



HM Government

Meeting Carbon Budgets – 2015 Progress Report to Parliament

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

October 2015



Meeting Carbon Budgets – 2015 Progress Report to Parliament

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

October 2015

Meeting Carbon Budgets – 2015 Progress
Report to Parliament.

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

URN 15D/485



© Crown copyright 2015

This publication is licensed under the terms of the Open Government Licence v3.0 except where otherwise stated. To view this licence, visit nationalarchives.gov.uk/doc/open-government-licence/version/3 or write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or email: psi@nationalarchives.gsi.gov.uk.

Where we have identified any third party copyright information you will need to obtain permission from the copyright holders concerned.

This publication is available at
www.gov.uk/government/publications

Any enquiries regarding this publication should be sent to us at
carbonbudgets@decc.gsi.gov.uk

Print ISBN 9781474124959

Web ISBN 9781474124966

ID P002760967 10/15 51540 19585

Printed on paper containing 75% recycled fibre content minimum

Printed in the UK by the Williams Lea Group on behalf of the Controller of Her Majesty's Stationery Office

Contents

Background to the response	5
Executive summary	7
Chapter 1: UK Emissions Trends	11
Chapter 2: Power Sector	15
Chapter 3: Buildings	19
Chapter 4: Industry	23
Chapter 5: Transport	27
Chapter 6: Agriculture, Land use and Forestry	33
Chapter 7: Waste and F gases	37
Chapter 8: Devolved Administrations	41
Glossary	55
Annex A: Summary of CCC recommendations	59

Background to the response

The Climate Change Act 2008 established a legally binding target to reduce the UK's greenhouse gas emissions by at least 80% below 1990 base year levels by 2050. In million tonnes of carbon dioxide-equivalent (MtCO₂e), we currently estimate this to be around 160 MtCO₂e in 2050 versus 811 MtCO₂e in 1990.

To drive progress across the economy and set the UK on a pathway towards this target, the Act also introduced a system of carbon budgets which provide legally binding limits on the amount of emissions that may be produced in successive five-year periods, beginning in 2008.

The first three carbon budgets were set in law in May 2009 and the Climate Change Act requires emissions to be reduced by at least 34% below 1990 levels by 2020. The fourth carbon budget, covering the period 2023-27, was set in law in June 2011 and requires emissions to be at a level equivalent to around 50% below 1990 base year levels.

We are required to set the fifth carbon budget by June 2016. The Climate Change Act sets out a number of factors that must be taken into account by the Secretary of State in making the decision, including representations from the Devolved Administrations, and the Committee on Climate Change (CCC).

The CCC was set up under the Act as an independent body to advise Government on climate change. The Committee is required to

produce annual reports on progress towards meeting the carbon budgets and the 2050 target.

The CCC published their first report to the new Parliament (Reducing Emissions and Preparing for Climate Change: 2015 Progress Report to Parliament) on 30th June. The report analyses progress towards meeting the UK's emissions reduction targets and the impact of Government policies.

This document provides a response to each of the specific recommendations contained within the CCC's report. Annex A contains a full list of the CCC's recommendations.



Executive summary

This document lays out the Government's response to the Committee on Climate Change's (CCC) 2015 Annual Progress Report to Parliament. It responds to each of their thirty-five recommendations on progress towards meeting our carbon budgets.

This year, at the same time, the Committee also published their first statutory assessment of the National Adaptation Programme. A third CCC report provided a summary of the issues for both adaptation and mitigation and presented five main recommendations for Government on climate change. This document is therefore accompanied by a summary response and an adaptation response.

This is the first response to the CCC in this Parliament and this Government welcomes the opportunity to reiterate its commitment to our carbon targets.

We are now in the second carbon budget period (2013-2017) and in 2013 our emissions were 30% lower than in 1990, our base year, signalling that good progress has been made. Provisional figures for 2014 show that emissions fell by 8.4% between 2013 and 2014 while the UK's economy grew by 3%. As reported by the CCC, the UK is on track to meet both the second and third carbon budgets (covering the period up to 2022).

However, there is a shortfall over the fourth carbon budget (2023-2027) where our emissions are projected to be greater than

the cap set by the budget. This shortfall was acknowledged when the budget was set in 2011.

The CCC Progress Report laid out a number of recommendations on how we can successfully transition to a clean, low-carbon economy. One of their key overarching recommendations was to provide certainty over the longer term policy framework into the 2020s.

We are investing time now to consider the right approach to do that. After we have set the fifth carbon budget (by the end of June 2016), we will be able to provide more detail about our expectation for how we intend to meet the targets. Our new emissions reduction plan will be published towards the end of 2016 and will set out our proposals in full.

The CCC has made a number of recommendations to the UK Government for each sector, which are covered in chapters two to seven of this response. The final chapter of the response (chapter eight) includes the responses from the Devolved Administrations.

Power (Chapter 2)

The Committee recommended ensuring the power sector can invest with a 10 year lead time by setting a carbon objective for the sector in the 2020s and extending the funding under the Levy Control Framework (LCF). There were also specific

recommendations on continuing support for offshore wind, learning the lessons from the first Contracts for Difference (CfD) auctions, ensuring transparency over the cost implications of technology choices and commercialising Carbon Capture and Storage (CCS).

We welcome the CCC's finding that 2014 was a record year in the power sector for emissions reduction, and their acknowledgement of the role of our Electricity Market Reform programme in driving an increase in electricity generated from renewables.

The Government recognises that low-carbon electricity projects need long-term visibility of available support. The LCF currently aims to provide this certainty, and we have announced our intention to set out our approach to the LCF beyond 2020.

We agree with the CCC's recommendation on the need to be transparent on the overall costs of decarbonising the economy and the cost impacts of our policies.

We also recognise that CCS has the potential to play an important role in decarbonising our power sector.

Buildings (Chapter 3)

The CCC made a number of recommendations to address low-carbon heat and energy efficiency. They also recommended implementing the Zero Carbon Homes standard and simplifying existing policies for energy efficiency in the commercial sector.

Improving and decarbonising buildings will require changes to both energy efficiency measures and heating systems in properties. The Government is committed to considering both together, from a consumer perspective.

We recognise the need for a stronger long-term plan to address low-carbon heat and we are currently considering the right long-term framework for the home energy efficiency market. However, as detailed in the Productivity Plan, the Government will not implement Zero Carbon Homes.

In line with the CCC's recommendation, the Government recognises business concerns around the complexity of the business energy efficiency tax and regulatory environment. A consultation on improving the business energy and tax reporting policy framework was launched this autumn.

Industry (Chapter 4)

The CCC recommendations on industry included developing the eight industry Roadmaps (which set out pathways to reduce emissions) into Action Plans and rolling out the Roadmaps to other industrial sectors. The CCC also recommended joining up industrial CCS with power sector projects and evaluating the effectiveness of compensation to at-risk industries for low-carbon policies.

The Government is continuing to work collaboratively with industry and academia to promote and support emissions reductions in the industrial sector whilst ensuring that UK industry remains competitive. We welcome the provisional figures for 2014, outlined in the CCC's report, which indicate that industrial output grew whilst energy consumption and emissions fell.

The Government agrees with the recommendation to turn the eight existing Roadmaps into Action Plans and this work is underway. This will create knowledge and experience that could benefit a future roll out of the roadmap approach to more industries.

We also agree with the CCC that any industrial CCS programme would need to be considered in the context of our work on power CCS.

Lastly, on Energy Intensive Industries, a number of compensation schemes are currently in place, and an independent evaluation of the process and impact is underway.

Transport (Chapter 5)

The Committee's key recommendations on the transport sector were to maintain support for electric vehicles, provide the motor industry with greater certainty to 2030 and ensure the tax regime keeps pace with technological change.

We remain committed to delivering significant emissions reductions in the transport sector out to 2050. We will continue to address emissions from conventional vehicles, whilst accelerating the deployment of ultra-low emission vehicles (ULEVs), with the ultimate aim of almost every car and van being a zero emission vehicle by 2050.

The Government wants to build on the effective existing EU regulation on car and van tailpipe emissions to 2020 and recognises the value of tackling barriers to the uptake of electric vehicles. Over the next five years the Government will continue to provide support for consumers as part of its £500m package of investment for ULEVs.

The Summer Budget 2015 announced that Vehicle Excise Duty (VED) is being reformed for cars first registered from April 2017 onwards. The reformed VED system will strengthen the incentive to purchase the very cleanest cars.

The CCC also had recommendations on emission reduction schemes for freight, sustainable travel schemes and aviation emissions, which are covered in Chapter 5.

Agriculture, Land Use and Forestry (Chapter 6)

Recognising that estimates of emissions in this sector are uncertain, the Committee recommended pushing ahead with the SMART inventory (an agricultural greenhouse gas accounting system). They also suggested strengthening the current voluntary approach to reduce agricultural emissions, whilst also co-ordinating effort to reduce emissions across England, Scotland, Wales and Northern Ireland (given agriculture and forestry are devolved issues).

The Government is working to support industry to improve efficiency in production and resource use to deliver both reductions in emissions and growth in the sector. The Government's collaborative approach is at the centre of the developing 25 Year Food & Farming plan.

The Government welcomes the Committee's acknowledgement that our SMART inventory programme is essential for effective measurement of reductions in greenhouse gas emissions from improved practices in agriculture. We will implement the model in spring 2017.

We will also continue to work with industry on the Greenhouse Gas Action Plan and with the Devolved Administrations on opportunities to reduce emissions in this sector.

Waste and F Gases (Chapter 7)

In regards to reducing emissions from waste and F gases, the Committee recommended increasing methane capture rates, reducing the biodegradable waste sent to landfill and seeking opportunities to exceed regulatory minimums on F gases.

We will continue to support businesses and provide the right framework to ensure that we make the best use of materials and

resources, prevent and deal with waste and recycle properly.

We accept the Committee's recommendation on methane capture rates and work is underway within Defra and the Devolved Administrations to take this forward. In addition, we recognise the need to build on the progress already made to divert biodegradable waste from landfill. We are working with food manufacturers and retailers, and helping households waste less and save money through the 'Love Food Hate Waste' campaign.

The Government has introduced domestic legislation to enforce the requirements of EU regulation on F gases.

Devolved Administrations (Chapter 8)

The Government agrees with the CCC on the important role the Devolved Administrations play in achieving the UK's carbon budgets.

Chapter eight sets out their progress to date and provides responses to the Committee's individual recommendations to Scotland, Wales and Northern Ireland.

Chapter 1: UK Emissions Trends

We are now in the second carbon budget period

1.1 The past year saw the UK enter the first reporting year of its second carbon budget, having met its first carbon budget.¹ Over the first carbon budget period (2008-2012), the UK emitted 2,982 million tonnes of carbon dioxide-equivalent (MtCO₂e), which is 36 MtCO₂e below the first carbon budget cap of 3,018 MtCO₂e.

1.2 In 2013, net UK emissions were 566 MtCO₂e, representing a 30% reduction on 1990 base year emissions of 811 MtCO₂e. When tracking progress towards carbon budgets these net emissions are adjusted to take into account the impact of trading within the EU ETS. In 2013 this amounted to net purchases of 44 MtCO₂e. On this basis, 2013 net UK emissions were 523 MtCO₂e which falls 34 MtCO₂e below the average emissions per annum needed to meet the second carbon budget.² This is 36% below 1990 base year emissions.³

1.3 UK emissions are dominated by carbon dioxide, which accounted for about 82% of the UK's greenhouse gas emissions in 2013.

1.4 Reductions in net UK emissions since 1990 have been mainly observed in the industrial, power and waste sectors. Over a third of the decline seen since 1990 is associated with changes to the way energy is supplied in the UK, particularly from a reduction in coal-based electricity generation and an increase in the use of renewables. The waste sector has seen a significant decrease (67%) in emissions since 1990 due to improvements in the standards of landfilling, changes to the types of waste going to landfill and an increase in the amount of landfill gas being used for energy. Improvements in buildings and industrial energy use have also been important, while much of the improvements in vehicle efficiency have been offset by greater transport demand.

¹ <https://www.gov.uk/government/statistics/final-statement-for-the-first-carbon-budget-period>

² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/417680/48439_Un-Act_DECC_Web_Accessible_v0.2.pdf

³ Under the Kyoto Protocol, the UK uses 1990 as the base year for carbon dioxide, methane and nitrous oxide emissions, and 1995 as the base year for the fluorinated gases (or F-gases: hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride). To ensure consistency with our international obligations, the same base year for each greenhouse gas is used under the Climate Change Act.

UK emissions reductions are expected to continue

1.5 Historic emissions are reported in the final UK greenhouse gas emissions national statistics, based upon the UK greenhouse gas emission inventory. Estimated future UK greenhouse gas emissions are reported in the Energy and Emissions Projections (EEP).

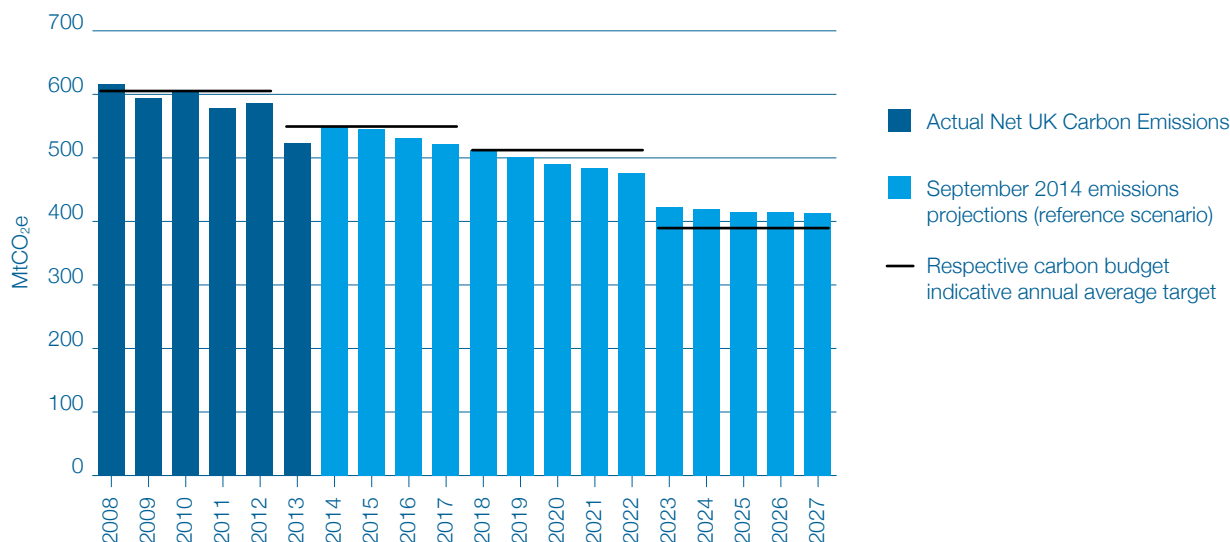
1.6 Based upon the projections published in September 2014,⁴ emissions measured on a territorial basis, not accounting for trading in the EU ETS, are expected to continue their decline, with estimated emissions of 352 MtCO₂e in 2035, 55% below the 1990 base year level.⁵ The power sector is expected to have the greatest role to play

in these reductions due to the expected decarbonisation of the electricity grid. This is despite a projected increase in total electricity consumption over the period. Further savings reflect projected reductions in the business, transport and building sectors.

