 2030 binding decarbonisation target range to be set for the UK's electricity in 2016, once we have decided the level of economy-wide emissions reductions that will have to be achieved by 2030 under the fifth carbon budget.

3.10 The CCC has a statutory role in advising the Government on the level of the fifth carbon budget by the end of 2015. We understand the CCC intends to conduct further work in this area and provide advice on both the decarbonisation target, and options to support deployment of offshore wind and CCS, in its 2015 advice.

3.11 The CCC made three specific recommendations for the power sector.

Response to recommendations

Recommendation 11

Complete implementation of Electricity Market Reform (EMR); set appropriate strike prices and sign contracts for low-carbon capacity; ensure a suitable mix of low-carbon technologies is supported; ensure final market design recognises the value of demand-side measures, interconnection, storage and flexibility in generation; require that all biomass is sustainably sourced.

3.12 The Government agrees with the CCC that implementation of EMR needs to be completed and has made good progress towards this. Since the CCC report was published in July, the budget for the first Contracts for Difference (CfD) allocation has been published;[19] the CfD for Renewables and the Capacity Market have received State Aid clearance; Parliamentary approval for the implementing secondary legislation has been granted and the regulations have come into force; and the EMR delivery bodies have been granted full powers. As a result, the first allocation processes for the CfD and Capacity Market have opened, with the CfD supply chain assessment opening on 1 August and prequalification for the first capacity auction opening on 4 August.

Sustainability criteria

3.13 Sustainability criteria have been introduced into the RO and CfDs which require that account be taken of the sourcing of biomass through land criteria, that wood is only sourced according to our UK Timber Standard and that the biomass meets minimum GHG savings. The UK has been at the forefront of developing criteria to ensure that biomass used in energy generation is sustainable and we will have some of the toughest sustainability criteria in the world. Compliance with the criteria will be mandatory under the RO from April 2015 and mandatory for Investment Contracts and CfDs. Payments will only be made for biomass that meets these standards. New sustainability criteria for the Renewable Heat Incentive (RHI) are also being introduced to ensure all installations using biomass fuels meet the government's environmental objectives. This will affect domestic and non-domestic RHI participants as well as producers and traders of biomass fuels.

CfD strike prices and contracts

3.14 The Government published the first EMR Delivery Plan in December 2013. It provided the detail on strike prices for renewable technologies under CFDs commissioning in the period 2014/15-2018/19. EMR is already attracting investment in renewables capacity. Eight projects have been offered an Investment Contract (an early form of CfDs) through the FID Enabling for Renewables process. The

[19] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/360129/CFD_Budget_Notice.pdf

EMR implementing legislation came into force on 1 August and we are on track to hold the first CFD Allocation round in October 2014.

Low carbon technologies

3.15 The Government is pleased that the CCC recognises that EMR supports a mix of the low-carbon technologies. The CfD budget has been set to balance the Government's objectives of having a diverse technology mix, driving cost reductions through competitive allocation of CFDs to keep costs for consumers down.

Demand Side Response[20]

3.16 The Government is fully committed to supporting the growth of Demand Side Response (DSR) and is actively implementing measures to establish a broader and more flexible DSR sector. The expansion of DSR has the potential to lower consumer bills, electricity system costs and greenhouse gas emissions.

3.17 The participation of DSR in National Grid's existing balancing services has already demonstrated the benefits DSR can bring in reducing total demand quickly at a given time. Currently around 1.4GW of DSR participates in National Grid's Short Term Operating Reserve, and we hope to develop the sector through its participation in the Capacity Market and specifically through our Transitional Arrangements. In addition, the Energy Act 2013 and household roll-out of smart meters could support further uptake of DSR.

3.18 We have undertaken extensive consultation with DSR providers and aggregators and have developed the following measures specifically to assist the growth of this sector and to help it compete against other resources:

- A low deminimis threshold of 2MW to encourage smaller providers and widen the DSR portfolio. DSR with capacity of under 2MW will be able to aggregate, providing a level of flexibility to the provider and aggregator.
- The choice to participate in either the four year ahead or one year ahead auction, allowing DSR providers to decide when to participate and plan their business priorities accordingly. Some capacity will be held back from the four year ahead auction and 'reserved' for the year ahead auction.
- Participation in the auction as price makers, enabling DSR resources to be free to bid up to the overall auction price cap.
- The choice of three metering options to allow for a wider participation of DSR resources.
- Transitional Arrangements which will run in the years between the first capacity auction (2014) and the first delivery year (2018/19). The auctions will offer different terms than the full Capacity Market enduring regime to limit risks, encourage enterprise and build confidence in the DSR sector.

Interconnection

3.19 The Government agrees with the CCC that the Capacity Market design should recognise the value of interconnected capacity. Participation of interconnected capacity will increase efficiency by increasing competition in the auction and provide appropriate incentives for additional investment in interconnection. The Government has committed to include interconnected capacity in the Capacity Market from the 2015 auction onwards.

[20] The Electricity Demand Reduction (EDR) Pilot Scheme can be found in Chapter 5.

Storage

3.20 Energy storage has been identified by the Government as one of the UK's current eight 'great technologies' in which the country has world-leading research and that can support UK growth.

3.21 Energy storage systems that can store surplus electrical energy generated at a time of low demand for use at times of higher demand can play an important enabling role in the future energy system by supporting the deployment of renewable electricity generation. By storing energy for use at times of highest demand, storage systems can also help to maintain security of electricity supply and the Government is keen to see storage get involved in the Capacity Market.

3.22 To help develop the sector, storage that is under 50MW will be able to participate in the Transitional Arrangements to help them build capacity and capability before the main Capacity Market starts.

3.23 In the enduring Capacity Market, new storage facilities could receive capacity agreements of up to 15 years if they meet the capital expenditure threshold of £250/kW, helping to bring investment to the sector.

Recommendation 12

In 2016, set a carbon intensity target range for 2030 under the Energy Act 2013, consistent with cost-effective decarbonisation of the economy (e.g. 50–100 g/kWh).

3.24 The Government has introduced powers in law through the Energy Act 2013, which enable a 2030 binding decarbonisation target range to be set for the UK's electricity sector. This power to set a decarbonisation target can be exercised following advice from the CCC on the level of the fifth carbon budget that covers the corresponding period (2028–2032) and when the Government has set this budget in law, which is due to take place in 2016. This timing means that a decision on whether to set a target range will not be taken in isolation, but in the context of the decarbonisation of the whole economy.

Recommendation 13

No later than 2016, commit funding for low-carbon generation in the period beyond 2020.

3.25 We recognise the CCC's recommendation and understand the CCC intends to provide further advice in its 2015 advice on the fifth carbon budget. The CCC's recommendation, to make the decision by 2016, acknowledges that the level of funding permitted by the LCF beyond 2020/21, or further spending decisions for future years need to be considered by the Government as part of its spending plans to be made during the next Parliament.

Recommendation 14

By 2016, publish a commercialisation strategy for offshore wind that includes levels of ambition to 2030, cost reductions required to sustain that ambition and the Government's role in supporting those reductions.

3.26 The Government agrees with the CCC that cost reduction is clearly linked to the future potential for the offshore wind sector and that there is an important role for the Government, working with industry, to support cost reduction and commercialisation. The Government is supporting significant levels of offshore wind deployment now in order to enable industry to drive down costs, invest and innovate so that offshore wind is well positioned to expand in the 2020s and beyond.

The UK's future capacity

3.27 The UK has more offshore wind installed capacity than any other country in the world and this will remain the case for at least the rest of the decade. In addition to the 5GW installed or under construction, the UK is supporting around another 3GW through early Contracts for Difference (CfD). There are a number of other large projects that have the option of accrediting under the Renewables Obligation, and with the CfD budget for the first allocation round in October 2014 and with sufficient funding held back to fund potentially more in the years to come, these all combine to result in strong overall pipeline for UK offshore wind. Our decision to proceed with a major expansion of offshore wind is based on a strategy of investing early in emerging low carbon technologies where the UK has real potential. We believe offshore wind can play an important role for expanding renewable electricity generation in the next decade, so it is important to drive costs down now. To support the commercialisation and further success of the industry, the Government works closely with the industry through the Offshore Wind Programme Board to drive forward the development of the sector as a programme.

3.28 The significant levels of support we are providing will more than double the size of the sector by 2020 – specifically recognising the relationship between sector size and cost reduction potential. This support also recognises the need to deliver sufficient volume to give the supply chain confidence to invest, bring in new entrants and encourage innovation. The Government continues to engage regularly with the sector to help drive cost reduction at a practical level, such as through the Offshore Wind Programme Board and will continue to do so.

The long-term vision

3.29 The Government agrees on the need for long-term visibility of climate and energy policies to continue to attract investment in the energy sector, but we must balance this with the need for flexibility to ensure that the UK can decarbonise cost-effectively over the longer term. The Government has set out its policy commitments and technology projections in the 2011 Carbon Plan, and more recently in the EMR delivery plan a number of different trajectories to 2030 which includes indicative levels of offshore wind deployment. These trajectories are based on a range of factors but clearly highlight the relationship between sector size and technology cost.

3.30 We do not believe it is prudent or necessary at this stage to specify levels of ambition for offshore wind to 2030. Our future low carbon energy mix of the future will depend on a range of circumstances. The generation mix in the 2020s will depend upon how individual technologies develop and how quickly costs can come down. We do not prescribe a particular mix so therefore consider specifying levels of ambition, which would be construed as targets, would not be the appropriate approach.

3.31 The Government is now providing certainty to the offshore wind sector and it is therefore up to industry to deliver on building up the UK based supply chain and driving costs down. If industry can do so, then offshore wind will be well placed to expand in the 2020s. We understand the CCC intends to conduct further work on ways in which offshore wind deployment can be supported in the context of a competitive low-carbon energy mix. We welcome this and look forward to further advice in 2015.

Offshore Transmission Owner (OFTO)

3.32 The CCC's report cites a report by the Royal Academy of Engineering which suggests that the Offshore Transmission Owner (OFTO) regime is a potential deterrent to investment. We do not agree with this judgement. Over £1.4bn of investment has now been licensed under this regime, with a further £1.5bn in the tender process. Developers can choose to have an OFTO appointed to build as well as operate the assets, or to build the assets themselves (and so manage construction risk) before an OFTO is appointed to operate them. Potential OFTOs bid for a 20-year availability-based revenue stream that is provided independently of the generation asset.

Chapter 4: Transport emissions

Emission trends

4.1 Greenhouse gas emissions from domestic transport were 117.5 $MtCO_2e$ in 2012 – 0.4% lower than in 2011 and 3.0% lower than 1990 levels. Figure 6 shows that over the first carbon budget, domestic transport emissions reduced by 6.9%. Provisional estimates for 2013 show that CO_2 emissions in the transport sector, decreased by 0.2% to 116.1 $MtCO_2$.

