



HM Government



# Delivering Clean Growth

**Progress Against Meeting Our Carbon Budgets – The Government Response to the Committee on Climate Change**

October 2018

**Building our  
Industrial Strategy**

# Delivering Clean Growth

## Progress Against Meeting Our Carbon Budgets – The Government Response to the Committee on Climate Change

Presented to Parliament pursuant to Section 37 of the Climate Change Act 2008

October 2018



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Department for Business, Energy and Industrial Strategy  
1 Victoria Street London  
SW1H 0ET

ISBN 978-1-5286-0814-5

CCS0918502908 10/18

Printed on paper containing 75% recycled fibre content minimum

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

# Contents

<b>Ministerial Foreword</b>	<b>2</b>
<b>Background To The Response</b>	<b>4</b>
<b>Executive Summary</b>	<b>5</b>
<b>Chapter 1: Progress on Reducing Emissions from the Power Sector</b>	<b>14</b>
<b>Chapter 2: Progress on Reducing Emissions from Buildings</b>	<b>22</b>
<b>Chapter 3: Progress on Reducing Emissions from Industry</b>	<b>34</b>
<b>Chapter 4: Progress on Reducing Emissions from Transport</b>	<b>42</b>
<b>Chapter 5: Progress on Reducing Emissions from Agriculture, Land Use and Forestry</b>	<b>52</b>
<b>Chapter 6: Progress on Reducing Emissions from Waste and F-Gases</b>	<b>58</b>
<b>Chapter 7: Devolved Administrations</b>	<b>64</b>
<b>Annex A: Metrics</b>	<b>73</b>
<b>Annex B: Progress Against Actions and Milestones</b>	<b>76</b>
<b>Annex C: Updated Actions and Milestones</b>	<b>80</b>

# Ministerial Foreword

## Delivering our Clean Growth Strategy

This autumn marks a decade since the UK introduced the world's first legally binding long-term emission reduction targets with the passage of the Climate Change Act, supported by all political parties. Since then, we have shown that low carbon or "clean" growth is a true British success story. We are in a prime position to benefit from the global shift to low carbon.

Cutting emissions and growing the economy are no longer in conflict: they are a win-win. Since 1990, we have reduced our emissions by over 40 per cent<sup>1</sup> while growing our economy by over two thirds<sup>2</sup>. Turnover for clean businesses increased by five per cent<sup>3</sup> between 2015 and 2016, more quickly than UK GDP which grew at 1.8 per cent<sup>4</sup>. Our low carbon sector supports almost 400,000 jobs across the country<sup>5</sup>, and the sector is still growing.

But we want to go further. That is why we have put clean growth at the heart of our modern Industrial Strategy.

This growth will not just be seen in the UK. Following the success of the Paris Agreement, where Britain played such an important role in securing the landmark deal, the transition to a global low carbon economy is gathering momentum. We want the UK to capture every economic opportunity it can from this global shift in technologies and services.



**Claire Perry MP**  
Minister of State for Energy and  
Clean Growth



**This time last year we published our Clean Growth Strategy<sup>6</sup>, setting out an ambitious blueprint for Britain's low carbon future.**

It laid out our plans to meet the UK's targets at the lowest cost, while maximizing the social and economic benefits. But publishing the Strategy was always only the start. What counts is that we deliver, and this document sets out how we are developing our policies and proposals. A year on, we are demonstrating that we are getting the job done.

Since publishing the Strategy, we have seen the first floating offshore wind farm demonstration in the world.

We have announced new auctions to deliver between 1 and 2 gigawatts of offshore wind each year in the 2020s, with the support of up to £557 million.

We have announced that we will at least halve the energy use of new buildings by 2030, and seen the first green mortgage offered.

<sup>1</sup> BEIS (2018) BEIS provisional UK emissions statistics 1990-2017 <https://www.gov.uk/government/statistics/provisional-uk-greenhouse-gas-emissions-national-statistics-2017>

<sup>2</sup> ONS (2018) Quarterly National Accounts Statistical bulletins (Series ABMI. Seasonally adjusted chained volume measures) <https://www.ons.gov.uk/economy/grossdomesticproductgdp/timeseries/abmi>

<sup>3</sup> ONS (2018) UK Environmental Accounts: Low Carbon and Renewable Energy Economy Survey, Final estimates: 2016 <https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/finalesimates/2016#main-points>

<sup>4</sup> ONS (2018) Gross Domestic Product: Chained volume measures, Seasonally adjusted, £m <https://www.ons.gov.uk/economy/grossdomesticproductgdp/timeseries/abmi/ukea>

<sup>5</sup> ONS (2018) UK Environmental Accounts: Low Carbon and Renewable Energy Economy Survey: 2016 Final Estimates <https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/finalesimates/2016>

<sup>6</sup> BEIS (2018) Clean Growth Strategy <https://www.gov.uk/government/publications/clean-growth-strategy>

We have set out our ambitious direction to improve the environment through the 25 Year Environment Plan, and detailed a route to delivering at least half of new cars being ultra low emission by 2030 through The Road to Zero.

Beyond the UK, we have also committed to helping developing countries meet their objectives. The UK is among the largest contributors of climate finance, committing to provide at least £5.8 billion from 2016 to 2020. This finance is helping developing countries reduce their emissions and deal with the impacts of climate change by building their capacity to take action and, while we do not count these results against our domestic budgets, we are proud of the impact of the UK's commitment to global climate action.

I am proud that this document is being published as part of our first Green GB Week – a week to bring the whole country together to celebrate UK leadership and look forward to seizing the opportunities of clean growth.

But we cannot be complacent. As ever, I am grateful to the Committee on Climate Change for their analysis, and for continuing to hold

our feet to the fire. There is always more to do and this document includes an update to our actions and milestones to set a clear plan for the year ahead.

Beyond our existing targets, the Clean Growth Strategy made it clear that the Government believes the UK will need to legislate for a net zero emissions target at an appropriate point in the future. I welcome the strong scientific analysis behind the recent IPCC Special Report on 1.5 Degrees and its conclusions are stark and sober. As policy makers we need to work together to accelerate the low carbon transition to minimise the costs and misery of a rapidly warming world. I have asked the Committee on Climate Change to provide their advice on the implications of the Paris Agreement for the UK's long-term targets.

I look forward to working with my colleagues across the Government and the Devolved Administrations, as well as with businesses, communities and non-governmental organisations across the UK, to deliver on our ambition to leave our environment in a better state than we inherited, and to fully seize the opportunities of clean growth.

## 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 per cent below 1990 base year levels by 2050. In million tonnes of carbon dioxide-equivalent (MtCO<sub>2</sub>e), we currently estimate this to be around 165 MtCO<sub>2</sub>e in 2050, compared to 798 MtCO<sub>2</sub>e in the base year<sup>7</sup>.

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 per cent below 1990 levels in 2020. The fourth carbon budget, covering the period 2023 to 2027, was set in law in June 2011 and requires emissions to be at a level equivalent to around 51 per cent below 1990 base year levels.

The fifth carbon budget was set in June 2016, at a level of 1,725 MtCO<sub>2</sub>e<sup>8</sup> over the five year period

from 2028-2032 (equivalent to a reduction of around 57 per cent compared to 1990). The Government published its Clean Growth Strategy – the plan to meet all the budgets set to date – in October 2017.

The CCC was set up under the Act as an independent body to advise the 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 annual progress report to Parliament (Reducing UK emissions: 2018 Progress Report to Parliament) on 28 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.

Throughout this publication “the Government” is used to denote the UK Government and its views. The Devolved Administrations have provided their respective responses in Chapter 7.

<sup>7</sup> BEIS (2018) Final UK greenhouse gas emissions national statistics: 1990-2016 <https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2016> (This figure includes an allowance for international aviation.)

<sup>8</sup> The Carbon Budget Order 2016 <http://www.legislation.gov.uk/uksi/2016/785/made>

# Executive Summary

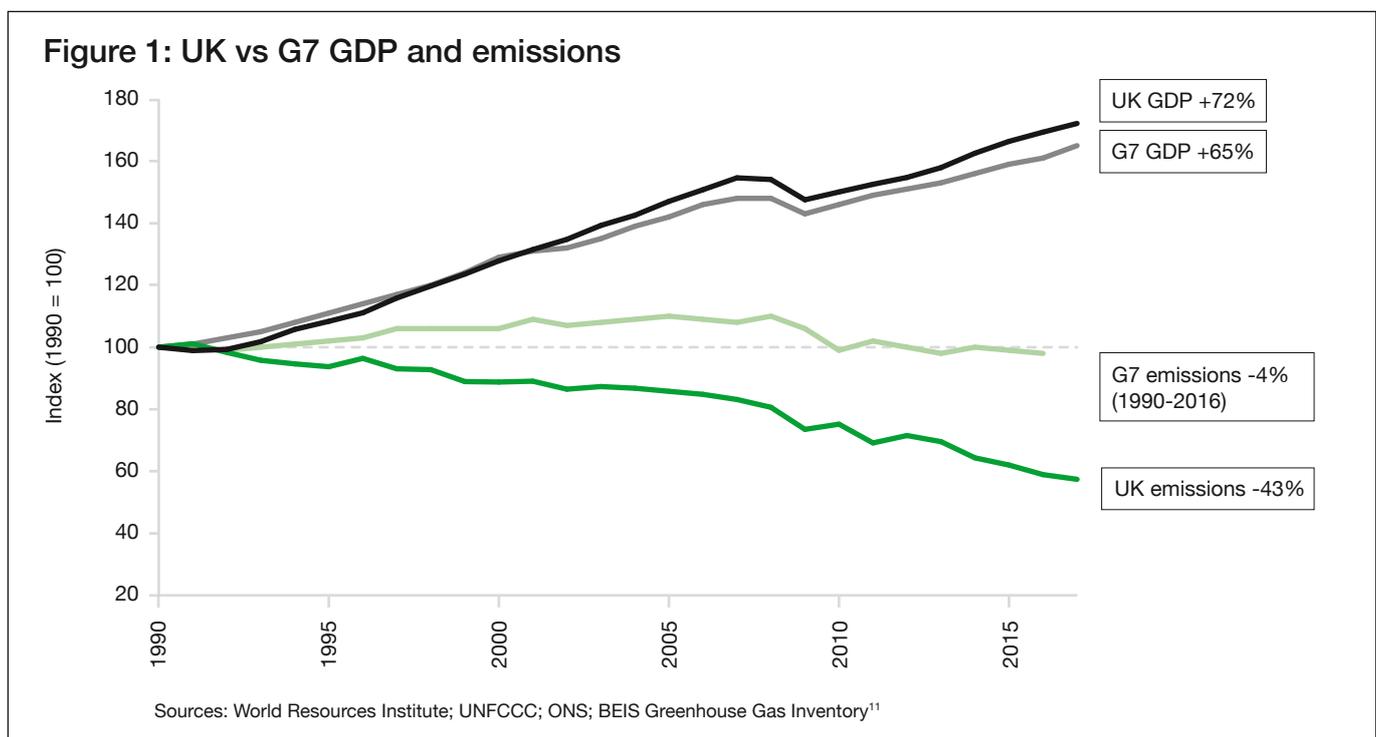
*This document sets out the Government's response to the Committee on Climate Change's (CCC) 2018 Annual Progress Report to Parliament on meeting carbon budgets (Reducing UK emissions – 2018 Progress Report to Parliament), and the progress made since the publication of our Clean Growth Strategy.*

## A Decade On from the Climate Change Act

The UK can be proud of its role as a world leader in tackling climate change.

2018 marks the tenth anniversary of the Climate Change Act (CCA), which made us the first country in the world to legislate for a long-term emissions reduction target. The CCA introduced our innovative carbon budget framework – providing us with a clear pathway to meeting our long-term targets.

By setting clear long-term ambition, supported by strong policy action, the UK has shown that clean growth – cutting emissions while growing the economy – is possible. Since 1990, we have reduced emissions by over 40 per cent<sup>9</sup> while growing the economy by more than two thirds<sup>10</sup>.



<sup>9</sup> BEIS (2018) BEIS provisional UK emissions statistics 1990-2017 <https://www.gov.uk/government/statistics/provisional-uk-greenhouse-gas-emissions-national-statistics-2017>

<sup>10</sup> ONS (2018) Quarterly National Accounts Statistical bulletins (Series ABMI. Seasonally adjusted chained volume measures) <https://www.ons.gov.uk/economy/grossdomesticproductgdp/timeseries/abmi>

<sup>11</sup> BEIS (2017) Final UK greenhouse gas emissions national statistics: 1990-2015 <https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2015>

ONS (2018) Gross Domestic Product: chained volume measures: Seasonally adjusted £m <https://www.ons.gov.uk/economy/grossdomesticproductgdp/timeseries/abmi/pn2>

UNFCCC Time Series – Annex I, [http://di.unfccc.int/time\\_series](http://di.unfccc.int/time_series)

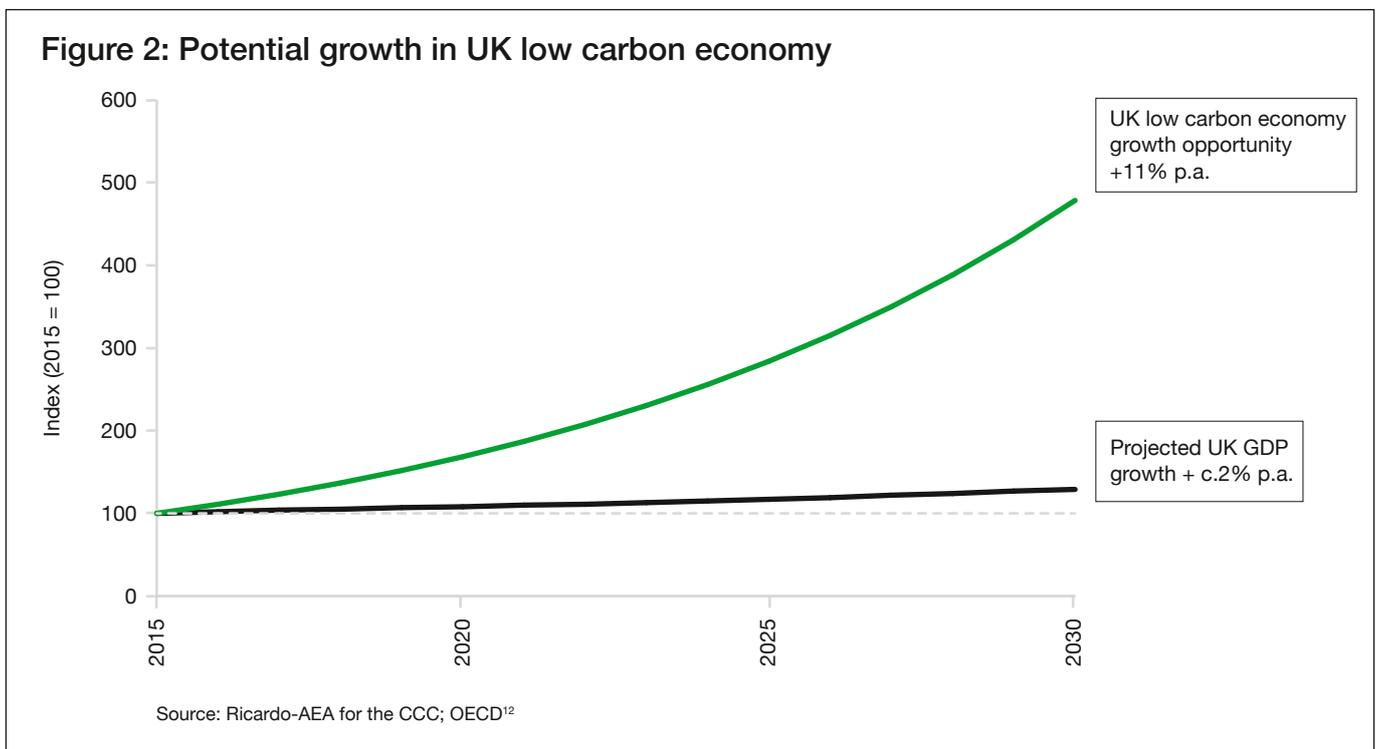
World Bank World Development Indicators, International Comparison Program database <https://data.worldbank.org/indicator/NY.GDP.MKTP.PP.KD>

We have driven innovation in the low carbon economy, which now supports hundreds of thousands of jobs. And we have galvanised action and initiatives across the UK and internationally, including helping secure the landmark Paris Agreement in 2015.

Looking ahead to the next 10 years and beyond, the opportunity is huge. By one estimate, the low carbon economy in the UK could grow

11 per cent per year between 2015 and 2030 – over four times faster than the rest of the economy.

Our focus on delivering clean growth reflects the fact that reducing our emissions can be a win-win: helping to cut consumer bills, drive economic growth, create high value jobs and improve our quality of life.

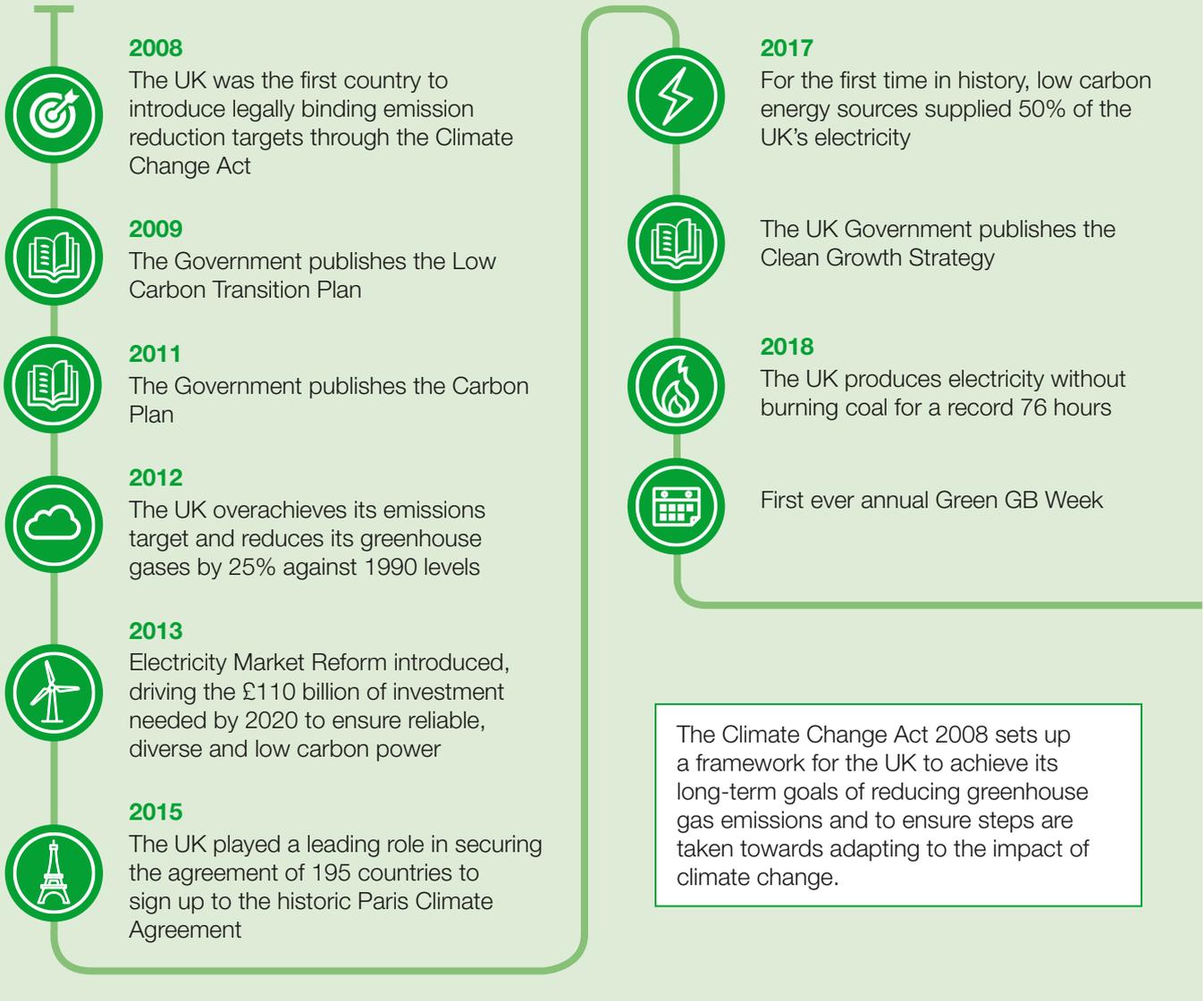


Our modern Industrial Strategy recognises how clean growth could help build a Britain fit for the future, through making the most of the untapped opportunity right across the country. As one of four “Grand Challenges”, we will ensure that the

UK can both meet its legally binding emission reduction targets and maximise the economic benefit for people and businesses, as the world makes the transition to low carbon technologies and services.

<sup>12</sup> CCC (2017) UK business opportunities of moving to a low-carbon economy <https://www.theccc.org.uk/publication/uk-energy-prices-and-bills-2017-report-supporting-research/>  
<https://data.oecd.org/gdp/gdp-long-term-forecast.htm>

### Figure 3: 10 years of the Climate Change Act – Progress so far

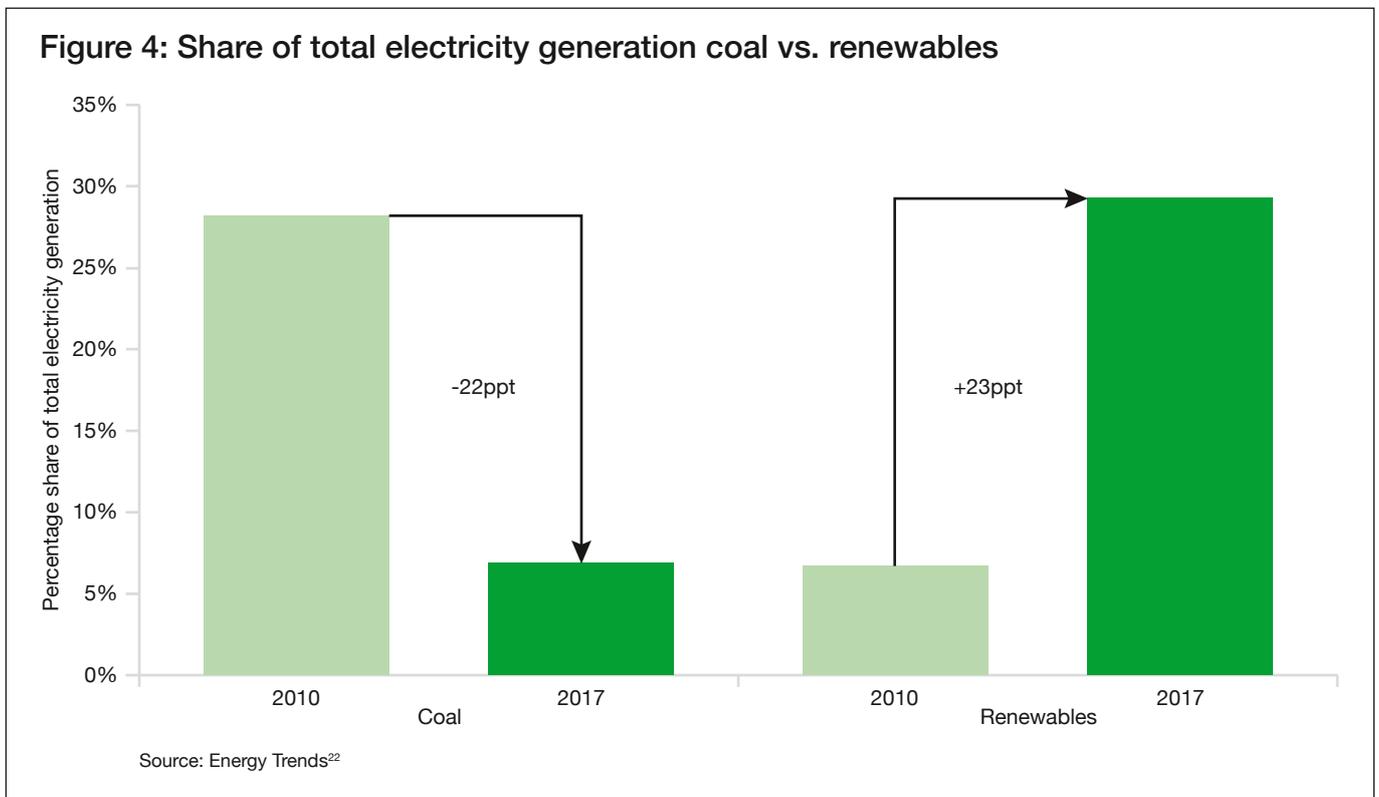


### Progress Against Carbon Budgets

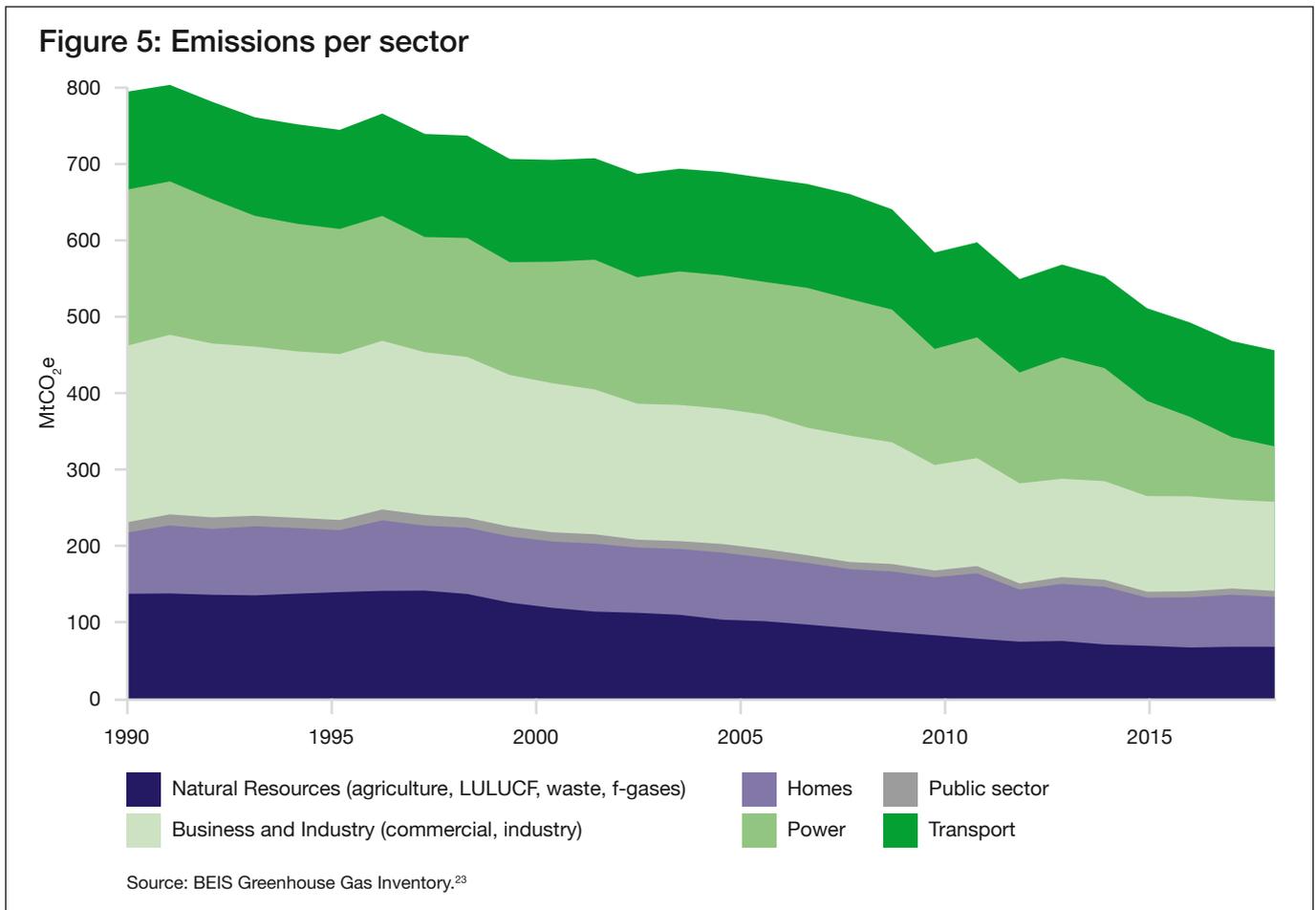
The Government welcomes the Committee on Climate Change’s progress report<sup>13</sup>.