Projections indicate that the UK is on track to meet second and third budgets

1.7 Figure 1 shows the projected UK performance against carbon budgets. Based on the 2014 projections, it is expected that the UK will meet its second and third carbon budgets, with a possible total over-performance of around 156 MtCO₂e.

Figure 1: Progress against carbon budgets



Source: National statistics (DECC, 2015), Energy Emissions Projections (DECC, 2014)

N.B: Emissions reported between 2008 and 2012 are fixed based upon the final statement for the first carbon budget period.

⁴ <https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2014>

⁵ 1990 base year emissions estimated in 2014 were 780.3MtCO₂e: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/296152/38238_Un_Act_DECC_web_accessible_v2.pdf

The UK continues to have a challenge over the fourth carbon budget

1.8 Based on the 2014 projections, the UK still has an expected shortfall over the fourth carbon budget (estimated as 133 MtCO₂e).

1.9 This challenge is not new. This shortfall was acknowledged when the budget was set in 2011. We are currently carefully assessing our approach for a post-2020 framework. This includes the level of support for low-carbon technologies in the power sector, our forward plan to tackle emissions from buildings and our next steps on electric vehicles. We intend to say more after we set the fifth carbon budget (by the end of June 2016). Our new emissions reduction plan will be published towards the end of 2016 which will set out our proposals in full.

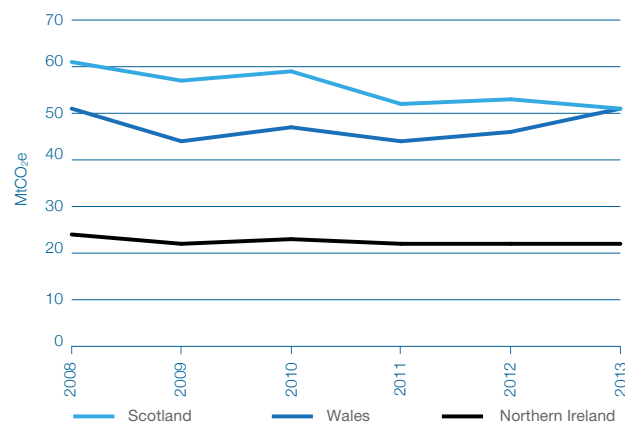
1.10 Updated projections are due to be published in autumn 2015. The projections are updated each year to reflect our latest understanding about the economy, population and the impact of policies. Further updates are made to include the latest data sources and improve modelling methodology. Changes to projections in 2015 could show that the greatest changes over the second to fourth carbon budget periods are likely to be seen in the land use, land use change and forestry (LULUCF) sector, primarily related to a change in methodology, including updates related to the UK greenhouse gas inventory, where we are obliged to update our methodology in line with international guidelines. Changes are also expected to industrial emissions as a result of changes to our expectations surrounding economic growth.

1.11 The result of these changes, many of which are out of the Government's control, could be that whilst the 2015 projections will continue to show that emissions will follow a

downward trend, the emissions reductions are likely to be less than those estimated in 2014. If that is the case, we would expect that carbon budgets two and three will still be met, but with a lower level of over-performance, and the gap over the fourth carbon budget would increase.

Emissions by England, Scotland, Wales and Northern Ireland

Figure 2: Historical emissions for Scotland, Wales and Northern Ireland, 2008-2013



Source: Greenhouse Gas Inventories for England, Scotland, Wales and Northern Ireland (DECC, 2015)

England

1.12 In 2013, total greenhouse gas emissions for England were estimated to be 429 MtCO₂e, 32% below 1990 (base year) levels. The largest decreases were experienced in the energy supply, waste management and industrial sectors from 1990 to 2013. Energy supply sector emissions reduced by 38% which is mainly due to a shift from coal and natural gas to renewable energy sources. Significant reductions of 67% in the waste management sector were largely due to the progressive introduction of methane capture and oxidation systems within landfill management. The industrial sector has shown large decreases in emissions since 1990 base year levels due to a decline in chemical and

fluorocarbon production, however emissions increased by 14% between 2012 and 2013 due to an increase in emissions from iron and steel works.

Scotland

1.13 In 2013, total greenhouse gas emissions for Scotland were estimated to be 51 MtCO₂e. Since 1990, Scotland's emissions have decreased by 35%⁶ and reductions have been predominantly seen in the energy sector, along with waste management and Land Use, Land Use Change and Forestry (LULUCF). Net emission reductions are the result of many factors from across the economy, including improvements to landfill gas management practices, efficiency improvements and fuel switching in power generation, a decline in manufacturing, efficiencies in energy generation and business heating, an increase in the storage of carbon in forests and grassland and reduced carbon losses from cropland. More recent reductions in emissions have been predominantly driven by a shift from coal to renewable energy sources in the energy sector.

Wales

1.14 In 2013, total greenhouse gas emissions for Wales were estimated to be 51 MtCO₂e, a 12% reduction from 1990 base year levels. These emission reductions are mainly due to efficiencies in energy generation and business sector heating, the use of natural gas to replace some coal and other fuels as well as abatement in some chemical industries, and variations in manufacturing output (e.g. in iron and steel, and bulk chemical production). However, Wales' emissions in 2013 were actually higher than those in the previous year a 10% increase from 2012. This is predominantly driven by increases in the business and industrial process sectors due to increased

iron and steel production following the restart of Tata Steel's Port Talbot No.4 Blast Furnace in February 2013, and a shift from natural gas to coal use in power stations in the energy supply sector (increase of 9%). On an end-user consumption basis in Wales emissions have decreased by 31% since the 1990 baseline. This decrease is larger than that achieved in the by-source (direct territorial) emissions in Wales because Wales is a net exporter of energy.

Northern Ireland

1.15 In 2013, total greenhouse gas emissions for Northern Ireland were estimated to be 23 MtCO₂e. Total greenhouse gas emissions for Northern Ireland show a decrease between 1990 and 2013 of 16%. This was made up primarily of reductions in the energy, waste and residential buildings sectors. Emissions in the energy supply sector reduced by 24% and are a result of energy efficiency and a switch from coal to gas for electricity generation, though emissions have increased by 8% between 2011 and 2013 due to a shift back from the use of natural gas to coal in power stations. Waste management sector emissions reductions were largely due to the progressive introduction of methane capture and oxidation systems within landfill management, and building emissions have decreased due to fuel-switching to take advantage of natural gas supply, displacing more carbon-intensive fuels such as coal. However, emissions in the transport sector have increased by 22% since 1990 due to growth in transport demand over the period.

⁶ Excluding international aviation and shipping.

Chapter 2: Progress decarbonising the power sector

Policy Approach

2.1 We welcome the CCC's finding that 2014 was a record year in the power sector for emissions reduction, and their acknowledgement of the role of our Electricity Market Reform programme in driving an increase in electricity generated from renewables. Renewable electricity capacity has almost trebled since 2010 – from 8.7GW at the end of 2010 Quarter 2 to 24.6GW at the end of 2014. In 2014, renewables' share of electricity generation was 19%, powering the equivalent of 15.7 million homes annually.

2.2 We have been clear that we will not support additional expensive power sector decarbonisation targets and we will cut emissions as cost-effectively as possible. It is vital that we take careful account of the costs of our policies so that we are not imposing unnecessary burdens on households and businesses, making household bills unaffordable or putting the UK at a competitive disadvantage.

2.3 Contracts for Difference (CfD), introduced in the Energy Act 2013, provide long-term certainty for investors, driving investment in a new generation of clean power and driving costs down for consumers through competition. The Levy Control Framework (LCF) sets support levels for clean electricity up to 2020/21.

2.4 The Carbon Price Floor (CPF) is designed to provide long term certainty for low carbon investment by setting a minimum

price for carbon dioxide emissions from the UK electricity generation sector. It sets out a trajectory to 2030 for the carbon price faced by fossil fuels used in electricity generation, which is made up of the carbon price set by the EU Emissions Trading Scheme (EU ETS) and a UK-only "top up" carbon price known as the Carbon Price Support (CPS) payment.

2.5 The EU ETS is the cornerstone of the EU's low-carbon strategy. It must provide the long-term, stable and effective low-carbon framework and strengthened price signal required by businesses and investors to drive the cost-effective low-carbon transition that the UK and other Member States need. We therefore welcome the recent agreement on the Market Stability Reserve (MSR) which will address the significant surplus of emission allowances that has built up and to improve the resilience of the system to major demand shocks. It is now necessary to ensure this ambition is maintained through further reform post-2020.

Response to CCC recommendations

Recommendation 1

Ensure the power sector can invest with a 10-year lead time: as soon as possible, set the Government's carbon objective for the power sector in the 2020s and extend funding under the Levy Control Framework to match project timelines (e.g. to 2025 with rolling annual updates).

2.6 We recognise that low carbon electricity projects often have long lead times and need long-term visibility of available support.

2.7 The Levy Control Framework (LCF), currently set to 2020/21, aims to provide this certainty while keeping costs down for consumers. Significant commitments have been made against the LCF for future years which will drive continued progress towards our renewables and low carbon ambitions.

2.8 We recognise the challenges the current LCF end date poses for developers of projects that wish to commission in the next decade (i.e. beyond 2020/21). We have therefore announced our intention to set out our approach to the LCF beyond 2020. The Government intends to set out plans in the autumn in respect of future CfD allocation rounds.

Recommendation 2

Continue with auctions under Electricity Market Reform, maintaining momentum by adhering to the proposed timings and working with industry to learn lessons from the first auctions.

2.9 The more developers can do now to bring down costs the more likely they are to find themselves in a strong position to compete for and secure any potential Government support. We will set out

our proposals in respect of the next CfD allocation round this autumn. We continue to work closely with the Delivery Body (National Grid) and industry to refine the CfD allocation process where necessary and we are in the process of amending legislation to implement these changes. We have also commissioned an independent evaluation of the CfD allocation round and will consider any issues raised in that report and make amendments as appropriate.

Recommendation 3

Set out approach to commercialise CCS through the planned clusters: including a strategic approach to transport and storage infrastructure, completing the two proposed projects and contracting for at least two further 'capture' projects this Parliament.

2.10 The Government recognises that CCC that Carbon Capture and Storage (CCS) has the potential to play an important role in the long term decarbonisation of the power sector. The coalition Government set out its approach to assist the development and deployment of CCS in the UK in August 2014. Key to understanding the potential for CCS in the UK is the CCS Commercialisation Programme, which offers a route, through the CCS Competition, to support for initial full-chain CCS power plant generation at commercial scale, de-risk future CCS deployment and reduce costs. The two projects – the proposed Peterhead and White Rose CCS projects – are expected to decide whether to proceed with their projects in late 2015, with the Government taking decisions about whether any financial support required is justified shortly afterwards.

2.11 The Government also recognises that the further use of CCS in the UK would require additional incentives, and work is underway to develop the necessary framework. Any decision to provide additional

support to CCS projects as recommended by the Committee is a matter for the Spending Review.

2.12 The Energy Bill which is currently before Parliament will establish the Oil and Gas Authority (OGA) as an independent regulator. The OGA's remit will include an important role on CCS. The OGA will issue carbon dioxide storage site licences and approve carbon dioxide storage permit applications. CCS will also form an important element of the technology and decommissioning sector strategies which will be developed by the OGA, in consultation with industry, and which will underpin the strategy to maximise economic recovery of offshore UK petroleum. The Government is keen to ensure that the OGA's functions complement the Government's work to support the development of CCS in the UK.

Recommendation 4

Support offshore wind until subsidies can be removed in the 2020s: set out intention to contract 1-2 GW per year and wider innovation support provided costs fall with view to removing subsidies in the 2020s.

2.13 Our approach to supporting low carbon generation under Electricity Market Reform (EMR) is based on encouraging competition between technologies to drive costs down for consumers, rather than setting out exactly how much of each technology we will deploy.

2.14 The UK is the world leader in offshore wind and will remain so until, at least, the end of the decade. The UK is supporting significantly more offshore wind than any other country in the world. As set out above, we have announced our intention to set out totals for the LCF beyond 2020.

Recommendation 5

Be transparent over the cost implications of technology choices: including the cost of alternatives if low-cost options are constrained, system integration costs and the full carbon cost of fossil-fired generation.

2.15 The Government agrees with the CCC's recommendation on the need to be transparent on the overall costs of decarbonising the economy and the cost impacts of our policies. We already regularly review our evidence to ensure we have an accurate and up-to-date picture of the costs of different technologies and regularly publish information on this.

2.16 For example, we publish the cost assumptions used in our modelling in the DECC Generation Costs report,⁷ and we also publish our detailed methodology on the setting of CfD strike prices and details of modelling changes between the draft and final EMR Delivery Plan. The evidence on levelised costs of generation is currently being updated and is planned for publication later in the year.

2.17 In addition, there is currently a research project underway to expand our evidence base still further, to incorporate an assessment of system impacts to our estimates of electricity generation costs.

2.18 This project will allow us to make more effective comparisons between technologies and technology pathways, which can feed into the design of future policy.

2.19 We publish any changes to levy-funded schemes to ensure that the cost impacts are transparent, and will continue to do so for any future changes.

⁷ <https://www.gov.uk/government/collections/energy-generation-cost-projections>



Chapter 3: Progress reducing emissions from buildings

Policy Approach

3.1 Reducing emissions from buildings will require improved energy efficiency measures and changes to heating systems in properties. The Government is committed to considering both together through a stable long-term framework which explores the potential role of regulation, and to thinking about them from the perspective of consumers, home-owners, landlords, tenants and industry.

3.2 We recognise that in order to make the transition to a low-carbon economy we need to change the way we generate, distribute and use heat in buildings. The Renewable Heat Incentive (RHI) is the main policy influencing the uptake of low-carbon heat technology, by providing long-term financial support for households and businesses to make the switch to renewable heat.

3.3 The RHI is currently supporting almost 35,000 domestic heating systems and over 10,000 non-domestic installations. At the end of May 2015, 3.75 terawatt hours (TWh) of renewable heat has been generated and paid for through the scheme which is enough to heat the equivalent of almost 250,000 UK homes for a year.

3.4 Other policies such as Building Regulations have been successful in reducing heat emissions from buildings, for example through the requirement to install a condensing boiler when a heating system needs to be installed.