Policy approach

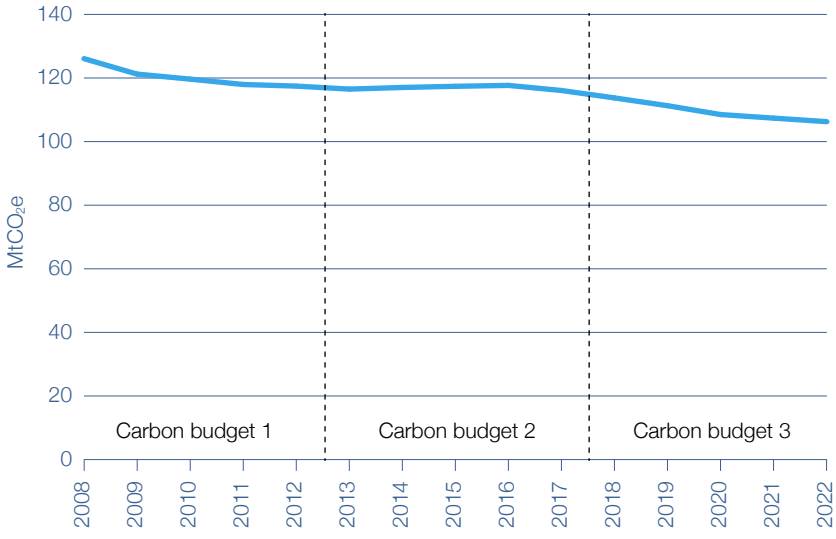
4.2 The Government is committed to continuing to support emissions reductions in the transport sector. Building on solid performance over the first carbon budget, over the second and third carbon budgets, the transport sector will continue to prepare for mass deployment in the late 2020s and 2030s.

4.3 The Government policy in the sector continues to make significant contribution to emission reductions and the Government is committed to continuing to make the UK a world leader in low-carbon transport.

Conventional vehicle emissions

4.4 The UK has made strong progress on new car CO_2 tailpipe emissions – with the average CO_2 emissions from cars newly registered in 2013 falling by 3% from 2012 to

Figure 6: Domestic transport emissions in the first carbon budget (2008–12) and projections for the second and third carbon budgets (2013–22)

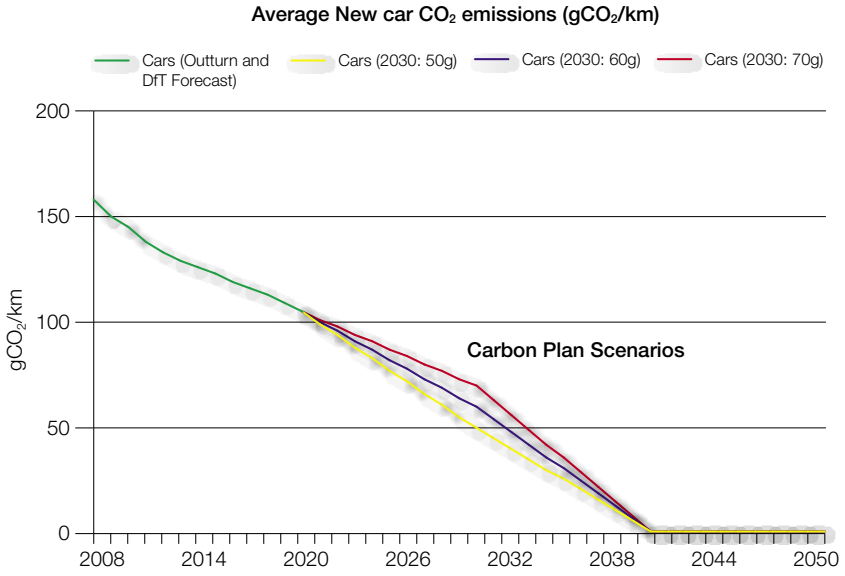


Source: Emissions projections derived from Updated Emissions Projections, DECC
https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2014
Note: This chart is for illustrative purposes only.

an average figure of 128 g/km. Since 2001 the average emissions of new cars has fallen by 28%. Figure 7 shows that the average CO_2 emissions from vans newly registered in 2013 fell by 1.2% in 2013 to 186.1g/km.

- Local Sustainable Transport Fund: All projects are required to demonstrate how they will deliver carbon savings in order to be eligible for funding. A case study specifically building evidence around sustainable transport and carbon savings is due for publication in 2015/16.
- ECO driving: The Government continues to encourage the use of eco-driving techniques through the learner driver curriculum, and by support for the Energy Saving Trust's (EST's) training and research programme. The EST has re-focused its programme this year to enable a wider population of driving instructors and schools to offer eco-driving lessons using the EST's model.
- Biofuels: In 2013/14, a total of 1,744 million litres of renewable fuel were supplied, achieving an aggregate greenhouse gas saving of 70% compared to fossil fuels.[21]

Figure 7: New CO_2 from tailpipe emissions for the first three carbon budgets (2008–22) and illustrative range to 2050



NOTES
2008 – 2013 Yearly Outturn (DVLA)
2014 YTD figure (DVLA)
2015 – 2020 DfT Forecast based on EU New Car CO_2 Regulation
2020 – 2030 Based on Carbon Plan (2011) 3 Scenarios showing new car CO_2 emissions falling to 50g, 60g and 70g in 2030 (all consistent with meeting CB4)
2030 – 2050 Based on Carbon Plan (2011) conclusion that nearly all new cars need to be zero-emisison vehicles from 2040

Environmental Analysis, September 2014

[21] This figure excludes emissions from indirect land use change.

Ultra low emission vehicles

4.5 The 2013 Spending Review[22] (SR) contained provision of £500 million to support the Office of Low Emission Vehicles' (OLEV's) work to 2020 with the Roads Command Paper *Action for roads: a network for the 21st century*[23] providing more detail.

4.6 OLEV published *Driving the Future Today*[24] (September 2013) a strategy document providing a framework for government support for the ultra low emission vehicles (ULEV) market. A call for evidence was run from November 2013 to January 2014 to help inform how best to use the £500m investment.

4.7 OLEV published '*Investing in ultra low emission vehicles in the UK, 2015 to 2020'*[25] in April 2014 which sets out key elements of the Government's proposed package of support for ULEVs in the period 2015/20. More details will be announced on each element in autumn 2014.

4.8 As of 30 June 2014, 11,897 plug-in grant claims had been made.

Response to recommendations

Recommendation 15

Push for stretching EU targets for emissions of new cars and vans for 2030 in the context of negotiations around the overall 2030 EU emissions reduction package; these should take account of the scope for improving efficiency of conventional vehicles and the need to achieve greater take-up of electric vehicles (EVs) and other ultra-low emissions vehicles (ULEVs).

4.9 The new car and van CO_2 regulations are vitally important for a range of UK Government objectives. They promote low carbon technology innovation and stimulate original research and development, as well as delivering significant reductions in CO_2 emissions from road transport. Amendments agreed in March 2014 will deliver genuine and ambitious action to tackle CO_2 emissions to 2021.

4.10 The CCC are correct to identify that beyond this it is clear that some form of mandatory and progressively tighter emission standards will continue to be an effective way to increase demand for ULEVs and continue to drive improvements in the efficiency of conventional vehicles.

4.11 As targets become tougher and ULEVs take an ever greater share of the new vehicle market between 2021 and 2030, it will be important to ensure that the regulation continues to be effective for a fleet with a mix of powertrains and that rate of progress of technological development is maintained. We will engage with industry, the Commission and other key stakeholders as the Commission develop proposals, which we expect to see in early 2015.

22 Details of the spending review can be found here: https://www.gov.uk/government/topical-events/spending-round-2013

23 https://www.gov.uk/government/publications/action-for-roads-a-network-for-the-21st-century

24 The strategy can be found here: https://www.gov.uk/government/publications/driving-the-future-today-a-strategy-for-ultra-low-emission-vehicles-in-the-uk

25 The package of measures can be found here: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/307019/ulev-2015-2020.pdf

Recommendation 16

Work with partner organisations (e.g. industry, local authorities, the Green Investment Bank) to tackle financial and non-financial barriers to electric vehicle uptake by providing: new, low-cost approaches to financing; onstreet residential charge points and a national network of rapid charge points; softer time-limited measures such as access to bus lanes and parking spaces.

4.12 The Government agrees and is working with the Green Investment Bank, Local Authorities, SMMT[26] and other key stakeholders to tackle financial and non-financial barriers to ULEV uptake. We continue to work with leasing and finance companies and vehicle manufacturers to ensure that financing and leasing of ULEVs is competitive with internal combustion engine vehicles.

4.13 We note the CCC's view that the key to making electric vehicles more attractive from a financial perspective is to spread upfront battery costs over time, and to do this at as low a rate of interest as possible.

4.14 It is for manufacturers to work with leasing companies to produce competitive packages that are attractive to customers – with some manufacturers already doing this demonstrating the approach is working.

EV Charge Points

4.15 The Government, through OLEV, has continued to give out grants to local authorities in England to facilitate the installation of rapid chargepoints, and fast chargepoints on UK wide public sector sites. This is building on the infrastructure installed under the 'Plugged-in Places' scheme[27], which supported the roll out of infrastructure in eight regions across the UK including Scotland. Through these grants, and through increased private sector activity, the UK will have over 500 rapid chargepoints by March 2015 – far more than any other European Country.

4.16 The Government considers that the CCC is right that more can be done, which is why we have committed to £500m of support for the ULEV agenda in the period 2015–2020, at least £32m of which will be spent on further improving the UK's charging infrastructure.

Softer measures

4.17 We agree with the CCC that there needs to be more time-limited softer measures. We have seen softer measures used in a number of countries, such as Norway, who use measures including access to bus lanes, congestion zones or free parking as a means of encouraging the uptake of ULEVs and we are currently developing analysis on these individual measures. As part of OLEV's £500m package for 2015 to 2020, the Government is funding a £35m City Scheme in which cities will be invited to bid for part of the funding by putting together alternative packages which we have suggested could include access to bus lanes and parking spaces for ULEVs. We are still developing this scheme and further announcements will be made over the autumn.

[26] The Society of Motor Manufacturers & Traders website can be found here: http://www.smmt.co.uk/

[27] Details of the scheme can be found here: https://www.gov.uk/government/publications/plugged-in-places

Recommendation 17

With agreement of a strong EU target and/or financial and non-financial barriers being tackled there would be scope to phase out the existing capital subsidy for electric vehicles. The Government should consider how to phase out EV subsidy and whether there is any benefit in announcing this in advance (e.g. in stimulating manufacturers to develop financing packages).

4.18 The Government is considering how to phase out ULEV subsidy and has announced the intention to continue the plug in car grant incentive until 2017 or until 50,000 vehicles have been bought. This will then be reviewed, and the Government will make sure that industry is given as much warning as possible of any changes. The Government's intention is to support the ULEV market by ensuring that manufacturers are incentivised to bring down the upfront cost of ULEVs so they are competitive with petrol and diesel vehicles without government subsidy. We have committed at least £200m in the period 2015 to 2020 to bridge the additional cost of ultra-low emission cars. This is a minimum provision and may change to reflect market conditions.

Recommendation 18

Over time, adjust fiscal levers (i.e. Vehicle Excise Duty, Company Car Tax and Enhanced Capital Allowances) to align to new vehicle CO_2 targets and provide additional incentives for ULEVs.

4.19 The CCC recognises the benefits of adjusting fiscal levers to reflect changes in vehicle efficiency. In considering such adjustments, the Government takes into account the wider impact on the public finances, competitiveness, tax administration and simplicity, in addition to environmental impacts.

4.20 As noted by the CCC, Company Car Tax (CCT) rates were adjusted in Budget 2014, to reflect the fact that vehicle CO_2 emissions have reduced over time. Enhanced Capital Allowances (ECAs) for cars have also been adjusted to align with reductions in vehicle CO_2 emissions. These were initially available for vehicles with emissions less than 110g CO_2/km and now are available for vehicles with emissions less than 95g CO_2/km. This threshold will reduce further to 75g CO_2/km from April 2015 as announced at Budget 2013. The Government announced at Budget 2013 that it has no plans to make significant changes to the structure of Vehicle Excise Duty (VED) for cars and vans in this Parliament. All taxes are however kept under review as part of the annual Budget process.