As the report notes, the UK exceeded required emissions reductions in its first carbon budget (2008 – 2012) by one per cent of the budget level<sup>14</sup>, and is projected to easily outperform the second and third carbon budgets (2013 – 2022)<sup>15</sup>, with GDP expected to grow 19 per cent over that period<sup>16</sup>.

In the power sector, we have delivered fundamental change at remarkable speed. We have cut emissions from 158 to 73 MtCO<sub>2</sub>e since 2010<sup>17</sup>, with 50 per cent of our electricity generated from clean sources in 2017<sup>18</sup> – up from 19 per cent in 2010<sup>19</sup>. This year the UK went without running coal powered generation for a record 76 consecutive hours in a row<sup>20</sup> – the longest coal-free period in the country since the 1880s<sup>21</sup>.



<sup>13</sup> CCC (2018) Reducing UK emissions – 2018 Progress Report to Parliament <https://www.theccc.org.uk/publication/reducing-uk-emissions-2018-progress-report-to-parliament/>  
<sup>14</sup> BEIS (2014) Final statement for the first Carbon Budget period <https://www.gov.uk/government/statistics/final-statement-for-the-first-carbon-budget-period>  
<sup>15</sup> BEIS (2018) Energy and Emissions Projections <https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2017>  
<sup>16</sup> OBR (2018) Economic and Fiscal Outlook <http://obr.uk/efo/economic-fiscal-outlook-march-2018/>  
<sup>17</sup> BEIS (2018) UK provisional emissions statistics (1990-2017) <https://www.gov.uk/government/statistics/provisional-uk-greenhouse-gas-emissions-national-statistics-2017>  
<sup>18</sup> BEIS (2018) Digest of UK Energy Statistics (DUKES) 2018: main report <https://www.gov.uk/government/statistics/digest-of-uk-energy-statistics-dukes-2018-main-report>  
<sup>19</sup> BEIS (2016) Digest of UK Energy Statistics (DUKES) 2016: main chapters and annexes <https://www.gov.uk/government/statistics/digest-of-united-kingdom-energy-statistics-dukes-2016-main-chapters-and-annexes>  
<sup>20</sup> Drax (2018) Electrical Insights Quarterly, April to June 2018 [https://www.drax.com/wp-content/uploads/2018/08/180809\\_Drax\\_Q2\\_Report.pdf](https://www.drax.com/wp-content/uploads/2018/08/180809_Drax_Q2_Report.pdf)  
<sup>21</sup> Drax (2018) Electrical Insights Quarterly, April to June 2018 [https://www.drax.com/wp-content/uploads/2018/08/180809\\_Drax\\_Q2\\_Report.pdf](https://www.drax.com/wp-content/uploads/2018/08/180809_Drax_Q2_Report.pdf)  
<sup>22</sup> BEIS (2018) Energy Trends: Electricity <https://www.gov.uk/government/statistics/electricity-section-5-energy-trends>



We have also delivered real change in other sectors such as waste management and emissions from landfill.

However, we agree with the CCC that this progress has not been uniform. Our focus is now on replicating the progress on power and waste across the economy.

In the Clean Growth Strategy, we published a set of metrics to help us assess and understand our progress. This document includes our updated figures (Annex A).

Overall, we are becoming more efficient while using less carbon. Our emissions intensity ratio (EIR) – the amount of greenhouse gases (tonnes

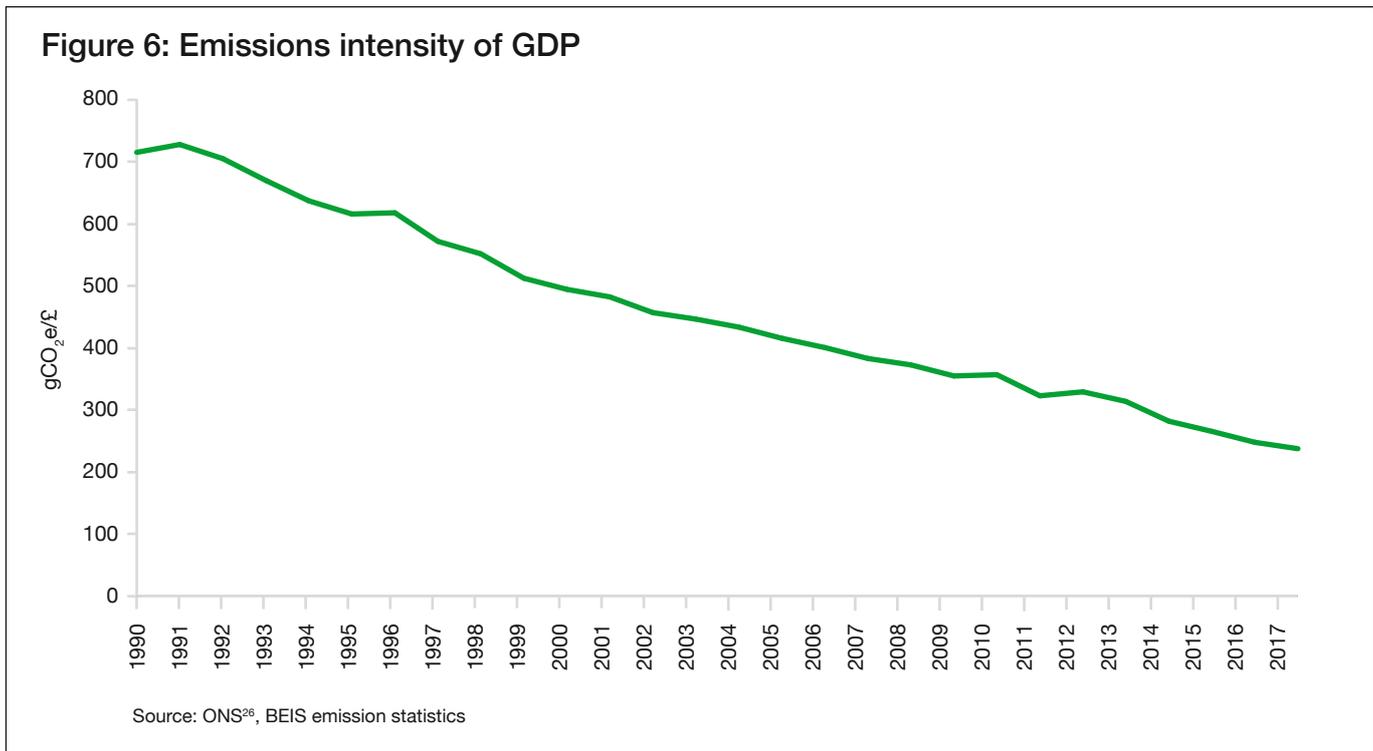
of carbon dioxide equivalent) produced for each unit of Gross Domestic Product (GDP) created – has continued to improve. In 1990 our EIR was 715 tonnes per £m of GDP – by last year it had fallen by over two thirds to 237 tonnes per £m of GDP<sup>24</sup>. This means EIR has fallen on average 5.4 per cent annually since 2015, demonstrating clean growth in action. And PwC’s Low Carbon Economy index indicates that the UK has led the G20 in the rate of emission reduction since 2000<sup>25</sup>.

<sup>23</sup> BEIS (2018) BEIS provisional UK emissions statistics 1990-2017 <https://www.gov.uk/government/statistics/provisional-uk-greenhouse-gas-emissions-national-statistics-2017>

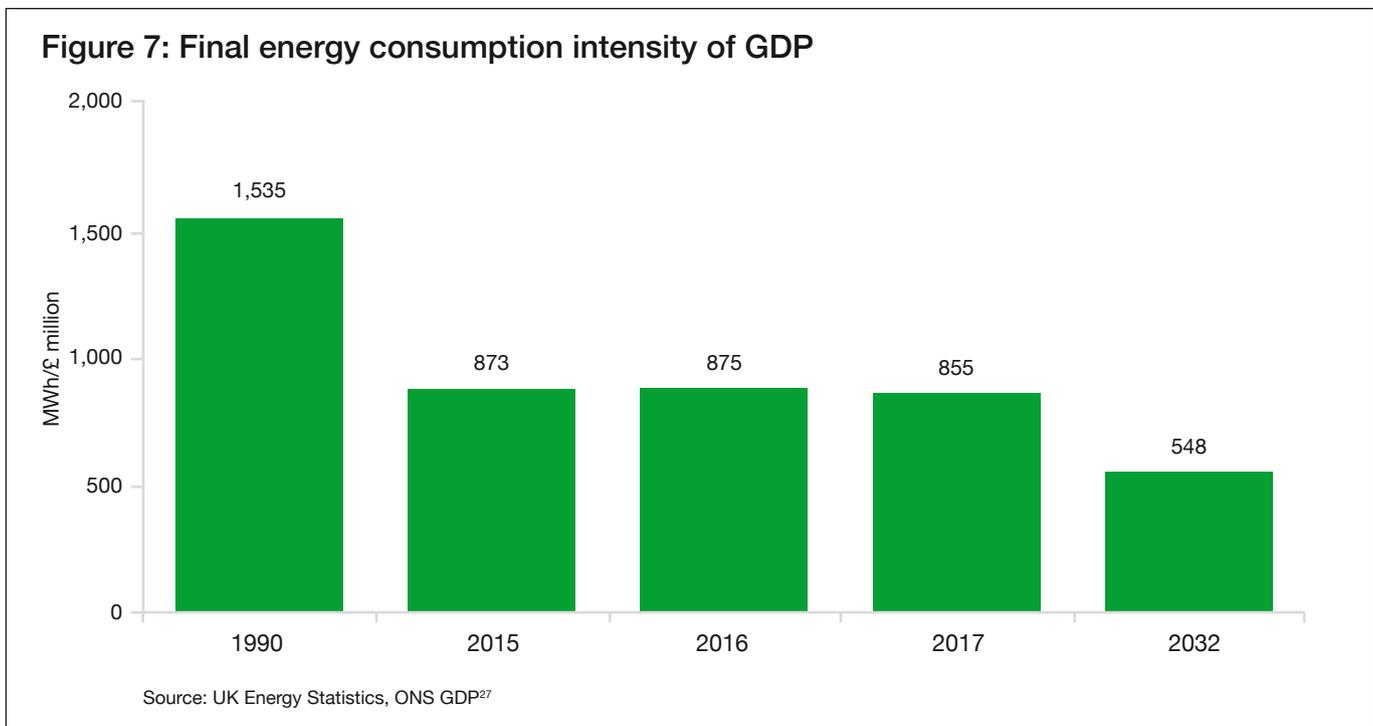
<sup>24</sup> BEIS (2018) UK provisional emissions statistics (1990-2017) <https://www.gov.uk/government/statistics/provisional-uk-greenhouse-gas-emissions-national-statistics-2017>

ONS (2018) Gross Domestic Product: chained volume measures: Seasonally adjusted £m <https://www.ons.gov.uk/economy/grossdomesticproductgdp/timeseries/abmi/pn2>

<sup>25</sup> PwC’s Low Carbon Economy Index: <https://www.pwc.co.uk/press-room/press-releases/lcei-index.html>



We have also seen the amount of energy we use per unit of GDP fall significantly since 1990.



<sup>26</sup> ONS (2018), Gross Domestic Product: chained volume measures: Seasonally adjusted £m, <https://www.ons.gov.uk/economy/grossdomesticproductgdp/timeseries/abmi/pn2>

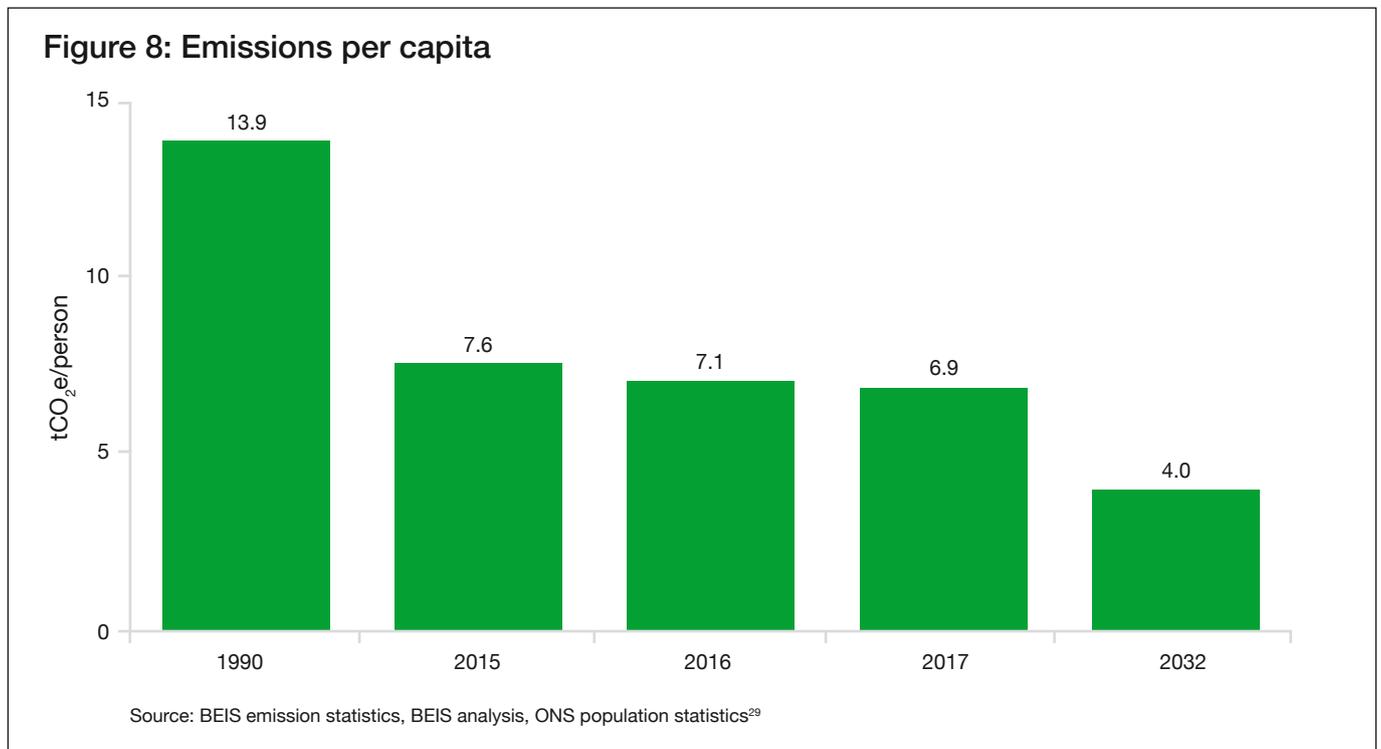
BEIS (2018) UK provisional emissions statistics (1990-2017) <https://www.gov.uk/government/statistics/provisional-uk-greenhouse-gas-emissions-national-statistics-2017>

<sup>27</sup> BEIS (2018) Energy consumption in the UK <https://www.gov.uk/government/statistics/energy-consumption-in-the-uk>

ONS (2018), Gross Domestic Product: chained volume measures: Seasonally adjusted £m, <https://www.ons.gov.uk/economy/grossdomesticproductgdp/timeseries/abmi/pn2>

Similarly, we have made huge gains when looking at the emissions per person in the UK

where we have, on average, reduced by half the emissions per person – a great achievement<sup>28</sup>.



### Our Approach

Last year we published our landmark Clean Growth Strategy, setting out our blueprint for Britain’s low carbon future. In that document, we set out over 50 actions for the upcoming year. Huge progress has been made across the board in delivering against these, as demonstrated in Figure 9, and in more detail at the start of each sector chapter and in Annex B.

However, we recognise that delivery of our future carbon budgets requires concerted action across the economy.

The Strategy set out the rationale for the decisions we are taking now and laid the groundwork for the future. Our approach has two guiding objectives – to meet our domestic commitments at the lowest possible net cost to

UK taxpayers, consumers and businesses, and to maximise the social and economic benefits for the UK from this transition.

To meet these objectives, we need to support innovation in both technologies and processes, to help drive down costs and secure the UK’s economic advantage.

We also need to acknowledge that we cannot predict every technological breakthrough. Therefore we need to ensure that we are creating the best possible environment for the private sector to innovate and invest.

We also acknowledge the areas where we face the greatest uncertainty and challenge. For these areas, we are laying the groundwork for the major decisions our analysis shows we need to make. To help demonstrate the steps

<sup>28</sup> BEIS (2018) UK provisional emissions statistics (1990-2017) <https://www.gov.uk/government/statistics/provisional-uk-greenhouse-gas-emissions-national-statistics-2017>

ONS, Population and Migration, <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration>

<sup>29</sup> BEIS (2018) UK provisional emissions statistics (1990-2017) <https://www.gov.uk/government/statistics/provisional-uk-greenhouse-gas-emissions-national-statistics-2017>

ONS (2017) Population estimates <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates>

needed to make these decisions, we have updated the milestones and actions table from the Clean Growth Strategy, with the actions we will be taking over the coming months.

#### This report:

- Sets out our progress over the last 12 months and addresses the CCC's recommendations in its June report;
- Provides an update on action in the Devolved Administrations – reflecting the fact that action across the UK is vital to meeting our targets;
- Assesses our performance against key metrics, as per our commitment in the Clean Growth Strategy; and
- Communicates an update on the milestones we committed to in the Clean Growth Strategy, and sets out future milestones to further develop our policies and proposals.

We agree with the CCC that ambitious implementation of the policies and proposals set out in the Clean Growth Strategy is vital to meet our carbon budgets, and that is our priority.

Looking forward, we recognise the CCC's view that further action and detailed policy measures are needed to reduce the risks to delivery of our future carbon budgets. Our key focus in the coming months and years will be to ensure we are addressing those risks.

As part of this we have set up new processes to ensure that departments across the Government are delivering on the commitments made in the Clean Growth Strategy and looking for opportunities to go further, including through our Environment and Clean Growth Inter-Ministerial Group.

We invited views and comments on the Clean Growth Strategy when it was published. We welcome these views and are taking them into account as we develop our policies. We will also consider them as we update key elements of the Strategy before setting the sixth carbon budget.

Meeting our carbon budgets and delivering clean growth has to be a shared endeavour between the Government, business, civil society and the British people. That is why this report is published in the first Green GB week – which provides an exciting opportunity for the Government, businesses and civil society to come together to promote clean growth.

**Figure 9: Overall Progress**

<b>Industrial Strategy</b>	<ul style="list-style-type: none"> <li>• Clean Growth established as an Industrial Strategy Grand Challenge.</li> </ul>
<b>Power</b> Page 14	<ul style="list-style-type: none"> <li>• Opened world's first floating demonstration wind farm.</li> <li>• Announced next CFD allocation round will open by May 2019, and intention to run auctions every two years after that, signalling support of up to £557 million previously announced. This could see 1-2 gigawatts of new offshore wind every year in the 2020s.</li> <li>• Achieved a record 76 hours of continuous coal free electricity generation.</li> <li>• Announced new £200 million nuclear sector deal.</li> </ul>
<b>Buildings</b> Page 22	<ul style="list-style-type: none"> <li>• Grand Challenge Buildings Mission announced – to at least halve the energy use of new buildings by 2030.</li> <li>• The Smart Meters Act 2018 received Royal Assent in May 2018. As of the end of June 2018, over 12 million smart and advanced meters were operating across Great Britain with more than 400,000 being installed every month, helping people to take control of their energy use and save money on their bills.</li> <li>• Consulted on ECO3, 2018 to 2022. To date around 2.4 million measures have been installed in around 1.8 million unique properties as part of this Government scheme.</li> <li>• Published a Call for Evidence on the Future Framework for Heat, reaffirming ambition to phase out installation of high carbon fossil fuel heating in new and existing buildings off the gas grid, during the 2020s.</li> <li>• Published a Call for Evidence on improvements to Energy Performance Certificates, in line with the aspiration that as many homes as possible are improved to EPC Band C by 2035, where practical, cost-effective and affordable.</li> <li>• Published a consultation to improve the effectiveness of the Private Rented Sector regulations, so that more of these properties can be brought up to EPC E.</li> <li>• Completed reforms of the Renewable Heat Incentive, improving value for money, providing certainty to non-domestic projects, and enabling more households to access the domestic scheme.</li> </ul>
<b>Public Sector</b>	<ul style="list-style-type: none"> <li>• Set new, ambitious GHG reduction target for central government, potentially delivering £340 million in savings.</li> <li>• Announced Emissions Reductions Pledge for wider public and higher education sectors.</li> </ul>
<b>Industry</b> Page 34	<ul style="list-style-type: none"> <li>• Published a Call For Evidence to help businesses improve the way they use energy.</li> <li>• Consulted on the design of a new £18 million industrial heat recovery support programme.</li> <li>• Set up a CCUS Council and established a CCUS Cost Challenge Taskforce who have reported to Government on progressing Carbon Capture, Usage and Storage in the UK.</li> </ul>
<b>Transport</b> Page 42	<ul style="list-style-type: none"> <li>• Set out ambitious measures to reduce emissions from vehicles in the Road to Zero strategy.</li> <li>• Increased support for transition to zero emission vehicles to nearly £1.5 billion.</li> <li>• Announced an £80 million national battery scale-up facility, the UK Battery Industrialisation Centre, as part of the Automotive Sector Deal.</li> </ul>
<b>Agriculture, Land Use, Forestry, Waste &amp; F-Gases</b> Page 52	<ul style="list-style-type: none"> <li>• Set ambitious direction in 25 Year Environment Plan to leave the environment in a better state than we found it.</li> <li>• Ratified the Kigali Amendment to the Montreal Protocol to reduce consumption of HFCs (the main group of F-gases) by 85 per cent by 2035</li> <li>• Published 'Health and Harmony' consultation on future for food, farming and the environment in a Green Brexit and subsequently introduced the Agriculture Bill to Parliament</li> </ul>
<b>Green Finance</b>	<ul style="list-style-type: none"> <li>• First green mortgage offered.</li> <li>• Green Finance Taskforce delivered recommendations on capturing the growth opportunity.</li> <li>• Announced establishing a Green Finance Institute, as per the Taskforce's recommendations.</li> </ul>

# Chapter 1: Progress on Reducing Emissions from the Power Sector



## Summary of Progress on Power

### Since publishing the Clean Growth Strategy, we have:

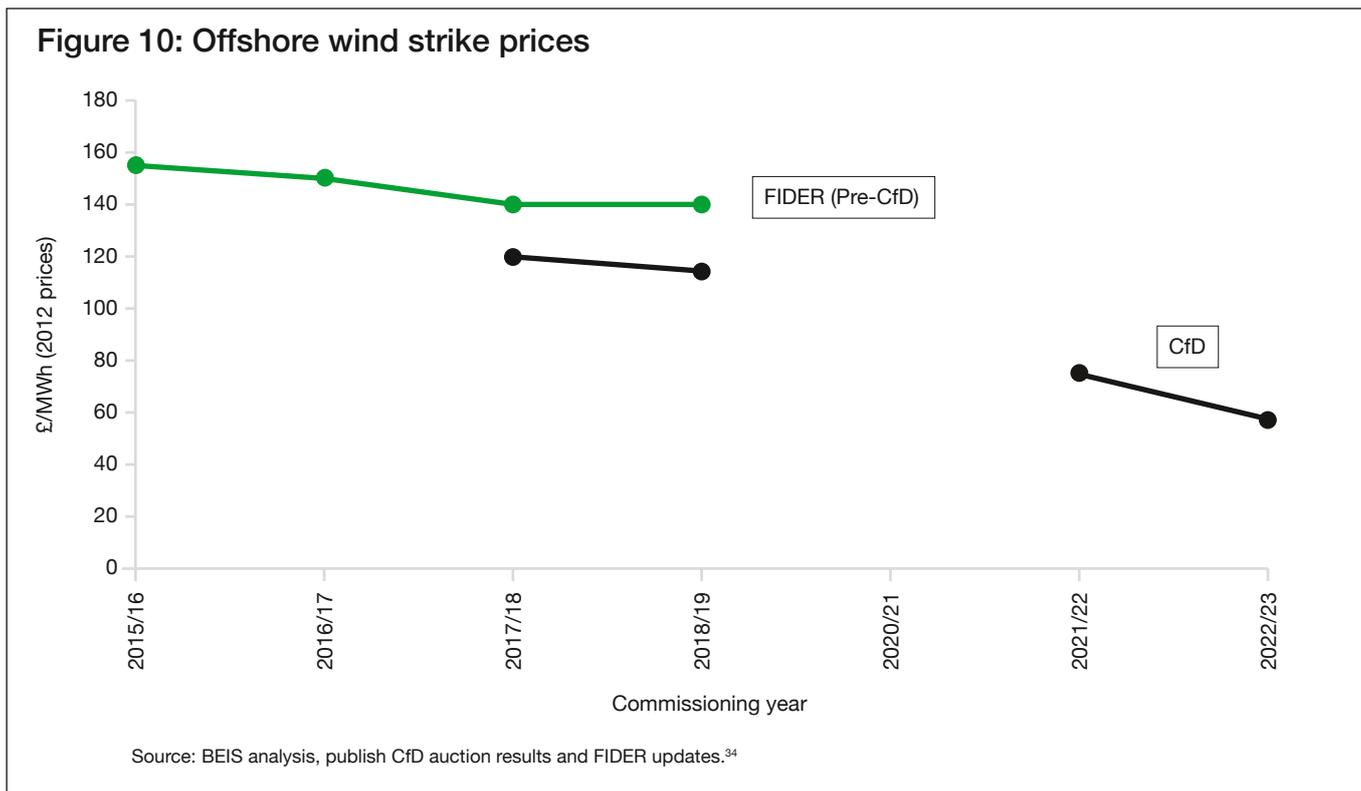
1. Further developed the route to market for renewable technologies by announcing that the next Contract for Difference allocation round will open by May 2019. The following allocation rounds will be held around every two years after that. Depending on the price achieved, these auctions will deliver between 1 to 2 gigawatts of offshore wind each year in the 2020s with support of up to £557 million.
2. Published the Government's response to the unabated coal closure consultation, along with an updated impact assessment which acts as a statement of policy for how to put the 2025 requirement into effect. The Government is now considering the appropriate legislative vehicle for achieving this.
3. Continued to engage with the offshore wind sector in the development of an ambitious sector deal.
4. Maintained a Carbon Price Support of £18 per tonne of carbon dioxide on top of the EU Emissions Trading System, to encourage the transition to low carbon electricity generation by driving coal-to-gas switching.
5. Continued our implementation of the ambitious Smart Systems and Flexibility Plan, which will help to integrate more low carbon generation and electric vehicles, balance the grid and reduce peak demand, unlocking significant benefits for the consumer and the system.
6. Engaged with National Grid and Ofgem, as they work to deliver separation of the transmission network owner and system operator; driving greater competition, coordination and innovation across the system. In September 2018, National Grid Electricity System Operator's (ESO) identity was launched, allowing industry to be clear when they are engaging with the ESO. This is a key milestone towards achieving full legal separation by April 2019.
7. Passed legislation requiring Ofgem to impose a temporary absolute cap on standard variable and default tariffs to improve competition in the retail energy market whilst extending price protection to all consumers. This is one step in a series of innovative market interventions.
8. Progressed, through our partners, construction at Hinkley Point C, which remains on track for its scheduled completion date of 2025. When built, the plant is expected to provide the UK with up to seven per cent of its electricity needs. We have also made progress in our discussions over the next project in the pipeline, the proposed 2.9 gigawatt Wylfa Newydd plant based in Anglesey in North Wales. Industry set out its commitment to reducing the cost of nuclear in the Nuclear Sector Deal, which was published on 28 June, with a target to reduce the cost of new build by 30 per cent by 2030.
9. Announced five years of funding for the Offshore Renewable Energy Catapult to drive further innovation in renewable energy.
10. Launched a £10 million Phase 7 of our Energy Entrepreneurs Fund – a competitive funding scheme to support the development and demonstration of state of the art technologies, products and processes in the areas of energy efficiency, power generation and heat and electricity storage.