3.5 Energy efficiency is one of the most important things we can do to help people and businesses cut their energy bills, which is why we are committed to insulating a million more homes in this Parliament. Around 1.6 million energy efficiency measures were installed in 1.3 million homes between January 2013 and end of June 2015 with the Energy Company Obligation (ECO) delivering 96% of these measures. Since April 2010, 3.8 million lofts and 2.1 million cavities have been insulated through Government schemes up to end June 2015, the majority arising from the Carbon Emissions Reduction Target (CERT).

3.6 However there are challenges going forward with the largest share of remaining domestic potential in more costly or less developed measures like solid wall insulation, smart heating controls and low carbon heating. The Government recognises that delivering this requires a coherent and cost effective framework. We will work with industry partners and consumer groups to develop this.

3.7 We have a range of policies to drive energy efficiency in the non-domestic sector, where there remains significant untapped cost-effective potential. Energy efficiency policies implemented since 2009 are cumulatively estimated to lead average energy savings of 42TWh per year in this sector over the third carbon budget period (2018-2022).

3.8 However, we recognise that there is scope to simplify the current policy landscape for business and launched a consultation on improving the business energy tax and reporting policy framework in the autumn.

3.9 The Government is committed to demonstrating leadership on energy efficiency. In 2010, the Government introduced targets – known as the Greening Government Commitments (GGCs) – for reducing the environmental impact of the central government estate and its operations. Already the GGCs have delivered substantial improvements across, including a 22% reduction in GHG emissions compared to 2009/10 levels. The Government is currently considering the future GGCs arrangements.

Response to CCC recommendations

Recommendation 6

Develop an action plan to address the significant shortfall in low-carbon heat: short term this should commit to extend the Renewable Heat Incentive to 2020, or until a suitable replacement is found; long term it should link support for low-carbon heat with energy efficiency, support for heat networks and wider decisions about infrastructure for heat.

3.10 The Government is determined to help keep homes and business warmer for less, save carbon and meet our fuel poverty targets.

3.11 We recognise the need for a stronger, long-term action plan to address low-carbon heat. It is unlikely that there will be one single “low carbon heat” solution for buildings. Our approach will look at:

- Individual buildings. We are considering changes to energy efficiency measures and heating systems in properties within

a coherent, affordable and value for money approach and will work closely with consumer groups and industry alike to develop ideas, based on evidence of what works.

- Communities, towns, cities and regions. The Heat Network Delivery Unit (HNDU) is currently working with local authorities to plan low carbon heat networks across England and Wales, where these make economic sense and work for consumers. This is complemented with innovation and research work to ensure new low carbon sources of heat, such as recovered heat, are fully exploited, and working with other regional local development plans where heat networks may be an important part of the energy package. The HNDU will run a further feasibility funding round for local authorities this autumn. The latest round of HNDU support was opened on 28th September. However, further support is a matter for the Spending Review.
- The level of the whole energy system which links us all together, we are considering the potential of options for using green gases like bio-methane or green hydrogen, and at the storage and balancing opportunities offered by new heating solutions in tandem with renewable electricity and combined heat and power (CHP).

3.12 Budgets for the Renewable Heat Incentive have not been set beyond this year and will be a matter for the Spending Review.

Recommendation 7

Energy efficiency: set out the future of the Energy Company Obligation beyond 2017, ensuring it delivers energy efficiency while also meeting fuel poverty targets.

3.13 The Energy Company Obligation (ECO) has been successful, and is responsible for 96% of the 1.6 million energy efficiency measures installed under Government policies between January 2013 and end of July 2015. Since 2013, 873,000 energy efficiency measures (including over 321,000 boilers) were installed in around 698,000 low income and vulnerable households, or households in specified areas of low income through ECO.

3.14 The Warm Home Discount provides assistance to around two million low income and vulnerable households each year and has funding agreed until March 2016. Over 1.4 million of the poorest pensioners received £140 off their electricity bill last winter (2014-15), over 1.3 million of them automatically.⁸

3.15 We are fully committed to tackling fuel poverty in England and to meeting our fuel poverty targets. A successful approach to keeping homes warmer for less needs to be long-term, stable, coherent, and affordable, and targeted at those who need it most. The 2030 fuel poverty target, enshrined in law, requires the Government to improve as many fuel poor homes as reasonably practicable to 'Band B and C' energy efficiency standard by 2030.⁹ There are also interim fuel poverty milestones for 2020 and 2025, which involves getting as many fuel poor households as reasonably practicable into Band E and D respectively.

⁸ <https://www.gov.uk/government/collections/green-deal-and-energy-company-obligation-eco-statistics>

⁹ The methodology Government has developed for measuring progress against the target is known as the Fuel Poverty Energy Efficiency Rating (FPEER). More detail is available at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/332236/fpeer_methodology.pdf

3.16 We are currently considering the right long-term framework for the home energy efficiency market, and are working with the building industry and consumer groups on an improved value-for-money approach. The longer-term future of ECO is part of these considerations. The design of any future schemes beyond ECO, which runs until March 2017, will ensure that we meet our targets for homes insulated while also supporting our commitment to tackle fuel poverty and ensuring good value for money.

Recommendation 8

Implement commitments on Zero Carbon Homes for 2016: implement zero carbon standards without further weakening and ensure incentives are in place to encourage low-carbon heat sources.

3.17 As detailed in the Productivity Plan the Government will not implement zero carbon homes/standards. The zero carbon homes standard, in particular the Allowable Solutions carbon off-setting element, would have placed a significant regulatory burden on the house building industry.

3.18 In the last Parliament, the Government strengthened the energy efficiency requirements for new homes twice.

3.19 In regard to energy efficiency standards for new buildings, the Government must also meet its obligations set out in the European Commission's Energy Performance of Buildings Directive. As part of this the Government must report to the Commission in 2017 on whether energy performance standards for buildings are 'cost optimal' and must ensure that all new buildings are 'nearly zero energy buildings' from 2021.

Recommendation 9

Simplify policies for commercial energy efficiency: simplify and rationalise wide range of existing policies for commercial energy efficiency to strengthen incentives.

3.20 The Government recognises business concerns around the complexity of the business energy efficiency tax and regulatory environment. We are committed to creating a sustainable system that is fair, simple and supports growth, as well as ensuring business continue to play their part in the transition to a low carbon economy.

3.21 At the Summer Budget the Chancellor announced a review looking at business energy efficiency taxes. This review, the consultation for which was published this autumn, aims to make things simpler for businesses, strengthen the incentives for them to save energy, and boost productivity. The review considers the Climate Change Levy (CCL), CRC energy efficiency scheme and their interaction with other business energy efficiency policies and regulations.

Chapter 4: Progress reducing emissions from industry

Policy Approach

4.1 The Government is continuing to work collaboratively with industry and academia to promote and support emissions reductions in the industrial sector whilst ensuring that UK industry remains competitive. We welcome the provisional figures for 2014, outlined in the CCC's report, which indicate that industrial output grew whilst energy consumption and emissions fell.

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

4.3 The Renewable Heat Incentive (RHI) continues to deliver emissions reductions in industry. It is funded through general taxation and has an agreed budget until the end of March 2016. As part of the Spending Review, we will take decisions on future budgets.

4.4 The Climate Change Agreements Scheme is a voluntary scheme introduced in 2001 allowing eligible energy-intensive sectors to receive a reduction in the Climate Change Levy of 90% on electricity and 65% on other fuels if they sign up to stretching energy efficiency improvement targets agreed with the Government.

4.5 Based on participation at the start of the new scheme in 2013, if all participants were to meet their targets, this would reduce emissions of carbon dioxide by 19 MtCO₂e and reduce primary energy consumption by

approximately 100TWh compared with 2008 levels.

4.6 We have previously signalled that CCA targets will be reviewed in 2016. The Government has decided to delay the target review given the announcement in July 2015 that we will review the business energy efficiency tax landscape and will consider approaches to the effectiveness of incentives to save energy and carbon.

4.7 As referenced in Chapter 3, this review will also cover commercial energy efficiency. A new date for the target review will be announced in due course.

4.8 We set up the Electricity Demand Reduction (EDR) pilot scheme to test whether projects that deliver lasting electricity savings at peak could in future compete for funding with generation, demand side response (DSR) and storage in the Capacity Market.

4.9 The Industrial 2050 Roadmaps project (March 2015), set out pathways as to how the eight largest heat using industrial sectors can use decarbonisation and energy efficiency measures to reduce carbon emissions while remaining competitive. The eight sectors are: Cement, Ceramics, Chemicals, Food & Drink, Glass, Iron & Steel, Oil Refining and Pulp & Paper. Collectively, these sectors employ around 2% of UK workforce, contributing £50bn to the economy per year, and are responsible for two thirds of industrial emissions.

Response to CCC recommendations

Recommendation 10

Develop joint work with industry into action plans: publish plans setting out specific actions and clear milestones to move abatement efforts forward along the paths developed with industry in the “Roadmaps”.

4.10 We agree with the CCC’s recommendation and are progressing to the next stage of the Industry 2050 Roadmaps project, working with representatives from the eight industry sectors, relevant NGOs and stakeholders from academia, to develop Action Plans for each sector.

4.11 The development of a series of Action Plans will help Energy Intensive Industries identify measures that can reduce carbon emissions, increase energy efficiency and contribute to our carbon reduction targets while remaining competitive. Budget is available in 2015/16 to develop our approach. Implementation beyond 2015/16 is dependent on funding decisions as part of the Spending Review.

Recommendation 11

Complete roll-out of “Roadmaps” to other industrial sectors: taking account of lessons learned, roll-out roadmaps to industrial sectors not covered in first wave.

4.12 The Government is focusing effort in the areas which have the biggest impact. The eight industries covered to date have been prioritised because collectively they are responsible for two thirds of all industrial emissions. As set out above, the next stage of this work is to draw up a series of Action Plans for each of the eight industries covered by the project.

4.13 We agree that successful development of the Action Plans and associated deliverables will create knowledge and experience that could benefit a future roll out of the roadmap approach to more industries.

Recommendation 12

Join-up industrial CCS with power sector projects: set an approach to commercialisation of industrial CCS alongside the approach adopted for the power sector, including ensuring industry can link into planned infrastructure.

4.14 The Government recognises industrial CCS as a key option for significant carbon abatement in Energy Intensive Industries. This was demonstrated by the Industrial 2050 Roadmaps project which concluded that industrial CCS has a key role to play in the long term decarbonisation and competitiveness of some of the largest heat-using industrial sectors. We agree with the CCC that any industrial CCS programme would need to be considered in the context of our work on power CCS. No decisions have yet been taken on future work programmes, which are subject to the Spending Review.

4.15 The Government has supported the development of industrial CCS in two main ways over the last two years:

- by commissioning and publishing research into industrial CCS technologies and costs and then their potential role in reducing carbon emissions in industry, through a Techno-Economic report on industrial CCS (2014) and the Industrial 2050 Roadmaps (2015); and
- by granting £1m to Tees Valley Unlimited, a Local Enterprise Partnership, to undertake engineering and commercial studies into the scope for industrial CCS on Teesside.

4.16 As set out in the Coalition Government's CCS publication, Next Steps in CCS: Policy Scoping Document, the Government will be using the findings from all this work in considering the options for deployment of industrial CCS and the role it could play in future in the UK.¹⁰

4.17 The £1bn competition to commercialise CCS from power stations could deliver key infrastructure and learning to facilitate cost effective deployment of industrial CCS. While considerable knowledge and experience can be transferred from the power generation sector's development of carbon capture technologies to Energy Intensive Industries, there are also unique challenges in relation to suitable capture technologies, sector specific commercial considerations, and potential impacts on end products' cost and quality.

Recommendation 13

Evaluate effectiveness of compensation to at-risk industries for low-carbon policies: independent evaluation of industries that are at-risk and effectiveness of the compensation framework.

4.18 A number of compensation schemes are in place to compensate Energy Intensive Industries for the indirect costs of energy and climate change policies. These are currently scheduled to be in place until 2019/2020.

4.19 We are committed to ensuring value for money. To fulfil this, in September 2014 we commissioned an independent evaluation of the process and impact of the Energy Intensive Industry compensation schemes. The first phase, covering the scheme process and procedures, has now concluded. The second phase, examining the impact of

compensation using application data, began in early 2015 and the full report is expected by the end of 2015.

4.20 Climate change and energy policy costs can increase the risk of 'carbon leakage', the relocation of businesses or new investments to jurisdictions with less restriction on carbon emissions which results in an increase in global emissions overall. The Government has introduced a relief package for those businesses most affected by the rising cost of electricity. The main sectors currently benefiting from relief are iron and steel, paper, and organic and inorganic chemicals.

4.21 Fifty-six different businesses have received a total of £121.1m in compensation since August 2013 – £62.6m in compensation for costs related to the EU Emissions Trading System and £58.5m related to the Carbon Price Support mechanism week commencing 24 August 2015. Further relief measures are being considered by the European Commission.

¹⁰ Published in March 2015, the Next Steps in CCS: Policy Scoping Document can be found at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/341995/Final_Version_Policy_Scoping_Document_PSD.pdf



Chapter 5: Progress on emissions from transport

Policy Approach

5.1 We remain committed to delivering significant emissions reductions in the transport sector out to 2050. We will continue to address emissions from conventional vehicles, whilst accelerating the deployment of ultra-low emission vehicles (ULEVs) with the ultimate aim of almost every car and van being a zero emission vehicle by 2050.

5.2 The UK continues to make strong progress on the emissions performance of new cars. In 2014, the average tailpipe emissions of new cars registered in UK was 124.6g CO₂/km, a 2.9% reduction from 2013 and drop of 24% from 2007 (164.7 CO₂/km).¹¹

5.3 Examples of UK policies that target emissions from conventional vehicles are as follows:

- **Local Sustainable Transport Fund:** a fund to support sustainable travel investments by Local Government in England.
- **The Renewables Transport Fuel Obligation (RTFO):** under the RTFO, suppliers of transport and non-road mobile machinery fuel in the UK must be able to show that 4.75% of the fuel they supply comes from renewable and sustainable sources.

5.4 The Government will spend over £500m over the next five years to drive the uptake of ultra-low emission vehicles.

5.5 The UK is already performing well when compared internationally – we have the second largest market after the USA in sales of the best-selling EV, the Nissan LEAF, and the highest number of registrations of ULEVs in the EU in 2014. Examples of UK policies driving the uptake of ULEVs are as follows:

- **Plug-in Car Grant:** provides a discount on the upfront-cost of an eligible ultra-low emission car, currently worth £5,000 or 35%. It was confirmed in August that the grants would remain at the same level until March 2016.
- **Plug-in Van Grant:** provides up to £8,000 or 20% of the upfront cost of an eligible ultra-low emission van.
- **Electric Vehicle Homecharge Scheme:** provides up to 75% or £700 of the capital costs associated with installing and commissioning a domestic charge point.
- **Low Carbon Truck Trial:** the Government is helping operators establish and run fleets of low carbon heavy goods vehicles (HGVs).
- **The Ultra-Low Emission Taxi fund:** will provide up to £20m for local authorities across the UK to reduce the upfront cost of purpose-built taxis and to install charging infrastructure for taxi and private hire use.