4.21 The Government has put in place a range of tax incentives to support ULEVs in addition to upfront grants. All ultra-low emission cars pay no VED and at Budget 2014, the Government guaranteed reduced CCT rates for ultra-low emission cars for 5 years from 2015/16 to 2019/20. These reduced rates will ensure that ultra-low emission company cars will be subject to lower tax rates than popular conventionally fuelled cars. Ultra-low emission cars will also benefit from the extension to the 100% first year capital allowance from 2015 to 2018. Zero emission company vans will pay lower tax (van benefit charge) than conventionally fuelled vans until 2019/20.

4.22 The Government announced at Budget 2012 that expenditure incurred on leased cars will be excluded from Enhanced Capital Allowances from April 2013. This is designed to protect the Exchequer from the risk of cross border leasing and is consistent with wider capital allowances policy.

Recommendation 19

Push for a swift conclusion to current EU work on standards for HGVs and press for new vehicle standards as soon as practical (e.g. soon after 2015).

4.23 We share the CCC's concerns over the impact on GHG emissions from increasing demands for road freight transport and believe that strong action will be necessary if we are to reduce emissions from larger vehicles and meet our wider climate change objectives. We agree that it is likely that some form of EU framework for these vehicles could deliver similar benefits to the UK as we have seen with cars and vans. We recognise the Commission's efforts towards the development of a suitable methodology for measuring Heavy Duty Vehicle (HDV) CO_2 emissions and will continue to support international efforts to develop the Vehicle Energy Consumption Calculation Tool (VECTO) simulation tool and the accompanying certification procedure.

4.24 However, swift progress in its development should not come at the detriment or expense of providing a solid and robust methodology that accurately reports emissions and has the trust and confidence of those using it. We will continue to work with the Commission, industry and academia to ensure that the tool is robust, fit for purpose and correlates to real world emissions.

Recommendation 20

Ensure demand-side opportunities are realised: continue progress reducing car travel once the current Local Sustainable Travel Fund ends in 2015; encourage adoption of complementary technologies to support eco-driving, including pushing for fuel consumption meters to be reconsidered in future EU negotiations; monitor existing voluntary action in the freight sector aimed at improving fuel consumption and consider stronger levers as required, including ways to address barriers for smaller operators.

4.25 We welcome the CCC stating the value they place on the Local Sustainable Transport Fund.[28] The Fund has now been extended into 2015/16 and will support 44 local authorities in delivering a range of sustainable transport solutions aimed at reducing single car occupancy. Sustainable transport also featured in a number of the Local Growth Fund priority lists. In July 2014, the Department announced £500k to support two car club pilot schemes for England, which will help to influence the travel choices of those without access to a vehicle or public transport, and those debating the need for a permanent personal vehicle.

4.26 In June 2014 the Scottish Government announced £5 million of funding in 2015/16 for the Smarter Choices, Smarter Places programme which will deliver a range of local interventions designed to deliver modal shift from the car to public transport and active travel. A further £1 million will also be allocated in 2014/15 to enable car clubs in Scotland to purchase electric vehicles (EVs).

[28] Details of the fund can be found here: https://www.gov.uk/government/collections/local-sustainable-transport-fund

Complementary technologies and Eco-driving

4.27 The Government believes that any complementary technology that might be cost-effective should be given consideration. Implementation, even of technologies that can be shown to be cost-effective, should be subject, as a matter of course, to adequate lead-time being made available for industry to adapt vehicle designs and production processes. We will push for renewed consideration being given to fuel consumption meters in this context. Negotiations on the introduction of further complementary measures are ongoing in Europe.

Freight emissions

4.28 The Government will continue to monitor actions by the freight industry to improve efficiency and reduce carbon emissions, such as the Logistics Carbon Reduction Scheme,[29] led by the Freight Transport Association. We have also initiated a research project that will survey the uptake of fuel saving measures such as aerodynamic equipment, fuel efficient tyres and more efficient operational practices in the road freight sector. The project is currently in the planning and consultation stages and will collect information from a wide range of road freight operators, including those that are not participating in the Logistics Carbon Reduction Scheme. We will use data from the survey to consider if stronger levers are required to address barriers to voluntary action across the freight sector aimed at improving fuel consumption as well as those specifically affecting small operators.

Recommendation 21

Fully evaluate the carbon implications of use of natural gas in vehicles before any nationwide roll-out of gas infrastructure and support.

4.29 The Government believes that natural gas has the potential to reduce carbon emissions by up to 15% compared with diesel and that biomethane,[30] using the same vehicles and refuelling infrastructure, could reduce carbon emissions by 65%. The use of natural gas is seen as a step towards wider use of biomethane to achieve greater carbon benefits in the longer term, provided that sufficient supplies of biomethane for use in transport can be secured.

4.30 The Low Carbon Truck and Infrastructure Trials,[31] launched in 2012, required bidders to offer at least a 15% carbon saving compared with diesel and most are using some form of natural gas. These trials will provide real world experience of whether vehicles using natural gas and biomethane deliver the expected carbon savings. The first annual summary report giving preliminary findings of the early stages of the trials was published in June 2014.[32]

4.31 The Government agrees with the CCC on the importance of evidence in determining the carbon impacts of the use of natural gas as a fuel in vehicles. We are now in the process of commissioning a further evaluation project to scope and undertake emissions testing, looking specifically at the extent of methane slip

29 The latest report of the scheme can be found here: http://www.fta.co.uk/export/sites/fta/_galleries/downloads/logistics_carbon_reduction_scheme/Logistics_Carbon_Review_2014.pdf

30 Research carried out by Ricardo AEA for the joint Government and industry HGV low carbon technology Taskforce and published by LowCVP in December 2012

31 Latest progress on the trials can be found here: https://www.gov.uk/government/publications/low-carbon-truck-trial-first-year-executive-summary

32 https://www.gov.uk/government/publications/low-carbon-truck-trial-first-year-executive-summary

from various gas vehicle technologies and potential mitigations. The outcome of the Low Carbon Truck and Infrastructure Trials and the emissions testing project will assess the suitability of natural gas and biomethane for reducing carbon emissions from freight and will inform any decision to go beyond the £4m already allocated to deliver a nationwide roll-out of gas infrastructure.

Recommendation 22

When considering future airport expansion, plan on the basis of 2050 emissions at around 2005 levels, implying an increase in demand – provided aircraft efficiency continues to improve significantly – of around 60% on 2005 levels by 2050.

4.32 In September 2012 the Coalition Government set up the independent Airports Commission to examine the evidence on the nature, scale and timing of any expansion of airport capacity needed to maintain the UK's status as a leading global aviation hub. The Commission's Interim Report published in December 2013[33] concluded that there is a need for a net increase of one runway in the South East by 2030, and potentially another runway by 2050. As part of its analysis, the Commission also re-examined aviation passenger demand forecasts. It concluded that based on current forecasts, passenger demand growth of around 67% is compatible with returning aviation emissions to 2005 levels by 2050.

4.33 The Commission has taken carbon emissions from flights into account in setting its assessment of need, and the recommendation that one net additional runway is required by 2030 took into account the UK's obligations under the Climate Change Act 2008. It shortlisted three options (two at Heathrow and one at Gatwick) for further work.

4.34 In April 2014 the Commission published its Appraisal Framework setting out in detail how the Commission expects scheme designs to be developed, and how the schemes will be appraised. The Commission will continue to undertake further analyses and consultation on its shortlist of runway options before publishing its conclusions in the summer of 2015.

4.35 The Government will not take a view on airport expansion in the South East until after the Commission's final report.

4.36 Once the Commission publishes its final report, the Government of the day will need to examine the Commission's findings and take decisions on the recommendations being made. It will carefully consider externalities such as carbon emissions as part of any future decision on new airport capacity.

[33] The interim report can be found here: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/271231/airports-commission-interim-report.pdf

Chapter 5: Industry emissions

Emission trends

5.1 Greenhouse gas emissions from industry (energy supply, industrial combustion and industrial processes) were 125.2 $MtCO_2e$ in 2012 – 2.7% lower than in 2011 and 45.5% lower than 1990 levels. Figure 8 shows that over the first carbon budget, industry emissions reduced by 18.3%. Provisional estimates for 2013 show that CO_2 emissions, which account for the majority of emissions in the industry sector, increased by 1% to 107.7 $MtCO_2$.

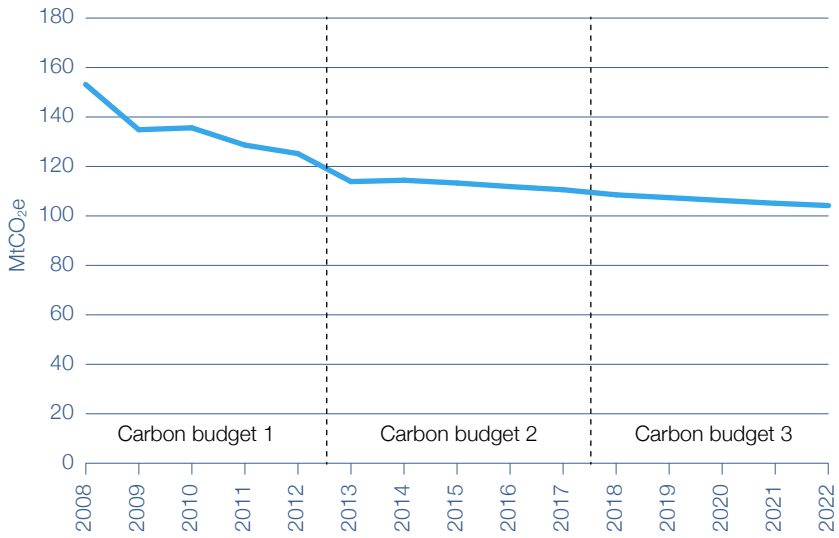
Policy approach

5.2 The Government is committed to continuing to support emissions reductions in the industrial sector whilst ensuring that UK industry remains competitive.

5.3 The Government's policies in this sector continue to make a significant contribution to overall emissions reductions.

- The Renewable Heat Incentive continues to deliver emissions reductions in industry.
- Climate Change Agreements (CCAs): The CCC's report estimates that targets set do not maximise the incentive for industry, particularly in relation to energy consumption that falls within the EU

Figure 8: Industry emissions in the first carbon budget (2008–12) and projections for the second and third carbon budgets (2013–22)



Source: Emissions projections derived from Updated Emissions Projections, DECC https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2014
Note: This chart is for illustrative purposes only.

Emissions Trading System (EU ETS). However, in those circumstances where a company's energy use is part of the EU ETS, the EU ETS caps provide an incentive to cut consumption. Imposing CCAs on the same energy use would be a double administrative burden without commensurate benefits. CCA Targets will be reviewed in 2016 to ensure they remain challenging but achievable.

- The Electricity Demand Reduction (EDR) Pilot Scheme: The scheme will provide organisations with financial support for the capacity savings arising from the installation of more efficient equipment. Organisations that have registered, and whose projects qualify, will be invited to take part in a competitive auction. The first auction within the scheme is for a total of up to £10 million. The window for full applications, which must include measurement and verification plans for the EDR capacity savings, is open until 31 October 2014.
- Industrial Carbon Capture and Storage (ICCS): The Government expects ICCS to be a key option for delivering the significant carbon abatement required in energy intensive industries. The Government continues to build its understanding of the technologies and costs involved and is supporting Tees Valley to develop the case for ICCS.

5.4 While the CCC is right to highlight the impact of the economic downturn on industry's emissions, the impact of Government policy is projected to reduce emissions by 40 $MtCO_2e$ between 2008 and 2022.