## Policy Approach

We welcome the Committee on Climate Change’s (CCC) finding that emissions continue to fall in the power sector. In 2017, carbon dioxide emissions from power stations were down 11 per cent on 2016 levels, 58 per cent on 2008 levels and 65 per cent on 1990 levels<sup>30</sup>, as we have switched from coal to gas and renewable power.

This has been assisted by falling costs and more efficient low carbon technologies, brought about through early policy action, innovations and growth in deployment.

In the past 10 years, the renewable capacity in the electricity sector has increased significantly, from 7.3 gigawatts in 2008<sup>31</sup> to 41.9 gigawatts in 2018 Q1<sup>32</sup>. Our sustained support for clean energy has led to dramatic falls in the costs of some renewable electricity generation technologies. For example, Government investment in offshore wind has helped to deliver a 50 per cent drop in clearing prices over just the last two years<sup>33</sup> and there are early signs of some renewable technologies deploying without Government support.



<sup>30</sup> BEIS (2018) 2017 UK greenhouse gas emissions: provisional figures – data tables <https://www.gov.uk/government/statistics/provisional-uk-greenhouse-gas-emissions-national-statistics-2017>

<sup>31</sup> DECC (2009) Digest of UK Energy Statistics 2009 [http://webarchive.nationalarchives.gov.uk/20130109092117/http://decc.gov.uk/assets/decc/statistics/publications/dukes/1\\_20100208131106\\_e\\_@\\_dukes09.pdf](http://webarchive.nationalarchives.gov.uk/20130109092117/http://decc.gov.uk/assets/decc/statistics/publications/dukes/1_20100208131106_e_@_dukes09.pdf)

<sup>32</sup> BEIS (2018) Energy Trends June 2018 [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/720077/Energy\\_Trends\\_June\\_2018.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/720077/Energy_Trends_June_2018.pdf)

<sup>33</sup> BEIS (2017) New clean energy projects set to power 36 million homes <https://www.gov.uk/government/news/new-clean-energy-projects-set-to-power-36-million-homes>

<sup>34</sup> BEIS (2017) Contract for Difference Second Allocation Round Results <https://www.gov.uk/government/publications/contracts-for-difference-cfd-second-allocation-round-results>

BEIS (2015) Contract for Difference Allocation Round One Outcome <https://www.gov.uk/government/publications/contracts-for-difference-cfd-allocation-round-one-outcome>

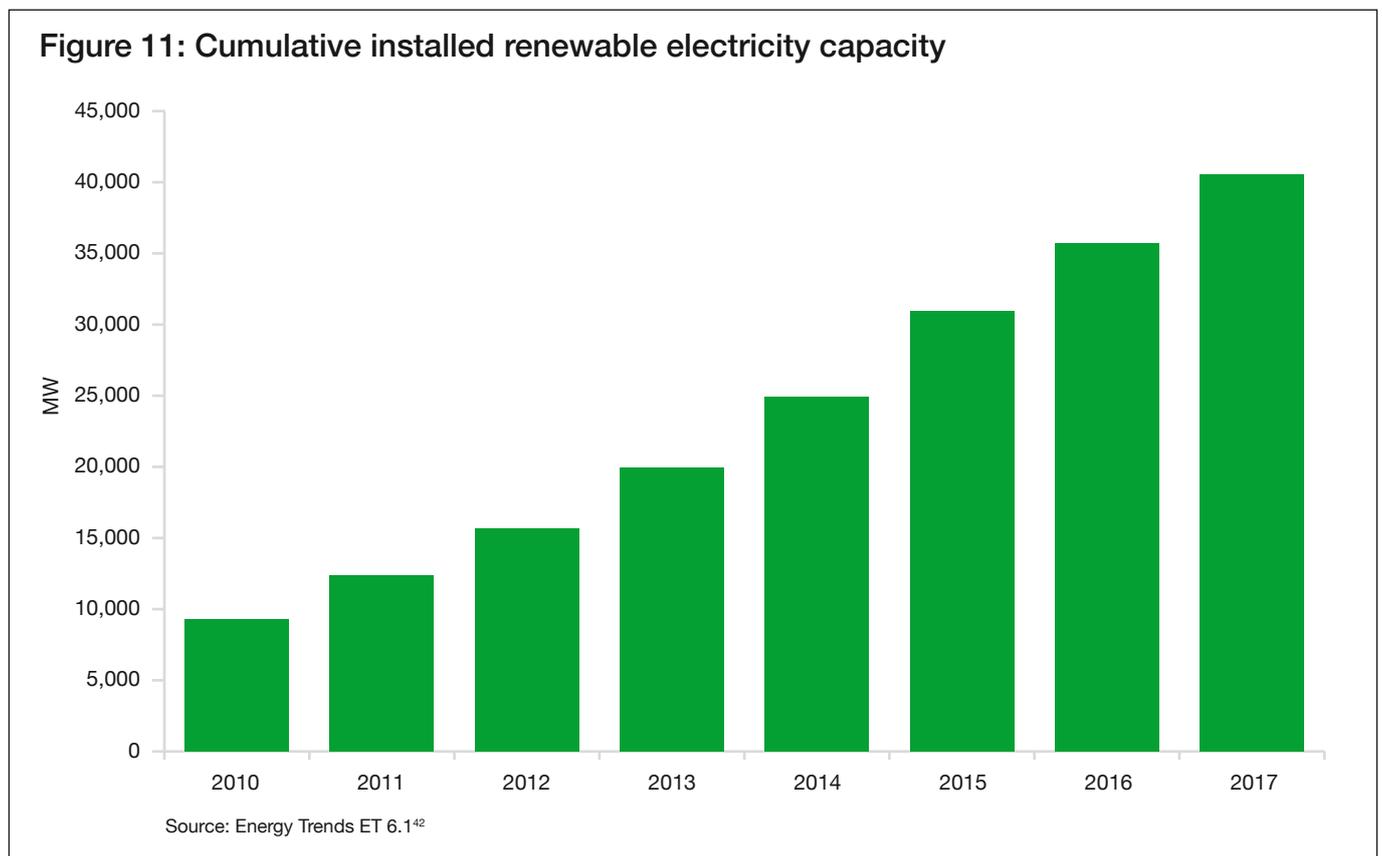
BEIS (2013) Final Investment Decision Enabling for Renewables: Updates 1, 2 and 3 <https://www.gov.uk/government/publications/increasing-certainty-for-investors-in-renewable-electricity-final-investment-decision-enabling-for-renewables>

DECC (2013) <https://www.gov.uk/government/news/record-investments-of-40-billion-in-renewable-electricity-to-bring-green-jobs-and-growth-to-the-uk>

The use of coal in our electricity mix has dropped from 34 per cent in 2007<sup>35</sup> to just seven per cent in 2017<sup>36</sup> – more than an 80 per cent decrease over just 10 years. Low carbon electricity’s share of generation increased from 46 per cent in 2017 Q1<sup>37</sup> to 48 per cent in 2018 Q1<sup>38</sup>, and renewables’ share of electricity generation is now just over 30 per cent<sup>39</sup>. In April 2017, the UK experienced its first coal free day since the industrial revolution and went on to go three days without coal in April 2018. This is a huge achievement for the energy sector and is testament to how our energy system is changing to reduce carbon emissions in the UK.

The Contract for Difference (CFD) scheme has had a remarkable impact on the renewable energy market, particularly in the offshore wind sector, in which we are the world leader with 7.8 gigawatts of installed, operational capacity<sup>40</sup>. This will rise to 10 gigawatts by 2020<sup>41</sup>.

Recent energy trends data shows the growth in UK renewables since 2010.



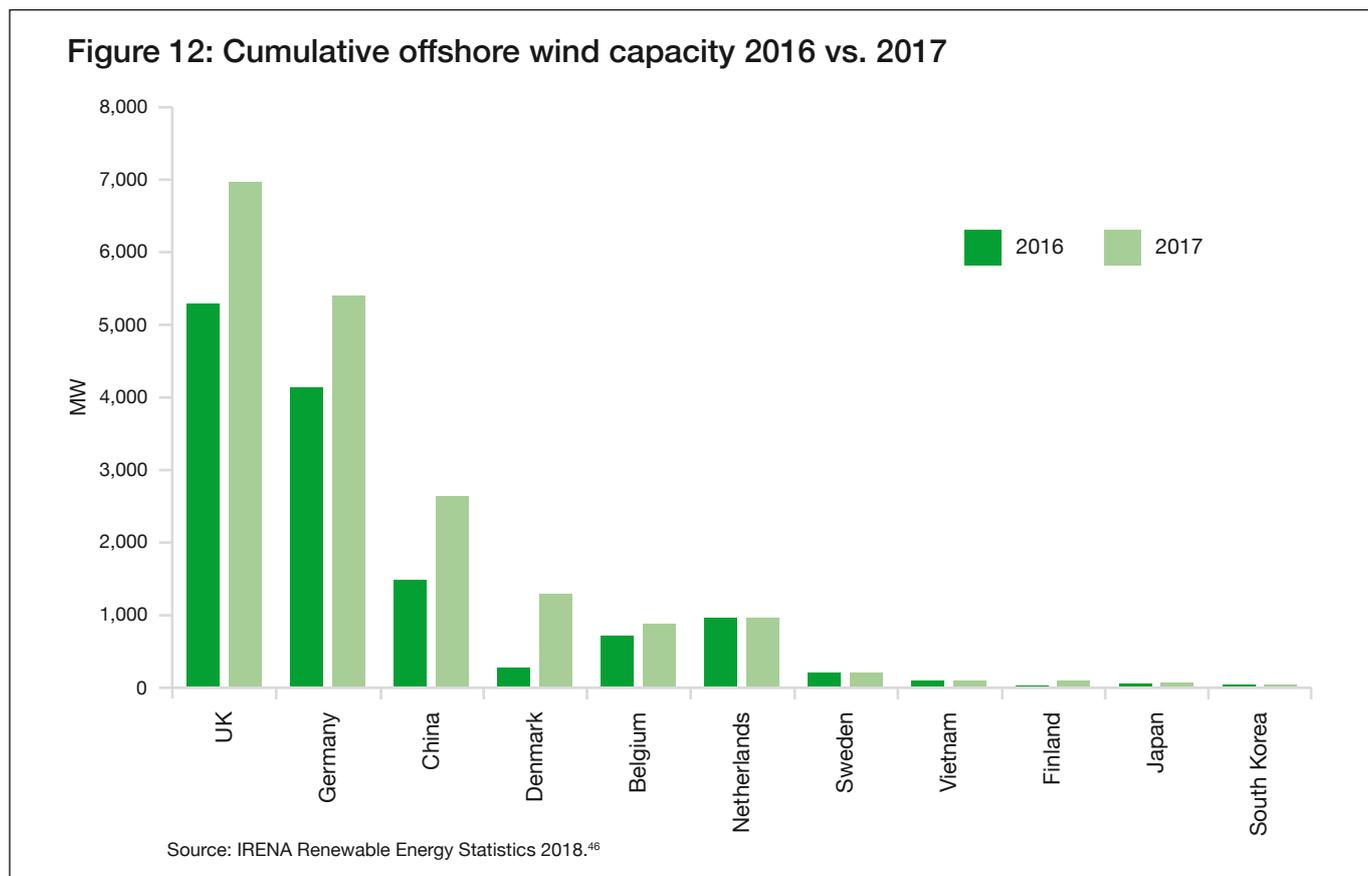
<sup>35</sup> BEIS (2018) Energy Trends: electricity <https://www.gov.uk/government/statistics/electricity-section-5-energy-trends>  
<sup>36</sup> BEIS (2018) UK Energy Statistics: <https://www.gov.uk/government/statistics/electricity-chapter-5-digest-of-united-kingdom-energy-statistics-dukes>  
<sup>37</sup> BEIS (2018) UK Energy Statistics: 2017 provisional data [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/682963/Press\\_Note\\_February\\_2018\\_key\\_data\\_from\\_monthly\\_update.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/682963/Press_Note_February_2018_key_data_from_monthly_update.pdf)  
<sup>38</sup> BEIS (2018) UK Energy Statistics Q1, 2018 [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/720182/Press\\_Note\\_June\\_18.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/720182/Press_Note_June_18.pdf)  
<sup>39</sup> BEIS (2018) UK Energy Statistics Q1, 2018 [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/720182/Press\\_Note\\_June\\_18.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/720182/Press_Note_June_18.pdf)  
<sup>40</sup> BEIS (2018) Energy Trends: renewables <https://www.gov.uk/government/statistics/energy-trends-section-6-renewables>  
<sup>41</sup> BEIS (2018) Energy Trends: renewables <https://www.gov.uk/government/statistics/energy-trends-section-6-renewables>  
<sup>42</sup> BEIS (2018) Energy Trends: renewables <https://www.gov.uk/government/statistics/energy-trends-section-6-renewables>

In January 2018, construction on Phase 1 of the Hornsea Wind Farm in the North Sea began. Once finished, Hornsea will replace the London Array as the largest wind farm in the world, with 1.2 gigawatts capacity – enough to power well over a million homes.

We have also seen a floating offshore wind farm demonstration project open in October 2017, which is the first of its kind in the world. The Hywind project, off the eastern coast of Scotland, has a 30 megawatt capacity, which will power up to 20,000 homes. In addition, an innovative new battery storage project will be piloted at Hywind next year. Storing energy generated by offshore wind turbines in batteries has the potential to mitigate the variability of wind, improving efficiency and lowering the cost of offshore wind energy even further.

The latest data available shows that the UK low carbon and renewable energy economy grew by five per cent to ~£43 billion in 2016<sup>43</sup>, from ~£41 billion in 2015<sup>44</sup>; it continued to account for around one per cent of total UK non-financial turnover<sup>45</sup>.

Our challenge is to build on the actions we have already taken, and maximise the opportunities from the changes which the electricity system will see in the coming years. We will see a more capital intensive and digitalised system, with smart meters, artificial intelligence, batteries and smart appliances. This, combined with the falling cost of low carbon generation, means we can reasonably expect a low carbon system to be the lowest cost option.



<sup>43</sup> ONS (2018) UK Environmental Accounts: Low Carbon and Renewable Energy Economy Survey: 2016 Final Estimates <https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/finalesimates/2016>

<sup>44</sup> ONS (2016) UK Environmental Accounts: Low Carbon and Renewable Energy Economy Survey: 2015 Final Estimates <https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/finalesimates/2015>

<sup>45</sup> ONS (2018) UK Environmental Accounts: Low Carbon and Renewable Energy Economy Survey: 2016 final estimates <https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/finalesimates/2016>

<sup>46</sup> Irena (2018) Renewable Energy Statistics 2018 [http://www.irena.org/-/media/Files/IRENA/Agency/Publication/2018/Jul/IRENA\\_Renewable\\_Energy\\_Statistics\\_2018.pdf](http://www.irena.org/-/media/Files/IRENA/Agency/Publication/2018/Jul/IRENA_Renewable_Energy_Statistics_2018.pdf)

## Next Steps

As set out in the Clean Growth Strategy, our ambition is to grow low carbon sources, enable a smarter, more flexible system, and keep costs down for consumers by reducing wasted energy. This will involve continuing to bring down the costs of low carbon generation from renewables and nuclear power and ensuring that the UK has the option to deploy carbon capture usage and storage (CCUS) at scale during the 2030s, subject to costs coming down sufficiently. We also need to remove barriers and improve price signals for smart energy innovations.

We will publish a CCUS Deployment Pathway by the end of 2018 which will set out the steps needed to meet the Government's stated ambition of having the option to deploy CCUS at scale during the 2030s, subject to costs coming down sufficiently.

We are today publishing a progress update on the Smart Systems and Flexibility Plan. This will set out the actions we have implemented to date, including some which go beyond those laid out in the plan, and our priorities going forward. We will also seek feedback from stakeholders on our priorities and overall package of work in this area.

## Response to CCC Recommendations

### Recommendation 1:

**Continue to run auctions for low-carbon power beyond the spring 2019 Contract for Difference auction, sufficient to reach an emissions intensity below 100 gCO<sub>2</sub>/kWh by 2030, including a route to market for the cheapest forms of low-carbon generation (i.e. onshore wind and solar).**

We welcome the CCC's support of the Government's main policy for bringing forward affordable, clean power. Our sustained support

has helped produce dramatic falls in the costs of renewable technology. For example, the cost of solar cells has fallen by 80 per cent since 2008<sup>47</sup> and Government investment in offshore wind has helped to deliver a 50 per cent drop in costs over just the last two years<sup>48</sup>.

We also agree with the CCC's view that it is important that this momentum is maintained.

The shift to low carbon power generation presents the UK with the opportunity to further grow a sustainable industry and support high value jobs. We have announced that the next CFD allocation round will be held in May 2019, with further allocation rounds every two years from then on, signaling support of up to £557 million for industry. We plan to set out the parameters of the next auction later this year and plan to consult at an appropriate time thereafter on outline principles for auction round 4.

The results of the May 2019 auction will enable us to take stock and more accurately analyse what further generation is required.

### Recommendation 2:

**A new strategic approach to deploy carbon capture and storage (CCS) at scale in the 2030s. This will require a programme of CCS deployment across any of power, hydrogen or industry reaching 10 MtCO<sub>2</sub> per annum in 2030, on the path to at least 20 MtCO<sub>2</sub> per annum in 2035. This must include separate approaches to CO<sub>2</sub> capture and the transport and storage infrastructure.**

The CCUS Cost Challenge Taskforce, comprising over 40 industry experts, has now published its report setting out the CCUS industry's view on the actions that need to be taken to cost-effectively progress CCUS in the UK.

The Government will respond to the Taskforce report by the end of 2018, through its CCUS Deployment Pathway which, as set out in the

<sup>47</sup> Bloomberg New Energy Finance (2016) Summit keynote presentation <http://www.bbhub.io/bnef/sites/4/2016/04/BNEF-Summit-Keynote-2016.pdf>

<sup>48</sup> BEIS (2017) New clean energy projects set to power 36 million homes <https://www.gov.uk/government/news/new-clean-energy-projects-set-to-power-36-million-homes>

Clean Growth Strategy, will set out the steps needed to meet the Government's stated ambition of deploying CCUS at scale during the 2030s, subject to costs coming down sufficiently.

The Government, taking into account the recommendations of the CCUS Cost Challenge Taskforce on business models for CCUS, is continuing its Review of the Investment and Delivery Frameworks for CCUS and will consult on these in 2019.

### Recommendation 3:

**The development of robust contingency plans that allow for additional low-carbon generation to be brought forward in the event of delay or cancellation of planned projects, or imports of electricity below projected levels.**

The Government recognises the importance of maintaining security of supply whilst successfully achieving our emissions reduction targets. Construction of major nuclear and interconnector projects are underway, and we have a developed renewables sector with the right policy levers to deliver more renewable generating capacity if it is needed.

We have confidence in the nuclear programme to deliver the generation required, and that we have the appropriate tools and sufficient flexibility to bring forward additional renewable capacity should that be needed. This is demonstrated through our commitment to hold CFD allocation rounds every two years – providing predictability for industry as well as a responsive and flexible approach where the Government can adapt to changing circumstances. Alongside CFD allocation rounds, there are other policy developments in place, such as an increase in storage and demand-side response, that would enable us to deliver more low-carbon capacity in the event of delays to the nuclear programme.

We will continue to monitor the forecast Commercial Operations Date for Hinkley Point C. We will increase our scrutiny and consideration

of delay scenarios as the time remaining to the forecast Commercial Operations Date approaches planning horizons for generation capacity decisions.

Good progress is also being made to increase levels of interconnection on top of the existing 4 gigawatts of capacity. There is 4.4 gigawatts of new capacity under construction, with an additional 9.5 gigawatts in the pipeline at an earlier stage of development. We could therefore have up to around 18 gigawatts of total capacity by the mid-2020s.

### Recommendation 4:

**Consultation on future electricity market design. This should include consideration of technology neutrality, subsidy-free Contracts for Difference and mechanisms for re-powering.**

The Government recognises that fundamental changes are happening in the electricity market. We want to ensure that the policy and regulatory environment maximises the opportunity for the sector to develop, whilst maintaining affordable and reliable supply for the consumer. That is why we commissioned Professor Dieter Helm to undertake the Cost of Energy Review. The Government will shortly set out its response to Professor Helm's Review.

It is important to achieve an appropriate balance between maintaining stability and certainty for the renewables sector and refining our policies to ensure that they evolve and remain appropriate for the operating environment. It was to provide additional certainty that we announced in July 2018 that CFD allocation rounds would be held approximately every two years, with the next one to be opened by May 2019. With that schedule of allocation rounds we will be considering further refinements to the CFD policy to improve its operation and stimulate the deployment of renewables whilst driving costs for consumers down. We anticipate publishing a consultation on policy changes we are considering in the context of allocation round 4, scheduled for 2021, in due course.

Additionally, on 8 August, we published a Call for Evidence which sought views on, amongst other things, potentially opening up the Capacity Market to renewables. The Call for Evidence response period closed on 1 October. Enabling the participation of renewables was highlighted as a priority issue. We intend to consult on proposals later this year.

### Recommendation 5:

#### **Continued progress on improving electricity system flexibility, including implementation of the 29 actions in the Government's Smart Systems and Flexibility Plan.**

We are committed to implementing the Smart Systems and Flexibility Plan in full, which will help to integrate more low carbon generation and electric vehicles, balance the grid and reduce peak demand, unlocking significant benefits for the consumer and the system. We have made good progress to date and are on track to deliver the 29 actions by 2022, with 15 actions already implemented.

Progress includes:

- Ofgem's publication of guidance on co-location of storage and renewables;
- A consultation on standards for smart appliances;
- The introduction of the Automated and Electric Vehicles Act;
- A commitment from Distribution Network Operators to open up network upgrades and reinforcements to market competition;
- Seven smart innovation competitions launched on top of Faraday Challenge and Prospering from the Energy Revolution Challenge as part of the Industrial Challenge Fund; and
- The creation of the Smart Systems Forum.

We are today publishing a progress update on the Smart Systems and Flexibility Plan. This will set out the actions we have implemented to date, including some which go beyond those laid out in the plan, and our priorities going forward. We will also seek feedback from stakeholders on our priorities and overall package of work in this area.



# Chapter 2:

## Progress on Reducing Emissions from Buildings



## Summary of Progress on Buildings

### Since publishing the Clean Growth Strategy, we have:

1. Launched a mission under the Clean Growth Grand Challenge to at least halve the energy use of new buildings by 2030.
2. Completed the reforms of the Renewable Heat Incentive (RHI) to improve value for money and tighten the focus on longer-term decarbonization of heat.
3. Published a Call for Evidence on the Future Framework for heat in buildings.
4. Published a Call for Evidence on Energy Performance Certificates (EPCs) seeking views on how well they are performing and how they could be improved.
5. Published a Call for Evidence on building a market for energy efficiency, particularly amongst owner occupiers.
6. Published a Call for Evidence on “Helping businesses to improve the way they use energy”, to support delivery of our ambition to reduce business energy use by 20 per cent by 2030. Alongside this we published a review of the potential role of the energy services market in meeting our ambition.
7. Consulted on options to amend the existing domestic private rented sector minimum standard regulations by introducing a landlord spend requirement and published a summary of responses, to be followed by the Government response this autumn.
8. Started work on the review of the energy performance standards in Building Regulations.
9. Worked with the Better Buildings Partnership on the industry-led Design for Performance pilot for commercial buildings.
10. Commenced analysis and scoping work for setting a long-term energy efficiency trajectory in the domestic and commercial private rented sector (England and Wales) with plans to consult later in the year, and also in the social housing sector, building on the ambition set out in the Social Housing Green paper consultation.
11. Continued with the smart meter rollout, with over 12 million smart and advanced meters operating in Great Britain as of end of June 2018. Launched an innovation competition to support the development and demonstration of a variety of Smart Meter Enabled Thermal Efficiency Ratings methods to measure the thermal performance of homes robustly and reliably.
12. Provided ongoing support to local authorities on heat networks and worked on lessons from our pilot of the Heat Networks Investment Project.
13. Brought new boiler standards into force that ensure household heating is more efficient, more controllable and more comfortable than ever before. These standards keep the UK at the forefront of a global boiler market.
14. Announced funding for £16 million of innovation projects through our low carbon heating technology and building thermal efficiency innovation funds.
15. Appointed programme management contractors for the £25 million Hy4Heat programme and initiated several strands of work including a competition to develop a range of hydrogen appliances (boilers, fires and cookers).
16. Confirmed new targets for greenhouse gas reductions in the public sector. Central Government to reduce greenhouse gas emissions by 43 per cent by 2020 from a 2009/10 base; a voluntary Emission Reduction Pledge of 30 per cent reduction by 2020 from a 2009/10 base for the wider public sector.
17. Launched a new Local Energy Programme to support local leadership on decarbonisation. This includes support for local energy strategies and capacity support for local carbon investments via five local energy hubs across England.