¹¹ Society of Motor Manufacturers and Traders (SMMT), *New Car CO₂ Report 2015*.

Response to CCC recommendations

Recommendation 14

Provide motor industry with greater certainty to 2030: push for clear, stretching 2030 EU targets for new cars and vans that take account of the need for ultra-low emission vehicles and use realistic testing procedures.

5.6 Our aim is for almost every car and van to be a zero emission vehicle by 2050. To this end we want to build on the effective existing EU regulation on new car and van tailpipe emissions to 2020.

5.7 Since their introduction, EU tailpipe regulations have proven highly effective in improving fuel efficiency, reducing running costs for consumers and significantly cutting CO₂ emissions from road transport. They have provided a stable environment for vehicle manufacturers and technology suppliers to make essential long-term investments in low carbon technology innovation, research and development and supported the introduction of ULEVs to the market.

5.8 The European Commission is working towards replacing the current European testing procedure for fuel consumption and CO₂ emissions of cars – the New European Driving Cycle (NEDC) – with the newly developed Worldwide harmonized Light-duty vehicles Test Procedure (WLTP), by Autumn 2017. This new test procedure should better reflect modern vehicles' design and driving patterns and give a more accurate assessment of the impact of the latest technologies on fuel consumption and CO₂ emissions. The UK has been heavily involved in the development of this new testing procedure and supports the introduction of more representative testing of CO₂ emissions in accordance with the Commissioner's timetable.

Recommendation 15

Tackle barriers to Electric Vehicle uptake: maintain support for upfront costs while they remain more expensive than conventional vehicles; provide a national network of charge points and roll-out local incentives such as access to parking.

5.9 We recognise the value of tackling barriers to uptake of these vehicles, supporting consumers to overcome upfront costs, providing fiscal incentives, supporting charging infrastructure and encouraging targeted local measures.

5.10 The "Go Ultra Low" communications campaign targets potential ULEV buyers and aims to improve consumers' awareness and understanding. It addresses popular myths and provides clear, accessible information on ULEV costs and usage.

5.11 Over the next five years the Government will continue to provide support for consumers as part of its £500m package of investment for ULEVs.

5.12 The Government will also continue to support recharging infrastructure to underpin the uptake of ULEVs, for example:

- the Electric Vehicle Homecharge Scheme (EVHS);
- funding to develop an initial network of 12 hydrogen refuelling stations, to support the arrival of fuel cell vehicles in the UK in 2015;
- the Road Investment Strategy for Highways England announced £15m to ensure that drivers on the Strategic Road Network are never more than 20 miles from a charge point.

5.13 Local incentives, such as access to parking and electric vehicle car clubs, are being encouraged through the £35m *Go Ultra Low* City scheme, which aims to create two to four exemplar cities and help spread

best practice. The Office for Low Emission Vehicles also continues to work with local authorities and other stakeholders on the types of local incentives highlighted by the CCC. For example, support is being provided for the deployment of ULEVs in public sector fleets and local authorities, and transport operators will be assisted to shift their bus and taxi fleets to ULEVs. Significant funding for ULEV-related research and development is awarded through InnovateUK, to encourage further technological progress and incentivise industrial investment in the UK.

Recommendation 16

Ensure the tax regime keeps pace with technological change: align existing fiscal levers (e.g. Vehicle Excise Duty) to ongoing improvements in new vehicle CO₂, including a greater differentiation between rates for high and low emission vehicles.

5.14 The Summer Budget 2015 announced that Vehicle Excise Duty (VED) is being reformed for cars first registered from April 2017 onwards. The reformed VED system strengthens environmental incentives to purchase the very cleanest cars which we expect to be essential for both long-term achievement of UK carbon budgets and for delivery of air quality objectives.

5.15 First year VED in the reformed system is clearly based on environmental standards, and evidence from car purchase decisions across Europe suggests this is when the environmental signals are most effective in influencing people's choice of car. It creates five new First Year Rate bands in the 0–100 gCO₂/km range to distinguish between zero-emission cars, Plug-In and hybrid vehicles and efficient conventionally fuelled cars. The very cleanest zero-emission cars will pay nothing while rates on the most polluting cars will be significantly increased.

5.16 For all subsequent years the reformed VED system moves to a flat Standard Rate for all cars except zero-emission cars, which continue to pay nothing and the most expensive cars, which pay a Standard Rate supplement. Zero emission cars are particularly incentivised as their uptake will drive the greatest reduction in carbon emissions reductions and air quality pollutants.

Recommendation 17

Extend successful emissions-reduction schemes for freight operations: larger freight operators have pioneered schemes to reduce fuel costs and emissions that should be rolled out across the industry, including small operators.

5.17 The Government supports the role of industry-led schemes such as the Logistics Carbon Reduction Scheme (LCRS) in reducing heavy duty vehicle (HDV) emissions, and has endorsed the LCRS as a way for industry to record, report and reduce emissions from freight without the need for regulation or additional taxation. The LCRS is projected to reduce CO₂ emissions by around 7% against the 2010 baseline (CO₂e per vkm).

5.18 We welcome the CCC's recommendation that emissions-reduction schemes should be rolled out more widely across industry. However at this time we consider that such schemes should continue to be voluntary and industry-led. We recognise the challenge of engaging smaller operators and acknowledge that there may be a role here for the Government in supporting wider roll-out to encourage industry buy-in. We will consider this issue further through the Low Emission HGV task force, which includes representation of smaller vehicle fleet operators.

5.19 The Government is also supporting and part-funding the Low Carbon Vehicle Partnership (LowCVP) in developing an accreditation scheme for fuel saving technologies. The scheme will verify fuel savings of a range of retrofit technologies, so operators (of any size) have confidence that investment will be cost-effective. The Government will support the roll-out of this scheme (expected in 2016) and will work to raise industry awareness.

5.20 The UK also supports wider initiatives to reduce freight emissions. Following publication of an EU Strategy for reducing fuel consumption and CO₂ emissions from HDVs, the European Commission is making progress in developing regulatory proposals to reduce the lack of transparency around the CO₂ emitted by heavier vehicles. Manufacturers will be required to certify and report on whole vehicle CO₂ emissions to inform the market and allow comparability to stimulate consumer awareness and competition among manufacturers. We are supporting the development of these proposals within the technical working groups and recognise the current difficulties in measuring and verifying emissions from these vehicles.

Recommendation 18

Ensure lessons from schemes to reduce travel demand are applied: sustainable travel schemes should be properly evaluated and extended if they provide cost-effective emissions reductions.

5.21 The Government has a commitment to double the number of journeys made by bicycle and to make cycling safer to reduce the number of cyclists and other road users killed or injured on the roads every year. This will be addressed through the development and delivery of the first Cycling and Walking Investment Strategy which, following the Infrastructure Act

2015, the Secretary of State for Transport now has a legal obligation to produce and finance. This builds on the Local Sustainable Transport Fund (LSTF) 2010–2015 which allocated £600m capital and revenue funding to 96 projects delivered by 77 local authorities. As part of the LSTF funding allocation process, monitoring of delivery was part of the criteria for awarding grants. A monitoring and evaluation framework for the LSTF was published in December 2013; this sets out the Department's expectations in relation to the evaluation of LSTF schemes from 2011–2015. We agree to the recommendation to ensure lessons from schemes to reduce travel demand are applied and that sustainable travel schemes should be properly evaluated, and are working with the twelve largest projects to ensure proportionate evaluation is completed. An annual report for the LSTF for 2013/14 was published in February. An interim meta-analysis of the outcomes of the 12 largest LSTF projects has been commissioned and is in progress.

5.22 We have also supported the delivery of five capability-building workshops, which have been aimed at sharing good practice and learning lessons from scheme delivery, and have played a key role in the delivery of three large-scale sustainable transport conferences.

5.23 Schemes which provide cost-effective emission reductions have the potential to be extended, but this is subject to future funding being available and is a matter for the local transport authority to decide.

Recommendation 19

Publish an effective policy framework for aviation emissions: plan for UK 2050 emissions at 2005 levels (implying around a 60% increase in demand) and push for strong international and EU policies.

5.24 International aviation emissions are not currently included within the UK's 2050 emissions target as defined by the Climate Change Act, or within the four carbon budgets.

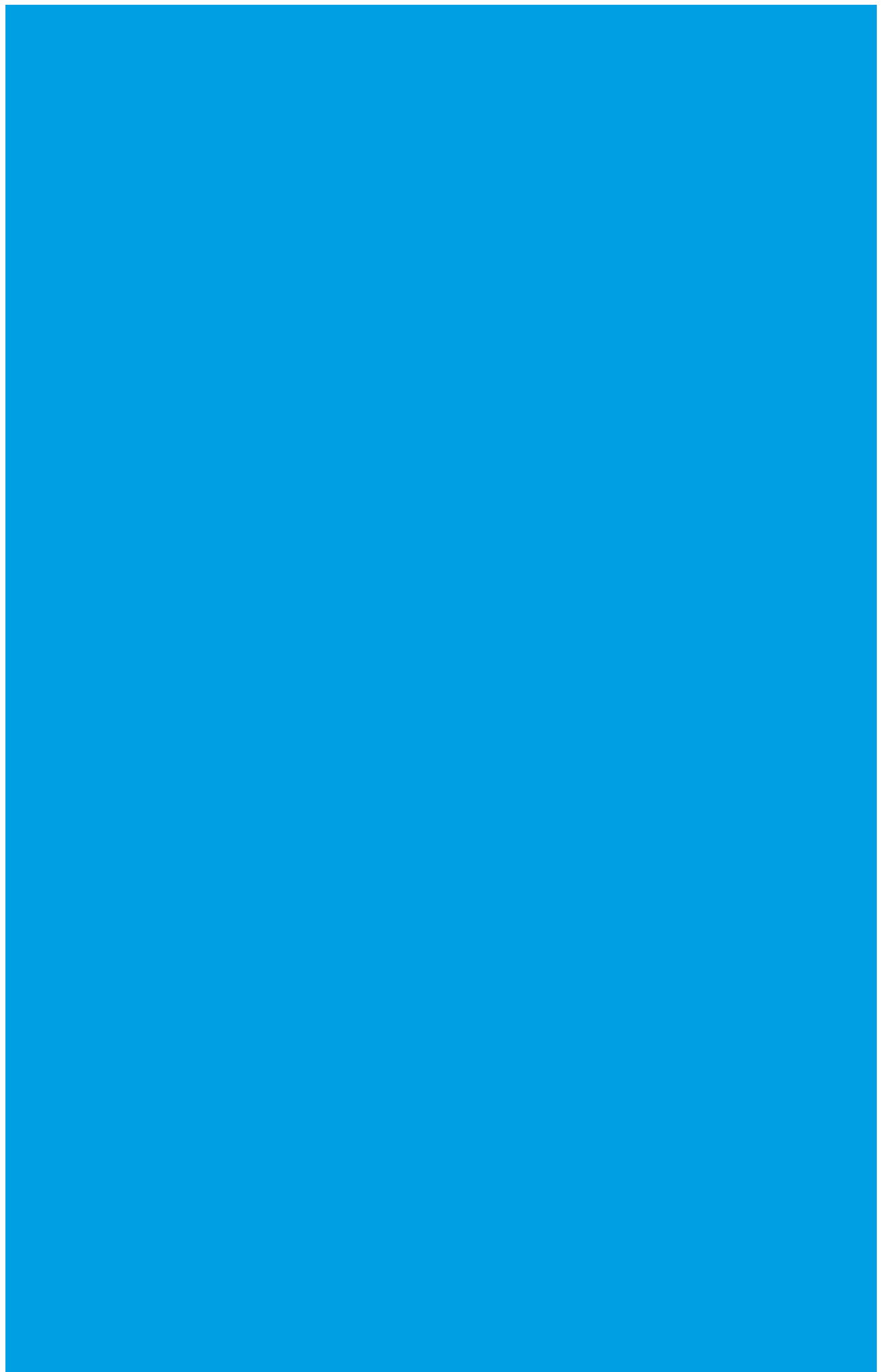
5.25 However the Climate Change Act says that we must "take into account" the "estimated amount of reportable emissions from international aviation for the budgetary period or periods in question". In practice this has meant that the budgets for other sectors have been constrained so that, to 2027, the UK is on a trajectory that could be consistent with a 2050 target that includes emissions from international aviation.

5.26 Given the international nature of aviation, the Government believes that action at the global level is the most effective means of tackling aviation emissions. Consequently, we are working hard through the International Civil Aviation Organisation (ICAO) to try to secure agreement on a global market-based measure (GMBM) to reduce aviation emissions.

5.27 In 2013 the ICAO Assembly adopted a Climate Change Resolution, which agreed to develop a global market-based measure to tackle emissions from international aviation as well as a work programme to finalise its design, for implementation from 2020. A decision to implement a GMBM will be taken at the next ICAO Assembly in 2016. The measure is one of a basket of measures ICAO hopes to adopt to achieve its goal of carbon neutral growth from 2020 for international aviation.

5.28 In the meantime – until effective action is taken globally – the Government supports the use of regional measures, in particular the EU Emissions Trading System. The Aviation EU Emissions Trading System is a regional EU cap-and-trade scheme that came into force in 2012.

5.29 The Government is also supportive of action taken by industry to reduce carbon emissions through greater use of advanced biofuels and improved operational efficiency.



Chapter 6: Progress on reducing emissions from agriculture, land use and forestry

6.1 The UK is committed to reducing greenhouse gas emissions from the agriculture, forestry and land management sectors.

6.2 The Government is working to support industry to improve efficiency in production and resource use to deliver both reductions in emissions and sustainable growth in the sector. Our collaborative approach is at the centre of the developing 25 Year Food & Farming plan to improve competitiveness across the entire food chain, helping the UK to become one of the most innovative food nations in the world.

6.3 We know that decisions to further reduce emissions in the sector needs to be made on robust and effective evidence. Our work to improve how emissions are reported and our support for the industry-led review of their emission reduction plan are necessary first steps in knowing what role the sectors can play during the 2020s and beyond.

Agriculture

6.4 The agriculture sector is one of the sectors most clearly exposed to the risks of climate change and it also has a role to play in reducing emissions. As such it is important for work with the agriculture sector to both reduce emissions and prepare for the impacts that cannot be avoided.

6.5 The current UK agricultural greenhouse gases inventory model uses IPCC methods that do not capture all of the

mitigation activities of UK agriculture. Farm management options that increase efficiency and reduce emissions are not currently captured. In order to address this, a new approach to collecting inventory data is in development by Defra and the Devolved Administrations via a five year research programme. This 'SMART' inventory programme is valued in excess of £12.5m and once the research programme is complete the SMART inventory will be implemented operationally under our inventory delivery contract.