5.5 DECC, BIS, industry and academia are working collaboratively on the development of long-term decarbonisation and energy efficiency 'roadmaps' for the eight most heat intensive sectors in the UK. The objectives of the project are to develop action plans with each of the sectors, with each plan based on an enhanced and shared evidence base including illustrative emissions reduction pathways for the period from 2020 to 2050, while ensuring their continued competitiveness.

5.6 The Government continues to closely monitor low-cost measures in the sector. The right time to examine the long-term funding of measures as well as spell out options to strengthen incentives to decarbonise industrial sectors is in the Spending Round, against the background of setting the fifth carbon budget in 2016.

Response to recommendations

Recommendation 23

Use the "2050 decarbonisation roadmaps", planned for spring 2015, to identify and set out the opportunities for reducing emissions in industry, then by 2017 publish a strategy for delivering abatement in the 2020s, including milestones to monitor progress against.

5.7 The Government is developing industrial energy efficiency and decarbonisation 2050 roadmaps with industry and academics to set out carbon reduction pathways and action plans for eight key heat-intensive industry sectors. We agree with the CCC that these roadmaps will enable the Government and industry to identify and set out the opportunities for reducing emissions in industry while remaining competitive.

5.8 Work on the development of the roadmaps has begun with all eight sectors. Trade Associations and industry members have been proactive and positive in their engagement with the project, providing valuable inputs to contribute to the development of the roadmaps that ensure they take the opportunity to shape and develop them collaboratively.

5.9 Due to the staggered start dates of the sectors, the iron and steel and paper and pulp sectors are the furthest forward, with first drafts of the roadmaps currently being reviewed by the sector team, which incorporates Government, industry and academia, in advance of publication. The project will be completed in spring 2015.

5.10 The Government agrees that the scope for the roadmaps project should be broad and is including the full range of options for abatement of emissions from UK manufacturing, as agreed with industry and academics, in our analysis.

5.11 The Government will publish an action plan for each of the eight industrial sector roadmaps that will identify strategic conclusions from the evidence gathering and analysis, and actions to deliver a low carbon pathway.

5.12 The 2050 roadmaps evidence, analysis and particularly the action plans, will be a key input to the Government's consideration of industrial emissions reduction in the next Carbon Plan, which will be published following the setting of the fifth carbon budget.

Recommendation 24

By the end of 2016, set an approach to deploying initial industrial CCS projects compatible with widespread deployment from the second half of the 2020s, and joined up with the approach to CCS commercialisation in the power sector.

5.13 The Government agrees with the CCC that CCS is likely to be a key technology for decarbonisation in specific industries and that implementation may be required in the 2020s. The Government has committed to identifying how to further support development of ICCS as part of the Government's wider efforts on CCS.

5.14 The Government is making good progress on developing CCS – but we accept that more needs to be done. That is why, in 2014, we have continued to increase our activity in this area and to develop our approach to ICCS deployment. We have published the results of a techno-economic study undertaken with close engagement from energy intensive industry, giving improved evidence on the relevant technologies and costs.

5.15 We have committed £1m (alongside further industry contributions) to support Tees Valley Unlimited to undertake a pre-FEED and analysis on carbon capture, transport and storage from multiple industrial sources in Teesside, as well as to develop business and investment models for ICCS in Teesside – this project is expected to conclude in 2015.

5.16 On 7 August 2014, we published a CCS policy scoping document summarising our current work as outlined above. In that document we committed to a stakeholder workshop in the autumn to exchange views and seek further inputs from industry about how best to make progress on ICCS.

Recommendation 25

Review policies for compensating at-risk industries for costs of low-carbon policies, by the end of 2016.

5.17 The Government has announced that its Energy Intensive Industries (EIIs) compensation scheme for the indirect emissions costs of the EU ETS and the Carbon Price Support mechanism will continue until 2019/20. This provides industry with some certainty with regard to their costs for the next few years, informing their investment decisions.

5.18 Eligibility for the UK's scheme is based on the European Commission's list of sectors deemed to be at risk from the indirect costs of EU ETS. As a consequence, if the

Commission publishes a revised list, we will need to review the coverage of our domestic scheme. The UK Government considers that there are a small number of products that are electricity intensive, but are not on the Commission's indirect ETS compensation eligibility list. Ministers intend to discuss this with the Commission in the autumn.

5.19 At Budget 2014, the Government announced that it will also compensate EIIs for the costs of the Renewables Obligation and small-scale FITs until 2019/20, in addition to putting in place an exemption for the costs of Contracts for Difference, subject to gaining State Aid approval. The Government published a consultation on eligibility for the RO/FIT and CfD schemes on 31 July 2014,[34] with the aim of focusing help towards those sectors whose competitiveness is most at risk from electricity price rises. The consultation will determine eligibility for the foreseeable future.

5.20 While Government is not planning a specific review of these compensation schemes, we will continue to monitor and evaluate their impact and effectiveness.

Recommendation 26

Work with industry and the EU to improve knowledge sharing within industry and R&D into opportunities to reduce emissions at low cost.

5.21 At an EU level, Horizon 2020 presents opportunities for DECC and BIS to build on the progress made under the Framework Programme – to make greater use of the funding on offer while bringing industry and academia together in productive international collaborations.

5.22 The UK has been successful in positioning itself at the heart of the EU's processes for setting energy priorities, under the Strategic Energy Technology Plan.[35] However, there is scope to do more: in addition to DECC and BIS collaborating with other UK innovation funders and with private sector partners, we are increasingly seeking to forge international partnerships, to pool resources and to share risks in taking forward joint programmes.

5.23 There are UK stakeholder groups for bioenergy, solar, wind, CCS, smart cities and smart grids, and groups for ocean energy and energy efficiency are now being established. The purpose of these groups is to bring UK organisations (industry, academia, research organisations etc.) from each sector together, to help ensure the UK positions itself to maximise its influence on European RD&D priorities and funding.

5.24 DECC has worked closely with industry and other UK innovation funders in building the evidence base to inform investment in low carbon R&D. The Technology Innovation Needs Assessment (TINA) project, launched in 2010, applies a consistent methodology to identify and value the potential for innovation within those technologies likely to be most important in achieving our energy and emissions targets and in delivering economic benefits. Following the completion of a TINA for a particular technology family, workshops with relevant industry representatives are undertaken to check the findings. We have already published 10 TINA Summary Reports, with more to follow.

Recommendation 27

Investigate options to overcome barriers to capital investment.

[34] The consultation can be found here: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/342851/bis_14_995_-_Relief_from_the_indirect_costs_of_Renewables_-_consultation_on_eligibility.pdf

[35] Details of the plan can be found here: http://europa.eu/legislation_summaries/energy/european_energy_policy/l27079_en.htm

5.25 The Government agrees that this is a significant challenge – capital investment is a significant factor under most scenarios, including plant improvements for process efficiency, combined heat and power for overall system efficiency, carbon capture for emissions reductions, and fuel switching away from fossil fuels into renewable and low carbon heating systems where appropriate.

5.26 As noted elsewhere, the Government is committed to continuing to support emissions reductions in the industrial sector whilst ensuring that UK industry remains competitive. The analysis of evidence and decarbonisation pathways for the industrial 2050 roadmaps project suggests significant capital investment is required in the industrial sector to 2050. The project includes social and business decision-making research to provide evidence on the investment context, which will inform our analysis of pathways and the resulting action plans. This will be completed in spring 2015.

Chapter 6: Agriculture and land-use emissions

Emission trends

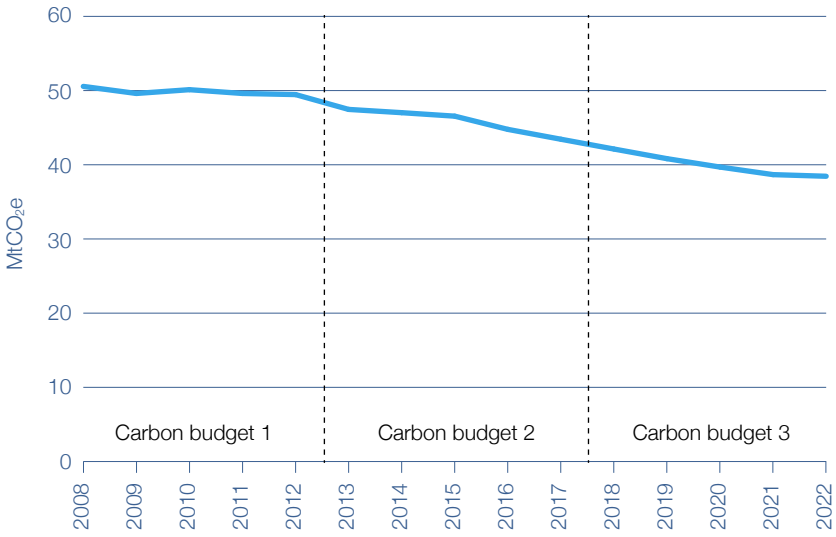
6.1 Greenhouse gas emissions from agriculture and land use were 49.5 $MtCO_2e$ in 2012 – 0.3% lower than in 2011 and 32.1% lower than 1990 levels. Figure 9 shows that over the first carbon budget, agriculture and land use emissions reduced by 2.2%.

Policy approach

6.2 The UK has developed a policy framework to reduce all GHG emissions from the agriculture, forestry and land management sector to enable the sector to fulfil its potential in contributing to climate change mitigation. Many of these actions explicitly relate to production efficiency, sustainably increasing the productivity of the sector by improving resource use efficiency.

6.3 Central to the approach is working directly with the sector to raise awareness and encourage behaviour change. The Task Force published its Greenhouse Gas Action Plan (GHGAP)[36] in 2010 which details 15 on-farm measures that reduce emissions whilst improving the efficiency of agriculture. This

Figure 9: Agriculture emissions in the first carbon budget (2008–12) and projections for the second and third carbon budgets (2013–22)



Source: Emissions projections derived from Updated Emissions Projections, DECC https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2014
Note: This chart is for illustrative purposes only.

[36] Details of the GHG Action Plan launch can be found here: https://www.gov.uk/government/news/farming-industry-must-act-to-reduce-greenhouse-gas-emissions

supports the product roadmaps published by the agricultural sector levy bodies and contributes to the Government's growth plan for agriculture.

Response to recommendations

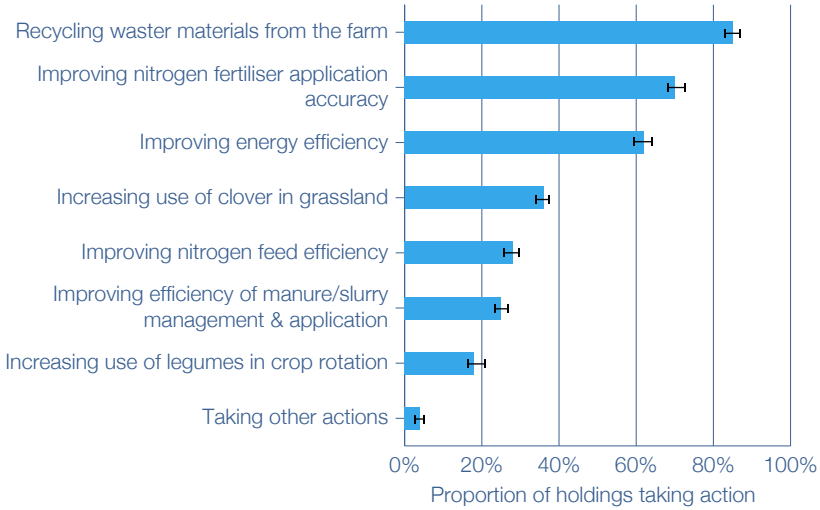
Recommendation 28

Ensure that the agriculture sector monitors the effectiveness of the GHG Action Plan, including 'SMART' objectives, quantifiable targets and evidence of buy-in from farmers, to allow effective evaluation in the Government's review in 2016.