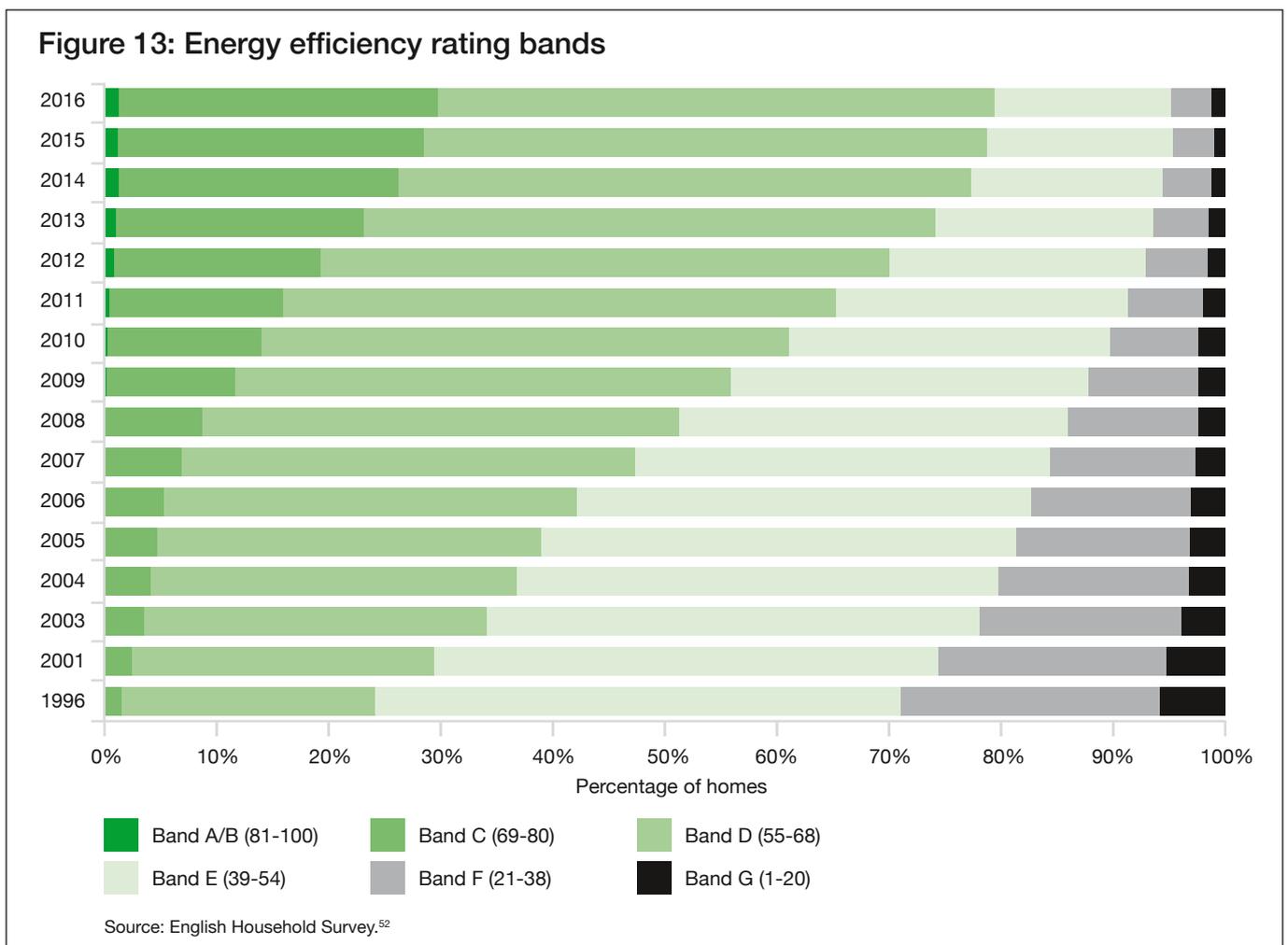
## Policy Approach

Reducing emissions and keeping energy bills down for homes and business is a priority for the Government. We have made strong progress to date – emissions from non-domestic buildings were at least 20 per cent lower in 2016 than 1990<sup>49</sup>, and the average household energy consumption has fallen by over 17 per cent over the same time<sup>50</sup>. But we know that meeting our carbon goals will require improvements in the way in which industrial and commercial buildings are built, refurbished and operated. It will also require a step change in energy performance improvements in both new and existing homes

through a combination of greater energy efficiency and moving to low carbon heat.

The Government has taken action to reduce fuel poverty, through the 2015 Fuel Poverty Strategy, and more recently a refocussing of the Government’s flagship domestic energy efficiency scheme, the Energy Company Obligation (ECO) to have a greater focus on tackling fuel poverty.

Over 2.5 million energy efficiency measures were installed in around 1.9 million properties through ECO and under the Green Deal Framework to the end of July this year<sup>51</sup>, and we have seen significant improvements in the energy performance of our homes.

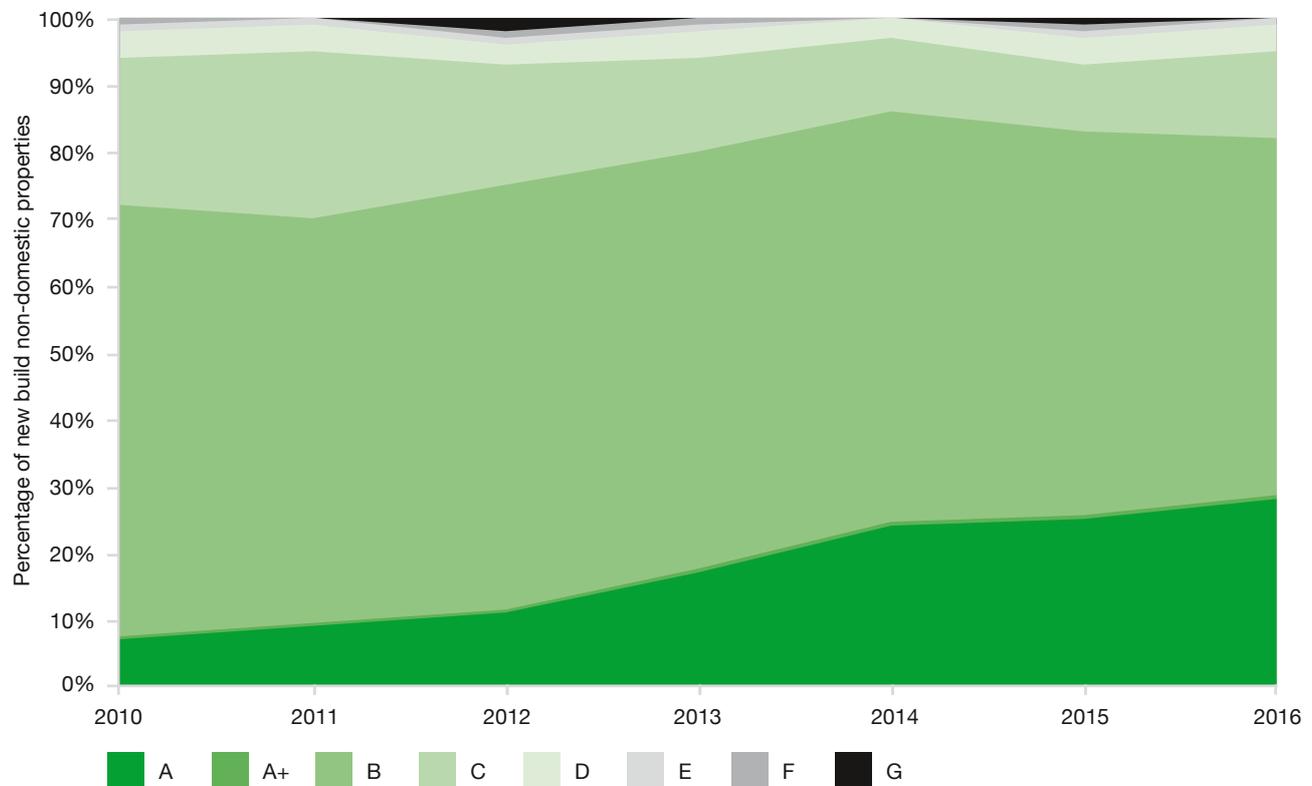


<sup>49</sup> BEIS (2017) Final UK greenhouse gas emissions national statistics: 1990-2015 <https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2015>

<sup>50</sup> BEIS (2017) Energy Consumption in the UK <https://www.gov.uk/government/statistics/energy-consumption-in-the-uk>

<sup>51</sup> BEIS (2018) Household Energy Efficiency National Statistics <https://www.gov.uk/government/collections/household-energy-efficiency-national-statistics>

<sup>52</sup> MHCLG (2018) English Housing Survey, <https://www.gov.uk/government/collections/english-housing-survey>

**Figure 14: EPC ratings of new build non-domestic properties**

Source: EPC banding data collected by MHCLG.<sup>53</sup>

There are a range of existing policies to encourage businesses to invest in energy efficiency and low carbon heating including building regulations, incentives such as Enhanced Capital Allowances and informational policies such as the Energy Saving Opportunity Scheme.

However, we recognise that there is much more to do. There is a strong economic and environmental case for action to improve the energy performance of our buildings. This is why, in addition to the policies and proposals set out in the Clean Growth Strategy, we have launched our Buildings Mission.

### Mission: At least halve the energy use of new buildings by 2030

Through the mission we will:

- Make sure every new building in Britain is safe, high quality, much more efficient and uses clean heating;
- Innovate to bring down the cost of building low energy, low carbon buildings;
- Drive lower carbon, lower cost and higher quality construction through innovative techniques;
- Give consumers more control over how they use energy through smart tech;
- Halve the cost of renovating existing buildings to a similar standard as new buildings whilst increasing quality and safety.

<sup>53</sup> MHCLG Energy Performance of Buildings Data: England and Wales <https://epc.opendatacommunities.org/>

## Next Steps

Meeting our carbon goals will require real progress in both domestic and commercial buildings – a combination of greater energy efficiency and moving to low carbon heat.

We will continue to develop detail of the policies and proposals set out in the Clean Growth Strategy, including through:

- Laying the groundwork on energy efficiency, innovation to bring down costs, and deploying low carbon heat in homes and businesses not connected to the gas grid, to ensure we are not closing off cost-effective options around heat technologies;
- Setting out our priorities for establishing a heat networks market framework to deliver growth in a way that protects consumers as well as maximises the potential economic and environmental benefits from heat networks. This will form our response to the recommendations of the Competition and Markets Authority (CMA) to ensure that heat network consumers are appropriately protected and to the Industry Task Force Report;
- By the end of 2019 we will publish proposals for updating the Fuel Poverty Strategy;
- A Decent Homes Standard Review to ensure that people are living in safe homes which they can affordably heat;
- Considering feedback from our Call for Evidence on “Helping businesses improve the way they use energy” and deciding how to respond by end of year, taking account of responses as we continue to develop policy options;
- Announcing innovation funding to support business models that scale up energy efficiency projects from SMEs, for launch in 2019;
- Publishing a consultation on Part L of the Building Regulations, considering proposals to improve the energy efficiency of new and existing buildings where there are cost-effective and affordable opportunities, and it is safe and practical to do so. Our approach will take into account the recommendations of the independent review of Building Regulations and fire safety undertaken by Dame Judith Hackitt which reported in May 2018;
- Continuing to develop our Buildings Mission under the Clean Growth Grand Challenge. We have announced £36 million funding for the Active Buildings Centre, which seeks to reduce the cost and commercialise energy generation and storage components in buildings.

Further milestones which set out how we are continuing to develop the policies and proposals set out in the Clean Growth Strategy are included at Annex C.

## Response to CCC Recommendations

### Recommendation 1:

**Publish concrete policies to deliver the Government’s ambition on retrofit (Energy Performance Certificate band C by 2035) – including a delivery mechanism for the social housing minimum standards.**

Alongside the Clean Growth Strategy we published a Call for Evidence on Building a Market for Energy Efficiency, with a focus on owner occupied homes, which closed in January 2018. This covered policies to tackle demand-side barriers such as finance for energy efficiency, price signals tied to building energy efficiency and policies to improve consumer awareness. It also covered policies to address supply-side barriers, for example bringing new players such as mortgage providers into the market, enabling innovative products and services, improving data to open up the market

for investment and improving supply chain capability. We will publish an action plan that will set out what steps we will take to build the market for energy efficiency, in particular amongst owner occupiers, by the end of 2018.

We are currently developing options for the delivery mechanism on Social Housing, following the publication of the Social Housing Green Paper and associated consultation document in August.

### Recommendation 2:

**Address major delivery risks around the Private Rented Sector (PRS) regulations – in particular, the exemptions capping landlord contributions which severely limit the scope and impact – and set out a trajectory for tightening to Energy Performance Certificate (EPC) band C by 2030.**

We published a consultation on amendments to the domestic PRS minimum standard regulations, which closed in March 2018. The consultation proposed the introduction of a capped landlord contribution element (under the original regulations landlords are exempt if they would incur any cost). We published a summary of responses in July 2018 and aim to publish the final policy design in autumn 2018, laying the amended regulations as soon as possible thereafter. Risks related to enforcement are addressed below.

We are currently considering our preferred policy design for a trajectory to reach EPC band C by 2030, with a view to consulting later in the year.

### Recommendation 3:

**Set out concrete policies to deliver the ambition on non-residential buildings, and address existing policy risks including tightening non-domestic PRS regulations.**

In the Clean Growth Strategy, we set out a stretching ambition to reduce business energy use by 20 per cent by 2030. Achieving the 20 per cent ambition will require action across

all businesses, in both the efficiency of buildings and industrial processes.

Our Call for Evidence on “Helping businesses to improve the way they use energy”, published in July, set out possible approaches on building standards supported by enabling measures to facilitate the market for energy efficiency, and we will be considering how to respond by the end of the year. We are currently reviewing the responses and will take account of these as we develop new policies, as well as the level of ambition and how best to measure our progress.

We are currently analysing the impact of higher standards for rented sector business buildings. We intend to consult on a trajectory for minimum standards in early 2019.

To ensure that the benefit of the policies is fully realised, we are also working with local authorities on enforcement pilots, as set out under recommendation 8 below.

### Recommendation 4:

**Introduce voluntary public sector target, followed by review and consultation on future targets, including developing options to go further in more ambitious sectors, and finalising tighter ‘Greening the Government’ targets.**

We have announced a new greenhouse gas emissions reduction target for the central Government estate of 43 per cent by 2020 from a 2009/2010 base, potentially delivering £340 million in savings. This shows central Government leading the charge across the public sector in reducing greenhouse gas emissions. We have also introduced a voluntary target – the Emissions Reduction Pledge – for the wider public sector and higher education sector of a 30 per cent reduction in greenhouse gas emissions by 2020 from a 2009/10 base.

A Call for Evidence was launched in October 2017: “Leading by example: cutting energy bills and carbon emissions in the public and higher education sectors”. A summary of responses

was published in July 2018 and further analysis will feed into a review of carbon reduction policies across the public sector. We will publish a decarbonisation roadmap in 2019 which will include options for targets beyond 2020, with a view to moving to more ambitious and potentially mandatory targets during the 2020s. Energy efficiency is also being supported by a revolving interest-free loan scheme for the public sector, managed by Salix Finance. By 2017 the loan scheme had funded over 16,000 projects<sup>54</sup>, improving public sector and higher education buildings for its users and is projected to save the sector around £55 million on energy bills in 2017. The loan scheme administrator currently manages £240 million, and this will rise to £385 million by 2020. This fund currently supports investment of circa £100 million per annum in energy efficiency across the public sector.

### Recommendation 5:

#### **Continue to improve boiler standards and heating controls, including a second phase of standards.**

Earlier this year new standards were set, once again improving performance, and introducing requirements for state of the art control devices, to ensure systems use no more fuel and power than is reasonable.

We can also look beyond the boiler to consider ways to improve the efficiency of mainstream heating technologies, for example complete hydraulic system design, emitters, proper zonal control and system balancing. These considerations can increase the cost of installation, but also mean consumers spend less on heating bills, have greater comfort and control, and they often extend the life of the boiler.

However, with today's fossil fuel boilers these improvements still only offer incremental benefits. Further changes to installation standards need to be made in the context of any future changes

to the fuels and technologies themselves. In addition, further work needs to be undertaken to understand the expected skills and products gap before mandating new products and installation skills.

### Recommendation 6:

#### **Strengthen new-build standards to ensure they are designed for a changing climate, are future-proofed for low-carbon heating and deliver high levels of energy efficiency. Tighter new-build standards supporting low-carbon heat come into force.**

We published a Call for Evidence on A Future Framework for Heat in Buildings. This included consideration of moving to low-carbon heating and future-proofing for low carbon heat. We are currently reviewing the responses to the Call for Evidence and will bring forward the Government's views in due course.

As part of our ongoing ambition to improve the energy performance of buildings, the Prime Minister also announced our Buildings Mission in May 2018<sup>55</sup>, which is an ambition to cut the energy use of all new buildings by a half, by 2030. We plan to consult further on proposals, and will be engaging with stakeholders through to the new year.

The Government has committed to consulting on strengthening new build standards, and work is underway in preparing to publish this in spring 2019. This will include further consideration of low-carbon heat and future-proofing in new build. We plan to also use the consultation to explore the trajectory for standards beyond 2020 in support of the ambitions set out in the Buildings Mission.

### Recommendation 7:

#### **Reform monitoring metrics and certification.**

In the Clean Growth Strategy, the Government committed to exploring the possibility of

<sup>54</sup> Salix Finance: Public Sector Loan Scheme <https://www.salixfinance.co.uk/>

<sup>55</sup> 10 Downing St (2018) PM speech on science and modern Industrial Strategy <https://www.gov.uk/government/speeches/pm-speech-on-science-and-modern-industrial-strategy-21-may-2018>

measuring actual building performance using data from smart meters, and a market review in early 2018 identified several potential methods for measuring the thermal performance of domestic buildings using smart meter and other data which could meet various policy needs. These have been collectively termed Smart Meter Enabled Thermal Efficiency Ratings (SMETER) methods.

We published a Call for Evidence in July 2018 on improving Energy Performance Certificates. The responses to the Call for Evidence will inform policy development over the period set out by the Committee on Climate Change (CCC). This Call for Evidence asked for views on how such SMETER methods might be integrated into EPCs.

In September 2018, we launched an innovation competition with the aim of developing and demonstrating a variety of SMETER methods that will robustly and reliably measure the thermal performance of homes. The programme will also fund a Technical Assessment Contractor to design and carry out independent testing and validation of the SMETER products to assess their suitability for use in policy.

### Recommendation 8:

**Strengthen compliance and enforcement framework so that it is outcomes-based, places risk with those able to control it, provides transparent information and a clear audit trail, with effective oversight and sanctions.**

The risks around the enforcement of EPCs will be explored as part of the work around the Call for Evidence on EPCs, published in July 2018.

The Government is also planning on funding a series of targeted local authority enforcement pilots for the PRS regulations in the autumn and we will use the opportunity to work with local authorities to develop best practice enforcement guidance and an enforcement toolkit for wider dissemination.

As part of the consultation into improving Building Regulations energy efficiency standards, we will consider how the guidance and standards can be reviewed to improve the flow of information between construction professionals, energy assessors and building control bodies. We will also look at ways in which the guidance can be clarified and enhanced to improve compliance and reduce the performance gap.

### Recommendation 9:

**Put in place a long-term heat networks policy framework.**

We are launching the £320 million Heat Networks Investment Project (HNIP) building on learning from the pilot projects in 2017. The project aims to help create a self-sustaining heat network market that does not require direct Government subsidy by supporting development of efficient heat networks that meet local needs and avoid customer detriment.

In parallel, we are developing a market framework for heat networks that delivers sustainable benefits for consumers and growth for the sector. We welcome the CMA's Heat Networks Market Study for domestic consumers, published in July 2018. We expect to set out in due course our priorities for establishing a heat networks market framework to deliver growth in a way that protects consumers, delivers sustained investment and maximises the potential economic and environmental benefits from heat networks. This will form our response to the CMA's recommendations to ensure that heat network consumers are appropriately protected. We expect to consult further with stakeholders in 2019 on options for ensuring heat network consumers receive equivalent protections to gas and electricity consumers. In addition to the CMA's findings, we are considering proposals from an Industry taskforce led by the Association for Decentralised Energy on necessary steps to facilitate ongoing investment in heat networks. As part of our policy development and consultation process, we will be exploring options that support growth

of a self-sustaining market needed to maximise potential economic and environmental benefits from heat networks longer term.

### Recommendation 10:

**Include in the Heat Strategic Options publication detail on a governance framework to drive decisions on heat infrastructure in the early 2020s.**

In the Clean Growth Strategy, the Government committed to lay the groundwork this Parliament to set up decisions in the first half of the next decade on the long-term future of heat. We are continuing our review of the evidence on the different approaches to achieve long-term decarbonisation, and are planning to publish a report on our review when it is complete.

### Recommendation 11:

**Publish detailed plans to phase out the installation of high-carbon fossil fuel heating in the 2020s, ensuring there is no policy hiatus in 2021.**

We published a Call for Evidence on A Future Framework for Heat in Buildings on 19 March. This focused on the Clean Growth Strategy commitment to phase out installation of high carbon fossil fuel heating in buildings off the gas grid in the 2020s, starting with new build. We are currently reviewing the responses to the Call for Evidence and will bring forward the Government's views in due course.

### Recommendation 12:

**Establish support framework for heat pumps and biomethane post-2021, as well as support for low-carbon technologies in heat networks.**

The Clean Growth Strategy sets out a strong action plan to accelerate clean growth through delivering increased economic growth whilst decreasing carbon emissions. Both heat pumps and biomethane have the potential to play a

strategic role in future heat decarbonisation. The Government will consider options for supporting renewable heating technologies, including heat pumps and biomethane. The Call for Evidence described in relation to Recommendation 11 explored various models for supporting growth in the heat sector as investors, consumers and the supply chain move towards low carbon solutions.

In each of the Clean Growth Strategy's three illustrative pathways to 2050, heat networks are projected to meet 17 per cent of heat demand in homes and up to 24 per cent of heat demand in industrial and public sector buildings<sup>56</sup>. To help deliver this, the Government is investing £320 million of capital through grants and loans for heat network projects through the Heat Networks Investment Project (HNIP). The aim of HNIP is to increase the volume of heat networks built, in order to deliver carbon savings that help us reduce emissions in a cost-effective way and lower bills for consumers. A longer-term aim is for HNIP funding to create a self-sustaining, subsidy-free market for heat networks in the 2020s.

### Recommendation 13:

**Review the balance of tax and regulatory costs across fuels in order to improve alignment with implicit carbon prices and reflect the progressive decarbonisation of electricity.**

Carbon pricing plays an important role in the Government's energy policy. The Carbon Price Support has played a large role in the decarbonising of the UK power sector. We announced at Budget 2016 that we would equalise gas and electricity Climate Change Levy (CCL) rates by 2025 to incentivise reductions in the use of gas, in support of the UK's climate targets. CCL rates are due to change in April 2019, reducing the ratio of electricity to gas from 2.9:1 today to 2.5:1. We will announce rates for 2020 to 2021 and 2021 to 2022 at Budget 2018.

<sup>56</sup> BEIS (2017) Clean Growth Strategy [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/700496/clean-growth-strategy-correction-april-2018.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf)

The Government's energy tax policy takes place within the framework of its overall priorities for the tax system, including ensuring the system is sustainable, fair, simple and stable.

#### Recommendation 14:

**Set out policy package for able-to-pay and address delivery risks around the Energy Company Obligation (ECO) – in particular, to retain a focus on carbon savings and timely delivery.**

The Call for Evidence on Building a Market for Energy Efficiency explored a number of demand and supply measures to stimulate the market for householders. These include working with mortgage lenders to incorporate energy efficiency into their lending decisions, supporting the launch of innovative “green mortgage” products and looking at incentives and other levers that could encourage homeowners to invest in energy efficiency improvements. The Building a Market for Energy Efficiency Action Plan, to be published by the end of 2018, will set out policies to support the able-to-pay market.

We laid Regulations before Parliament in July that will extend the Energy Company Obligation until March 2022. In accordance with the Government's commitments, support will be focused on those most in need – low income and vulnerable households. Reflecting the Committee's advice, the Government decided not to allow under-delivery against the current ECO scheme to be delivered against the extended scheme. A requirement for a minimum number of solid wall homes to be improved has been included and, where this is through measures other than solid wall insulation, they will need to deliver equivalent or higher lifetime bill savings. The Government intends that allowing consideration of different measures to improve solid wall homes, combined with the new innovation element to ECO, will help to bring down the costs of improving the energy efficiency of these more challenging homes.

#### Recommendation 15:

**Implement Green Finance Taskforce recommendations around green mortgages and fiscal incentives to encourage uptake and support financing of upfront costs.**

We have already taken a range of steps to support lenders to take account of energy efficiency in their lending decisions. These include:

- Funding the LENDERS project to look at the link between energy efficiency and mortgage affordability calculations;
- Releasing EPC data to allow mortgage lenders to carry out “green tagging” of loan books. Barclays used this data to support their analysis for their “Green Home Mortgage” product, with a lower interest rate for the most energy efficient properties, which was launched earlier this year;
- Publishing a Call for Evidence on EPCs in July 2018 which explored ideas such as the “Green Buildings Passport” recommended by the Green Finance Taskforce.

The recent Call for Evidence on building a market for energy efficiency looked at possible options for fiscal incentives and encouraging finance providers to develop green mortgages. We intend to publish an Action Plan on Building a Market for Energy Efficiency by the end of the year.

#### Recommendation 16:

**Develop new policy to support SMEs, (eg. Peer-to peer-networks, financial support and soft loans).**

Our Call for Evidence on “Helping business to improve the way they use energy”, published in July, recognised that action by SMEs will be needed to deliver our ambition for improving business energy efficiency, given they account for 50 per cent of business energy use<sup>57</sup>. We asked for further evidence and ideas on how

<sup>57</sup> BEIS (2016) Building Energy Efficiency Survey <https://www.gov.uk/government/publications/building-energy-efficiency-survey-bees>

to raise awareness of the benefits of energy efficiency to SMEs.

We also recognise that there are fewer finance options available to SMEs to invest in energy efficiency compared to large businesses. We asked for views on whether aggregation of projects could help SMEs access services. We also asked for views on how to encourage lenders to develop financial products suitable for SMEs investing in energy efficiency. We are announcing innovation funding to support business models that scale up energy efficiency projects from SMEs, for launch in 2019.