Land use, land use change and forestry

6.6 The Government acknowledges the important roles of woodland expansion and peatland restoration in delivering emission savings and welcomes recognition of the plans to increase woodland creation rates in England and the Devolved Administrations. Active management and restoration of these assets will also increase resilience to climate change protecting these carbon stores.

6.7 Woodland cover in the UK has increased, year on year, from 2.92 million hectares in 1998 to 3.15 million hectares in 2015, largely as a result of Rural Development Programme funded woodland grant schemes in England and the Devolved Administrations.

6.8 In England, the Government aims to fund the planting of 2,000 hectares of new woodland per year for the next five years through the Countryside Stewardship grant

scheme, in line with our commitment to plant 11 million trees over the course of this Parliament.

6.9 The strong regulatory framework for forestry, including Felling Licence Regulations and Environmental Impact Assessment (Forestry) Regulations provides protection for existing woodland and ensures that the impact of woodland creation proposals on the environment, existing land use and associated cultural context is a consideration of the consenting process.

6.10 Now that the Intergovernmental Panel on Climate Change (IPCC) has published their methodology for capturing emissions and removals from peatland drainage and restoration, we are aiming to include these in the UK greenhouse gas inventory as soon as possible. To this end, Government research is developing an operational framework to implement the methodology. This will report in 2016. We will be exploring soil protection issues, including peatlands, during the development of the Framework for Action on the Environment.

Response to CCC recommendations

Recommendation 20

Deliver the SMART inventory to current timeline: the SMART inventory is essential for effective measurement of emissions from agriculture and should be delivered in 2016, without further delays.

6.11 The Government welcomes the Committee's acknowledgement that our SMART inventory programme is essential for monitoring progress on emissions mitigation from the sector. The UK has invested over £12.5m over 5 years on research and development in order to develop our agricultural greenhouse gas accounting system to reflect the soils, climates and

farming systems typical of UK agriculture. This objective of this research is to inform a new SMART inventory model that is capable of capturing on farm management measures that reduce greenhouse gas emissions.

6.12 The programme was scheduled to complete in July 2015, but technical challenges have delayed development. While we are not in a position to implement the SMART inventory in 2016, we will be implementing improvements for emissions of nitrous oxide from soils that are more representative of UK conditions. We will implement the complete SMART inventory model in spring 2017.

Recommendation 21

Strengthen the current voluntary approach to reduce agricultural emissions: farming industry to develop robust indicators to properly evaluate the GHG Action Plan. Government to consider stronger measures as part of its 2016 review if these cannot assess the effectiveness of the existing scheme.

6.13 The Government agrees with the Committee that robust indicators are needed to evaluate the effectiveness of the Greenhouse Gas Action Plan (GHGAP). The Government is working closely with the GHGAP task force, made of leading industry stakeholders, to review and identify what the best indicators are and how they can be effectively employed.

6.14 The GHGAP review in 2016 will assess the progress and effectiveness of the agricultural industry voluntary approach to reducing greenhouse gas emissions. It will capture the lessons learned in achieving emission reductions, evaluate the potential for the action plan to go further to improve existing abatement measures and provide positive recommendations for moving forward with new opportunities to increase mitigation potential.

6.15 The Government will consider stronger measures as part of its 2016 review, if appropriate indicators cannot be identified to assess the effectiveness of the existing scheme. However, we must work with industry to develop an effective and mutually acceptable solution, before considering options that might require us to impose measures.

Recommendation 22

Co-ordinate effort to reduce emissions from agriculture and forestry: ensure measures being implemented across the four nations are feasible, cost-effective and consistent with UK carbon budgets.

6.16 The Government agrees that there are opportunities to deliver abatement through rural land use. This is not a simple process, requiring that biodiversity, food/timber production, landscape and cultural issues are taken into account, alongside the ability to reduce greenhouse gas emissions. Existing regulatory processes balance these different objectives, while the work of the Natural Capital Committee sets out the additional social, economic and environmental benefits provided by new woodland, and where these might be maximised.

6.17 Although forestry and agriculture are both devolved matters, all four countries see significant opportunities for woodland expansion, in part to help meet carbon budgets. This is set out in their respective forestry policies and Rural Development Programmes. Projections of future planting rates and associated greenhouse gas removals that arise from these policies, strategies and programmes are co-ordinated through the Scientific Steering Group for the UK's LULUCF greenhouse gas inventory and more broadly through the National Inventory Steering Committee. This involves a continual process of improvement to the models underpinning the inventory,

the assumptions used within the models and to the policy scenarios to ensure that emissions reductions are achievable and cost-effective. For example, Defra and the Devolved Administrations have co-funded the greenhouse gas Research and Development Platform to develop improved metrics and accounting mechanisms for agricultural greenhouse gas emissions.

6.18 We agree that there is scope for England, Scotland, Wales and Northern Ireland to collaborate further and learn from one another in the delivery of carbon abatement alongside other economic, environmental and social objectives. The Government also agrees that measures must be affordable and realistic and this is why cost-effectiveness and the ability to meet any targets are at the heart of the analysis supporting the setting of the fifth carbon budget.



Chapter 7: Progress on reducing emissions from waste and F gases

Policy Approach

Waste

7.1 The Government is committed to delivering a sustainable and more circular economy, to continue to maximise the opportunities for economic growth and environmental improvement, while protecting human health. It is therefore essential that we make the best use of our resources, maximising the lifetime and value of our products.

7.2 The Government is not complacent at the success of reducing emissions in this sector to date. It will continue to support businesses and provide the right framework to ensure that we make the best use of materials and resources, prevent and deal with waste and recycle properly.

- **Landfill tax** has been a major driver behind reducing the amount of waste sent to landfill and towards other potential destinations such as recycling and recovery of waste materials. Under the EU Landfill Directive the UK has targets to reduce the amount of biodegradable municipal waste to 35% of that in 1995. Data published last year shows that in 2012 the UK had reduced this to 29% of 1995 levels.
- **Food waste prevention** voluntary agreements include the food retail and manufacturing sector (Courtauld Commitment) and the hospitality and food service sector (HAFSA), along with

the campaign 'Love Food Hate Waste', led by the Waste & Resources Action Programme (WRAP). This voluntary approach is working and the Courtauld Commitment has contributed to a 15% reduction in household food waste between 2007 and 2012, representing an overall reduction in household food waste of 1.3 million tonnes over this period.

7.3 Considerable progress has been made in improving recycling of all materials (including bio-degradable) since 2000/1, with the rate of recycling from households in England increasing almost four fold from around 11% to 43% in 2013/14, with 64.6% of packaging waste also recycled as a result of our packaging targets in 2012/13. Much of this might otherwise have gone to landfill. The latest UK 'waste from households' recycling rate, which is the official measure used to report against the EU target to recycle 50% of household waste by 2020, reached 43.9% in 2012.

7.4 The Government is committed to meeting the EU target of recycling 50% of household waste by 2020. We will continue to work with local authorities and industry to promote good practice and look at how recycling can be made more convenient for residents. Projections are highly uncertain and we intend to work with WRAP and other partners to promote further recycling.

F gases

7.5 The new EU Fluorinated Greenhouse Gases Regulation came into force in January 2015 and the Government moved quickly to introduce domestic legislation to enforce its requirements, which include:

- A 79% cut in F gases on the EU market between 2015 and 2035, leading to an 81% reduction in UK F gas emissions in CO₂ equivalent between 2013 and 2035;¹²
- Banning the use of F gases in certain uses where less harmful alternatives are widely available;
- Reducing emissions from existing equipment by requiring leak checks, ensuring, in most cases, that F gases are only sold to and used by qualified personnel and that gases are recovered at the end of the equipment's life.

Response to CCC recommendations

Recommendation 23

Scotland, England, Wales and Northern Ireland to set out approaches to increase methane capture rates: as a devolved matter, each nation should set out specific actions and clear milestones.

7.6 We accept the Committee's recommendation – the UK Government and the Devolved Administrations are already taking this work forward. Modern UK landfill sites utilise the best available technology and have the second highest capture rate in Europe. Significant investment has been made by the UK and Devolved Administrations to minimise emissions from landfill sites.

England

7.7 Efforts have been targeted at operational landfills as these sites contribute the major portion of the total UK landfill emissions. The Environment Agency's programme of technical reviews benchmark the worst performing operational landfills against industry best practice to maximise methane capture. Defra and the Environment Agency have also carried out world-leading research on measurement of landfill methane emissions, which will improve future prioritisation and evaluation of mitigation activities. In addition, Project ACUMEN (Assessing, Capturing and Utilising Methane from Expired and Non-Operational Landfills) looked at options to reduce emissions from closed landfills.

7.8 This work has led to significant improvements in our evidence base, which have been reflected in updates to the model that estimates UK landfill emissions. There were greenhouse gas inventory methodological improvements for methane formation, flaring treatment, decay rates and landfill gas engine efficiency. The results of this indicate landfill emissions were significantly higher in 1990 but lower in 2012 than previously estimated.

Recommendation 24

Reduce biodegradable waste to landfill: each nation should set out specific actions and clear milestones – including England – to further reduce biodegradable waste to landfill.

7.9 The Government recognises the need to build on the progress made to date and go further to reduce biodegradable waste to landfill. The most effective way to reduce food waste to landfill is at the top of the hierarchy with waste prevention, the landfill tax has also been an important driver.

¹² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/453665/2015_Report_v1_6.pdf

7.10 For food waste, prevention is the most cost-effective option. Evidence suggests that each tonne of food waste that is not prevented has an average cost to consumers of £2,960/t. The Government will consider all options and will closely follow developments in the Devolved Administrations. Any decisions must be supported by robust evidence and take into account the social, environmental and financial costs and benefits.

7.11 We are working with food manufacturers and retailers to reduce food waste under the Courtauld Commitment, which is targeting a further 1.1 million tonnes of food and packaging waste reduction between 2012 and 2015. We have an agreement with the hospitality sector which includes restaurants, pubs and canteens.

7.12 We are helping households waste less and save money through the Love Food Hate Waste campaign. WRAP launched Love Food Hate Waste in ten cities across the UK in 2014 and it will run until 2016. The '10 cities' campaign works with a range of organisations in each city including local authorities, community groups, the public sector, local businesses, and the grocery industry to raise awareness and the development of practical skills through community cooking classes and guidance and initiatives to improve shopping habits and budgeting.

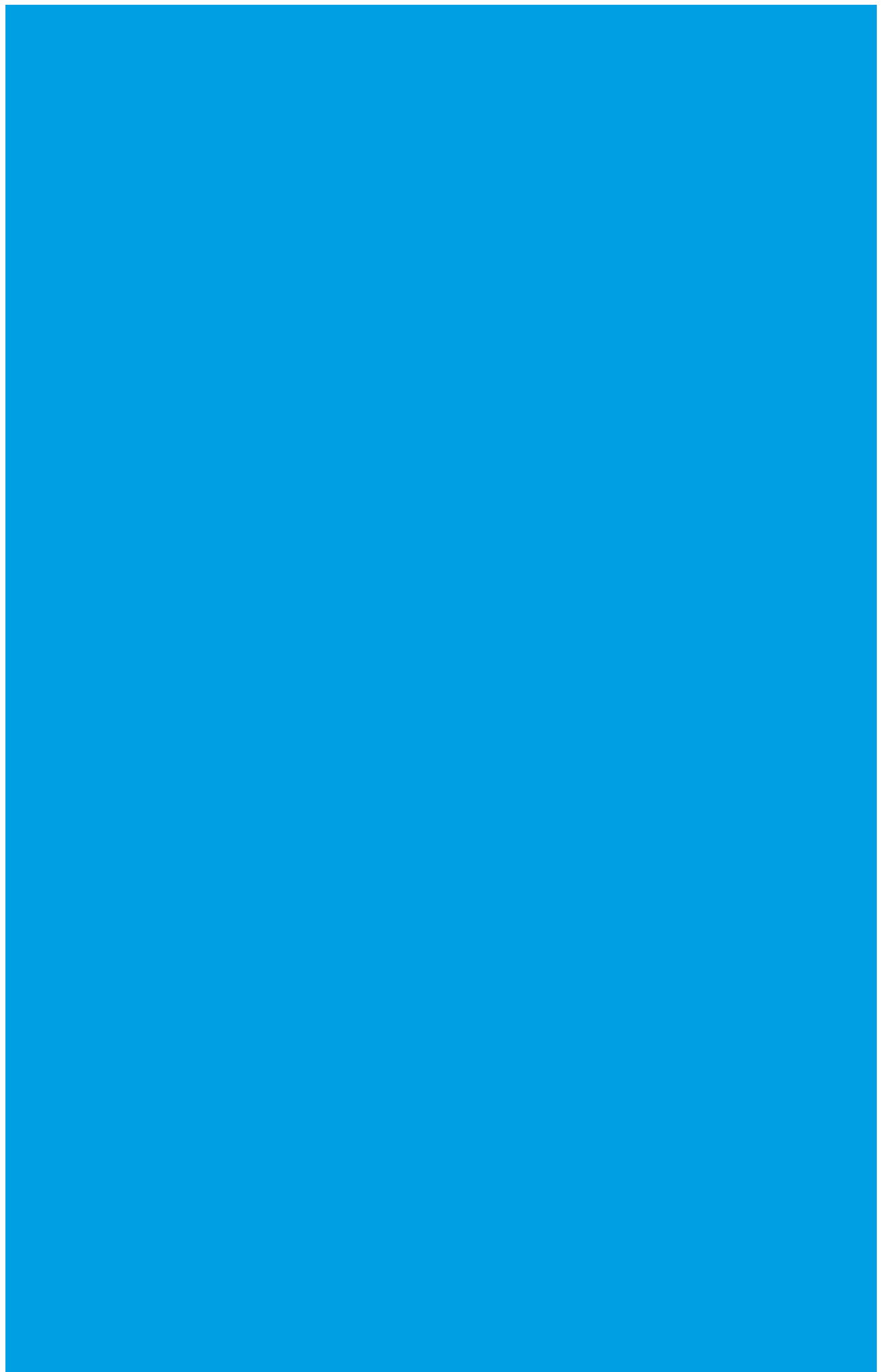
7.13 WRAP are currently developing proposals for Courtauld 2025, to promote action on grocery products with the highest environmental impact across the whole food supply chain, and reducing food waste will be a key element of these proposals. This will build on the success of the current voluntary agreements on food waste and will enable businesses to take increased ownership of these issues. We expect the success of these types of voluntary initiatives to inform proposals on the circular economy to be

made by the European Commission by the end of 2015.