6.4 The Government's approach to Greenhouse Gas Action Plans has enabled industry to take responsibility for GHG mitigation. In 2012 Defra led a review of voluntary initiatives to reduce agricultural GHG emissions. The review confirmed that the industry aspiration for a 3 $MtCO_2e$ reduction in English agricultural GHG emissions against a 2007 baseline was reasonable and achievable. Data from Defra surveys on farming practices indicates that around 1.4 to 1.7 $MtCO_2e$ of abatement is already being delivered via co-benefits of existing policies (e.g. cross compliance under the Common Agricultural Policy, and the Nitrates Directive in England) and industry action (Figure 10).

6.5 The 2012 review also concluded that it is likely an additional 3.1 to 3.3 $MtCO_2e$ of abatement is available at zero cost to the sector. Defra continues to monitor progress on uptake of cost neutral measures through a high level monitoring framework. Results of this monitoring exercise are published annually in the Agricultural Statistics and Climate Change report[37]. In 2014 the data from the monitoring framework was supplemented with a dedicated Farm Practices Survey on agricultural GHG mitigation, which indicated significant uptake of some options by farmers.

Figure 10: Actions being taken by farmers to reduce greenhouse gas emissions (including confidence interval)



Source: Figure 2.13 from Farm practices Survey 2014, Defra
https://www.gov.uk/government/collections/farm-practices-survey
Note: This chart is for illustrative purposes only.

[37] https://www.gov.uk/government/publications/agricultural-statistics-and-climate-change

6.6 Whilst the action plans do not have SMART objectives in place we will be engaging the Industry Task Force over the autumn to discuss monitoring and evaluation requirements to support the review in 2016.

Recommendation 29

Recognise the high delivery risk under the GHG Action Plan, and as part of the 2016 review consider stronger policy options to ensure savings are delivered.

6.7 While the voluntary nature of the GHG plans makes securing outcomes more uncertain it is right that the industry was given the opportunity to take the lead. However, no policy options are off the table for consideration in the 2016 review.

6.8 The voluntary approach is reasonable as many agricultural mitigation measures are cost beneficial to farmers; such measures are being promoted by the Industry's GHG Action Plan via established knowledge exchange and training mechanisms. Results from this year's Farm Practice Survey indicate significant uptake of some of these options.

6.9 Where mitigation measures have high capital costs associated with them it may be possible to incentivise their uptake. Over recent years Defra has provided grant funding through the Rural Development Programme for England which has generated air and water quality benefits. We are now considering options for using funds in the new Programme from 2015, including how we can continue to provide air and water quality benefits alongside GHG reductions. Future schemes will encourage greater innovation and provide support where capital costs act as a barrier to uptake.

6.10 Innovation may have a significant role to play in reducing GHG emissions from the agricultural sector. The £160m UK Strategy for Agricultural Technologies was launched in July 2013 and brings together UK Government, the science base and industry to promote greater collaboration between researchers and the agricultural sector with the aim of increasing food productivity whilst at the same time reducing the impact on the environment, including reducing GHG emissions per unit of production. Adapting existing farming techniques, developing entirely new production systems, innovative engineering and novel approaches to crop and livestock genetic improvement will all be supported in order to achieve sustainable food security.

Recommendation 30

The GHG inventory should include emissions from upland peat as soon as possible, existing regulation should be enforced and the policy framework strengthened to enable further peatland restoration effort.

6.11 The Government agrees with the CCC that now that the Intergovernmental Panel on Climate Change (IPCC) has published their methodology for capturing emissions and removals from peatland drainage and restoration we should aim to include these in the UK GHG inventory as soon as possible. To that end Government is commissioning research to develop an operational framework to implement the methodology. There are a number of methodological issues which need to be resolved, for example, determining UK specific emission factors for blanket bog (for which the default emission factors are not suitable), before reporting of these emissions and removals can commence.

6.12 The Government agrees that there is more we can do to strengthen the policy framework to enable further peatland restoration effort. Whilst the Government has

[38] Details of the 2014 survey can be found here: https://www.gov.uk/government/collections/farm-practices-survey

not set targets for how much peatland should be restored in England, we are committed to delivering our 2013 Statement of Intent on peatland protection and restoration, working in partnership with environmental NGOs, farming organisations, moorland owners and managers, businesses and local communities.

6.13 In 2013 we committed £31.2 million through Environmental Stewardship (covering around 98,000 ha) to management options for the maintenance and restoration of moorland habitats. A further £4.1million was committed in capital grants for grip blocking. These are the key options in Environmental Stewardship that contribute to the management of upland peat.

6.14 Support will continue to be provided under the new environmental land management scheme. Biodiversity will be the priority for the new scheme; it will also seek to maximise opportunities to deliver biodiversity, water quality and flooding benefits together. This includes protecting and improving our peat landscapes. The new scheme will also be more targeted. It will aim to identify the options which should be prioritised in agreements with farmers and other land managers to best deliver the right actions in the right place.

6.15 The pilot phase of the UK Peatland Code was launched in September 2013 focusing on providing the standards and robust science to underpin the payment for ecosystem services scheme and gaining investment from business. An initial suite of restoration projects from across the UK have been identified covering over 25,000 ha of mainly blanket bog.

6.16 We are provisionally proposing to introduce a facility for making advance payments to upland farms with parcels of land above the moorland line where those agreement holders are conducting large scale capital works (e.g. grip blocking as part of moorland or blanket bog restoration) as part of their site specific agreement.

6.17 Three of the twelve Nature Improvement Areas (NIA) established in 2012 are focussed on peatland restoration, including Dark Peak NIA in the Peak District which aims to improve upland peatland habitats across an area of 25,000 ha.

6.18 Under an agreement reached with the peat milling company in March 2010, peat extraction and milling operations have been brought to an end at Bolton Fell Moss, a rare lowland raised bog of significant international conservation importance. Following the obtaining of planning permission for a scheme of restoration and a procurement process to secure best value from contractors Natural England has now commenced an ambitious program to restore bog vegetation to the 400 ha site. This site will complete our network of Special Areas of Conservation for this habitat type.

6.19 Natural England is currently in the process of reviewing its guidance on burning and blanket bog restoration as part of a broader guidance refresh.

Chapter 7: Waste and F-gas emissions

Emission trends

7.1 Greenhouse gas emissions from waste and F-gas emissions were 21.6 $MtCO_2$ in 2012 – 4.8% lower than in 2011 and 54.2% lower than 1990 levels. Figure 11 shows that over the first carbon budget, waste and F-gas emissions reduced by 22.6%.

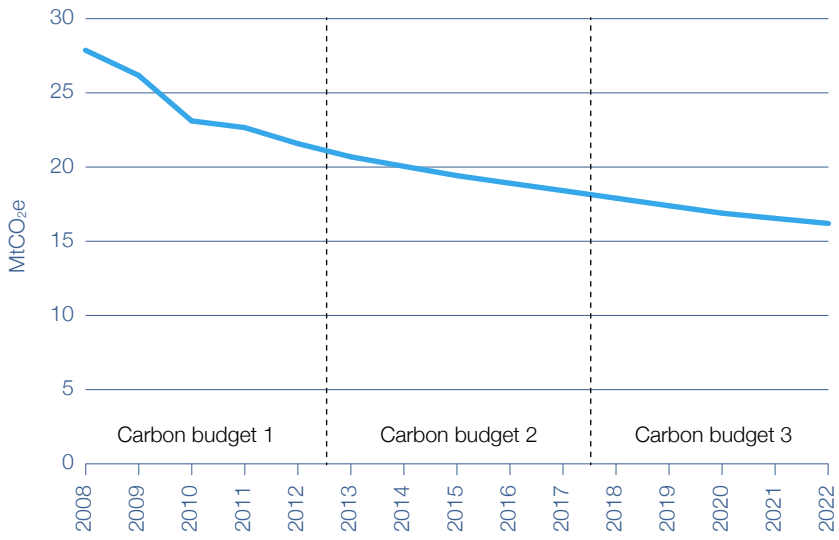
7.2 Although waste policies have been effective in reducing emissions, the impact of these policies has been to some extent hidden by changes to the methodology of the UK's greenhouse gas inventory. Improvements in our evidence base have seen the UK's waste emissions now estimated to be 31% higher than previously thought. Both CCC and Government consider that these changes do not reflect an absence of policy action.

Policy approach

7.3 Methane from landfill waste contributes the vast majority of emissions in the waste sector. The first approach to reducing emissions is therefore to seek to prevent excess waste, which will also contribute to a broader sustainable economy. By avoiding waste being sent to landfill, the UK will reduce emissions and can save money for households, businesses and local authorities.

7.4 The Government is committed to reducing F-gas emissions and strongly supports the world-leading EU regulation that will deliver an 80% cut in F-gas consumption

Figure 11: Waste and F-gas emissions in the first carbon budget (2008–12) and projections for the second and third carbon budgets (2013–22)



Source: Emissions projections derived from Updated Emissions Projections, DECC https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2014.

over the next 15 years, bringing an annual emission reduction of between eight and nine $mtCO_2e$ by 2035.

Response to recommendations

Recommendation 31

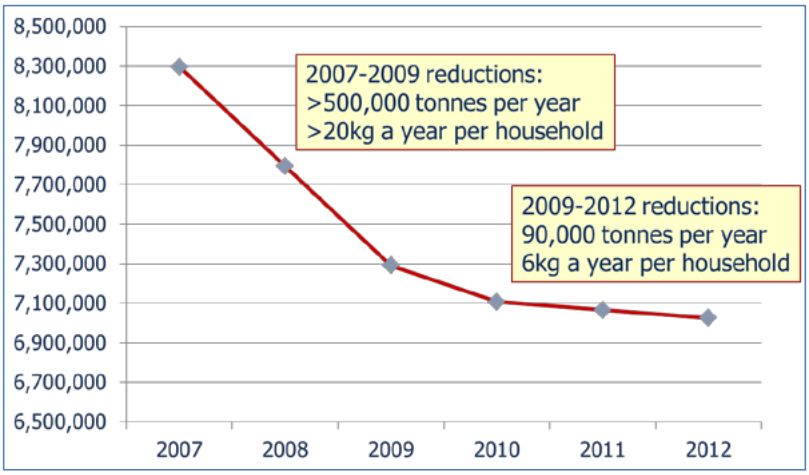
Publish specific strategies for reductions in the amounts of the main biodegradable waste sources sent to landfill (specifically food, paper/card, and wood), and introduce stronger levers to ensure these are met unless there is clear evidence that these are not required.

7.5 Government agrees with the CCC's recommendations that food, paper/card and wood require significant focus, and we have a number of initiatives in place to reduce waste associated with these materials. The Government's approach is to reduce the total waste generated, thereby reducing the overall amount that is sent to landfill. The Landfill Tax has been a major policy tool – now at £80/tonne and increasing in line with inflation until 2020. This has, and continues to be, a strong driver in reducing landfill and giving policy certainty to the waste sector.

7.6 Paper, card and wood are all identified as priority materials within the Waste Prevention Programme for England. This Programme was published last year and has a pivotal role in moving towards a more sustainable economy through the prevention of excess waste.