We are reviewing responses and continuing to develop policy options in this area. We will take a decision on how to respond by the end of the year.

#### Recommendation 17:

**Improve consumer access to data and advice, implementing the Green Finance Taskforce proposals on Green Building Passports, improving EPCs and access to data underpinning EPCs and the Standard Assessment Procedure (SAP).**

The Government has worked with the implementation of Each Home Counts<sup>58</sup> to develop a new digitally-led energy saving advice service, which has been available to the public as a prototype since May 2018. This fulfils some of the recommendations of the Green Finance Taskforce, including providing tailored recommendations and advice to homeowners.

As set out above, we published a Call for Evidence on improving domestic and non-domestic EPCs in July 2018, which included questions on developing Green Building Passports and improving access to data underpinning EPCs. We will review the responses to the Call for Evidence to guide the development of our approach to using EPC data to drive energy efficiency in buildings.

The SAP methodology<sup>59</sup> is publicly available, as well as the “SAP conventions” which provide extra information on the implementation of certain aspects of SAP.

#### Recommendation 18:

**Drive wider use of operational data for benchmarking in the public and commercial sectors by strengthening and extending mandatory public reporting of operational energy ratings, e.g. via Display Energy Certificates or equivalent (such as NABERS). Streamlined Energy and Carbon Reporting Scheme (SECR) introduced for businesses.**

We recognise the potential for benchmarking to incentivise action on energy efficiency. We are currently considering what and how operational data could be used.

We committed in the Clean Growth Strategy to look at the role of voluntary standards to improve energy use and energy efficiency for businesses and their buildings. We have been working with the Better Buildings Partnership and monitoring the progress of the industry-led Design for Performance pilot that is looking at the measurement of building energy use and a proposed benchmarking standard. This pilot is based on the NABERS principles in a UK context.

The Government published a consultation response on streamlined energy and carbon reporting alongside draft Regulations in July 2018 to introduce SECR from April 2019. SECR reports are required to include at least one intensity metric.

#### Recommendation 19:

**Review professional standards and skills across the building and heat supply trades with a nationwide training programme to upskill the existing workforce along with an**

<sup>58</sup> MHCLG, BEIS (2016) Each Home Counts: Review of Consumer Advice, Protection, Standards and Enforcement for Energy Efficiency and Renewable Energy <https://www.gov.uk/government/publications/each-home-counts-review-of-consumer-advice-protection-standards-and-enforcement-for-energy-efficiency-and-renewable-energy>

<sup>59</sup> BEIS (2014) Standard Assessment Procedure, <https://www.gov.uk/guidance/standard-assessment-procedure>

### **increased focus on incentivising high “as-built” performance.**

As described in the Industrial Strategy, technical skills in the UK fall behind many other countries in the EU, with negative impact on productivity. We therefore said we would set high standards, and high expectations.

The Government has introduced T-Levels for the first time, and construction will be in the first wave of T-Levels due to be launched in 2020. Through the Sector Deal, industry has pledged to provide 1000 work placements for T-Level students.

Following on from the Government’s review of Industry Training Boards, we are committed to working with the Construction Industry Training Board (CITB) to implement a significant programme of reform. This will ensure that CITB is better able to respond to the emerging skills needs of the construction sector, including skills for sustainable construction and assuring high quality “as built” performance.

The construction sector is working with the Institute for Apprenticeships to develop new, employer-owned, apprenticeship standards, and is on track to exceed the target set in the Construction Sector Deal of agreeing 50 new

standards by the end of this year. As part of the National Retraining Scheme, the Government is also investing £34 million to scale up innovative training models for construction skills across the country. This includes the Construction Skills Fund, launched in June 2018, which will deliver 20 onsite training hubs by 2020.

We are also considering specific standards and skills across heat, energy efficiency and smart meters. For example, the Building a Market for Energy Efficiency Call for Evidence included proposals for improving supply chain capability, and details of measures to address this will be included in the Building a Market for Energy Efficiency Action Plan. We also sought insight on skills and standards for low carbon heating in the Call for Evidence on A Future Framework for Heat in Buildings.

The Smart Metering Implementation Programme has worked with industry parties through the National Skills Academy for Power (NSAP) to further review competencies and standards associated with smart metering. Activities include ensuring that training standards continue to meet industry requirements; development of guidance for installer mentoring; and ensuring that operational lessons are reflected in training curriculums.

# Chapter 3:

## Progress on Reducing Emissions from Industry



## Summary of Progress on Industry

### Since publishing the Clean Growth Strategy, we have:

1. Published a Call for Evidence on “Helping Businesses to Improve the way they use Energy” in July which sets out our possible approach to delivering on the Government’s ambition to improve energy efficiency by 20 per cent by 2030, including on industrial processes.
2. Published alongside the Clean Growth Strategy decarbonisation and energy efficiency action plans for seven energy intensive industrial sectors. These were developed jointly by industry and the Government and set out concrete tasks that industry and the Government will carry out to support emissions reductions in the relevant sectors.
3. Established a CCUS Council, co-chaired by the Minister of State for Energy and Clean Growth, with James Smith, former Chair of Shell UK and the Carbon Trust, to engage the CCUS sector on key strategic issues to enable the Government’s ambition for CCUS to be achieved.
4. Convened a CCUS Cost Challenge Taskforce, comprising over 40 industry experts, to provide advice to the Government on how to cost-effectively progress CCUS in the UK. The Taskforce published its report on 19 July 2018 and the Government will respond to the Taskforce report by the end of 2018, through its CCUS Deployment Pathway.
5. Announced over £40 million of CCUS innovation funding focused on reducing the cost of the CCUS technologies to support it to become commercially viable at scale, including a £20 million competition on carbon capture and storage for UK industrial sites and an open call for £15 million on CCUS innovation.
6. Taken on leadership (with Saudi Arabia and Mexico) of the Carbon Capture Challenge under Mission Innovation – a unique opportunity to work together with other countries to address the innovation challenges CCUS presents.
7. Announced plans for a high-level International CCUS Summit, held jointly with the IEA, in November 2018.
8. Commissioned a study on how Greenhouse Gas Removal (GGR) activity can be incentivised, to inform our strategic approach to GGR technologies.
9. Asked the Royal Society and Royal Academy of Engineering to review GGR technologies; their review was published in September 2018.
10. Launched an £18 million industrial heat recovery support programme to support the recycling of heat produced in industrial processes, with the first applications expected by the end of 2018.
11. Announced a call for £20 million on hydrogen supply to accelerate the scale up of low-carbon, lower-cost hydrogen supply solutions for transport, heat, industry and power.

## Policy Approach

Keeping energy bills down for businesses is a priority for the Government, given the significant potential for UK businesses to save money and energy. The Government is focussing on driving progress in efficiency in buildings, as well as in industrial processes.

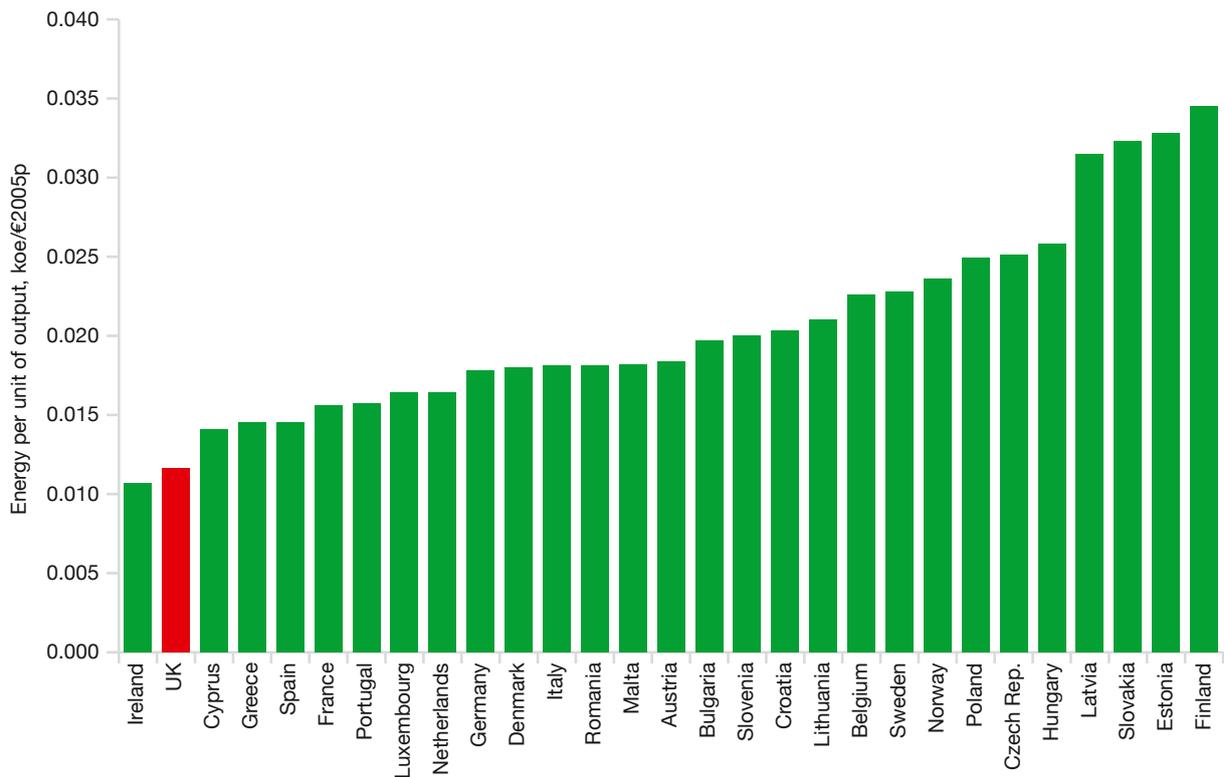
Carbon Capture, Usage and Storage (CCUS) has the potential to decarbonise the economy and maximise economic opportunities for the UK. However, cost reductions are necessary to be able to deploy CCUS cost effectively in the UK, providing value for money for both the taxpayer and consumers.

Since 1990, emissions from business and industry have almost halved, mainly due to efficiency gains and a shift in manufacturing to cleaner fuels, as well as changes to the industrial structure of the UK economy. Between 2015 and 2016 (the latest available data), the emissions intensity of industrial business energy use fell by

over six per cent, and is over 22 per cent lower than in 1990.

The energy productivity of the UK’s service and manufacturing sectors – that is, the level of energy used for each unit of output – is strong in comparison to their European counterparts.

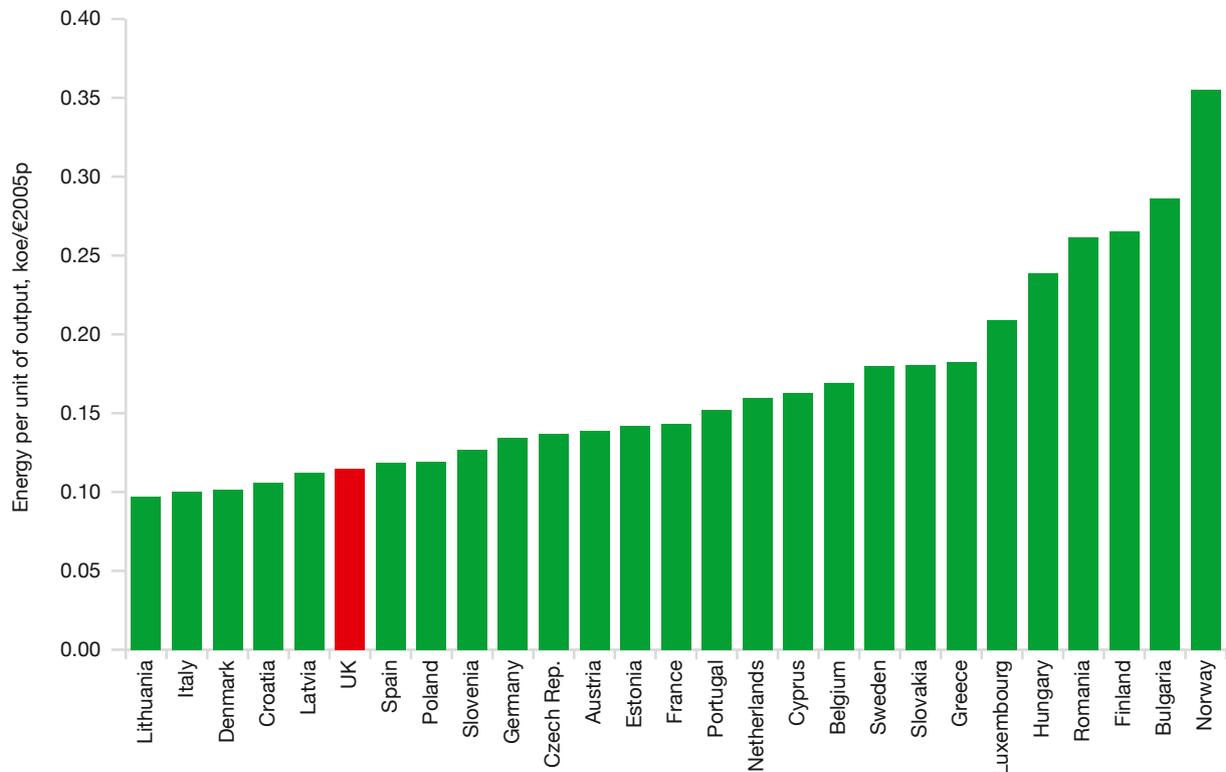
**Figure 15: Service sector energy consumption per unit of GVA, 2015**



Source: BEIS Business energy statistical summary (July 2018) based on ODYSSEE European energy efficiency indicators.<sup>60</sup>

<sup>60</sup> BEIS Business energy statistical summary (July 2018) <https://www.gov.uk/government/publications/business-energy-statistical-summary>

**Figure 16: Manufacturing energy consumption per unit of GVA, 2015**



Source: BEIS Business energy statistical summary (July 2018) based on ODYSSEE European energy efficiency indicators.<sup>61</sup>

The Government has put in place over the last decade a range of policies and programmes to support industry to cut their energy use and their bills, and to keep costs as low as possible for them over the coming decades. The Government has delivered a number of targeted schemes to encourage energy efficiency in business and industry:

- The Climate Change Agreements scheme, which allows energy intensive participants to pay significantly reduced rates of Climate Change Levy – a tax on the supply of energy – in exchange for signing up to energy efficiency or carbon reduction targets agreed with the Government;
- The Energy Savings Opportunity Scheme (ESOS), a mandatory energy assessment scheme implemented in 2014;

- The CRC Energy Efficiency Scheme, a mandatory emissions trading scheme since 2010 covering 2,000 large users of energy across the business and public sector;
- A £9.2 million Industrial Energy Efficiency Accelerator (IEEA), which aims to lower the cost of near-market energy efficient technologies for a range of industrial sectors through demonstration projects.

In addition to the above interventions, the Government also published the Industrial Decarbonisation and Energy Efficiency Roadmap Action Plans in October 2017 alongside the Clean Growth Strategy.

However, we know there is much more to do, and that is why we are continuing to develop the policies and proposals set out in the Clean Growth Strategy.

<sup>61</sup> BEIS Business energy statistical summary (July 2018) <https://www.gov.uk/government/publications/business-energy-statistical-summary>

## Next Steps

To achieve the 20 per cent ambition will require action across all businesses; we estimate up to an additional £23 billion in private sector investment will be needed. We recently published a Call for Evidence, setting out our proposed overall approach to delivering on this ambition, and set out potential options for taking this forward. We will take a decision on how to respond to the Call for Evidence by the end of the year.

On CCUS, the Government has set out a programme of work that will be undertaken to establish the additional steps that are required to meet the ambition of having the option to deploy CCUS at scale during the 2030s, subject to costs coming down sufficiently. The Government has received advice from the CCUS Cost Challenge Taskforce, and will respond to the report by the end of 2018 through its CCUS Deployment Pathway, setting out the steps needed to meet our ambition.

Further milestones which set out how we are continuing to develop the policies and proposals set out in the Clean Growth Strategy are included at Annex C.

## Response to CCC Recommendations

### Recommendation 1:

**Consult on specific, concrete policies to achieve the proposal to improve business energy efficiency by 20 per cent by 2030.**

We welcome the Committee on Climate Change's (CCC) support for our ambition to improve business energy efficiency by 20 per cent by 2030. We are now focussing on developing the evidence base and proposals to support this ambition.

We have published a Call for Evidence on "Helping Business to Improve the Way they Use Energy" in July. This sets out the analysis underpinning our ambition. It also sets out

the potential energy savings from buildings and industrial processes and our views on the potential contribution of various policy options.

We are reviewing responses and will take a decision on how to respond by the end of the year.

### Recommendation 2:

**Develop the Industrial Energy Efficiency Scheme, confirm funding and start implementation.**

The Government is considering the case for a scheme that adds value to the existing support for industrial energy efficiency through Climate Change Agreements, the Industrial Energy Efficiency Accelerator and the Industrial Heat Recovery Support Programme.

### Recommendation 3:

**Evaluate effect of Climate Change Assessments to inform any successor scheme for 2023.**

The Government recognises the importance of evaluating the effect of Climate Change Agreements to ensure that any successor scheme provides maximum value.

We started an independent evaluation of existing Climate Change Agreements Scheme in May 2018 (which runs to October 2019) and will inform decisions on any future CCA Scheme after the current Scheme ends in March 2023.

### Recommendation 4:

**Introduce new streamlined energy and carbon reporting framework.**

The Government published decisions on streamlined energy and carbon reporting / CRC Energy Efficiency Scheme (alongside laying of CRC and draft SECR legislation) in July 2018 which will, subject to Parliamentary Agreement, enable closure of CRC after the current phase and implementation of SECR in annual reports

of over 11,000 companies and Limited Liability Partnerships from April 2019.

### Recommendation 5:

#### **Fund initial heat recovery project through the industrial heat recovery scheme.**

The Industrial Heat Recovery Support (IHRS) programme aims to increase industry confidence to invest in technologies to recover heat from industrial processes, and increase the deployment of such technologies in England and Wales.

We have launched the £18 million IHRS programme in July 2018 – the IHRS is expected to open to applications in October 2018 with first award of funding in 2019/20.

### Recommendation 6:

#### **Publish (a) additional milestones on the timeline for the ‘framework to support industrial decarbonisation’, including for consulting on the framework (b) a Call for Evidence on the potential options for the framework including the potential design options for a mechanism to support investment in industrial decarbonisation.**

Business and industry accounts for around 25 per cent of UK emissions<sup>62</sup>. Our analysis suggests that these emissions will need to be reduced significantly to meet our 2050 targets cost-effectively.

As set out in the Clean Growth Strategy, the Government is committed to developing a policy framework for decarbonising heavy industry. This approach builds on close engagement with stakeholders through the industrial decarbonisation and energy efficiency roadmaps and action plans, and sits alongside Government action on innovation, CCUS and Industrial Energy Efficiency and Heat Recovery.

### Recommendation 7:

#### **Develop and implement the framework to support decarbonisation of heavy industry.**

See response to recommendation 6.

### Recommendation 8:

#### **Publish CCS Deployment Pathway and Government’s review of CCS delivery and investment models.**

The CCUS Cost Challenge Taskforce, comprising over 40 industry experts, has now reported, setting out the CCUS industry’s view on the actions that need to be taken to cost-effectively progress CCUS in the UK.

The Government will respond to the Taskforce report by the end of 2018, through its CCUS Deployment Pathway which, as set out in the Clean Growth Strategy, will set out the steps needed to meet the Government’s stated ambition of deploying CCUS at scale during the 2030s, subject to costs coming down sufficiently.

### Recommendation 9:

#### **Put in place a mechanism to support CO<sub>2</sub> transport and storage infrastructure.**

The CCUS Cost Challenge Taskforce reported in July setting out industry’s view of the business model required to support carbon dioxide transport and storage infrastructure in the UK.

The Taskforce’s recommended approach will be considered further, alongside other possible mechanisms for carbon dioxide transport and storage infrastructure, as part of the Government’s review of the delivery and investment frameworks for CCUS.

<sup>62</sup> BEIS (2018) UK greenhouse gas inventory statistics (1990-2016) <https://www.gov.uk/government/collections/final-uk-greenhouse-gas-emissions-national-statistics>

[note that business and industry emissions are adjusted to include from the energy industry]

**Recommendation 10:**

**Put in place a mechanism to support initial industrial CCS project(s).**

Our new approach to CCUS recognises that it has potential value in sectors across the economy including to support industrial decarbonisation.

The possible mechanisms required to support initial industrial CCUS in industry projects are being considered as part of the Government's review of the delivery and investment frameworks for CCUS.

**Recommendation 11:**

**First industrial CCS project(s)/ cluster operational.**

The Government will publish, by the end of 2018, its CCUS Deployment Pathway, setting out the steps needed to meet the Government's ambition of deploying CCUS at scale during the 2030s, subject to costs coming down sufficiently. We recognise that clusters hold benefits for initial deployment of decarbonisation technologies due to economies of scale and shared infrastructure and in parallel to the Deployment Pathway, the Government continues to engage with potential clusters across the UK.

**Recommendation 12:**

**Set out proposals for the phase-out of high-carbon fossil fuel heating in businesses off the gas grid, including a definition of 'high-carbon fossil fuel heating'. This should include consideration of cost-effective opportunities for large-scale heat pumps in industrial buildings.**

We published a Call for Evidence on A Future Framework for Heat in Buildings on 19 March. This focused on the Clean Growth Strategy commitment to phase out installation of high carbon fossil fuel heating in buildings off the gas grid in the 2020s, starting with new build. We are currently reviewing the responses to

the Call for Evidence and will bring forward the Government's views in due course.

**Recommendation 13:**

**As part of the new industrial framework, set out proposals for supporting deployment of low-carbon industrial process heat beyond 2021.**

See response to recommendation 6.

**Recommendation 14:**

**Set out plans for ensuring a continued carbon price in the UK, in the case that the UK leaves the EU ETS.**

The Government is considering all factors in relation to the UK's future participation, or otherwise, in the EU Emissions Trading System (EU ETS), in consultation with stakeholders. Future participation, or otherwise, in the EU ETS remains a matter for negotiation.

The UK considers that long-term certainty on carbon pricing is crucial for businesses and, as set out in the Clean Growth Strategy, is committed to a robust carbon price.

The UK intends to discuss options with the EU for maintaining robust, equivalent carbon pricing mechanisms, including in relation to aviation operations.

Whatever our future relationship with the EU, we will seek to ensure that our future approach is at least as ambitious as the existing scheme and provide a smooth transition for the relevant sectors as we exit the EU.



# Chapter 4:

## Progress on Reducing Emissions from Transport



## Summary of Progress on Transport

### Since publishing the Clean Growth Strategy, we have:

1. Announced the 2040 mission to put the UK at the forefront of the design and manufacturing of zero emission vehicles, and for all new cars and vans to be effectively zero emission by 2040.
2. Published the Road to Zero strategy, setting out long-term ambitions and a clear pathway to zero emission vehicles, alongside plans for the expansion of charging infrastructure and reducing emissions from existing vehicles.
3. Made additional funding available to bolster the package of support for the transition to zero emission vehicles from £1 billion to nearly £1.5 billion, out to 2021.
4. Taken new powers through the Automated and Electric Vehicles Act 2018 to ensure that chargepoints can be easily accessed and used across the UK, and that they are smart ready. The UK now has more than 14,000 public chargepoints. At least 1,300 are rapid devices – one of the largest and most comprehensive networks in Europe.
5. Announced the £400 million public-private Charging Infrastructure Investment Fund which will see thousands more electric vehicle chargepoints installed across the UK.
6. Continued to take a leading role on the global shift to cleaner transport, including through hosting the Zero Emission Vehicle Summit which brought together ministers, industry leaders and sector representatives from around the world to accelerate the development of ultra low and zero emission vehicles.
7. Published updated Government buying standards that will ensure that 25 per cent of the central Government car fleet is ultra low emission by 2022, and that all new car purchases are ultra low emission by default. We have made a further commitment for 100 per cent of the central Government car fleet to be ultra low emission by 2030.
8. Announced a new industry-wide voluntary target for reducing HGV greenhouse gas emissions by 15 per cent by 2025, from 2015 levels.
9. Completed consideration of the outcome and next steps in light of SME HGV fleet review pilot, which advised companies on ways to reduce carbon dioxide emissions. The success of the pilot has led to our decision to continue the scheme.
10. Announced the £80 million national battery scale-up facility, the UK Battery Industrialisation Centre, as part of the Automotive Sector Deal, with the Faraday Institution also announcing £42 million of projects aimed at overcoming challenges with electric vehicle batteries. There is also a further £63 million for innovation projects.
11. Played a key role in reaching a global deal at the International Maritime Organization that will see greenhouse gas emissions from international shipping reduced by at least 50 per cent by 2050, against a 2008 baseline, while pursuing efforts to phase out these emissions entirely as soon as possible.
12. Launched a Call for Evidence on sustainable last mile deliveries, and announced £2 million of funding to support e-cargo bikes.
13. Introduced legislation to increase the use of low carbon fuels in transport to around seven per cent of transport fuel by 2032.
14. Challenged the rail industry to meet the ambition of removing all diesel-only trains by 2040.