Recommendation 25

Find opportunities to exceed regulatory minimums on F gas abatement: including clearly assessing and addressing barriers where evidence suggests cost-effective abatement above minimum standards.

7.14 From January 2015, the total quantity of F gases available in the EU is determined by the EU F gas Regulation and largely follows pre-determined reductions from the average quantity on the market between 2009 and 2012. The EU reduction schedule was deemed to be at the limit of what was technically feasible when it was set and will lead to very substantial cuts, culminating in an 81% reduction in UK emissions by 2035. Under this system, if the UK were to cut usage further or faster than the EU Regulation requires, then it would simply increase the F gases available in other EU countries, disadvantaging UK business without any net benefit for overall emissions. It is very likely that such unilateral UK action would be incompatible with EU single market rules, given that there would be no clear environmental benefit. Nevertheless, there are some F gas uses, such as medical dose inhalers and military equipment, which sit outside the EU quota system. The Government will examine whether worthwhile, cost-effective abatement measures exist in those areas as part of setting the fifth carbon budget in 2016.



Chapter 8: Devolved Administrations

Northern Ireland

Progress to date

8.1 The Northern Ireland Cross Departmental Working Group on Climate Change submitted its fourth annual progress report in May 2015 to the Executive on the performance of all departments in implementing the agreed Northern Ireland Greenhouse Gas Emissions Reduction – Action Plan. The Action Plan supports the achievement of the Programme for Government target, to continue to work towards a reduction in greenhouse gas emissions of at least 35% on 1990 levels by 2025.

8.2 The latest inventory reports that there has been a reduction in greenhouse gas emissions of 16% and the latest available projection data indicate that Northern Ireland is estimated to achieve a reduction of 33% by 2025.

8.3 The 7th CCC Annual Progress Report acknowledges the progress made in Northern Ireland in residential energy efficiency and fuel poverty schemes; towards achieving ambitious household waste recycling targets; the increasing use of low carbon fuels such as renewables and gas; and continued progress made developing infrastructure and markets for electric vehicles.

8.4 The partnership approach taken to develop voluntary agreements through which the Northern Ireland Environment Agency and

an organisation can explore opportunities for reducing environmental impacts in ways that create prosperity and wellbeing, continues to evolve. Discussions continue with interested organisations and to date three voluntary agreements have been signed that include environmental and emission reduction commitments and improve economic outcomes for the organisation.

Response to CCC recommendations

8.5 The Northern Ireland departments have agreed, with the exception of the ECO recommendation, to the inclusion of the CCC recommendations in the Northern Ireland Greenhouse Gas Emissions Reduction – Action Plan. This will give impetus to the action to be taken and provide for monitoring of the commitments.

Recommendation 7

Energy efficiency: set out the future of the Energy Company Obligation beyond 2017, ensuring it delivers energy efficiency while also meeting fuel poverty targets.

8.6 Energy efficiency is a devolved matter and the ECO does not apply in Northern Ireland. There are some similarities to the Northern Ireland Sustainable Energy Programme (NISEP) that will continue to operate until March 2017, with consideration being given to a new programme from April 2017 onwards.

8.7 There is benefit in being kept informed on thinking in relation to the design of any successor to ECO in Great Britain beyond 2017 and the possible implications for any new Northern Ireland programme.

Recommendation 22

Co-ordinate effort to reduce emissions from agriculture and forestry: ensure measures being implemented across the four nations are feasible, cost-effective and consistent with UK carbon budgets.

8.8 Co-ordination between the Devolved Administrations and Defra on agriculture has existed for some time. The Northern Ireland Executive's approach is localised with industry and environmental partners due to the export profile for the majority of Northern Ireland's agricultural produce. A similar suite of mitigation and adaptation measures as across the rest of the UK are promoted for uptake on a voluntary basis in Northern Ireland. The Northern Ireland Rural Development Programme 2014-2020 has a cross cutting climate change theme and will incentivise a range of measures including knowledge transfer, innovation, enhanced farm viability and better management of soils.

Recommendation 23

Scotland, England, Wales and Northern Ireland to set out approaches to increase methane capture rates: as a devolved matter, each nation should set out specific actions and clear milestones.

8.9 The Northern Ireland Environment Agency has worked with operators to maximise methane capture and reduce methane emissions from landfills in Northern Ireland. This has been achieved through permit conditions which require operators to capture and utilise landfill gas where viable and mitigate elsewhere. The NIEA will continue this work in relation to methane

capture. Future utilisation opportunities are limited by infrastructure and the recent changes in Renewable Obligations.

Recommendation 24

Reduce biodegradable waste to landfill: each nation should set out specific actions and clear milestones – including England – to further reduce biodegradable waste to landfill.

8.10 The Northern Ireland Landfill Allowance Scheme (NILAS) Regulations, which came into operation in 2005, place a statutory obligation on district councils, in each scheme year, to landfill no more than the quantity of Local Authority Collected Biodegradable Municipal Waste for which they have allowances. Northern Ireland Local Government reform resulted in the previous 26 Council area model being replaced with 11 new Council areas in April 2015. The Department reallocated the NILAS allowances to the new councils using the same approach used for the original allocations to the 26 councils in 2005 for each year up to 2020. Under the scheme, the amount of biodegradable waste going to landfill has fallen from 558k tonnes in 2005/06 to 229k tonnes in 2014/15.

8.11 In addition new regulations on food waste have recently been made. A provision banning the land filling of separately collected food waste came in operation in April 2015. Provisions requiring food businesses to make arrangements for the separate collection of their food waste and on councils to provide food waste receptacles for householders will come into effect in 2016 and 2017. The cumulative effect will be to significantly reduce the amount of food waste ending up in landfill.

Recommendation 33

Consider further action to facilitate heat networks: for example, obliging local authorities to connect to existing local networks and requiring consideration of network heat in new developments.

8.12 It should be noted that there are significant differences in the heating market between Northern Ireland and Great Britain. There are very few if any district heating networks, oil constitutes the heating fuel for the majority of homes and major investment has been focused on the expansion of the gas network. The draft Strategic Planning Policy Statement for Northern Ireland (SPPS) indicates that planning authorities should consider the energy and heat requirements of new developments when designating land and plan to make use of opportunities for decentralised or low carbon sources of heat and power wherever possible. The final draft of the SPPS was completed in March 2015 following a period of extensive engagement with key planning stakeholders. The Department aims to publish the SPPS in final form in the near future following Executive committee consideration.

Recommendation 34

Improve monitoring of agricultural emissions: following Defra's delivery of the Smart inventory, put in place local monitoring and process for acting on its findings.

8.13 The Northern Ireland Executive co-fund the development of the UK Agriculture greenhouse gas inventory which is due to be completed in 2016. Also, development of carbon intensity indicators, firstly in the dairy sector, is nearing finalisation and is based on dairy farm business data and an accredited carbon calculator. It is planned to use Intensity Indicators to help monitor and evaluate progress.

Recommendation 35

Address non-financial barriers for electric vehicles: including further measures which could be implemented such as parking, use of priority lanes, raising awareness and public procurement.

8.14 Northern Ireland is addressing potential barriers for electric vehicle use including seeking funding to help facilitate expansion of use, the introduction of transport policy measures to encourage the uptake of electric vehicles and providing further financial incentives for leasing or purchasing electric vehicles through dedicated schemes all supported by a robust marketing and communications strategy.

8.15 The Northern Ireland Executive notes that many policies and funding for emissions reduction programmes are due to expire and agrees with the CCC that steps will have to be taken by the UK Government during this Parliament to make sure targets to reduce emissions for the 2020s and beyond are achieved in a cost-effective way. Whilst many functions and responsibilities are devolved to the Northern Ireland Executive decisions on future policy at Westminster will have implications in Northern Ireland regards funding, legislation and attracting the investment necessary to ensure greenhouse gas emissions reduction targets and ambitions can be achieved.

Wales

Progress to date

8.16 The Welsh Government's latest Climate Change Annual Report was published in December 2014 and sets out the progress that has been made in reducing greenhouse gas emissions in Wales against their targets over the last year, as well as summarising some of the key actions taken to tackle

the causes and consequences of climate change.

8.17 The report sets out continued progress to meeting the Welsh Government's 3% annual emissions target for 2012.

8.18 For the longer term target to reduce all Welsh greenhouse gas emissions by 40% by 2020, total emissions in 2012 decreased by 18% against the 1990 baseline. Emissions increased by 5% over the year to 2012, relative to 2011. The two key factors behind this increase being firstly, a shift from natural gas back to coal in the energy sector due to the impact of changes in global fuel prices and secondly, the colder than average temperatures over the winter in 2012, compared to 2011. In setting out the contribution to the 3% target from each of the key sectors, the report shows that all sectors have reduced their emissions in comparison with the baseline for 2012, the reductions for each sector being as follows: Transport Sector (8.2%), Residential Sector (7.6%), Business Sector (16.7%), Agriculture and Land-use sector (1.2%), Resource Efficiency and Waste Sector (20.4%) and the Devolved Public Sector (3.1%).

8.19 In summary, the report further underlines the message that although some good progress is being made, further action is needed in order to deliver the target of a 40% reduction in total emissions by 2020. The Resource Efficiency and Waste Sector however shows what can be done. The implementation of Wales' Towards Zero Waste strategy has not only put Wales fourth in Europe in terms of recycling, but has also decreased emissions by 20.4% and supported significant economic benefit for Wales.

8.20 Wales' current legislative programme contains landmark pieces of legislation that further enshrine Wales' commitment to sustainable development and strengthen

efforts to tackle key intergenerational challenges like climate change.

8.21 The Well-being of Future Generations Act and Environment Bill builds on Wales' previous achievements as one of the first nations in the world with a constitutional duty on sustainable development.

8.22 The Act places sustainable development as the central organising principle of the public sector in Wales. It sets ambitious and long-term goals for a prosperous, resilient, healthier, more equal Wales based on sustainable development principles and linked to the UN Sustainable Development Goals. In putting these goals into law, it also establishes the role of a Future Generations Commissioner and aligns accountability against the achieving of the goals as the public sector's overarching purpose.

8.23 The Environment (Wales) Bill will put in place legislation to plan and manage Wales' resources in a sustainable and joined-up way. In doing so, it sets out requirements to manage, use and enhance Wales' natural resources sustainably, enshrining the ecosystem approach from the UN Convention on Biological Diversity which is essential to ensuring the resilience of ecosystems and tackling climate change. It also puts in place the legal framework for not only statutory emission reduction targets, but also carbon budgeting towards the goal of at least an 80% reduction by 2050. In addition the Bill further strengthens action on waste thereby further supporting the move to a more circular economy.

Response to CCC recommendations

Recommendation 7

Energy efficiency: set out the future of the Energy Company Obligation beyond 2017, ensuring it delivers energy efficiency while also meeting fuel poverty targets.

8.24 Wales will work closely with the UK Government in the design of any successor to the Energy Company Obligation post 2017.

Recommendation 22

Co-ordinate effort to reduce emissions from agriculture and forestry: ensure measures being implemented across the four nations are feasible, cost-effective and consistent with UK carbon budgets.

8.25 The Welsh Government's policy for woodlands and trees in Wales, "Woodlands for Wales", details the contribution that woodlands and trees can make to help Wales meet its carbon emission reduction targets. First, woodland in Wales is predicted to remain a net sink for atmospheric carbon and current sequestration from woodlands is estimated to be approximately 1,419,000 tonnes annually (Woodlands for Wales Indicators 2013/14). The Well-being of Future Generations (Wales) Act 2015 sets a statutory framework within which specified Welsh public authorities must set objectives to achieve well-being goals that include Wales's capacity to adapt to climate change. In addition, the Environment Bill, currently before the National Assembly for Wales, proposes a statutory framework for carbon budgeting in Wales. The well-being goals and the regime for carbon budgeting will act as an incentive for tree planting as the costs of using trees to remove carbon compare favourably with the costs of other abatement

options. Second, promoting the use of Welsh timber, including as an essential material for sustainable construction, will provide opportunities to substitute the use of other materials derived from or using fossil fuels in their production. The "Woodlands for Wales Action Plan" for the coming five years, which is in development, will detail actions to take both of these matters forward.

Recommendation 23

Scotland, England, Wales and Northern Ireland to set out approaches to increase methane capture rates: as a devolved matter, each nation should set out specific actions and clear milestones.

8.26 Natural Resources Wales is responsible for conducting technical reviews of landfills and working with operators to maximise the capture of methane gas.

8.27 In 2014/15, the focus of Natural Resources Wales (NRW) has been on delivering the requirements of the Landfill Directive at those sites which did not meet the conditions for definite closure. An important element of this definite closure programme is the production and management of landfill gas. Opportunities to maximise gas collection efficiencies at these sites are an integral part of this programme.

Recommendation 24

Reduce biodegradable waste to landfill: each nation should set out specific actions and clear milestones – including England – to further reduce biodegradable waste to landfill.

8.28 Direct greenhouse gas emissions from waste have reduced every year from 2009 to 2012, and the total reduction is 258 thousand tonnes over this period.

8.29 Wales is committed, through Towards Zero Waste, the waste strategy for

Wales, to reducing direct greenhouse gas emissions from the waste sector by diverting biodegradable waste from landfill to recycling, composting or anaerobic digestion.

Recommendation 29

Develop a heat strategy: build on UK evidence and approach to develop clear heat strategy for Wales including a renewable heat target.

8.30 Our understanding is that responsibility for heat policy is not devolved to Wales. However, renewable heat does form an important element of Welsh Government's approach to local energy which is set out in the Green Growth Wales: Local Energy document which was published in July.

8.31 The Welsh Government is working with the Heat Network Delivery Unit to develop opportunities for local authorities to invest in district heating. This far HNDU has provided practical support and funding to 7 authorities in Wales.

8.32 We are also working with UK Government on the comprehensive assessment of CHP, district heating and cooling. This will enable us to compare a range of efficient heating and cooling supply options in order to identify the most resource and cost-efficient solutions to meeting heating and cooling needs. A workshop is being held in Cardiff on 21 September to present the results of the assessment.

8.33 The Energy Technology Institute is working with Bridgend under the Smart System and Heat Programme. The ETI programme is developing a range of tools that can be used for the design of the local energy systems. This will enable Bridgend to develop a detailed local energy masterplan to inform local infrastructure investment decisions.

Recommendation 30

Prepare for higher ambition required of industry: plan ways to reduce industry emissions, including consideration of voluntary partnership agreements with industry and encouraging innovative solutions.

8.34 The Welsh Government is working with our Energy Intensive Industries to assist them in identifying measures to reduce both emissions and increase energy efficiency.

Recommendation 31

Address non-financial barriers for electric vehicles: including further measures which could be implemented such as parking, use of priority lanes, raising awareness and public procurement.