7.7 We have recently published evidence on the composition of waste to landfill, specifically the amount of biodegradable waste. The report concluded that the proportion of biodegradable waste sent to landfill has decreased from 68% to 50% (Figure 12) – showing that the actions we are taking to prevent waste and increase recycling are driving out biodegradable waste from landfill.[39]

Figure 12: Change in total household food waste over time (tonnes/year)



Source: http://www.wrap.org.uk/sites/files/wrap/Courtauld%20Commitment%202%20Household%20Food%20Waste%20Technical%20Paper.pdf

[39] http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=19389#RelatedDocuments

Food waste

7.8 Prevention is the most cost effective way of tackling food waste. Evidence suggests that each tonne of food that is wasted costs consumers an average of £2,700. The Government has adopted a voluntary approach to reducing food waste, enabling businesses and consumers to implement economic and resource efficient solutions. These include voluntary agreements in the food retail and manufacturing sector (Courtauld Commitment) and the hospitality and food service sector (HAFSA), along with the Love Food Hate Waste campaign. The Courtauld Commitment has contributed to a 15% reduction in household food waste since 2007, representing an annual reduction in household food waste of 1.3 million tonnes. Through the Courtauld Commitment we are committed to further reducing household food waste by 5% and supply chain food waste by 3% by 2015.

Paper and card

7.9 In the paper sector a new Voluntary Responsibility Deal between Defra, the Scottish Government, the Welsh Government and the Professional Publishers Association (magazine sector) started in 2014 and finishes at the end of 2018. It focuses on waste prevention, sustainable production and recycling, including an annual recycling target of 75% up to the end of 2018.

Wood

7.10 Waste wood is one of the Environment Agency's (EA) priority waste streams. Working with industry groups, the EA is supporting recyclers in the development of new markets and treatment for wood waste, especially in diverting this waste stream from landfill. Practices in the sector vary and the EA is working with industry to promote best practice.

7.11 The Government understands that the trend towards using waste wood for energy recovery is continuing to increase and is the main market for waste wood.

7.12 The Government held a Call for Evidence in 2012 on landfill restrictions for wood waste, and published a response in February 2013.[40] The analysis suggested that wood waste to landfill is likely to continue to decline without further Government intervention and that a restriction would likely impose additional costs on businesses, particularly SMEs. The analysis concluded that it is likely that costs would exceed benefits.

Recommendation 32

Set out an approach to increase methane capture rates, towards best practice, with milestones and actions to ensure these are met.

7.13 The Government has a long-standing programme of work aimed at improving emissions estimates as well as increasing mitigation.

7.14 The Joint Methane Capture Programme was established in 2010 with two primary aims – to increase actual methane capture and to improve understanding of emissions and modelling, ultimately moving to direct measurement technologies.

7.15 The CCC's report acknowledges that, overall, UK landfill sites have the second highest methane capture rate in Europe after Ireland. The UK has a large portfolio of landfill sites, with 1,791 permitted sites, of which 339 are operational (still accepting waste). Modern landfill sites in the UK utilise best practice and typical capture rates are in excess of 80%. All operational landfills have

[40] Analysis on the call for evidence can be found here: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/120749/wood-waste-analysis-20130213.pdf

been 'benchmarked' against industry best practice and a series of improvement targets have been set. Along with the Environment Agency, work on methods of quantifying methane emissions from landfills is being undertaken in order to improve the future prioritisation and evaluation of mitigation activities.

Historic sites

7.16 There are approximately 20,000 historic sites and we agree with the CCC that bringing all of these sites in line with best practice may well not be practicable or cost effective. For this reason mitigation efforts are targeted to maximise emissions reduction. In addition it is important to note that emissions from closed landfill sites will decrease over time according to rate of degradation.

Further work

7.17 The Government is working with operators, the EA and academia to investigate options to mitigate emissions from closed and historic sites. This is ongoing, and as the evidence base improves and new techniques for measurement and mitigation are validated, we hope to reduce emissions even further.

7.18 We have been working to improve the modelling approach used to calculate landfill emissions, building on recommendations from the UNFCCC on using flaring data. Work to examine the assumptions used in modelling that provides estimates of methane emissions has been undertaken, and we intend to publish the findings later this year.

Recommendation 33

Ensure UK businesses comply with new EU F-gas regulation and seek opportunities to go further where cost-effective alternatives exist; if these are found, push for stronger implementation at the EU level.

7.19 The Government agrees that UK businesses should fully comply with the new EU F-gas regulation. The new regulation, which the Government strongly supports, is world leading in terms of action to cut F-gases. It will deliver an 80% cut in F-gas consumption over the next 15 years, bringing an annual emission reduction of between eight and nine $mtCO_2e$ by 2035. The Government is putting in place secondary legislation to ensure compliance with the new regulation. We also welcome the pledge made to the UN by the European heating, cooling and refrigeration industry confirming European industry's collective commitment to ensure the new regulation is understood and properly applied across Europe.

7.20 We welcome any efforts industry is making voluntarily to go further than legislative requirements and we will draw those to the attention of the European Commission and other EU Member States as part of our progress reporting. We will continue to work with our EU partners in pressing for a global phase down of F-gases through the Montreal Protocol and other international agreements.

Chapter 8: Devolved administrations

Northern Ireland

Progress to date

8.1 The Northern Ireland Cross Departmental Working Group on Climate Change submitted its third annual report in May 2014 to the Executive on the performance of all departments in implementing the agreed Northern Ireland Greenhouse Gas Emissions Reduction – Action Plan.[41] The Action Plan supports the achievement of the Programme for Government target of a reduction in greenhouse gas emissions of at least 35% on 1990 levels by 2025.

8.2 Progress on the implementation of this commitment is monitored using the Department of the Environment (DOE) projection tool, which has been reviewed in the last year to improve functionality and incorporate more Northern Ireland specific data and policies. The latest available projection data, using the enhanced projection tool, indicate that Northern Ireland is estimated to achieve a reduction of 27.6% against the 35% target.

8.3 The CCC's Sixth Annual Progress Report acknowledged the progress made in Northern Ireland in targeting energy efficiency measures to tackle fuel poverty; developing a collaborative approach with the farming industry; ambitious household waste recycling targets; and progress made in the renewable energy sector, reducing emissions across the power sector.

8.4 Recognition of the progress made is welcome, however, the CCC also identified key areas that will require action if targets are to be met. These include:

Improving energy efficiency in non-residential buildings

8.5 The Northern Ireland Civil Service (NICS) is responsible for around 4% of the Northern Ireland public sector energy consumption. The Department for Finance and Personnel (DFP) office estate energy reduction strategy centres on reducing the footprint of the estate, capital investment and behavioural change. Capital investments thus far include rationalisation of buildings energy management systems (BEMS); installation of voltage optimisation, LED lighting and improved efficiency of hot water generation equipment within buildings with high energy consumption.

8.6 The Department of Education (DE) is investing £10m in a schools energy efficiency programme. To date 460 schools have applied for installations that will include photovoltaic panels; replacement of old, inefficient boilers and the installation of energy monitoring and controls across the schools estate.

8.7 The Department of Health, Social Services and Public Safety (DHSSPS) is providing capital funding for investment in energy efficiency and carbon reduction

[41] The action plan can be found here: http://www.doeni.gov.uk/northern_ireland_action_plan_on_greenhouse_gas_emissions_reductions.pdf

through its Carbon Emissions Reduction Initiative (CERI). This initiative, part of its capital investment programme, is targeted at the existing health estate in order to improve its energy efficiency.

8.8 Invest NI's Energy Efficiency Loan Scheme and the Resource Efficiency Capital Grant and the Northern Ireland Sustainable Energy Programme, administered by the NI Utility Regulator, continue to make funding available for resource and energy efficiency projects. Northern Ireland will also be participating in the Energy Savings Opportunity Scheme requiring large enterprises to carry out a mandatory energy audit by 5 December 2015 and at least every 4 years thereafter.

8.9 The Department of Culture, Art & Leisure (DCAL) Ministerial Advisory Group for Architecture and the Built Environment published guidance on the Design Principles for Sustainable Design that combines a very strong ethical and environmental case with construction science and technology. In addition, DFP is currently working on the 3rd amendment to The Building Regulations (Northern Ireland) 2012 which will include improved standards in the conservation of fuel and power.

Increasing low carbon heat penetration

8.10 The Department of Enterprise Trade and Investment (DETI) has led the development of the Renewable Heat Premium Payment for domestic customers and the Renewable Heat Incentive for non-domestic customers, which provide payments to those who generate and use renewable energy to heat buildings. Since their introduction in 2012 the two schemes together have received nearly 2300 applications. Current projections indicate that Northern Ireland is on course to meet its target of 4% of total heat consumption from renewable resources by 2015.

8.11 The current Renewable Heat Incentive (RHI) commits funding for the scheme until 2020 so that potentially provides for payments until 2027 for applications approved in 2020. DETI will ensure the RHI is actively promoted to ensure maximum uptake.

Developing approaches to reduce emissions from agriculture

8.12 The Department of Agriculture and Rural Development Northern Ireland (DARDNI) will continue to work in effective partnership with the agriculture and forestry industries to further promote, develop and implement the Efficient Farming Cuts Greenhouse Gases Strategy and its associated suite of climate change mitigation and adaptation measures.

8.13 In addition, considerable design effort is currently being made to encourage additional behavioural change by mainstreaming incentives, aimed at reducing carbon intensity of food products, within the Northern Ireland Rural Development Programme 2014-2020. Incentives being considered are consistent with those recommended for inclusion by the European Commission for all Member States.

8.14 The development of the UK Smart Agriculture Inventory is continuing to be co-funded by DARDNI and will be a directional lever as Phase 2 of the efficient farming strategy is finalised for launch in 2015.

Increasing the rate of tree planting

8.15 Northern Ireland Forestry Strategy identifies a long term aim of doubling the area of forest from 6% in 2006 to 12% by the middle of this century. The current level of forest cover is 8%. Throughout the 2006-2013 Rural Development Programme the rate of afforestation has been insufficient to reach this long term. In 2010, the planting rate fell to a low of just 200 hectares per year, and

although it increased slightly to 300 hectares in 2011, the rate has remained unchanged since then.

8.16 New mechanisms to support first afforestation within the 2014-2020 Rural Development Programme are being developed to encourage an increase in the rate of new woodland creation and targets will be set annually in the Forest Service Business Plan.

Transport

8.17 The Department for Regional Development (DRD) is taking forward a number of strategic and immediate initiatives which aim to reduce emissions from transport in Northern Ireland and drive modal shift to more sustainable forms of transport. This includes, through utilisation of a Policy Prioritisation Framework, identification of future transport priorities which align with the Northern Ireland Executive's economic, social and environmental priorities. A key focus of this is to develop sustainable transport which in turn will aid the reduction of greenhouse gas (GHG) emissions.

8.18 In the last few years, there has been a significant upturn in rail passenger growth in Northern Ireland. Passenger numbers have almost doubled since 2002. To build on this, the DRD Minister, recently published the Railway Investment Prioritisation Strategy for Northern Ireland. The Strategy allows for a significant enhancement of existing rail capacity, preparation for the future electrification of the network and the first major extensions to the railway since the closing of lines following the Benson Report in 1963.

8.19 The DRD Minister has also announced his determination to stimulate a cycling revolution in Northern Ireland. While beneficial for the individual, cycling can also deliver benefits for wider society including, less congestion, fewer sick days, longer life expectancy, less wear and tear on the roads, buoyant local economies and reduced GHG emissions from transport. In line with this the DRD has prepared a draft Bicycle Strategy for Northern Ireland which sets out, over a 25 year horizon, how we plan to make Northern Ireland a cycling community. This Draft Strategy document outlines the Minister's vision for cycling in Northern Ireland and, at a high level, how we intend to achieve this vision.