## Policy Approach

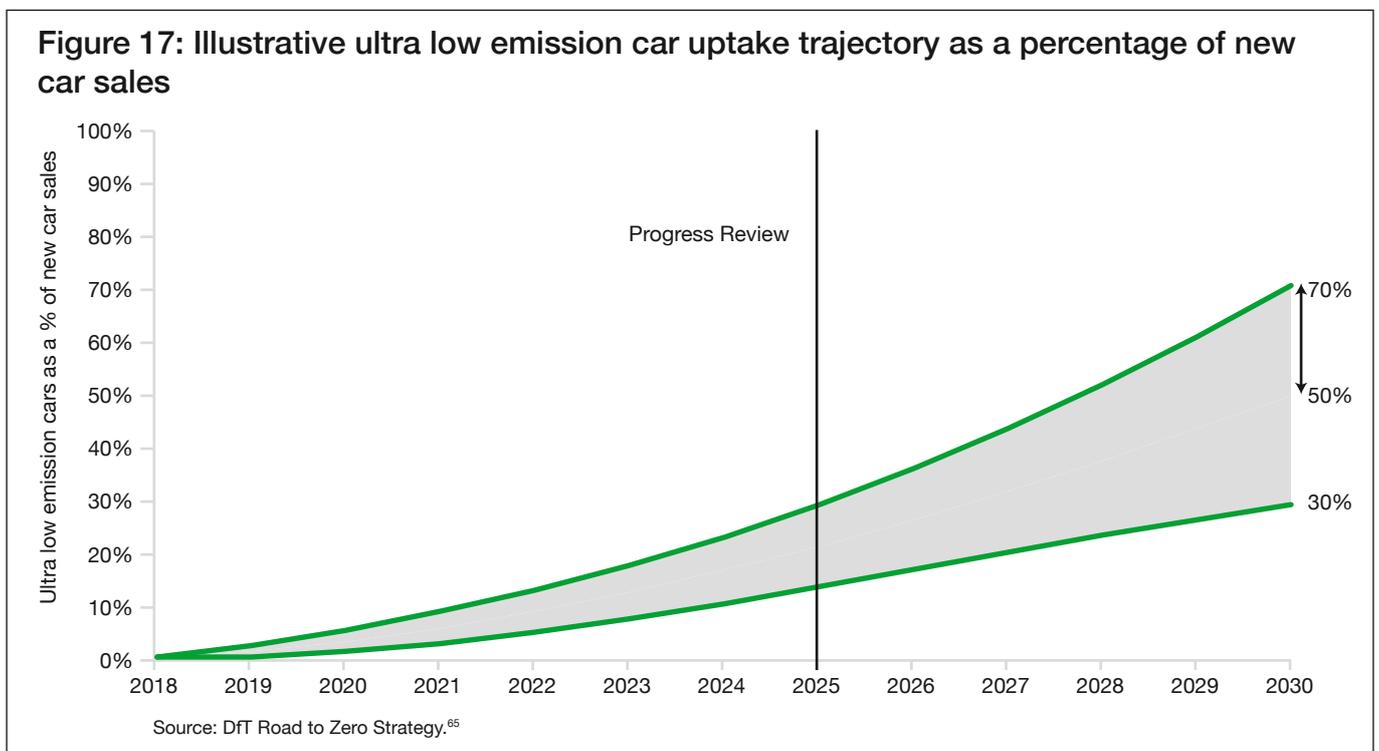
Latest confirmed data shows that, in 2016, transport accounted for 27 per cent of UK greenhouse gas emissions<sup>63</sup>. It now represents the largest emitting sector and, as the Committee on Climate Change (CCC) point out, cars, vans and heavy goods vehicles (HGVs) continue to make the largest contribution, at 87 per cent of the total. Over the last 10 years, since the passage of the Climate Change Act, cars have become significantly more fuel efficient. Between 1990 and 2016, road transport emissions per vehicle kilometre reduced by over 18 per cent<sup>64</sup>. However, in parallel, the number of vehicles on the road and the mileage travelled have also increased.

The Government recognises that transport is one of the key areas where we must step up the pace of progress in reducing emissions. We are taking action across all modes, including public transport and walking and cycling, as well as promoting lower emission aviation and shipping

through both domestic and international approaches.

But the biggest prize, in terms of emissions reduction potential and industrial opportunities, is offered by road transport.

The Road to Zero strategy, published in July, set out our plans for driving the uptake of zero emission cars, vans and trucks, while reducing emissions from vehicles already on the UK’s roads. It also outlined our proposals for enabling the deployment of world-leading electric vehicle infrastructure. It is the next step towards delivering our mission to put the UK at the forefront of the design and manufacture of zero emission vehicles, and for all new cars and vans to be effectively zero emission by 2040, as part of the “Future of Mobility” Grand Challenge. The world is moving towards the mass adoption of zero emission vehicles, and we are determined to meet our climate and air quality commitments on transport, while realising the huge growth opportunities available to the UK.



<sup>63</sup> BEIS (2018) Final UK greenhouse gas emissions national statistics: 1990-2016 <https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2016>

<sup>64</sup> BEIS (2017) Final UK greenhouse gas emissions national statistics: 1990-2016 <https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2016>; DfT analysis

<sup>65</sup> DfT (2018) Reducing emissions from road transport: Road to Zero Strategy <https://www.gov.uk/government/publications/reducing-emissions-from-road-transport-road-to-zero-strategy>

## Next Steps

Over the next 12 months, we will continue implementing the Road to Zero strategy and other transport policies and measures, while promoting the opportunities offered by lower emission technologies. We will also be publishing further plans for specific transport sectors, including significant strategies that address emissions reduction from shipping and aviation in the first half of 2019.

## Response to CCC Recommendations

### Recommendation 1:

**Set out the UK regulatory approach to the EU 2020/21 new car and van CO<sub>2</sub> targets in the event of an EU exit. If the UK is not covered by these targets, there is little incentive for manufacturers to sell their most efficient and ultra low emission vehicles here.**

The Government wants to see new cars and vans delivering as many zero emission miles as possible, as fast as possible. In the Clean Growth Strategy, and more recently in the Road to Zero strategy, the Government stated that, as we leave the EU, we will pursue a future approach to vehicle emissions regulation that is at least as ambitious as the current arrangements. We want to see an approach that improves air quality and reduces greenhouse gas emissions and regulation will be critical in supporting our aim of delivering our mission for all new cars and vans to be effectively zero emission by 2040.

### Recommendation 2:

**Set stretching CO<sub>2</sub> targets for new cars and vans beyond 2020, requiring a high electric vehicle market share. A real-world testing regime must be used alongside standardised tests.**

We want to ensure that we have only the cleanest new vehicles being rolled out onto UK roads. As mentioned already, the Government

has said that it will pursue a future approach to vehicle emissions regulation that is at least as ambitious as the current arrangements. We have also said that the European Commission's proposal for future regulation, that 15 per cent of new cars should be zero or low emission by 2025, and 30 per cent by 2030, falls short of the UK's ambition. In the Road to Zero strategy, we made clear that we are aiming for 50-70 per cent of new car sales to be ultra low emission vehicles (ULEVs) by 2030. The public sector is leading by example, by ensuring 25 per cent of the central Government car fleet are ULEVs by 2022 and that all new car purchases are ULEVs by default. The Road to Zero strategy makes a commitment for 100 per cent of the central Government car fleet to be ULEVs by 2030.

Work is already underway to improve the testing regime for new vehicles. The new Worldwide Harmonised Light Vehicle Test Procedure (WLTP) was introduced in 2017 and was mandatory for all new cars from September 2018. WLTP is complemented by the on-road Real Driving Emissions (RDE) test, in force since September 2017. From January 2019, the labelling on new cars will reflect the results of the new testing regime. The Commission's latest proposals for future regulation include plans to introduce monitoring and assessment of real-world carbon dioxide emissions, which the Government supports.

### Recommendation 3:

**Policies to deliver a high uptake of electric vehicles to around 60 per cent of new car and van sales by 2030.**

In the Road to Zero strategy we said that, by 2030, we want at least 50 per cent and as many as 70 per cent of new car sales to be ultra low emission, and up to 40 per cent of new van sales. We expect this transition to be industry and consumer led, supported in the coming years by the measures set out in our strategy. We will review progress by 2025, and we will consider what interventions are required if not enough progress is being made.

We are clear that there is a role for the Government to play, as part of a holistic approach that includes adequate vehicle supply, a strong consumer base, and the right market conditions and infrastructure. We now have one of the most comprehensive packages of support for the transition to zero emission vehicles in the world, amounting to investment of nearly £1.5 billion. As part of this, we will continue to offer grants for plug-in cars and vans until at least 2020. In parallel, charging at home and at work continues to be supported by the Electric Vehicle Homecharge Scheme and the increased grants available under the Workplace Charging Scheme. We have also said that consumer incentives will continue in some form beyond 2020.

The Road to Zero outlined a range of measures and significant investment to accelerate the widespread deployment of affordable, efficient and reliable charging infrastructure. We have taken new powers through the Automated and Electric Vehicles Act 2018 to ensure that chargepoints have good interoperability and are more readily available and accessible. We are consulting on proposals for chargepoints to be installed with all new built homes in England, where appropriate, potentially providing a huge expansion in the number of chargepoints. We also want all new lamp posts to include charging infrastructure and will provide guidance to local authorities to support this. We are also seeking to increase charging provision for residential and non-residential buildings through the National Planning Policy Framework and possible amendments to both Building Regulations and commonhold tenure rules.

The Government recently issued a Call for Evidence on sustainable last mile deliveries, to explore opportunities for replacing vans with electric cargo bikes, vans and micro vehicles.

We will run a series of regional roadshows across the UK in 2018 on the Road to Zero strategy. These will include disseminating best practice and learning points to local authorities

from the Government's £40 million Go Ultra Low Cities scheme, which supported eight exemplar cities in rolling-out ULEVs. We will also promote available incentives to motorists via the Go Ultra Low website.

#### Recommendation 4:

**Ensure that plug-in hybrid electric vehicles deliver near-zero real-world emissions by setting a minimum range for electric drive in 2035 so that almost all trips can be completed without using the petrol/diesel engine.**

The Road to Zero strategy set out, for the first time, a comprehensive and independently verified the Government's view of the relative environmental performance of different road transport powertrains and fuels. We did this in part to provide consumer groups and other stakeholders from across the automotive, fuel and environmental sectors with a transparent assessment of the environmental impact of different technologies.

Within that assessment, we have shown that plug-in hybrids are amongst the cleanest vehicles now on the market. However, the Government is clear that the environmental benefits of plug-in hybrids rely on two factors: their zero emission range and how they are used. The zero emission range of today's plug-in hybrids can already cover the vast majority of UK journeys<sup>66</sup>. Our approach has been, and will remain, technology neutral and it would be premature to set precise standards to deliver our long-term ambitions. However, the technologies on sale, and the market share of those technologies, must be compatible with achieving our 2050 climate change target and our long-term air quality goals.

As part of our engagement with industry, businesses, academia, environmental groups, Devolved Administrations, local Government, consumers and international partners, we would

<sup>66</sup> For example, based on the National Travel Survey, a 50 mile continuous zero emission range could cover up to 98 per cent of all UK journeys and a 25 mile continuous zero emission range could cover up to 94 per cent.

welcome views on the ambitions set out in the Road to Zero strategy and how we deliver them.

### Recommendation 5:

**Policies, including fiscal instruments, must align with new car and van emissions targets to strengthen incentives to purchase cleaner cars.**

The Government offers a range of incentives to help consumers make the shift to cleaner vehicles, including through the tax system, direct grants and other financial support. We have said, in our Road to Zero strategy, that we will continue to ensure the tax system incentivises the purchase of the cleanest vehicles and, in particular, zero emission vehicles. Local authorities may also use money from the £220 million Clean Air Fund to provide financial incentives for lower emission or ultra low emission vehicles, to help individuals and businesses adapt to plans for reaching NO2 compliance.

Tax incentives are in place for ultra low and zero emission vehicles and supporting infrastructure, with both vehicle excise duty and company car tax graded to promote the lowest emitting vehicles.

Purchase incentives include:

#### *Vehicle Excise Duty*

- Lower rates of vehicle excise duty (VED) for ultra low emission cars, with no VED payable on zero emission cars. We have also launched a consultation on a new VED approach for vans, to ensure that the cleanest options are incentivised.
- Since April 2018, almost all drivers of purpose built ultra low emission taxis have been exempted from paying the VED supplement for vehicles costing over £40,000.
- A VED supplement is now applied to new diesel cars that do not meet the RDE2 standard, so that their first-year rate is effectively one VED band higher.

#### *Business tax incentives*

- In 2017, the Government legislated for the Company Car Tax rates from 2020/21, which incentivise the uptake of the very cleanest cars using the most advanced technologies, by introducing 11 new bands. These bands will distinguish between ULEVs with different plug-in hybrid technologies and improved battery range.
- Since April 2018, benefit in kind liabilities for electricity provided to charge employees' own electric vehicles have been removed.
- Zero emission vans now only pay a small proportion of the van benefit charge (40 per cent for 2018/19).
- An enhanced capital allowance (ECA) is available for businesses investing in new electric vehicle charging or gas refuelling infrastructure, allowing them to deduct the full cost from their profits before tax. An ECA is also available for purchasing zero emission goods vehicles.
- From April 2018 the company car tax diesel supplement has increased from three per cent to four per cent.

#### *Fuel duty*

- For liquefied petroleum gas (LPG), the fuel duty escalator will be ended, supporting uptake of lower emission LPG vans and taxis in the transition to zero emission vehicles.

### Recommendation 6:

**The UK must set out an approach to the EU HGV regulation proposals in the context of EU exit.**

We are currently reviewing and analysing the EU's recent proposal for setting new carbon dioxide emission standards for heavy-duty vehicles (HDVs, which includes trucks, buses and coaches). We are keen to explore whether the proposal can be more ambitious in reducing emissions and incentivising low and zero emission HDVs.

After the UK's exit from the EU, we will pursue a future approach to HDV carbon dioxide performance standard regulation that is at least as ambitious as arrangements in the EU. Moreover, as HDVs are typically manufactured for a Europe-wide market, regardless of the outcome of EU exit negotiations, the Regulation will have an impact on new HDVs purchased and operated in the UK, and their fuel efficiency and carbon dioxide emission levels. The Government therefore plans to engage in full with the negotiation of the proposed Regulation.

With regards to HGVs specifically, technology development is now moving towards zero emission options. As we said in the Road to Zero strategy, these technologies exist and are technically proven for all types of HGVs and operations, although their development is more advanced for smaller, shorter-haul HGVs. But the Government is firm in its view that in the long-term these technologies must be developed and made available commercially for all types of HGVs. DfT is working with industry to develop an Ultra Low Emission Truck standard to provide clarity on expected emission standards.

### Recommendation 7:

**The Government must set out policies to encourage eco-driving training and logistics improvements in the freight sector, including implementing recommendations from the Freight Carbon Review. Cost-effective shifting of freight from road to rail must also be encouraged.**

The benefits delivered by more efficient freight operations are clear, both in terms of emissions reductions and the substantial cost savings that can accrue to haulage companies. To get a better sense of the scale of the opportunity, the Government has asked the National Infrastructure Commission to examine the future of freight out to 2050, to set out how the UK can deliver efficient and productive freight, while reducing its impact in terms of carbon emissions and congestion.

### *Eco-driving*

The Government agrees with the CCC that fuel efficiency training and driver monitoring offer cost-effective ways to significantly reduce carbon dioxide emissions from road freight. As an outcome of the 2017 Freight Carbon Review, DfT worked with the Energy Saving Trust to pilot HGV fleet reviews, and the success of this pilot is reflected in the Government's decision to continue the scheme. The Energy Saving Trust is also developing a freight portal that will ensure HGV operators have access to reliable information on cost-effective measures to improve fuel efficiency and reduce emissions.

### *Logistics improvements*

In the Road to Zero strategy we announced a new industry-wide voluntary target for reducing HGV greenhouse gas emissions by 15 per cent by 2025, from 2015 levels. This is the first time the road freight industry has come together to agree such a target. It is for operators to decide how best to reduce their emissions, and this may include renewing their fleet and purchasing alternatively fuelled vehicles. As part of industry's support for the voluntary target, the Freight Transport Association has made its new Logistics Emissions Reduction Scheme available to all operators free of charge. This allows the logistics sector to publicly report its contribution towards national emission reduction targets.

Separately, the Government's Longer Semi-Trailer trial is being extended for another five years until 2027, with the initial allocation of 1800 vehicles increased to 2800. This reflects the success of the trial in demonstrating the efficiencies that can be gained through more effective use of the road network. The Government is also delivering trials of HGV platoons, which could bring significant fuel and emissions savings, with the first on-road trials expected in spring 2019.

### *Road to rail*

The Rail Freight Strategy, published in September 2016, highlighted the potential

for increasing rail freight, and the economic and environmental benefits this delivers. The Government continues to support shifting freight from road to rail, to deliver emissions savings and wider environmental and social benefits from reduced HGV traffic. The Government has committed to providing grants of more than £15 million until at least March 2020 to help with the operating costs associated with running rail or water freight, where this is more expensive than road transport.

In Control Period 5 (2014 to 2019), the Government is investing £235 million in the Strategic Freight Network, to improve the capacity and capability of the rail network for freight. The Statement of Funds Available for Control Period 6 (2019 to 2024) includes funding for continued investment in improvements to the rail freight network.

### Recommendation 8:

#### Plans to increase cycling and walking must be implemented

We have already made strong progress on cycling and walking. Since 2008, the average number of short walks per person per year (between 50 yards and one mile) has increased by 14 per cent to 192, and the average distance cycled per person per year has increased by 36 per cent to 60 miles<sup>67</sup>. The Government is now implementing the Cycling and Walking Investment Strategy (CWIS), which was published in April 2017. The ambition for England by 2040 is to make cycling and walking the natural choices for shorter journeys, or as part of a longer journey. The CWIS also sets out some nearer term aims and targets for 2025, including an aim to double cycling to 1.6 billion stages by 2025. The CWIS identified £1.2 billion available for investment in cycling and walking out to 2021. Since the strategy's publication, further funding has been made available for

cycling and walking projects, such as the £1.7 billion Transforming Cities Fund, where £840 million has already been allocated to six mayoral combined authorities<sup>68</sup>. In addition, the £220 million Clean Air Fund and the £5 billion Housing Infrastructure Fund can also be used to support cycling and walking infrastructure.

The Government is now considering the responses to its cycling and walking safety review, a Call for Evidence that closed in June. Given the air quality and environmental, health, economic and community benefits of cycling and walking, we are committed to further investment in active travel.

### Recommendation 9:

#### Public transport must be incentivised. The decline in bus usage across the UK must be addressed.

We know that if we want to reduce carbon dioxide emissions from road traffic, we must enable and encourage people to choose the most sustainable mode of travel for their journey, which will often be public transport.

As stated in the Clean Growth Strategy, we will continue to invest in our public transport network, and help people to cycle, walk or travel by bus or train. For example, the £1.7 billion Transforming Cities Fund is providing support for public transport in some of England's largest cities.

The Government has made great strides in encouraging rail usage. Since the privatisation of the railways (1994/95), usage has more than doubled, reaching a record high of 1.73 billion passengers in 2016/17<sup>69</sup>. To encourage further uptake, we are looking to improve the consumer experience of fares and ticketing through measures such as smart ticketing (requiring all franchise bidders to introduce new, more flexible

<sup>67</sup> DfT (2018) Table NTS0303 and NTS0308 – National Travel Survey 2017 <https://www.gov.uk/government/statistics/national-travel-survey-2017>

<sup>68</sup> These are the West Midlands (£250 million), Greater Manchester (£243 million), Liverpool (£134 million), West of England (£80 million), Cambridge and Peterborough (£74 million), and Tees Valley (£59 million).

<sup>69</sup> Office of Rail and Road (2017) Passenger Rail Usage 2016-17 Q4 Statistical Release [http://orr.gov.uk/\\_data/assets/pdf\\_file/0019/24832/passenger-rail-usage-2016-17-q4.pdf](http://orr.gov.uk/_data/assets/pdf_file/0019/24832/passenger-rail-usage-2016-17-q4.pdf)

products) and supporting the rail industry's current trial of the 26-30 railcard.

For buses, the £220 million Clean Air Fund is available for investment in a range of measures, including bus priority measures, which improve reliability and reduce journey times. In addition, around £2 billion is provided to bus operators and local authorities to support bus services<sup>70</sup>, and £250 million is provided in the form of the Bus Service Operators Grant, with £43 million of this directly devolved to local authorities to support non-commercial bus services. The Government also supports free off-peak travel for older and disabled persons through the English National Concessionary Travel Pass.

Bus usage fell in the early 1990s before starting to increase but it has remained relatively stable since 2007/08 at over 4.4 billion passenger journeys. In Great Britain, buses are the most used form of public transport, accounting for about 60 per cent of all public transport trips<sup>71</sup>. However, we are not complacent, and the Government is actively seeking to reverse the decline in bus use through the provisions of the Bus Services Act 2017. This gives local authorities new powers to work with operators to bring passengers a richer and more informative experience of bus travel, delivering services that go further to meet their needs. It introduces new bus franchising powers for local authorities, as well as providing other tools to improve bus services.

Regulations made under the new open data provisions and new ticketing powers should make it easier for passengers in England (outside London) to use buses, move between different modes of transport and to access timetables, routes, fares, tickets, real time information and the actual location of bus services. In July 2018, the Government launched its open data consultation, seeking views on ways to improve information for bus passengers through the Bus

Services Act 2017 and open data legislation. The Government aims for bus open data legislation to be in place by the end of 2020.

### Recommendation 10:

#### **Enforcement of speed limits on major roads can reduce emissions by ensuring cars are efficiently driven and increase road safety.**

Speed limits on UK roads are set by highway authorities (Highways England for the Strategic Road Network and local authorities for the Major Road Network and all other major and minor roads) but enforcement of speed limits is a matter for the police.

Locally elected Police and Crime Commissioners are responsible for setting police and crime objectives. Speed enforcement is time and resource intensive and has to be weighed against competing demands on police time. In general, police forces follow the former Association of Chief Police Officers' guidelines<sup>72</sup> in enforcing speed limits, with consistency of approach balanced by a measure of discretion for individual police officers. These guidelines make clear that enforcement is mainly reactive, rather than being a preventative measure to ensure vehicles keep to speed limits. Instead, prevention relies on public support and compliance by the majority, with enforcement targeted on the minority who ignore the law.

Other approaches promote adherence to speed limits, complementing police enforcement. These include the use of roadside speed cameras (both fixed and average speed) and vehicle activated signs which alert drivers to speed limits. In addition, Community Speedwatch is a police-led national initiative where local volunteers monitor vehicle speeds using detection devices, with the support of the local force. Volunteers monitor passing traffic and record the details of vehicles exceeding speed limits. The police then undertake vehicle checks and write to the

<sup>70</sup> DfT (2017) Annual Bus Statistics <https://www.gov.uk/government/statistics/annual-bus-statistics-year-ending-march-2017>; BUS0502: <https://www.gov.uk/government/statistical-data-sets/bus05-subsidies-and-concessions#table-bus0502>

<sup>71</sup> DfT (2017) Annual Bus Statistics <https://www.gov.uk/government/statistics/annual-bus-statistics-year-ending-march-2017>

<sup>72</sup> ACPO (2013) Speed Enforcement Policy Guidelines 2011-2015: Joining Forces for Safer Roads <http://library.college.police.uk/docs/appref/ACPO-Speed-Enforcement-Guidance.pdf>

registered keepers, advising them of their speed and why it is a community concern.

### Recommendation 11:

**Announce and implement updated plans for rail electrification to achieve the full cost-effective potential over the Network Rail Control Period 6 (2019-2024).**

The Government has said that the rail sector must play its part in decarbonising transport, and that we want to see all diesel-only trains taken off the track by 2040. Earlier this year, we called on the industry to produce a vision for how it will decarbonise; a taskforce being led by the Rail Safety and Standards Board is expected to report shortly.

Learning from the cost and delivery lessons of enhancement projects such as rail electrification in Railway Control Period (2014 to 2019), we have developed an improved approach for future years, and we published the Rail Network Enhancements Pipeline in March 2018. Future proposals for route electrification will be managed through this approach.

We are also clear that rail electrification should only be undertaken where it is cost-effective, and where it will deliver passenger benefits such as journey time savings. It is likely there will always be a proportion of the rail network that is not electrified, where electrification does not deliver additional benefits. We are promoting the transition to bi-mode (modern diesel / electric) trains, and trains using alternative technologies such as power by batteries or hydrogen fuel cells, through the inclusion of environmental trajectories in the invitations to tender for rail franchises, thereby encouraging the market to investigate alternative fuels and drive trains that reduce emissions.

New bi-mode trains deliver a reduction in carbon dioxide and help improve air quality. We also continue to pursue other lower-emission rail futures. As battery technology improves, we expect to see the diesel engines in bi-modes replaced altogether, with batteries powering

the train between the electrified sections of the network, or those batteries and diesel engines replaced with hydrogen units.

### Recommendation 12:

**A plan for UK aviation emissions at around 2005 levels by 2050 (implying around a 60 per cent potential increase in demand), supported by strong international policies.**

The UK's 2050 target and carbon budgets currently exclude emissions from international aviation; however carbon budgets have been set in a way that takes these emissions into account and puts the UK on a trajectory consistent with a 2050 target that includes these emissions. The CCC's planning assumption, that aviation emissions in 2050 should be at or below 2005 levels (37.5 MtCO<sub>2</sub>), has been incorporated into our 2050 pathways as set out in the Clean Growth Strategy, and it was also incorporated into the advice provided by the Airports Commission in 2015. We have not reached a final view on the appropriate level of aviation emissions in 2050.

The Government has said that it will publish its Aviation Strategy in the first half of 2019, and a Green Paper is now being prepared for publication by the end of this year. The strategy will put in place a framework for tackling carbon emissions from UK aviation out to 2050. We will consider all cost-effective measures to ensure that the sector contributes to the UK's emissions reduction obligations. These will include international action, for example standards and offsetting schemes, and domestic approaches such as technological and operational improvements, the use of sustainable alternative fuels and policies to encourage behavioural change.

# Chapter 5:

## Progress on Reducing Emissions from Agriculture, Land Use and Forestry



## Summary of Progress on Agriculture and Land Use, Land-Use Change and Forestry

### Since publishing the Clean Growth Strategy, we have:

1. From February to May 2018, the Government consulted on a range of possible paths to a brighter future for food, farming and the environment in England. At the heart of 'Health and Harmony: the future for food, farming and the environment in a Green Brexit' was a proposal to spend public money on public goods – principally, enhancing our environment and protecting our countryside. Environmental land management will be the cornerstone of future agricultural policy and an important delivery method for some of the 25 YEP key outcomes, including climate change mitigation and adaptation.
2. The Government published the summary of responses to the Health and Harmony consultation in September.
3. In September, the Agriculture Bill was introduced to Parliament. The Agriculture Bill is part of the Government's programme of critical legislation to deliver a smooth Exit from the European Union and seize the opportunities of a Green Brexit.
4. Made progress towards meeting our targets to plant 11 million trees by the end of this Parliament through a variety of funding schemes, including Countryside Stewardship, Woodland Carbon Fund and the Woodland Creation Planning Grant.
5. Launched a new Forestry Commission competition for the Forestry Innovation Fund earlier this year. The aim of this fund is to encourage and broaden innovation in forestry, from woodland planning to manufacture of wood products and use of wood. £300,000 was allocated to support up to six projects worth £50,000 each. Successful applicants were notified in early July and projects will be completed by April 2019.
6. Funded four peat restoration projects in England using the £10 million capital grant scheme that will help restore over 6,000 ha of peatland over the next three years.