8.35 The Welsh Government's Minister for Economy, Science and Transport has established a Low Carbon Vehicle Expert Steering Group to advise on key interventions required for promoting low carbon vehicle usage in Wales, including electric. The Group is expected to report this Autumn with a number of financial and non-financial recommendations.

Recommendation 32

Meet tree planting targets: consider whether further measures are needed to ensure tree planting targets are met, and develop approach jointly with stakeholders and other devolved administrations.

8.36 The Welsh Government's policy (set out in Woodlands for Wales) is to avoid the unnecessary removal of woodland and to increase woodland cover in Wales in order to ensure that woodland can continue to provide a full range of ecosystem services and community benefits. The Wales Climate Change Strategy, published in 2010, contains

an aspiration to create 100,000 hectares (ha) of new woodland between 2010 and 2030 as a means to help Wales meet its carbon emission reduction targets. The aspiration was a key recommendation of the Land Use and Climate Change Group. The recommendation was accepted by the Welsh Government as a climate change target to achieve levels of reduction in Wales greenhouse gas emissions by long-term carbon sequestration.

8.37 The aspiration required planting of 5,000ha of additional woodland cover per annum from 2010 to 2030, a higher level of planting than any ever previously achieved in Wales, including the large scale planting during the 1950s and 1960s. In 2014, the Welsh Government commissioned ADAS to review the climate change target. ADAS recommended a reduction in the target to 50,000ha of woodland creation to be delivered over 25 years up to 2040.

8.38 Both the Land Use and Climate Change Group and ADAS recommendations envisage new woodland creation at a level that is much higher than the actual achievement over recent years: between 2010 and 2015, 2,245ha of woodland has been created in Wales. To encourage woodland creation, the Welsh Government's Rural Development Plan provides direct funding for woodland creation. In addition, the Welsh Government is encouraging co-operation between land owners in the public and private sectors to deliver additional tree planting.

8.39 In terms of direct funding, the Welsh Government opened the revised Glastir Woodland Creation Scheme at the earliest opportunity following the approval of the Rural Development Plan by the European Commission. The application window for the new Scheme has generated a significant increase in demand compared to previous years, reflecting improvements made to the

Scheme to increase its flexibility and interest to potential applicants.

8.40 The Welsh Government hopes that direct funding and encouraging co-operation will generate an average of 2,000ha of tree planting per annum over the next five years. The statutory changes made by the Well-being of Future Generations (Wales) Act 2015 and together with those proposed by the Environment Bill, including carbon budgeting, will help to further encourage tree planting in the future in the form of small areas of woodlands, hedgerow planting, community woodlands, shelter belts and urban planting to deliver a range of benefits to people and communities in Wales. This planting will deliver carbon sequestration and contribute towards Wales's climate change targets too.

Current initiatives

Energy Efficiency

8.41 Work on energy efficiency has demonstrated that action on climate change can drive economic growth whilst also tackling vulnerability and inequality. The Welsh Government's area based energy efficiency programmes and Warm Homes Programme have directly improved over 10,000 homes in some of the most deprived areas of Wales. These schemes work to reduce the number of households in fuel poverty – making homes warmer and more energy efficient – whilst also providing jobs and training for local people.

8.42 Programmes include the Arbed ERDF Project which has created more than 470 new jobs and provided over 60,000 hours of training to new and existing employees. This has helped to support a wider increase in employment in the energy and environment sector together with a 90% increase in sales since 2006, which saw it outperform the majority of other sectors in Wales as one of

the few sectors to have continually grown throughout the recession.

Recycling and circular economy

8.43 Wales is aiming to be a zero waste (100 per cent recycling) nation by 2050 and to recycle at least 70% of waste by 2025. In order to achieve this, statutory recycling targets have been set, which, coupled with an investment of up to £750 million to support local authorities to deliver next generation waste facilities.

8.44 This has seen Wales achieve the highest recycling rates in the United Kingdom and become 4th in Europe from a low initial starting point. Importantly, as well as significantly increasing recycling to 56%, work in the waste sector has significantly reduced emissions by 20.4% and delivered economic growth. The Welsh Government also anticipate savings against future costs of over £5.5 million on food waste and over £500 million on residual waste programmes.

Innovative financing

8.45 The Welsh Government is working to put in place the finance, support, innovation, skills and legislation to drive Green Growth and has already committed £5 million to the development of Green Growth Wales.

8.46 Green Growth Wales is developing a pipeline of projects encompassing renewable energy, resource efficiency and energy from waste, with the intention to raise significant levels of private finance to support those projects. These projects will provide new opportunities for businesses in Wales and protect and create jobs.

8.47 Building on our support of innovation, the Sêr Cymru programme (which means Welsh Stars) looks to enhance and build on the research capacity in Wales and has committed £50 million, which complements the £85 million capital investment in the

energy industry and wider climate change framework worth almost £164 million.

Transport

8.48 The Active Travel (Wales) Act 2013 is intended to enable more people to walk and cycle and generally travel by non-motorised transport. Making walking and cycling safer and more practical encourages healthier lifestyles, reduces carbon emissions and improves Wales' environment.

8.49 Work on delivery of the next phase of a modern, high-quality public transport Metro system for south east Wales could begin as early as 2017, estimated to cost £500-£600 million, to serve the growing public transportation needs of the Cardiff Capital City.

Scotland

Progress to date

8.50 Through the Climate Change (Scotland) Act 2009, Scotland has set ambitious greenhouse gas emissions reduction targets of at least 42% by 2020, and at least 80% by 2050 compared to the 1990/1995 baseline. Scotland's framework includes fixed annual targets ensuring that the Scottish Government is held to account by its legislature in each and every year.

8.51 As outlined in Low Carbon Scotland: Meeting the Emissions Reduction Targets 2013-2027, a comprehensive package of policies and measures is in place to meet Scotland's emission reduction targets, including expanding renewable energy production, improvements in energy and resource efficiency in households and industry, transition of transport to a lower carbon basis, expansion of renewable sources of heat, and sustainable land use.

8.52 Scottish Government official statistics published in June 2015 show that, in 2013, Scotland's emissions of greenhouse gases have fallen by 38.4% from the baseline, which is more than three quarters of the way towards the statutory target of a 42% reduction by 2020.¹³

8.53 The Committee on Climate Change produces a stand-alone progress report for the Scottish Government based on more detailed and extensive analysis of the progress against Scotland's own climate targets. The 2015 progress report, Reducing Emissions in Scotland, was published in March 2015 and highlights that Scotland has made good progress in a number of areas.

8.54 The Scottish progress report acknowledges there has been good progress in deploying renewable electricity generation capacity, in installing community and locally-owned energy projects and in rolling out area-based energy efficiency programmes, and recognises the challenges as a result of improvements in calculating estimated emissions which have made Scotland's fixed annual targets harder to reach. The Committee also makes a number of recommendations, including recommendations on strengthening policies for low-carbon heat, energy efficiency, and agriculture which are repeated in the UK progress report.

8.55 The response to the Scottish progress report highlights that the Scottish Government is looking at a range of measures across Ministerial portfolios which could strengthen the comprehensive package of emissions reductions measures already in place. This was followed in June 2015 by an announcement of a comprehensive new package of measures

covering transport, environment and energy, including designating energy efficiency of Scotland's buildings a National Infrastructure priority.

Response to CCC recommendations

8.56 The UK progress report contains four recommendations addressed jointly to the UK Government and the Devolved Administrations, and the Scottish Government position on these is outlined below:

Recommendation 7

Energy efficiency: set out the future of the Energy Company Obligation beyond 2017, ensuring it delivers energy efficiency while also meeting fuel poverty targets.

8.57 Scotland will work closely with the UK Government in the design of any successor to the Energy Company Obligation post 2017.

Recommendation 22

Co-ordinate effort to reduce emissions from agriculture and forestry: ensure measures being implemented across the four nations are feasible, cost-effective and consistent with UK carbon budgets.

8.58 Co-ordination between the Devolved Administrations and the UK Government is already in place in particular with regards to the Land Use, Land Use Change and Forestry greenhouse gases projections and the development of the fifth carbon budget. The Devolved Administrations have an important role to play in delivering carbon abatement alongside other economic, environmental and social objectives. With regards to Scotland, opportunities for woodland expansions and agri-environment support measures, to help meet carbon

¹³ Adjusted for trading in the EU Emissions Trading System, and including international aviation and shipping emissions, which is the basis on which progress towards the statutory targets is assessed.

budgets, are supported under the SRDP 2014-2020.

Recommendation 23

Scotland, England, Wales and Northern Ireland to set out approaches to increase methane capture rates: as a devolved matter, each nation should set out specific actions and clear milestones

8.59 The Scottish Government has taken significant action to reduce biodegradable waste going to landfill but recognises that former landfill sites are still a significant source of greenhouse gas emissions. Innovative flaring technology which has been deployed to remove the equivalent of more than 20,000 tonnes of carbon dioxide from two sites in the Scottish Borders is to be rolled out to two further sites in Glasgow and East Lothian, supported by £500,000 of Scottish Government funding. The Scottish Environment Protection Agency (SEPA) is identifying further sites across Scotland where the same technological approach could be applied.

Recommendation 24

Reduce biodegradable waste to landfill: each nation should set out specific actions and clear milestones – including England – to further reduce biodegradable waste to landfill.

8.60 The Scottish Government has already taken considerable action to keep materials out of landfill and in higher value uses, contributing to the significant and continuing decrease in the amount of waste being sent to landfill – falling from 7.4 million tonnes in 2007 to 4.5 million tonnes in 2012.

8.61 The Scottish Landfill Tax, provides a strong financial incentive to keep materials out of landfill. It also provides a new deterrent

to illegal dumping by bringing this activity under the scope of the tax.

8.62 Scotland's collection and reprocessing infrastructure for food waste from households and businesses has developed substantially in recent years. Over 300,000 tonnes of food waste treatment capacity is operational in Scotland, through both In-vessel composting and Anaerobic Digestion. 1.46 million households (61% of total households) now have access to kerbside food waste recycling, up from 300,000 in 2010. These developments have been driven by the Waste (Scotland) Regulations 2012 and supported by Zero Waste Scotland, including over £20 million made available to councils, through Zero Waste Scotland, to support start-up costs of introducing food waste collections, plus an additional £5m announced in June 2015.

8.63 The Waste (Scotland) Regulations 2012 have set a clear direction of travel with a ban on biodegradable municipal waste going to landfill by 2021. The Scottish Government has set a target to send no more than 5% of all waste to landfill by 2025; and to recycle 70% of all waste by the same deadline.

8.64 On food waste in particular, the same Regulations require all food businesses generating over 50kg, in non-rural areas, to recycle food waste. From January 2016, this will extend to food businesses generating over 5kg. From January 2014, these Regulations have also required local authorities to start rolling out food waste recycling to households, in non-rural areas to be complete by end 2015.

8.65 The Scottish Government has also focused on reducing waste produced, with a target to reduce waste arising by 15% by 2025 against a 2011 baseline. We have

taken a number of actions to reduce food waste in households and businesses:

- Supporting the Love Food Hate Waste campaign, to encourage practices that will reduce food waste and save money.
- Supporting the Courtauld Commitment and Hospitality & Food Service Agreement helping reduce food waste across the supply chain and at home.
- Running two national communications campaigns in recent years to help Scots cut food waste and encourage the use of food waste collections.

8.66 Building on these actions, we are currently consulting on Making Things Last, a programme designed to reap the benefits of a more circular economy, encompassing actions to design out waste and to boost reuse, repair, remanufacturing and recycling – with ambitions to minimise ‘waste disposal’.

8.67 The UK progress report also highlights three key recommendations from the earlier Scottish progress report on strengthening policies for low-carbon heat, energy efficiency and agriculture:

Recommendation 26

Consider further action to facilitate heat networks: for example, obliging local authorities to connect to existing local networks and requiring consideration of network heat in new developments.

8.68 The National Planning Framework 3 and Scottish Planning Policy were published on 23 June 2014. Scottish Planning Policy states that local development plans: should support projects which deliver energy efficiency and recovery of energy; seek to ensure that an area’s full potential for electricity and heat from renewable sources is achieved; use heat mapping to identify opportunities for co-locating heat demand with heat supply; identify existing and

potential heat networks and include policies to support their implementation, which may include a requirement for new developments to include infrastructure for connection, providing the option to use heat from the network.

8.69 Scottish Government is updating its online planning advice on planning for heat. In addition, under the Memorandum of Understanding with the Danish Government signed in November 2014, Scottish Government and Heads of Planning Scotland arranged a study visit for Scottish planners to Copenhagen in May, hosted by the Danish Energy Agency.

8.70 To support local authorities develop strategies for the implementation of district heating, including in new developments, the Heat Network Partnership is rolling out a District Heating Strategy Support Programme. Twenty-four local authorities have participated in the Programme which started in June 2015, covering heat mapping, planning, delivery structures and identification of projects.

8.71 As heat networks continue to grow, it is essential to build consumer confidence through improved protection and standards. Scottish Ministers were pleased to support the recent announcement by the Association for Decentralised Energy (ADE) on the Heat Trust, the industry-led consumer protection scheme for district heating to be launched later in 2015. This is a significant step forward in ensuring consumers have confidence in connecting to heat networks, as is the collaboration between the ADE and CIBSE on a Code of Practice for Heat Networks in the UK.

8.72 As set out in the Heat Policy Statement published in June 2015, as the market grows, the Scottish Government will need to develop appropriate regulation, commensurate with the scale of the heat

market. Scottish Government established a Special Working Group on Regulation of the Expert Commission on District Heating to explore the options for regulation of district heating, including requirements for connections to heat networks. The Group is due to report in later in 2015.

Recommendation 27

Evaluate current energy efficiency schemes: focus particularly on area-based schemes to better understand the most effective way to implement supplier obligations once they become devolved.

8.73 Our existing Home Energy Efficiency Programme for Scotland will be evaluated as part of development and design of Scotland's Energy Efficiency Programme. This new programme will bring together action on domestic and non-domestic energy efficiency and will provide an offer of support to all buildings in Scotland, helping to improve their energy efficiency.

Recommendation 28

Improve evidence on agricultural abatement: to include what has worked under "Farming for a Better Climate" and whether its measures have been taken-up beyond the focus farms.

8.74 We have completed a scoping study to identify what evidence sources could be used to measure the impact of Farming For a Better Climate on the industry. We expect to complete a brief report on the impact of the programme soon, which will inform decisions we make about it in future, as well as new mitigation measures we are developing.