8.20 The DRD has also undertaken significant capital investment in the public transport fleet and infrastructure as part of its drive to promote more sustainable travel and transport. In line with this, the Sustainable Transport Enabling Measures element of the Belfast on the Move project was completed in October 2013. By reorganising traffic management in Belfast city centre the project set out to facilitate a reduction in general traffic levels and encourage greater walking, cycling and public transport use. The Report of the subsequent Post Implementation Impact Study shows that these aims have been met. Building on this, work has commenced on the new Belfast Rapid Transit (BRT) system which is due to be operational in 2017. BRT will create a new and dynamic public transport system for Belfast, providing people with better access to jobs, hospitals, shops, schools, colleges, and entertainment. The speed, reliability and comfort of the BRT services will provide an attractive public transport alternative to private car use.

Encouraging greater uptake of electric vehicles

8.21 The charging network is being expanded with the installation of an additional 100 pay as you go charging points across the NI public sector estate. The Department for Regional Development (DRD) has also committed to the delivery of a Small Business Research Initiative (SBRI) as part of the

Northern Ireland Innovation Strategy 2013 – 2025. The Department will use the SBRI approach to develop a mobile phone app resulting in innovative solutions to encourage the uptake of electric vehicles.

8.22 A commercial payment system is being developed to allow electric vechile (EV) drivers to pay for their charging events at public charge points. An 'Innovative EV Projects' work stream is also being advanced, which will ensure that the region is ready to attract inward investment for the advancement and commercialisation of electric vehicle technologies.

Scotland

Progress to date

8.23 The CCC published its 3rd Scottish progress report, *Reducing Emissions in Scotland,* in March 2014, assessing the Scottish Government's progress on implementation of the policy framework set out in the statutory Reports on Proposals and Policies[42], required by the Climate Change (Scotland) Act 2009, to meet the Scottish Government greenhouse gas emission reduction targets, of a 42% reduction for 2020 and 80% by 2050 on 1990 base levels.

8.24 The CCC's, third Scottish progress report acknowledged that the Scottish Government continues to make good progress towards achieving Scotland's 2020 ambitious climate change targets, especially in key areas like the energy and residential sectors. The report also recognises the significant contribution to GHG abatement made by the increased area of new woodland established in recent years under Scotland's Rural Development Programme, and highlights the Scottish Government's low carbon policy of creating an additional 100,000 ha of new woodland by 2022. The CCC's 6th UK progress report broadly restates the findings previously set-out in the Scottish progress report, in relation to Scotland's progress on reducing emissions.

8.25 The Scottish Government is committed to continuing to seek additional innovative ways to maximise the impact of current and future investments to ensure momentum and build on our progress to date. Recognising the importance of this investment, the Scottish Government has included the transition to a low carbon economy as a key strategic priority in the Scottish Government's Economic Strategy.

Increasing energy efficiency in the residential sector

8.26 The Scottish Government launched its Home Energy Efficiency Programmes for Scotland (HEEPS) in April 2013, with a budget of £74m for 2013-14, which is helping to refit and refurbish existing homes to improve their energy efficiency and tackle fuel poverty. In 2013-14 total investment, including estimated spending by energy companies in Scotland under ECO and budget allocations through Scottish Government programmes such as HEEPS, Warm Homes Fund and Green Homes Cashback, was in the order of £260 million. The Scottish Government is investing a further £79 million of HEEPS in 2014/15, which will see our remotest areas receiving over £5 million more funding for energy efficiency than was provided in the previous year. In addition, the Scottish Government launched its Energy Efficiency Standard for Social Housing in March 2014 and is developing regulations for public consultation in spring 2015 on energy efficiency of private housing helping strengthen the near-term framework for energy efficiency improvement in residential buildings.

[42] The first Report, *Low Carbon Scotland – Meeting the Emissions Reduction Targets 2010–2022 (March 2011) and Low Carbon Scotland – Meeting the Emissions Reduction Targets 2013–2027, (June 2013)* which refined the policies and proposals detailed in the earlier Report.

Target for decarbonising heat

8.27 Scotland's heat target is to deliver 11% of non-electrical heat demand by renewable sources by 2020 and largely decarbonize the heat system by 2050. Figures available from the Energy Saving Trust for 2013 show that the amount of heat generated from renewable technologies in Scotland grew to 2,904GWh in 2013 compared to 2,481GWh in 2012. These figures suggest that Scotland is making good progress towards meeting the 2020 target.

Draft Heat Generation Policy Statement

8.28 The Scottish Government recently consulted on a draft Heat Generation Policy Statement, *Towards Decarbonising Heat: Maximising the Opportunities for Scotland*.[43] The document sets out the Scottish Government's holistic policy for heat use, supply and generation, in order to largely decarbonise the heat system by 2050. Responses to the consultation are currently being analysed and will help inform the final policy statement.

Increasing low carbon heat penetration

8.29 The Scottish Government is keen to maxmise the take-up of the Renewable Heat Incentive to benefit of Scottish households. Over 60% of Scotland is not connected to the gas grid and this area contains around 12% of Scotland's population. To this end, we have continued to fund our interest-free Home Renewables loan scheme for householders via the Energy Saving Trust.

8.30 Since the introduction of the domestic renewable heat incentive in April 2014 there have been 1180 accredited installations in Scotland (August 2014), 70% of which are in off-gas grid areas.

8.31 Scotland generates around 19% of the heat capacity produced under the Non-domestic Renewable Heat Incentive. As at August 2014 there were 975 accredited installations in Scotland, accounting for 17% of installations accredited under the Non-domestic scheme.

Building emissions

8.32 Since 2007, development of building regulations policy in Scotland to reduce emissions arising from the built environment has been supported by the recommendations of the expert panel which produced The Sullivan Report – *A Low Carbon Building Standards strategy for Scotland*[44].

8.33 In relation to recommendation 8 in Chapter 2, improvements in energy standards within building regulations will apply from 1 October 2015, with further review planned[45].

8.34 In relation to recommendations 4 and 9 in Chapter 2, outwith provisions in the Energy Act 2011, work is underway to deliver regulations requiring the assessment and improvement of existing non-domestic buildings via section 63 of the Climate Change Scotland Act 2009[46].

Waste emissions

8.35 The Scottish Government has targets of 15% for reduction in total waste arisings, maximum 5% of total waste going to landfill, 70% recycling or composting of all waste by 2025. Scottish legislation is being phased in requiring separate collection of dry recyclables and food waste from homes and

43 http://www.scotland.gov.uk/Publications/2014/03/2778

44 http://www.scotland.gov.uk/sullivanreport

45 http://www.scotland.gov.uk/Publications/2014/07/1013

46 http://www.scotland.gov.uk/Resource/0044/00448418.pdf

businesses; and restricting materials going to landfill or incineration.

8.36 Implementation of these regulations is well underway. For example, around 1.3 million households (56% of Scottish households) now have a food waste collection service.

8.37 Scotland's waste prevention programme "Safeguarding Scotland's Resources" (2013) sets out a programme of actions, including:

- establishing Resource Efficient Scotland to help businesses cut overheads by reducing waste and energy use;
- growing Scotland's reuse sector;
- influencing public behaviours through education, communication campaigns and through UK-wide agreement with retailers and brands on reducing food waste.

Communities

8.38 In addition, the Climate Challenge Fund is encouraging individuals, households and communities across Scotland to respond to the consequences of climate change. Since 2008, the Fund has invested almost £60 million to support nearly 500 communities in action on waste reduction and recycling, sustainable transport, energy efficiency in the home and in community-owned properties, and in local food growing initiatives.

Transport

8.39 The Scottish Government launched *Switched on Scotland: A Roadmap to Widespread Adoption of Plug-in Vehicles* in September 2013. This roadmap sets out the measures that the Scottish Government and its partners will take to accelerate the uptake of electric vehicles. Over the past two years the Scottish Government has invested over £10 million in electric vehicles and infrastructure in Scotland and more than £17 million will be invested in a range of low carbon vehicle projects over the next two years, helping to make low emission vehicles more accessible to the Scottish public and businesses.

8.40 The Scottish Government is committed to promoting modal shift from the private car to public transport and active travel. In June 2014 the Scottish Government announced £5 million of funding in 2015/16 for the Smarter Choices, Smarter Places programme which will deliver a range of local interventions designed to deliver modal shift from the car to public transport and active travel. A further £1 million will also be allocated in 2014/15 to enable car clubs in Scotland to purchase electric vehicles (EVs) thereby promoting car sharing as a viable option for more people across Scotland.

Wales

Progress to date

8.41 The Welsh Government's overarching commitments to climate change action are set out in its Programme for Government. This sets out the headline commitments to a low carbon economy, implementing the Welsh Government's Climate Change Strategy[47] to reduce greenhouse gases and drive effective adaptation to climate change. Set against the overarching commitment are two headline emissions targets guiding the Welsh Government's action – a 3% annual reduction in emissions in devolved areas and a 40% reduction in overall emissions by 2020.

8.42 The Climate Change Strategy focuses on both reducing emissions and driving a comprehensive package of practical measures to respond to the consequences

[47] The strategy can be found here: http://wales.gov.uk/topics/environmentcountryside/climatechange/publications/strategy/?lang=en

of climate change. As well as Welsh Government actions, the Strategy also highlights the wider contribution of others towards the targets – action by businesses, local government, the wider public sector, the third sector, communities and individuals all being critical to successful delivery.

8.43 The Climate Change Annual Progress report published in December 2013[48] highlighted progress in delivering against targets in Wales. It was the first time that the Welsh Government was able to report against the 3% target in devolved areas and it showed that in 2011 emissions were 29.26 $MtCO_2e$, which equates to a decrease from the baseline of 10.1%. For the wider 40% target by 2020, the report highlighted progress in that emissions have decreased 20.6% against the baseline. However, although this is positive progress as recognised in the report, the current trend would not meet the Welsh Government's aim of a 40% reduction by 2020 and significant further action is required.

8.44 The report also breaks down emissions by key sectors and highlights that most sectors have shown progress in contributing to the 3% emissions reduction target. The following sectors have seen significant reductions: Transport Sector (6.8%), Resource Efficiency and Waste Sector (8.8%), Business Sector (13.3%) and Residential Sector (16.5%). Emissions in the Agriculture and Land-use sector have slightly increased, however, by 1.2%.[49] This increase, seen since 2009, is largely due to a historical legacy of aging forestry in Wales. The maturation of Wales' forest areas reduces the size of the forest sink in the Welsh inventory and has led to an overall increase in emissions for the Agriculture and Land-Use Sector. The sectoral breakdown also highlights the very good progress made in the Public Sector, which has taken a lead role in reducing emissions with a reduction of 18.7% in 2011.

8.45 The Climate Change Annual Progress report also highlights other areas of delivery including:

- Progress in driving down emissions from waste and increasing recycling – The latest recycling statistics for Wales show the highest quarterly recycling figures ever recorded in Wales or any UK nation. The continued increase in recycling rates means that Wales remains on track to meet our ambitious recycling targets.
- The success of the Welsh Government's strategic energy scheme, A*rbed* along with the boiler scrappage scheme and the home energy efficiency programme.
- In the Energy sector, *Energy Wales: A Low Carbon Transition*[50] sets out the Welsh Government's aim to drive the change to a sustainable, low carbon economy for Wales. Between January 2010 and April 2013 there has been £1.4 billion investment in the renewable energy market in Wales, with the potential to support nearly 2,000 jobs.
- The development of the Sustainable Travel Centre initiative in delivering better integrated transport networks whilst promoting health and well-being.
- There has been significant progress in improving the energy efficiency of the existing housing stock. By March 2013,

48 The report can be found here: http://wales.gov.uk/topics/environmentcountryside/climatechange/publications/2013-annual-report/?lang=en

49 Forest land in Wales removes carbon dioxide from the atmosphere creating a sink, but as forests age they become less active at drawing down and storing carbon dioxide from the atmosphere. The greenhouse gas inventory uses a model to estimate the impact of these changes on emissions in Wales.