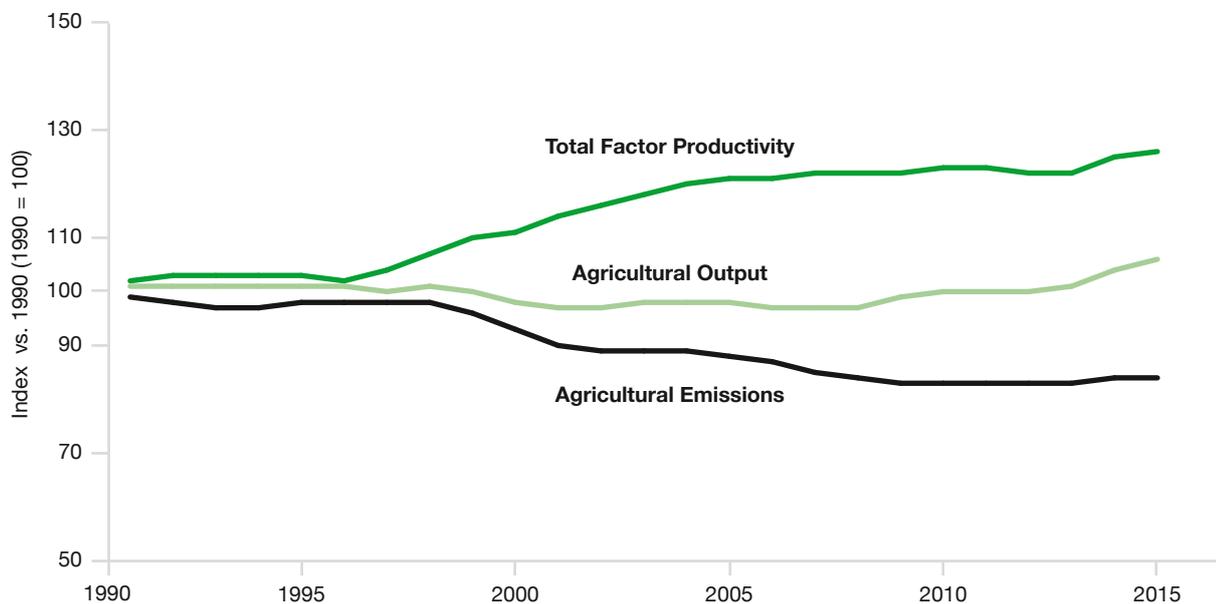
## Policy Approach

Agricultural greenhouse gas emissions have reduced by 16 per cent since 1990<sup>73</sup> with many farms using more efficient agricultural practices. Land use, land use change and forestry continue to provide benefits in carbon sequestration. The Government recognises the importance of reducing emissions further in these sectors. The Clean Growth Strategy and the 25 Year Environment Plan set out the Government's ambition for how this will be achieved.

Since the introduction of the Climate Change Act we have introduced the industry led greenhouse gas action plan that coordinates reduction of emissions from agriculture. We have also made a public commitment to putting our lowland agriculture peat soils into sustainable management. Furthermore, we have set up the Woodland Carbon Code<sup>74</sup>, created the Woodland Carbon Fund and appointed a Tree Champion to support the planting of trees and announced the creation of a new Northern Forest with £5.7 million of initial Government funding.

<sup>73</sup> BEIS (2018) Final UK greenhouse gas emissions national statistics:1990-2016 <https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2016>

<sup>74</sup> Forestry Commission (2018) The Woodland Carbon Code scheme for buyers and landowners <https://www.gov.uk/guidance/the-woodland-carbon-code-scheme-for-buyers-and-landowners>

**Figure 18: Agricultural productivity and output vs. emissions (3 year rolling averages)**

Source: DEFRA Farm accounts<sup>75</sup>, UNFCCC emissions inventories<sup>76</sup>.

As we leave the EU, a new system of payment of public money for public goods will be designed to focus on delivering better environmental outcomes, including addressing climate change. This will also include a focus on the management of our natural environment including capturing more carbon by plants and soil.

New woodlands and forests in England will be established including funding larger-scale woodland and forest creation, in support of our commitment to plant 11 million trees and increase the amount of UK timber used in construction.

We will focus on innovation and research through the £90 million Industrial Strategy Challenge Fund (ISCF) Transforming Food Production challenge that will enhance the sustainability, productivity and resilience of UK agriculture and its supply chain. It will reduce environmental impacts from agriculture including greenhouse gas emissions and soil erosion.

## Next Steps

The Government has committed to the following actions, reflecting the ambition of the Clean Growth Strategy and of the 25 Year Environment Plan, pledging to leave our environment in a better state than we found it:

- The new system of payment of public money for public goods will continue to be designed and developed;
- We will progress the Agriculture Bill through Parliament;
- We will continue working with industry on breeding programmes to improve the efficiency of feed conversion in beef;
- Next year, we will establish a Lowland Agricultural Peat taskforce;
- Through the £90 million ISCF Transforming Food Production challenge we will focus on innovation and research around agriculture, productivity and sustainability;

<sup>75</sup> [FarmAccounts@defra.gsi.gov.uk](mailto:FarmAccounts@defra.gsi.gov.uk) – DEFRA analysis based on Annual Farming Business Survey

<sup>76</sup> UNFCCC National Inventory Submissions 2017 [http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/10116.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/10116.php)

- We will continue to work towards our target to plant 11 million trees through funding larger-scale woodland and forest creation. In addition, the 25 Year Environment Plan sets out a commitment to raise the level of forest cover in England from the existing 10 per cent of land area to 12 per cent by 2060;
- England Peat Strategy will be published by the end of 2018;
- We will continue implementing the four peat restoration projects to restore over 6,000 ha of peatland over the next three years;
- We will publish a Clean Air Strategy by the end of 2018.

## Response to CCC Recommendations

Recommendations specifically related to agriculture policy for the Devolved Administrations are covered separately in Chapter 7. All other Committee on Climate Change (CCC) recommendations for agriculture, forestry and land use are covered in this chapter.

### Recommendation 1:

**A stronger framework to deliver GHG abatement is needed in agriculture to take effect from 2019. The voluntary industry-led approach has failed to meet its emission reduction targets across England and the Devolved Administrations.**

The Government recognises the scope to further improve productivity in the agriculture sector. Industry is well placed to consider and implement farm efficiencies and we will continue to support the voluntary industry-led Greenhouse Gas Action Plan. Going forward we are reviewing the options to further reduce greenhouse gas emissions from agriculture and will ensure climate change mitigation is fully embedded in future agriculture policy.

### Recommendation 2:

**The 2018 Agriculture Bill should set out a post-CAP framework which links financial support to agricultural emissions reduction and increased carbon sequestration through a range of measures to take effect from 2022.**

The Government's recent consultation paper on food, farming and the environment outlines proposals for a future environment land management system, underpinned by payment of public money for the provision of public goods. The intention is to trial and test elements of the new system prior to a large-scale pilot and its subsequent roll out.

### Recommendation 3:

**Allocate the £90 million Industrial Strategy Challenge Fund to projects that deliver GHG emissions reduction, in addition to Government's other stated objectives.**

The first funding competition (August 2018) under the ISCF Transforming Food Production programme provided £20 million for projects in two areas:

- To drive productivity and improve environmental outcomes in crop and ruminant production systems;
- To develop new, highly efficient, high-value food production systems that maximise productivity and improve environmental performance.

This will be further developed in future calls.

### Recommendation 4:

**Accelerate the rate of tree planting in the UK without delay by addressing non-financial and financial barriers:**

**A coherent plan, including funding, to deliver on the commitment to plant 11 million trees in England between 2017 and 2022 (equivalent to over 2,000 hectares per annum). Remove non-financial barriers to rapid afforestation.**

**Completing the review and implement necessary changes to the Countryside Stewardship (CS) Woodland Creation scheme, and extending changes made to the Woodland Carbon Fund to the lifetime of the Fund (2020), while ensuring any funds not allocated by 2020 can be rolled forward.**

**Over the longer term, develop a strategy, finalise incentives and policies in England and each of the Devolved Administrations to deliver around 20,000 hectares per year across the UK by 2020, rising to 27,000 hectares by 2024, in line with stated ambition of the countries of the UK.**

The 25 Year Environment Plan, published in January 2018, set out a number of policies to achieve the 11 million tree commitment, including appointing a Tree Champion for England, the strengthening of domestic carbon offset markets, the piloting of Forestry Investment Zones, and the kick-starting of the Northern Forest.

Alongside continuing support for large-scale woodland creation through the Woodland Carbon Fund, the Woodland Creation Planning Grant, HS2 Woodland Fund and extensions to the Countryside Stewardship Woodland Creation Grant, represent a coherent and comprehensive approach to exceeding the 11 million tree commitment and put us on a path to the more ambitious long-term aspirations set out in the Clean Growth Strategy.

We recently announced improvements to the Countryside Stewardship Woodland Creation Grants for the 2017 and 2018 application window and, in response to specific requests by applicants, applications can now be submitted year-round. The temporary changes made to the Woodland Carbon Fund (and Woodland Creation Planning Grant) in 2017 – which allowed applications to be submitted year-round, reduced the minimum geographic size of an application, and extended support for woodland creation planning – were confirmed as being made permanent on 27 July. The capital allocation for the Woodland Carbon Fund

covered the period 2016 to 2021 and is subject to Treasury rules governing capital expenditure.

The 25 Year Environment Plan sets out a commitment to raise the level of forest cover in England from the existing 10 per cent of land area to 12 per cent by 2060. To support delivery of this target, forestry will be included in future agriculture policy while finance for tree-planting will continue from sources such as HS2 through to 2024.

### Recommendation 5:

**Turn Clean Growth Strategy proposals into firm policies to improve cattle health and low-carbon fertilisers.**

The Government recognises the need for proposals in the Clean Growth Strategy to be turned into firm policies. We are currently reviewing how fertiliser policy can help to reduce greenhouse gas emissions from fertilisers in future.

We are currently involved in several research projects to tackle health and productivity in beef and dairy herds, including “SusTradeOff” and “Animal-Future” which aim to further reduce the greenhouse gas emissions from the sector.

The Government is also working with industry on breeding programmes to improve the efficiency of feed conversion in beef. Modelling indicates that, over 20 years, such intervention could reduce greenhouse gas emissions by about 22 percent.

The optimisation of the efficiency of dietary nitrogen use in dairy cattle is being explored as an approach to reducing greenhouse gas emissions. This is important because inefficient use of protein increases the nitrous oxide emissions.

The Government is funding the extension of the Sustainable Intensification Projects that will deliver Clean Growth in agriculture. This project is likely to start at the end of this year and will build upon former successes that include decision

tools on greenhouse gas saving measures and management options.

### **Recommendation 6:**

**For England, we recommend that all options are considered when assessing sustainable practices on lowland peat, including the growing of paludiculture crops. In particular, the Peatland Strategy should ensure proposals to reverse the ongoing loss of lowland peat soils are set out by 2019, and target the restoration of all designated blanket bog habitats to good condition by 2030 in line with the recommendations of the CCC's Adaptation Sub-Committee.**

As set out in the 25 Year Environment Plan, the Government has identified the development of new sustainable management measures to retain topsoil on lowland peat as a key issue and we have not ruled out any options at this stage. We will be setting out our proposals in the forthcoming England Peat Strategy which will be published by the end of 2018. In 2019, we will establish a Lowland Agricultural Peat taskforce to advise the Government and industry on how best to bring agricultural peat into sustainable management.

# Chapter 6:

## Progress on Reducing Emissions from Waste and F-Gases



## Summary of Progress on Waste and F-gases

### Since the Clean Growth Strategy was published:

1. Published the 25 Year Environment Plan, where, in addition to other policies, an ambitious target to eliminate avoidable plastic waste by 2042 was announced. Since the publication of the plan several policies have been announced, such as an upcoming consultation on a deposit return scheme or restrictions on certain single-use plastic items.
2. The UK voted to support the EU Circular Economy Package.
3. On 14 November 2017, the UK became the sixth country in the world to ratify the Kigali Amendment to the Montreal Protocol, one of the 20 countries needed to bring the amendment into force. The Kigali amendment requires developed countries to reduce their consumption of hydrofluorocarbons (HFCs) 85 per cent by 2035.

## Policy Approach

Overall, the waste sector has accounted for significant reductions in greenhouse gas emissions since the Climate Change Act was introduced. The long-term trend has seen emissions from waste management decrease by over 53 per cent between 2007<sup>77</sup> and 2016 and there has been a 63 per cent drop in emissions from landfill during the same time period<sup>78</sup>.

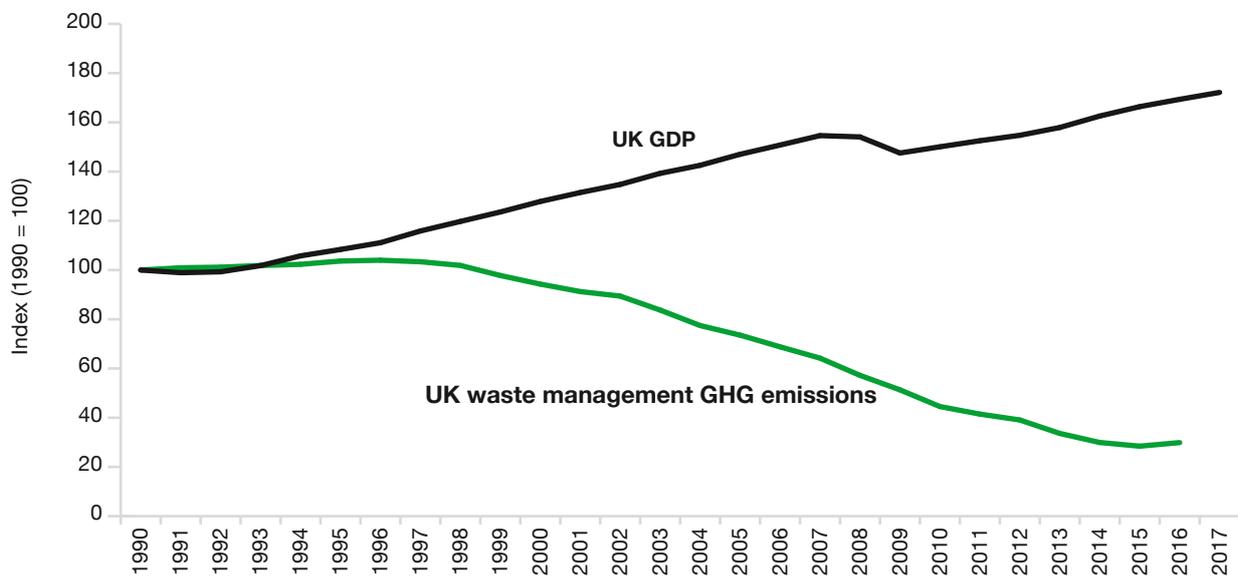
There has been over an 80 per cent decline in the proportion of local authority waste sent to landfill between 2006/07 and 2016/17<sup>79</sup>. In the UK, the Waste and Resources Action Programme (WRAP) work between 2011-2015 has resulted in four million tonnes less waste being produced and nearly 50 million carbon equivalent emissions being avoided<sup>80</sup>.

<sup>77</sup> BEIS, (2018), Final UK greenhouse gas emissions national statistics :1990-2016, <https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2016>

<sup>78</sup> BEIS, (2018), Final UK greenhouse gas emissions national statistics :1990-2016, <https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2016>

<sup>79</sup> DEFRA, (2017), Local Authority collected waste statistics – Local Authority Data, <https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables>

<sup>80</sup> WRAP, (2017), Annual Review 2016-17, <https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables>

**Figure 19: UK waste management emissions and GDP change over time**

Source: BEIS greenhouse gas emissions national statistics<sup>81</sup>, ONS GDP<sup>82</sup>.

In 2015 the EU Fluorinated Greenhouse Gases Regulation came into force, requiring a 79 per cent reduction in the use of HFCs across the EU by 2030, one of the world's most ambitious HFC phasedowns. The biggest single phasedown step, a cut of 37 per cent from 2014 levels, came into effect 1 Jan 2018<sup>83</sup>.

The Clean Growth Strategy set out proposals for waste and F-gases for delivering against our targets for the fourth and fifth carbon budgets:

- An ambitious target for zero avoidable waste by 2050, maximising the value we extract from our resources, and minimising the negative environmental and carbon impacts associated with their extraction, use and disposal;
- As set out in the 25 Year Environment Plan, the new Resources and Waste Strategy aims to make the UK a world leader in terms of competitiveness, resource productivity and resource efficiency;

- Explore new and innovative ways to manage emissions from landfill;
- The Government announced a £20 million plastics research and innovation fund this year. The UK also contributes £25 million towards the Commonwealth Marine Plastics Research and Innovation Challenge Fund, which will support researchers to address marine plastics from a scientific, technical and social perspective. Canada and India have joined the UK and become founding members.

<sup>81</sup> BEIS (2018) UK greenhouse gas inventory statistics (1990-2016) <https://www.gov.uk/government/collections/final-uk-greenhouse-gas-emissions-national-statistics>

<sup>82</sup> ONS (2018), Gross Domestic Product: chained volume measures: Seasonally adjusted £m, <https://www.ons.gov.uk/economy/grossdomesticproductgdp/timeseries/abmi/pn2>

<sup>83</sup> DEFRA, (2014), HFC phase down in the EU: how it works and exemptions, <https://www.gov.uk/guidance/hfc-phase-down-in-the-eu-how-it-works-and-exemptions>

## Next Steps

The Government has committed to the following actions, reflecting the ambition of the Clean Growth Strategy and of the 25 Year Environment Plan, pledging to leave our environment in a better state than we found it:

- New Resources and Waste Strategy will be published by the end of 2018 focusing on resource productivity and resource efficiency;
- We will continue working on our target to eliminate avoidable plastic waste by 2042;
- £20 million fund will be allocated to research and innovation on plastics;
- Scoping study on viable options for reducing the environmental impact of England's landfill sites is expected to be published by the end of 2018;
- Exploring options for the UK in relation to the EU F-gas Regulation when the UK leaves the EU;
- The Government will consider the feasibility of going beyond the existing requirements of the F-gas Regulation in a review scheduled for 2022.

## Response to CCC Recommendations

Recommendations specifically related to waste policy for the Devolved Administrations are covered separately in Chapter 7. All other Committee on Climate Change (CCC) recommendations for waste and F-gases are covered in this chapter.

### Recommendation 1:

**Set out in the new Waste and Resource Strategy a commitment to ban the landfilling**

**of most bio-degradable waste streams including food by 2025 at the very latest.**

The Resources and Waste Strategy will be published in 2018. This will set out more information on our policies and plans to tackle the issue of biodegradable waste to landfill including actions to continue to drive up prevention and recycling rates of material such as paper, card, garden waste and food waste, which have negative environmental impacts when sent to landfill.

The UK Government is on course to meet the Landfill directive target that no more than 35 per cent biodegradable municipal waste (BMW) is sent to landfill compared to 1995 by 2020. In 2016, the UK has surpassed the target and achieved a rate of 22 per cent BMW sent to landfill<sup>84</sup>.

The Government has also committed to work towards no food waste entering landfill by 2030 and will consider future options as part of the Resources and Waste Strategy. Many local authorities have introduced separate collection of food waste and we will work to support more so that the amount of food waste sent to landfill continues to decline. We will continue to work closely with WRAP, food businesses, local authorities and other organisations to meet Courtauld 2025<sup>85</sup>.

### Recommendation 2:

**Explore new and innovative ways to manage emissions from landfill, including legacy sites in England.**

The Government has already committed through the Clean Growth Strategy and the 25 Year Environment Plan to continuing to work on legacy landfill site aftercare issues. We are considering the results of the scoping study into viable options for reducing the environmental impact, including greenhouse gas emissions, of England's landfill sites. This will lead to further

<sup>84</sup> DEFRA, (2018), Data on biodegradable municipal waste (BMW) sent to landfill UK statistics on waste data, <https://www.gov.uk/government/statistical-data-sets/env23-uk-waste-data-and-management>

<sup>85</sup> DEFRA, (2018), A Green Future: Our 25 Year Plan to Improve the Environment, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/693158/25-year-environment-plan.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf)

research. The scoping study is expected to be published later this year.

### Recommendation 3:

**Continue the UK's inclusion in the EU F-gas Regulation, or develop equivalent or stronger legislation in the UK.**

It is the intention of both the UK and EU that the UK stays part of the EU F-gas system during the withdrawal implementation period. What happens after that is subject to negotiations on the UK's long-term relationship with the EU where we are seeking a close partnership. We are exploring all options including staying in the EU system.

Regardless of the outcome of the negotiations, the Government intends to maintain the current pace of HFC phase down in order to maintain the high level of environmental ambition and provide certainty for businesses which have already invested on the basis of the current phase down schedule.

### Recommendation 4:

**Publish a plan to restrict the use of F-gases to the very limited uses where there are currently no viable alternatives. The Government should publish a plan to achieve the cost-effective abatement that goes beyond the ambition of the existing F-gas Regulation. This should:**

- **Set out an approach to reduce emissions from refrigeration and air conditioning further and faster than the ambition of the F-gas Regulation, in line with the cost-effective potential identified in our new analysis.**
- **Set out an approach to enable 50 per cent of inhalers to be low-GHG by 2022 and to reduce emissions from metered-dose inhalers by at least 90 per cent by 2027.**

The HFC phase down under the EU F-gas Regulation is amongst the most ambitious in the world and many businesses are switching to low Global Warming Potential (GWP) alternatives as a result. A review of the Regulation is required in 2022, which will provide an opportunity to consider the feasibility of going further.

Many businesses in the refrigeration and air conditioning sectors have invested in alternative technologies to meet the current HFC phasedown and would be unfairly disadvantaged if the phasedown requirements were changed at short notice.

The Government agrees that low GWP inhalers should be promoted within the NHS. Whilst propellant based metered dose inhalers (MDIs) are in some cases the only appropriate delivery mechanism, dry powder inhalers (DPIs) are equally effective for many patients. The National Institute for Health Care Excellence (NICE) is working with the NHS and the Public Health England Sustainable Development Unit (SDU) to provide information about the relative environmental impacts of inhalers to patients and those prescribing inhalers, enabling patients to make an informed choice when they are offered a prescription. Industry is also developing lower GWP propellants to replace the high GWP gases currently used in MDIs.

Currently around 26 per cent of prescribed inhalers have a low GWP<sup>86</sup>. The SDU is consulting stakeholders, including clinicians, specialists and pharmaceutical and product manufacturers, in order to evaluate the potential for increasing this proportion. Any further measures will need to take account of the clinical and economic implications as well as environmental benefits.

The Government's approach is set out in this response. In summary:

- The UK Government are negotiating to remain with the EU F-gas system or will introduce equivalent domestic legislation;

<sup>86</sup> HMG (2018), Government response to Environmental Audit Committee report *UK progress on reducing F-Gas emissions*, <https://www.parliament.uk/business/committees/committees-a-z/commons-select/environmental-audit-committee/news-parliament-2017/f-gase-government-response-publication-17-19/>

- The Government will consider the feasibility of going beyond the existing requirements of the Regulation in a review scheduled for 2022.

The NHS are consulting on the introduction of low GWP MDIs. Any targets specifying the proportion of low GWP inhalers will take account of the clinical, economic and environmental implications.

# Chapter 7: Devolved Administrations



The Government agrees with the Committee on Climate Change (CCC) on the important role the Devolved Administrations play in achieving the UK's carbon budgets. We have recognised the importance of place in our Industrial Strategy, where building prosperous communities across the UK is one of the five foundations to align

our vision for a transformed economy. Figure 20 sets out the value of the low carbon economy in regions and Devolved Administrations around the UK. Each of the Devolved Administrations have their own strategies and plans for areas where policy is devolved, and their response to the CCC follows below.

## Figure 20: The UK's Low Carbon Economy

The growth in the UK's low carbon economy has taken place across the country with centres of excellence in many parts of the UK

### Northern Ireland:

The value of the new low carbon economy was £1 billion in 2016, supporting **6,000 jobs** and **4,500 businesses**

### Midlands:

Leading region for the design and manufacture of low carbon vehicles, with more than **£1.5 billion** (over 60%) of UK automotive R&D carried out in the region

### Wales:

The value of the low carbon economy was **£2.4 billion** in 2016, supporting **13,000 jobs** and **9,000 businesses**

### South West:

The low carbon sector in Bristol employs over **13,000 people** with over **34,000 jobs** in the whole of the West of England

### Scotland:

The value of the low carbon economy was **£5.8 billion** in 2016, supporting **24,000 jobs** and **9,000 businesses**

### North:

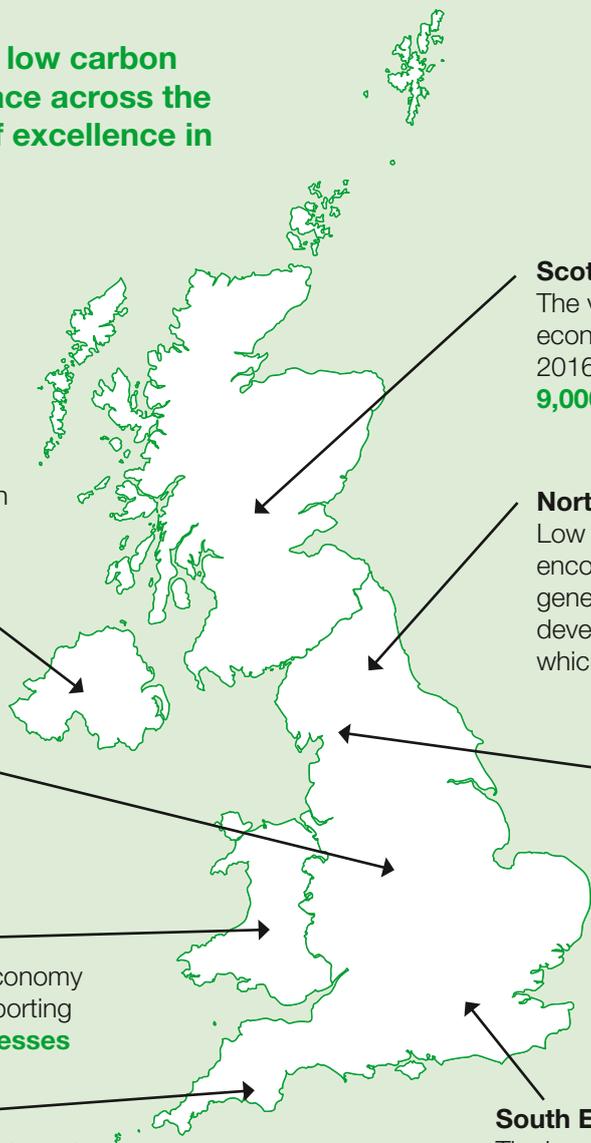
Low carbon investment has encouraged innovation and the generation of clean energy, and developed local supply chains, all of which has helped drive regeneration

### North West:

Low carbon economy supports **80,500 jobs** in the region

### South East:

The low carbon economy in Oxfordshire has a turnover of **£1.15 billion** supporting **8,800 jobs** and represents **7%** of the local economy



## Scotland

### Policy Approach

Scotland's low carbon transition is well underway. The most recent statistics show that a 49 per cent reduction in greenhouse gas emissions has been achieved between 1990 and 2016.

Climate change is a devolved matter and Scotland has its own legislative framework of emissions reduction targets. Scotland has met its statutory annual targets for the past three years and is well on track to exceed its current 2020 target.

The Scottish Government is pleased that the Committee on Climate Change's report recognises Scotland's strong progress to date and identifies areas where Scotland can share best practice across the UK, such as energy efficiency.