Other action

8.75 The Committee's UK progress report highlights that improved policy and additional action is needed in the Devolved

Administrations to drive investment, innovation and low-carbon choices and the following sections outline some of the actions being taken by the Scottish Government to respond to these challenges:

Low-carbon investment

Low carbon infrastructure

8.76 The Low Carbon Infrastructure Transition Programme (LCITP), launched in March 2015, will provide tailored support for established and start-up infrastructure projects across the private, public and community sectors. It aims to stimulate commercial interest and investment and maximise Scotland's vast potential in the low carbon sector. The £76 million scheme is receiving £33 million European Regional Development Fund (ERDF) grant funding under the new 2014-20 European Structural Funds (ESF) programme. The remainder is match funding from partners. It is collaboration between the Scottish Government and public sector partners including Scottish Futures Trust and Highlands and Islands Enterprise. Three levels of support will be offered to low carbon projects – Catalyst support for start-up projects; Development support for more advanced projects; and Demonstrator support for projects already using commercially proven technology.

8.77 **Forestry** The area of new woodland creation in Scotland in 2014/15 was 7,600 hectares. This compares with 8,300 hectares in 2013/14, 7,000 hectares in 2012/13, 9,000 hectares in 2011/12 and 5,100 hectares in 2009/10. When compared to the UK, around three quarters of new planting (74%) took place in Scotland. Arrangements for supporting forestry under the current SRDP include a forestry budget of £30 million for new woodland creation.

8.78 *Low carbon heat* In June 2015 the Scottish Government published its Heat Policy Statement, setting out its approach to drive the pace of change to largely decarbonising the heat system by 2050 along with a framework for investment in a low carbon heat sector. It also sets out activity to support Scotland's ambitious target that by 2020 11% of non-electrical heat demand should be met by renewable sources. The Policy Statement includes a level of ambition to achieve 1.5 TWh of Scotland's heat demand to be delivered by district or communal heating and to have 40,000 homes connected by 2020. Actions identified on renewable heat include:

- Funding of over £234,000 was awarded to five feasibility projects (June 2015) to investigate how the thermal energy in the ground can be used to heat homes and businesses. The 5 sites in Fife, West Lothian, North Lanarkshire and Aberdeenshire will explore the technical feasibility, economic viability and environmental sustainability of the emerging technology. The funding has been made from the Scottish Government's Geothermal Energy Challenge Fund, supported by the Low Carbon Infrastructure Fund.
- A support programme delivered by the Heat Network Partnership for Scotland during 2015 for Scottish local authorities to develop a strategic approach to district heating planning, supporting the use of the Scotland Heat Map to do so. The Heat Network Partnership also co-ordinates support for district heating development across a number of agencies and programmes.
- Designating energy efficiency as a National Infrastructure priority. The cornerstone will be Scotland's Energy Efficiency Programme (SEEP), which will provide an offer of support to all buildings

in Scotland to improve their energy efficiency.

- Ensuring that further decarbonisation of the energy system plays a central role in the third Report on Proposals and Policies scheduled for publication in 2016.

Transport

8.79 The Scottish Government will extend the budgets for sustainable and active travel, including the Future Transport Fund (FTF), into the next Parliament, to ensure additional funding and a multi-annual planning framework for improvements to sustainable and active transport infrastructure in Scotland. We will review the programmes that the FTF supports to ensure that they are effectively targeted to reduce transport emissions, improve air quality and promote active lifestyles..

Developing future options and innovation

Renewable Energy

8.80 The Scottish Government, in partnership with our Enterprise Agencies, have recently re-evaluated the qualifying criteria for the £35m POWERS (Prototyping for Offshore Wind Energy Renewables Scotland) and the £15m SIFT (Scottish Innovative Foundation Technologies Fund) to ensure that both funds remain fit for purpose to attract inward investment to Scotland.

8.81 The Scottish Government strengthened its support for the wave energy sector by establishing Wave Energy Scotland (WES) in December 2014. This new body, unique in the UK, brings together the best engineering and academic minds to collaborate in a research and development programme to accelerate wave technology further. WES is being delivered by Highlands and Islands Enterprise and will provide funding packages for the development of innovative

technologies to produce low cost, efficient and reliable components and subsystems, which can form the basis of the cost effective generation of wave energy in Scotland. WES will enable developers to take projects from the earliest stage of development through to proving and demonstration. WES is fully funded by the Scottish Government and has a budget of £14.3m until the end of the financial year in 2016. The budget for the following years is expected to be similar but is subject to parliamentary scrutiny and approval.

Low carbon heat

Funding has been made from the Scottish Government's Geothermal Energy Challenge Fund, supported by the Low Carbon Infrastructure Fund for five feasibility studies on the use of geothermal heat.

The Scottish Government is also examining the potential use of unused excess waste heat from business and industrial sources. Making use of the unused excess heat produced by Scottish business could reduce costs and be a source of income. We are working with SEPA, Resource Efficient Scotland, Scottish Enterprise and industry to identify sources of unused excess heat, assess their potential for recovery and help establish an evidence base for excess heat from Scottish industry (as required by Article 14 of the EU Energy Efficiency Directive 2012).

Low-carbon choices

Transport

Transport Scotland has grant funded Paths for All in 2015/16 to administer its Smarter Choices Smarter Places (SCSP) programme and to provide support for the projects, including the planning and implementation stages. The SCSP programme is designed to stimulate and sustain behaviour change

towards low carbon transport choices for local journeys and is match funded by local authorities and other delivery partners thereby leveraging additional funding to support modal shift to public transport and active travel. Most local authorities across Scotland are involved in taking forward a variety of SCSP schemes including mapping, signage, marketing, promotion, real time information for public transport and cycle training campaigns, all designed to increase the uptake of active travel and public transport. A commitment to programme evaluation is a mandatory prerequisite for eligibility for SCSP funding. The findings of the various scheme evaluations will be used to inform future programmes.

Glossary

ACUMEN	Assessing, Capturing and Utilising Methane from Expired and Non-Operational Landfills
ADE	Association for Decentralised Energy
CCA	Climate Change Agreement
CCC	Committee on Climate Change
CCS	Carbon Capture and Storage
CCL	Climate Change Levy
CERT	Carbon Emission Reduction Target
CfD	Contracts for Difference
CHP	Combined Heat and Power
CIBSE	Chartered Institute of Building Service Engineers
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide equivalent
CPF	Carbon Price Floor
CRC	Carbon Reduction Commitment
DECC	The Department of Energy and Climate Change
Defra	The Department for Environment, Food and Rural Affairs
DSR	Demand Side Response
ECO	Energy Company Obligation
EMR	Electricity Market Reform
EU	European Union
EU ETS	European Union Emissions Trading System
ERDF	European Regional Development Fund

ESF	European Structural Funds
EVHS	Electric Vehicle Homecharge Scheme
FEED	Front-End Engineering and Design
F gases	Fluorinated greenhouse gases
FPEER	Fuel Poverty Energy Efficiency Rating
FITs	Feed-in Tariffs
FTF	Future Transport Fund
GHG	Greenhouse gas
GGCs	Greening Government Commitments
GHGAP	Greenhouse Gas Action Plan
GMBM	Global Market-based Measure
GW	Gigawatt
HAFSA	Hospitality and Food Service Sector
HDV	Heavy Duty Vehicle
HGV	Heavy Goods Vehicle
HNDU	Heat Network Delivery Unit
ICAO	International Civil Aviation Organisation
ICCS	Industrial Carbon Capture and Storage
ILUC	Indirect Land Use Change
IPCC	Inter-governmental Panel on Climate Change
kWh	Kilowatt hour
LowCVP	Low Carbon Vehicle Partnership
LCF	Levy Control Framework
LCITP	Low Carbon Infrastructure Transition
LCRS	Low Carbon Reduction Scheme
LSTF	Local Sustainable Transport Fund
LULUCF	Land use, Land Use Change and Forestry
MSR	Market Stability Reserve
MtCO ₂ e	Million tonnes of carbon dioxide equivalent

MW	Megawatt
NEDC	New European Driving Cycle
NILAS	Northern Ireland Landfill Allowance Scheme
NISEP	Northern Ireland Sustainable Energy Programme
R&D	Research and Development
RHI	Renewable Heat Incentive
RTFO	Renewables Transport Fuel Obligations
RO	Renewables Obligation
SEPA	Scottish Environment Protection Agency
SCSP	Smarter Choices Smarter Places
SIFT	Scottish Innovation Foundation
SEEP	Scotland Energy Efficiency Programme
SRDP	Scottish Renewable Development Programme
SME	Small and Medium Sized Enterprises
TWh	Terrawatt-hours
ULEV	Ultra Low Emissions Vehicle
VECTRO	Vehicle Energy Consumption Calculation Tool
VED	Vehicle Exercise Duty
VKM	Vehicle Kilometers
WES	Wave Energy Scotland
WLTP	Worldwide harmonized Light-duty vehicles Test Procedure
WRAP	Waste & Resources Action Programme



Annex A: Summary of CCC Recommendations¹⁴

Power

1. Ensure the power sector can invest with a 10-year lead time: as soon as possible, set the Government's carbon objective for the power sector in the 2020s and extend funding under the Levy Control Framework to match project timelines (e.g. to 2025 with rolling annual updates).
2. Continue with auctions under Electricity Market Reform, maintaining momentum by adhering to the proposed timings and working with industry to learn lessons from the first auctions.
3. Set out approach to commercialise CCS through the planned clusters: including a strategic approach to transport and storage infrastructure, completing the two proposed projects and contracting for at least two further 'capture' projects this Parliament.
4. Support offshore wind until subsidies can be removed in the 2020s: set out intention to contract 1-2 GW per year and wider innovation support provided costs fall with view to removing subsidies in the 2020s.
5. Be transparent over the cost implications of technology choices: including the cost of alternatives if low-cost options are constrained, system integration costs and the full carbon cost of fossil-fired generation.

Buildings

6. Develop an action plan to address the significant shortfall in low-carbon heat: short term this should commit to extend the Renewable Heat Incentive to 2020, or until a suitable replacement is found; long term it should link support for low-carbon heat with energy efficiency, support for heat networks and wider decisions about infrastructure for heat.
7. Energy efficiency: set out the future of the Energy Company Obligation beyond 2017, ensuring it delivers energy efficiency while also meeting fuel poverty targets.
8. Implement commitments on Zero Carbon Homes for 2016: implement zero carbon standards without further weakening and ensure incentives are in place to encourage low-carbon heat sources.
9. Simplify policies for commercial energy efficiency: simplify and rationalise wide range of existing policies for commercial energy efficiency to strengthen incentives.

Industry

10. Develop joint work with industry into action plans: publish plans setting out specific actions and clear milestones to move abatement efforts forward along the paths developed with industry in the "Roadmaps".
11. Complete roll-out of "Roadmaps" to other industrial sectors: taking account of lessons learned, roll-out roadmaps to industrial sectors not covered in first wave.
12. Join-up industrial CCS with power sector projects: set an approach to commercialisation of industrial CCS alongside the approach adopted for the power sector, including ensuring industry can link into planned infrastructure.

¹⁴ The order of recommendations is taken from the Executive Summary of the CCC Progress Report. As laid out in the Executive Summary of the 2015 CCC Progress Report- Meeting Carbon Budgets: Progress in the UK's emissions and can be found here: https://www.theccc.org.uk/wp-content/uploads/2015/06/6.737_CCC-BOOK_WEB_030715_RFS.pdf

13. Evaluate effectiveness of compensation to at-risk industries for low-carbon policies: independent evaluation of industries that are at-risk and effectiveness of the compensation framework.

Transport

14. Provide motor industry with greater certainty to 2030: push for clear, stretching 2030 EU targets for new cars and vans that take account of the need for ultra-low emission vehicles and use realistic testing procedures.
15. Tackle barriers to EV uptake: maintain support for upfront costs while they remain more expensive than conventional vehicles; provide a national network of charge points and roll-out local incentives such as access to parking.
16. Ensure the tax regime keeps pace with technological change: align existing fiscal levers (e.g. Vehicle Excise Duty) to ongoing improvements in new vehicle CO₂, including a greater differentiation between rates for high and low emission vehicles.
17. Extend successful emissions-reduction schemes for freight operations: larger freight operators have pioneered schemes to reduce fuel costs and emissions that should be rolled out across the industry, including small operators.
18. Ensure lessons from schemes to reduce travel demand are applied: sustainable travel schemes should be properly evaluated and extended if they provide cost-effective emissions reductions.
19. Publish an effective policy framework for aviation emissions: plan for UK 2050 emissions at 2005 levels (implying around a 60% increase in demand) and push for strong international and EU policies.

Agriculture and Land-Use

20. Deliver the Smart inventory to current timeline: the Smart inventory is essential for effective measurement of emissions from agriculture and should be delivered in 2016, without further delays.
21. Strengthen the current voluntary approach to reduce agricultural emissions: farming industry to develop robust indicators to properly evaluate the greenhouse gas Action Plan. Government to consider stronger measures as part of its 2016 review if these cannot assess the effectiveness of the existing scheme.
22. Co-ordinate effort to reduce emissions from agriculture and forestry: ensure measures being implemented across the four nations are feasible, cost-effective and consistent with UK carbon budgets.

Waste and Non-CO₂

23. Scotland, England, Wales and Northern Ireland to set out approaches to increase methane capture rates: as a devolved matter, each nation should set out specific actions and clear milestones
24. Reduce biodegradable waste to landfill: each nation should set out specific actions and clear milestones – including England – to further reduce biodegradable waste to landfill.
25. Find opportunities to exceed regulatory minimums on F-gas abatement: including clearly assessing and addressing barriers where evidence suggests cost-effective abatement above minimum standards

Devolved Administrations

Scotland

26. Consider further action to facilitate heat networks: for example, obliging local authorities to connect to existing local networks and requiring consideration of network heat in new developments.
27. Evaluate current energy efficiency schemes: focus particularly on area-based schemes to better understand the most effective way to implement supplier obligations once they become devolved.
28. Improve evidence on agricultural abatement: to include what has worked under “Farming for a Better Climate” and whether its measures have been taken-up beyond the focus farms.

Wales

29. Develop a heat strategy: build on UK evidence and approach to develop clear heat strategy for Wales including a renewable heat target.
30. Prepare for higher ambition required of industry: plan ways to reduce industry emissions, including consideration of voluntary partnership agreements with industry and encouraging innovative solutions.
31. Address non-financial barriers for electric vehicles: including further measures which could be implemented such as parking, use of priority lanes, raising awareness and public procurement.
32. Meet tree planting targets: consider whether further measures are needed to ensure tree planting targets are met, and develop approach jointly with stakeholders and other DAs.

Northern Ireland

33. Consider further action to facilitate heat networks: for example, obliging local authorities to connect to existing local networks and requiring consideration of network heat in new developments.
34. Improve monitoring of agricultural emissions: following Defra's delivery of the Smart inventory, put in place local monitoring and process for acting on its findings.
35. Address non-financial barriers for electric vehicles: including further measures which could be implemented such as parking, use of priority lanes, raising awareness and public procurement.

Department of Energy & Climate Change
3 Whitehall Place
London SW1A 2AW

www.gov.uk/decc

URN 15D/485

ISBN 978-1-4741-2495-9



9 781474 124959