50 The transition documents can be found here: http://wales.gov.uk/topics/environmentcountryside/energy/energywales/?lang=en

74% of the existing 221,000 social homes in Wales had achieved a SAP rating of 65 or above. That's equivalent to an energy rating of D. This is a major achievement considering the age and profile of the stock.

- In 2012/13 the Welsh Government invested over £54 million on flood and coastal risk management, including more than £25 million in schemes that improve protection to 1,500 properties. The Flood Awareness Wales project, which encourages households to take practical steps to make themselves more resilient to the impacts of flooding, has also continued meaning that since 2010, 64,000 households have been contacted and work with over 200 communities carried out across Wales. Developed flood plans which protect over 40,600 people also reduce the economic and social impact of flooding as these cover schools, businesses and caravan parks.
- The ongoing support and advice to businesses on energy efficiency and low carbon opportunities for SMEs, and its work to lead action across the public sector to reduce emissions.
- The Welsh Government has commissioned a Land Use and Climate Change review to provide a more robust evidence base to support decision makers in the sector and the wider food chain to deliver emission reductions and improved climate change resilience.
- Almost 20% of electricity used by NHS Wales is now generated from Combined Heat & Power Units and all NHS organisations have sustainable travel plans for their hospital sites.
- The publication of guidance for public bodies in Wales on adapting to climate change and a national strategy on flood management.
- The Welsh Government is working to integrate mitigation and adaptation to climate change into the effective management of its natural resources.
- The launch of the Green Growth prospectus which showcased the Wales offer and green growth ambitions to an investment audience. There is already over 41,000 people employed in the green economy in a variety of industries including energy, waste and water. Strengths in engineering, steel fabrications, aerospace and construction offer an existing and diverse supply chain serving a thriving green economy.
- The Welsh Government's Environment Bill will set out a framework to prioritise natural resource opportunities and to ensure we have the evidence needed to better inform the shape and direction of sustainable economic growth and development.
- The Welsh Government's unique Future Generations of Wellbeing Bill strengthens existing governance arrangements for improving the well-being of Wales to ensure that present needs are met without compromising the ability of future generations to meet their own needs.

8.46 The Welsh Government recognises further action is needed and is currently undergoing a climate change policy refresh.

Glossary

BIS	Department for Business, Innovation and Skills
CCA	Climate Change Agreement
CCC	Committee on Climate Change
CCS	Carbon Capture and Storage
CCT	Company Car Tax
CfD	Contracts for Difference
CO_2	Carbon Dioxide
CRC	Carbon Reduction Commitment Energy Efficiency Scheme
CSCO	Carbon Saving Community Obligations
DECC	The Department of Energy and Climate Change
Defra	The Department for Environment, Food and Rural Affairs
DSR	Demand Side Response
EA	Environment Agency
ECO	Energy Company Obligation
EDR	Electricity Deman Reduction
EII	Energy Intensive Industry
EMR	Electricity Market Reform
EST	Energy Saving Trust
EU	European Union
EU ETS	European Union Emissions Trading System
EU ETS Phase 3	Current phase of the ETS running 2013 to 2020
FEED	Front-End Engineering and Design
F-gases	Fluorinated greenhouse gases

FITs	Feed-in Tariffs
GHG	Greenhouse gas
GHGAP	Greenhouse Gas Action Plan
GW	Gigawatt
HAFSA	Hospitality and Food Service Sector
HDV	Heavy duty vehicle
HGV	Heavy goods vehicle
ICCS	Industrial Carbon Capture and Storage
ILUC	Indirect land use change
kWh	Kilowatt hour
LCF	Levy Control Framework
$MtCO_2$	Million tonnes of carbon dioxide
$MtCO_2e$	Million tonnes of carbon dioxide equivalent
MW	Megawatt
OFTO	Offshore Transmission Owner
OLEV	Office of Low Emission Vehicles
PAYS	Pay As You Save
RD&D	Research, Development and Demonstration
RHI	Renewable Heat Incentive
RO	Renewables Obligation
SME	Small and Medium Sized Enterprises
TINA	Technology, Innovation Needs Assessment
ULEV	Ultra Low Emissions Vehicle
VECTRO	Vehicle Energy Consumption Calculation Tool
VED	Vehicle Exercise Duty

Annex A: Summary of CCC recommendations[51]

Cross-sectoral

1. Continue to push for a combination of EU ETS reform and ambitious emissions targets for 2020 and 2030 that will put the EU on the cost-effective path to meeting its target for at least an 80% emissions reduction by 2050 relative to 1990 and will deliver an EU ETS price that is sufficient to incentivise emissions reduction activities in the power sector. The regulatory regime should also allow for negative emissions (e.g. from use of bioenergy with CCS) to count towards required emissions reduction.
2. By 2016, publish a strategy to develop carbon capture and storage (CCS)[52] in both power and industry, including CO_2 infrastructure development, minimum levels of deployment over the period to 2030, and an approach to funding for projects beyond current policy (including higher levels of deployment dependent on cost reduction).
3. On biomass sustainability for transport, power and heat: continue to push for Indirect Land Use Change (ILUC) impacts to be fully taken into account in EU biofuel sustainability criteria; in the 2016/17 review of UK bioenergy strategy, add to the UK's criteria for biomass sustainability a requirement that all biomass is sourced from forests that can demonstrate constant or increasing carbon stocks, and push for this to be reflected in standards at the EU level.

Buildings

4. Strengthen the near-term framework for energy efficiency improvement in residential buildings: increase ambition on insulating lofts and cavity walls while finalising the Energy Company Obligation (ECO); maintain fiscal incentives to 2017; by the end of 2014, publish proposals for minimum energy performance standards for the private-rented sector.
5. Build on the existing approach to incentivising low-carbon heat in residential buildings: commit funding for the Renewable Heat Incentive to 2020 and commit to extending this approach beyond 2020 unless and until an alternative mechanism is in place; extend the Green Deal to cover the upfront cost of low-carbon heat technologies funded under the RHI and consider using Government guarantees to lower the financing cost; develop measures to improve consumer confidence in renewable heat.
6. Consider future options for the focus of the ECO (i.e. whether this should be on delivering more difficult energy efficiency improvements for the fuel poor or across all households). This consideration should reflect evidence on costs of solid wall insulation, costs of alternative options for reducing emissions and whether an alternative delivery mechanism could better tackle fuel poverty.
7. Develop additional measures to tackle fuel poverty in England to supplement the Affordable Warmth element of the ECO, possibly including targeting of the RHI.
8. Ensure that the Zero Carbon Homes standard requires investment in low-carbon heat unless heating requirements are very low, and only grant exemptions where a clear economic rationale for these has been demonstrated.

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51 The order of recommendations is taken from the Executive Summary of the CCC Progress Report.

52 As laid out in the Executive Summary of the 2014 CCC Progress Report and can be found here: http://www.theccc.org.uk/wp-content/uploads/2014/07/1911_CCC_PR2014_ES.pdf

9. In the commercial sector: simplify and rationalise existing policies for energy efficiency improvement, with a view to strengthened incentives and decisions by the end of 2016, and publish proposals for minimum energy performance standards for the private-rented sector.
10. By the end of 2014, set carbon targets for central government beyond 2015.

Power

11. Complete implementation of Electricity Market Reform (EMR); set appropriate strike prices and sign contracts for low-carbon capacity; ensure a suitable mix of low-carbon technologies is supported; ensure final market design recognises the value of demand-side measures, interconnection, storage and flexibility in generation; require that all biomass is sustainably sourced.
12. In 2016, set a carbon intensity target range for 2030 under the Energy Act 2013, consistent with cost-effective decarbonisation of the economy (e.g. 50-100 g/kWh).
13. No later than 2016, commit funding for low-carbon generation in the period beyond 2020.
14. By 2016, publish a commercialisation strategy for offshore wind that includes levels of ambition to 2030, cost reductions required to sustain that ambition and the Government's role in supporting those reductions.

Transport

15. Push for stretching EU targets for emissions of new cars and vans for 2030 in the context of negotiations around the overall 2030 EU emissions reduction package; these should take account of the scope for improving efficiency of conventional vehicles and the need to achieve greater take-up of electric vehicles (EVs) and other ultra-low emissions vehicles (ULEVs).
16. Work with partner organisations (e.g. industry, local authorities, the Green Investment Bank) to tackle financial and non-financial barriers to electric vehicle uptake by providing: new, low-cost approaches to financing; onstreet residential charge points and a national network of rapid charge points; softer time-limited measures such as access to bus lanes and parking spaces.
17. With agreement of a strong EU target and/or financial and non-financial barriers being tackled there would be scope to phase out the existing capital subsidy for electric vehicles. The Government should consider how to phase out EV subsidy and whether there is any benefit in announcing this in advance (e.g. in stimulating manufacturers to develop financing packages).
18. Over time, adjust fiscal levers (i.e. Vehicle Excise Duty, Company Car Tax and Enhanced Capital Allowances) to align to new vehicle CO_2 targets and provide additional incentives for ULEVs.
19. Push for a swift conclusion to current EU work on standards for HGVs and press for new vehicle standards as soon as practical (e.g. soon after 2015).
20. Ensure demand-side opportunities are realised: continue progress reducing car travel once the current Local Sustainable Travel Fund ends in 2015; encourage adoption of complementary technologies to support eco-driving, including pushing for fuel consumption meters to be reconsidered in future EU negotiations; monitor existing voluntary action in the freight sector aimed at improving fuel consumption and consider stronger levers as required, including ways to address barriers for smaller operators.
21. Fully evaluate the carbon implications of use of natural gas in vehicles before any nationwide roll-out of gas infrastructure and support.
22. When considering future airport expansion, plan on the basis of 2050 emissions at around 2005 levels, implying an increase in demand – provided aircraft efficiency continues to improve significantly – of around 60% on 2005 levels by 2050.

Industry

23. Use the "2050 decarbonisation roadmaps", planned for spring 2015, to identify and set out the opportunities for reducing emissions in industry, then by 2017 publish a strategy for delivering abatement in the 2020s, including milestones to monitor progress against.

24. By the end of 2016, set an approach to deploying initial industrial CCS projects compatible with widespread deployment from the second half of the 2020s, and joined up with the approach to CCS commercialisation in the power sector.
25. Review policies for compensating at-risk industries for costs of low-carbon policies, by the end of 2016.
26. Work with industry and the EU to improve knowledge sharing within industry and R&D into opportunities to reduce emissions at low cost.
27. Investigate options to overcome barriers to capital investment.

Agriculture and land use

28. Ensure that the agriculture sector monitors the effectiveness of the GHG Action Plan, including 'SMART' objectives, quantifiable targets and evidence of buy-in from farmers, to allow effective evaluation in the Government's review in 2016.
29. Recognise the high delivery risk under the GHG Action Plan, and as part of the 2016 review consider stronger policy options to ensure savings are delivered.
30. The GHG inventory should include emissions from upland peat as soon as possible, existing regulation should be enforced and the policy framework strengthened to enable further peatland restoration effort.

Waste & F-gases

31. Publish specific strategies for reductions in the amounts of the main biodegradable waste sources sent to landfill (specifically food, paper/card, and wood), and introduce stronger levers to ensure these are met unless there is clear evidence that these are not required.
32. Set out an approach to increase methane capture rates, towards best practice, with milestones and actions to ensure these are met.
33. Ensure UK businesses comply with new EU F-gas regulation and seek opportunities to go further where cost-effective alternatives exist; if these are found, push for stronger implementation at the EU level.

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