### Recent Progress

The Scottish Government's Climate Change Plan, published in February 2018, sets out policies and proposals to meet Scotland's current statutory emissions reduction targets over the period to 2032. The Plan includes a new Monitoring Framework, the first set of annual reports from which will be published in October 2018.

### Response to CCC Recommendations

The Committee on Climate Change provides a stand-alone annual progress report on Scotland's progress in reducing emissions, most recently published on 24 September 2018. The Scottish Government will respond separately to this more detailed report in due course. In the meanwhile, responses to the two recommendations directed to Scotland in the current UK-wide progress report are set out below.

### Recommendation 1:

**For Scotland, a stronger policy framework than currently committed to under the CCP to ensure it can deliver its target to reduce agricultural emissions.**

The Scottish Government is committed to continuing to work with farmers, crofters and land managers to maximise efficiency and lower the emissions intensity of Scottish produce. The Climate Change Plan includes a suite of measures to encourage farmers on the benefits of low carbon farming. We are exploring the potential for reducing emissions in agriculture with both the industry and our renowned scientific community, to find solutions that are beneficial for the environment, Scotland's farmers and our wider food and drink industry. The new Monitoring Framework for the Plan will help us better understand how the current measures are working. For example, we will monitor progress on soil testing and if not on track by 2020 we will re-evaluate our approach and consider possible incentives.

### Recommendation 2:

**Scotland to finalise and implement policies to meet the targets to reduce waste emissions as set out in its Climate Change Plan.**

The Scottish Government has committed to implementing the policies on waste management set out in the Climate Change Plan and the latest statistics show that emissions from waste continue to fall (down five per cent 2015 to 2016). The new Monitoring Framework for the Plan will help us monitor progress. The waste sector of the Plan contains the following policy output and implementation indicators:

- The landfilling of biodegradable municipal waste will be banned in Scotland from January 2021<sup>87</sup>, and the volume of waste landfilled (household and non-household) to

<sup>87</sup> Section 4 of the Waste (Scotland) Regulations 2012 amended the Landfill (Scotland) Regulations 2003 to introduce a ban on biodegradable municipal waste going to landfill from 1 January 2021.

be reduced to two million tonnes by 2020 (a 45 per cent reduction from the current level of 3.7 million tonnes).

- 60 per cent of total household waste to be recycled by 2020.
- 70 per cent of all waste to be recycled by 2025.
- Household and non-household food waste reduced by 33 per cent by 2025 from 2013 baseline.
- Up to 12 landfill gas capture sites being supported by 2020-21. Scottish Government funding was provided in 2017 and eight projects are underway at present.

## Next Steps

A new Scottish Climate Change Bill, in response to the increased global ambition of the UN Paris Agreement, was laid before the Scottish Parliament in May 2018. In line with the advice of the Committee on Climate Change, the Bill proposes increasing Scotland's emissions reduction target for 2020 to 56 per cent and that for 2050 to 90 per cent, which will also mean net zero emissions of carbon dioxide.

## Wales

### Policy Approach

The Welsh Government is disappointed with the 2016 emissions data but acknowledges the different challenges Wales faces compared to the rest of the UK. Nearly 60 per cent of our emissions come from heavy industry and electricity generation – almost double the average for the UK<sup>88</sup>. Wales produces more energy than it needs and is a net exporter of

energy. As a result, when measured on a consumption basis Wales has reduced its emissions by 37 per cent since 1990 (compared to the UK average of 42 per cent)<sup>89</sup>.

### Recent Activity

The 2016 emissions data reinforce the importance of setting targets and budgets, and establishing a clear pathway for decarbonisation. In the last year, Welsh Ministers have considered evidence from numerous sources, including the CCC, and agreed an emissions accounting framework, interim emissions reduction targets for 2020, 2030 and 2040, Wales' first two carbon budgets (2016 to 20 and 2021 to 25) and the offsetting limit for the first carbon budget.<sup>90</sup>

The Welsh Government has consulted on achieving a low-carbon pathway to 2030, seeking views on 32 potential actions for reaching the 2030 target and transitioning to a low-carbon economy.<sup>91</sup> It continues to engage with international partners in the Under2 Coalition to share experience and knowledge, and supports emerging economies to take action on climate change by contributing to the Climate Group's Future Fund.<sup>92</sup>

The Welsh Government ran a Call for Evidence to explore how best to achieve our ambition for a carbon neutral public sector by 2030.<sup>93</sup> In the private sector, the Welsh Government's Economic Action Plan (EAP) outlines its new relationship with business, framed by an Economic Contract that enables it to work with those businesses that show a commitment to lowering their carbon footprint.<sup>94</sup>

The Welsh Government announced a series of targets relating to renewable energy:

<sup>88</sup> NAEI (2018) Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland 1990-2016 [http://naei.beis.gov.uk/reports/reports?report\\_id=958](http://naei.beis.gov.uk/reports/reports?report_id=958)

<sup>89</sup> NAEI (2018) Greenhouse Gas Inventories for England, Scotland, Wales & Northern Ireland 1990-2016 [http://naei.beis.gov.uk/reports/reports?report\\_id=958](http://naei.beis.gov.uk/reports/reports?report_id=958)

<sup>90</sup> WG (2017) Written Statement – Update on the implementation of the carbon budgeting framework under the Environment Act: our accounting framework <https://gov.wales/about/cabinet/cabinetstatements/2017/carbonbudgetingframework>

WG (2018) Written Statement – Setting our interim emissions reduction targets and first two carbon budgets <https://gov.wales/about/cabinet/cabinetstatements/2018/emissionsreductionandcarbonbudgets>

<sup>91</sup> WG (2018) Consultation: A low carbon pathway for Wales <https://beta.gov.wales/low-carbon-pathway-wales>

<sup>92</sup> The Climate Group <https://www.theclimategroup.org/project/future-fund>

<sup>93</sup> WG (2017) Public sector decarbonisation <https://gov.wales/topics/environmentcountryside/climatechange/public-sector-decarbonisation>

<sup>94</sup> WG (2018) Prosperity to all: economic action plan <https://gov.wales/topics/businessandconomy/economic-action-plan>

- Wales to generate 70 per cent of its electricity consumption from renewable energy by 2030
- One gigawatt of renewable electricity capacity in Wales to be locally owned by 2030
- New renewable energy projects to have at least an element of local ownership by 2020

In appointing a new partner to run the Wales and Borders rail service, the Welsh Government has committed to 100 per cent electric traction on the Valleys lines running north from Cardiff, supplied with 100 per cent renewable electricity (50 per cent sourced from Wales). It has also committed to reduce emissions by 25 per cent across the network by the fifth year of the contract.<sup>95</sup> In addition, it has announced an investment of £60 million over three years in active travel, equivalent to an extra £20 per person.<sup>96</sup>

## Response to CCC Recommendations

### Recommendation 1:

**Replace voluntary industry-led framework [in agriculture], which has so far failed to meet emissions targets in England, Wales or Scotland, with a stronger framework to deliver greenhouse gas abatement to take effect from 2019.**

### Recommendation 2:

**We reiterate our earlier advice to the Welsh Government that it should look to simplify and streamline the process for supporting tree planting, in order to reduce the barriers to action.**

The Welsh Government has announced the Basic Payment Scheme will end and is consulting on the best way to support land managers in Wales after Brexit.<sup>97</sup> It intends to introduce two

new schemes: the Economic Resilience scheme and the Public Goods scheme. The latter will pay land managers for delivering things for which there is no market, including emissions reduction. The Welsh Government intends to consult further on the schemes in spring 2019.

The Welsh Government has also published its new woodlands strategy.<sup>98</sup> It includes the aim of planting at least 2,000ha per year from 2020.

### Recommendation 3:

**Wales to set out policy options to meet its proposed target to halve food waste by 2025.**

In 2018 the Welsh Government will consult on plans to halve food waste by 2025. Considerations will include the definition of food waste, including whether to measure avoidable food waste only, and the options available to achieve the target.

## Next Steps

Towards the end of 2018, the Welsh Government will seek approval from the National Assembly for Wales for setting the interim targets and first two carbon budgets in secondary legislation. We will publish our first Low Carbon Delivery Plan in March 2019, containing our policies and proposals for meeting the first carbon budget.

## Northern Ireland

### Policy Approach

In Northern Ireland greenhouse gas emissions have reduced by 15.9 per cent against the 1990 baseline, to 20.6 MtCO<sub>2</sub>e. The largest sectors in terms of emissions in 2016 were agriculture (27 per cent), transport (22 per cent) and energy supply (20 per cent). Most sectors show a decreasing trend since the base year, with the

<sup>95</sup> WG (2018) Written Statement - Update on the Procurement for the Wales and Borders Rail Service and South Wales Metro <https://gov.wales/about/cabinet/cabinetstatements/2018/railservicesupdate>

<sup>96</sup> WG, Wales infrastructure investment plan <https://gov.wales/funding/wales-infrastructure-investment-plan>

<sup>97</sup> WG (2018) Written Statement – Launch of Brexit Our Land <https://gov.wales/about/cabinet/cabinetstatements/2018/launchofbrexitourland>

<sup>98</sup> WG (2018) Woodlands for Wales: strategy <https://beta.gov.wales/woodlands-wales-strategy>

largest decreases in energy supply, residential, business and waste sectors.

From the introduction of the Climate Change Act 2008, Northern Ireland has made progress in reducing emissions. In the energy sector, over 35 per cent of total energy consumption is generated from renewable sources located in Northern Ireland. In addition, the natural gas network is expanding outside of Belfast to the west and south east, contributing to emissions reduction from the energy sector of 24 per cent<sup>99</sup>.

Action to address fuel poverty has seen schemes such as Affordable Warmth and the Northern Ireland Sustainable Energy Programme support families on low incomes improve the energy efficiency of their homes. Also, the Boiler Replacement scheme has seen the installation of new energy efficient boilers in low income households. This has helped the residential sector reduce emissions by 29 per cent<sup>100</sup>.

The Energy Efficiency Loan Fund has provided interest free loans to Northern Ireland businesses delivering cost savings. For the financial years 2016/17 and 2017/18 a total of 309 loans valued at £4.9 million delivered annual cost savings of £3.4 million and 11.83kt of carbon dioxide savings annually<sup>101</sup>. The loan fund is currently closed to new applications whilst an independent evaluation and economic appraisal is completed to determine whether a need still exists before launching a new/revised scheme. This contributed to a reduction in emissions of 23 per cent across the business sector.

The waste sector has seen big reductions in greenhouse gas emissions of 58 per cent. Landfill from household waste is at a low of 32.3 per cent and a household waste recycling rate of 47.1 per cent has been achieved. The Food Waste Regulations (Northern Ireland) 2015 came into operation in February 2015 and prohibited the landfill of separately collected food

waste from 1 April 2015. From 1 April 2016 large producers of food waste have been required to take measures to ensure the separate collection of their food waste, and from 1 April 2017 district councils have been required to promote the separate collection of food waste and provide receptacles to householders for separate food waste collection.

In transport, a charging network of 336 charging points for electric vehicles has already been established across Northern Ireland<sup>102</sup>. Work is being taken forward to support the introduction of ultra low emission vehicles and the use of alternative fuels in the NI market by adapting the broader UK Road to Zero Strategy.

Promoting the increased use of public transport is also progressing through projects such as the Belfast Rapid Transit, planned for operation from September 2018, development of the Belfast and Foyle city centre multi-modal Transport Hubs and the creation of more Park & Ride facilities.

Going forward, central and local Government continue to work closely in planning land use and transport to encourage the use of walking, cycling and public transport. This includes building safe and accessible cycling infrastructure by delivering a Belfast Bicycle Network, bicycle networks in other towns and a Strategic Plan for Greenways.

The Forestry Strategy is currently being reviewed and will identify actions to increase tree planting. As part of the Energy Management Programme being developed under the NICS Asset Management Strategy work is ongoing to identify how the forestry estate may be able to generate renewable energy, implement storage and energy efficient measures that will reduce energy costs and provide benefits in emissions reduction. The Energy Management Programme also encompasses work by NI Water to reduce the production of greenhouse gases from

<sup>99</sup> DfE, Development of the Northern Ireland gas industry <https://www.economy-ni.gov.uk/topics/energy/gas>

<sup>100</sup> DAERA (2018) Northern Ireland greenhouse gas inventory 1990-2016 statistical bulletin <https://www.daera-ni.gov.uk/publications/northern-ireland-greenhouse-gas-inventory-1990-2016-statistical-bulletin>

<sup>101</sup> InvestNI, Energy Efficiency Loan Fund <https://www.investni.com/energy-efficiency-loan-fund.html>

<sup>102</sup> Nidirect, Electric, Vehicles, <https://www.nidirect.gov.uk/articles/electric-vehicles>

its operations with a programme for energy efficiency and renewable energy generation; a pilot project to install energy monitoring/control systems in a number of schools; and the Royal Victoria Hospital Energy Centre Project.

The agriculture sector launched Phase 2 of the 'Efficient Farming Cuts Greenhouse Gases Implementation Plan 2016 – 2020' in September 2016. Building on Phase 1 (launched 2011), this plan focuses on supporting and promoting on-farm implementation of efficient technologies, best practice measures and knowledge transfer programmes that help reduce the carbon intensity of food production in Northern Ireland.

Northern Ireland is emerging as a region of excellence in bio-energy with a range of innovative design, manufacturing, installation, operation and maintenance companies within several sub-sectors including anaerobic digestion and biomass.

One such example is Granville EcoPark Ltd which uses high quality organic waste to operate an AD plant. This was the first AD plant in the UK to achieve certification under the AD Certification Scheme, an industry-led initiative that recognises good operational, environmental, and health and safety performance at AD plants. Since then the company have converted the biogas generated by the plant to produce bio-methane which is used to fuel CHP plants for food producers in NI as well as running some company cars on electricity they generate from it. The company now plan to capitalise on the CO<sub>2</sub> by product for food processing and also develop a high added value fertiliser from the digestate.

Northern Ireland has 100 per cent of schools registered on the Eco-Schools Programme<sup>103</sup>. The Eco-Schools Green Flag, awarded to schools with high achievement in their programme, is a recognised and respected eco-label for environmental education and performance. Northern Ireland is ranked ninth out of the 64 participating countries for number

of Green Flag Status Schools and was also the first country in the world to award a Green Flag to one of its schools.

### Response to CCC recommendations

The CCC has advised that Northern Ireland needs to make progress across the board.

There are unique challenges facing Northern Ireland in achieving greenhouse gas emissions reduction. There is no nuclear power to supplement the reduction in burning coal, two thirds of homes are heated by oil, unable to use rail transport to reduce emissions and the agriculture sector is pre-dominantly livestock based.

### Next Steps

Recognising these challenges and acknowledging the CCC recommendation the Northern Ireland departments have taken the step of commissioning a report from the CCC. The purpose will be to identify what policies, strategies, measures and schemes may be possible to progress emissions reduction in Northern Ireland through the 2020's. The report will inform options that can be developed for future Ministers' consideration.

<sup>103</sup> <http://www.eco-schoolsni.org/cgi-bin/greeting?instanceID=1>



# Annexes



## Annex A: Metrics

As set out in the Clean Growth Strategy, we have developed a framework of economy wide and sector-level metrics, which we are reporting against here, to demonstrate key changes in each sector.

		1990 <sup>104</sup>	2015	2016	2017 <sup>105</sup>	1990 – 2016 <sup>**</sup>
<b>Overall</b>	Emissions per capita (tCO <sub>2</sub> e/person)	14	8	7	7*	-49%
	Emissions Intensity Ratio, EIR (tCO <sub>2</sub> e/£ million of GDP) <sup>106</sup>	715	265	248	237*	-65%
	Final energy consumption intensity of GDP (MWh/£ million)	1535	873	875	855	-43%
<b>Business and public sector</b>	Non-industrial business and public energy use per £ million output (MWh/£ million)	303	166	168	162	-44%
	Emissions intensity of non-industrial business and public energy use (gCO <sub>2</sub> e/kWh)	120	88	88	87*	-27%
	Industrial business energy use per £ million output (MWh/£ million)	1680	992	921	937	-45%
	Emissions intensity of industrial business energy use (gCO <sub>2</sub> e/kWh)	488	404	379	376*	-22%
<b>Homes</b>	Home energy use per household (MWh/household)	21	17	17	17	-17%
	Emissions intensity of home energy use (gCO <sub>2</sub> e/kWh)	169	140	140	140*	-17%
<b>Transport</b>	Road transport energy use per 1,000 vehicle kilometres (kWh/km)	1127	941	943	931	-16%
	Road transport emissions per vehicle kilometre (gCO <sub>2</sub> e/km)	261	213	215	212*	-18%
	Road transport emissions per energy use (gCO <sub>2</sub> e/kWh)	231	227	228	228*	-2%
<b>Power</b>	Emissions from generation (MtCO <sub>2</sub> e)	204	104	82	73*	-60%
	Share of generation from clean sources (%)	21%	45%	45%	50%	24ppts
<b>Natural Resources</b>	Total conventional woodland area (thousand hectares)	2778	3155	3159	3166	14%
	Emissions intensity per £m agricultural output (tCO <sub>2</sub> e/£ million)	5539	3982	4231	4116*	-24%
	Biodegradable waste sent to landfill (MtCO <sub>2</sub> e)	36	8	8	Not available	-78%
	Greenhouse gas emissions from landfill (MtCO <sub>2</sub> e)	60	13	14	Not available	-77%

\* Emissions estimates for 2017 are provisional.

\*\* Rounded to nearest per cent.

<sup>104</sup> The numbers provided in this table reflect the latest data available and may differ from those published in the Clean Growth Strategy due to revisions.

<sup>105</sup> 2017 estimates are provided where available. A complete set for 2017 will not be available until 2019.

<sup>106</sup> To make updated GDP and output numbers comparable to those in the Clean Growth Strategy the data has been adjusted to maintain the same base year (2013).

This first update to the sector level metrics provides an indication of economy-wide progress towards meeting the ambitions set out in the Clean Growth Strategy, which gave estimates for 2015. These have been updated to include latest data for 2016 and, where available, estimates for 2017. Minor statistical revisions to historic data have also been included.

These metrics give helpful insight into the strength of progress. However, care should be taken when interpreting the figures: year-on-year results can be volatile as they depend on external factors such as the weather, and may not reflect underlying trends. In addition, several estimates for 2017 are based on provisional data and are likely to change.

The Emissions Intensity Ratio of the economy has fallen by over two thirds since 1990, and emissions per capita continued to fall in 2016 and 2017 to less than half the 1990 level.

Underpinning this are a range of factors:

- Businesses have been growing and becoming cleaner and are now more energy efficient and less carbon intensive than they were in 2015;
- Emissions from homes are highly dependent on the weather making year-on-year comparisons difficult. Nevertheless, since 1990 there has been a clear reduction in energy used per household and a reduction in the carbon content of the energy consumed;
- Emissions from transport remain high. While policy has driven vehicle emissions improvements, this has been offset by increased demand for road transport, with corresponding impacts on congestion;
- The power sector has continued to make strong progress, with half of all electricity generated from clean sources in 2017;
- Our latest estimates show the coverage of UK woodland area increasing in both 2016 and 2017, although there has been less progress recently in agriculture;
- While emissions from waste have been largely flat in since 2015, they are almost 80 per cent lower than in 1990.

Emissions across the economy



The graphs above include projections for 2032 from the pathway analysis presented in the Clean Growth Strategy. The Technical Annex to the Strategy provides more information on this methodology available at <https://www.gov.uk/government/publications/clean-growth-strategy>.

## Annex B:

# Progress Against Actions and Milestones

In this section we provide an update on progress against the actions and milestones set out in Annex B of the Clean Growth Strategy.

Lead Department	Description	Timing [as set out in Clean Growth Strategy]	Progress
<b>Improving Business and Industry Efficiency and Supporting Clean Growth</b>			
BEIS	Consult on new and streamlined energy and carbon reporting framework. This will replace some existing schemes, such as the reporting element of the CRC Energy Efficiency Scheme, and align with mandatory annual greenhouse gas reporting by UK quoted companies.	Published alongside this Strategy, with proposed introduction of new framework by 2019	Complete ✓
BEIS	Consult on the design of a new £18 million industrial heat recovery programme.	Published alongside this Strategy	Complete ✓
BEIS	Publish joint industrial decarbonisation and energy efficiency action plans with seven of the most energy intensive industrial sectors, building on three years of joint industry- Government cooperation.	Published alongside this Strategy	Complete ✓
BEIS	New Ministerial-led CCUS Council with industry established.	From 2017	Complete ✓
BEIS	CCUS Cost Challenge Taskforce established to deliver a plan to reduce the cost of deploying CCUS.	From 2017	Complete ✓
BEIS	Establish an Industrial Energy Efficiency scheme.	From 2017	Under consideration
BEIS/MHCLG	Consult on how best to improve the performance of the commercial and private rented sector, through tighter minimum building standards in the Private Rented Sector.	2018	Due by year end
BEIS	Deployment pathway for CCUS produced.	2018	Due by year end
BEIS	Work with industrial clusters to identify the most appropriate way forward to test the potential for development of CCUS industrial decarbonisation clusters.	2018	Ongoing
BEIS	Organise an international CCUS event with international partners.	2018	Organised for November 2018
BEIS	Commit to provide further details on CCUS innovation spend.	2018	Complete ✓
BEIS	Develop and consult on a package of measures to support businesses to improve how productively they use energy.	From 2018	Call for Evidence published
BEIS/HMT	Ensure incentives for investment in energy efficiency are regularly reviewed, for instance the list of products that qualify for enhanced capital allowances tax relief.	On-going	Ongoing
BEIS	Undertake an evaluation of the Climate Change Agreements to inform any successor scheme from 2023.	Expected to commence in 2018	In progress – runs to autumn 2019
MHCLG	Following the outcome of the independent review of Building Regulations and fire safety, and subject to its conclusions, the Government intends to consult on improving the energy efficiency of new and existing commercial buildings.	2018	Due spring 2019

Lead Department	Description	Timing [as set out in Clean Growth Strategy]	Progress
<b>Improving our Homes</b>			
BEIS	Publish a Call for Evidence on additional measures to encourage energy performance, particularly amongst owner occupiers.	Published alongside this Strategy	Complete ✓
BEIS	Publish a Call for Evidence on how to reform and streamline the Green Deal framework to make the “Pay as You Save” system more accessible to businesses, while ensuring adequate protection for consumers.	Published alongside this Strategy	Complete ✓
BEIS	Work with industry to implement the independent industry led Each Home Counts review to improve quality and standards for all retrofit energy efficiency and renewable energy installations.	2017	Ongoing work with industry – On track to launch trust mark autumn 18
BEIS/HMT	Work with mortgage lenders to incorporate energy efficiency into their lending decisions, and look at incentives and other levers that could encourage home-owners to invest in energy efficiency improvements.	2017	Ongoing – First green mortgage offered
BEIS	Explore ways in which we could make it easier for innovative approaches or products to be installed under our consumer-facing schemes such as the Energy Company Obligation.	2017	Consulted on 10-20 per cent of ECO being innovation focussed
BEIS	For privately rented homes, from April 2018, landlords of the worst performing properties will need to improve those properties to a minimum of EPC E before they can be let; lowering bills for some of the most vulnerable private tenants. We will consult shortly on steps to make these regulations more effective.	2017	Consulted and working towards publishing response in autumn 18
BEIS	Consult on ECO’s operation through to 2022.	2018	Complete ✓
BEIS	Reform the RHI to focus the scheme towards long-term decarbonisation through greater uptake of technologies such as heat pumps and bio methane (biogas to grid).	2017	Complete ✓
BEIS	Continue to work with suppliers to ensure that people are provided with tailored advice when a smart meter is installed.	2017	Ongoing
BEIS	Alongside this Strategy, the Government has published <i>Boiler Plus</i> <sup>107</sup> , improving standards for the 1.2 million new boilers installed in England every year and ensuring control devices are included with every installation so people can control comfort in their own homes for less from April 2018.	Spring 2018	Complete – ✓ Boiler Plus went live in spring 2018
BEIS	Replace the existing, telephone-only Energy Saving Advice Service with a digitally led-service working closely with the <i>Each Home Counts</i> implementation, offering tailored advice on improving the energy performance of people’s homes.	Spring 2018	Available as a prototype
BEIS/MHCLG	Issue a Call for Evidence seeking views on further trigger points for Energy Performance Certificates (EPCs) to be updated, as well as wider views on how EPCs could be further improved, in light of new sources of data and capabilities.	Spring 2018	Complete – ✓ Call for Evidence closes 19 October
BEIS/MHCLG	The Government will look at a long-term trajectory for energy performance standards across the private rented sector, with the aim of as many private rented homes as possible being upgraded to EPC C by 2030 where practical, cost-effective and affordable.	2018	Ongoing – Stakeholder engagement on options planned in autumn 18
BEIS/MHCLG	The Government will also look at introducing similar energy performance standards across the social housing sector, where practical, cost-effective and affordable. This will need to take account of the findings of the independent public inquiry into the fire at Grenfell Tower and the Government’s separate work looking at wider social housing policy issues.	2018	Ongoing – Stakeholder engagement on options planned in autumn 18.

<sup>107</sup> BEIS, Heat in Buildings, <https://www.gov.uk/government/groups/heat-in-buildings>

Lead Department	Description	Timing [as set out in Clean Growth Strategy]	Progress
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#### Accelerating the Shift to Low Carbon Transport

DfT	Series of consultation papers setting out the Government's strategic approach to aviation, including how to support growth whilst tackling environmental impacts.	2017-18	On track with Green Paper due in autumn 2018
DfT	Regulation to improve EV charge point provision and consumer access under the Automated and Electric Vehicles Bill.	2017	Bill has received Royal Assent
DfT	Deployment of £80 million ULEV infrastructure funding announced in Autumn Statement 2016.	2017-21	Ongoing
DfT	Consider outcome and next steps in light of SME HGV fleet review pilot.	2017	Complete ✓
DfT	Pathway to Zero Emission Road Transport Strategy Document.	By early March 2018	Complete ✓
DfT/Defra	Updating Government vehicle buying standards.	End 2018	Complete ✓

#### Clean, Smart, Flexible Power

BEIS	Publish a full response to the consultation on ending unabated coal generation in Great Britain.	Shortly	Complete ✓
BEIS	Publish independent Cost of Energy Review, undertaken by Professor Dieter Helm CBE.	Autumn 2017	Complete ✓
HMT	Set out further details on carbon prices beyond 2020/21.	Autumn 2017	Complete ✓
BEIS	Work with industry to develop a nuclear Sector Deal as part of the Industrial Strategy, looking at boosting competitiveness and skills across the sector.	Autumn 2017	Complete ✓
BEIS/HMT	Set out new controls to replace the Levy Control Framework beyond 2020/21.	End 2017	Complete ✓
BEIS	Provide an update on our approach for small scale low carbon generation beyond 2019.	End 2017	Ongoing – Call for Evidence and consultation published
Ofgem	Introduce a modified generation licence for storage to improve regulatory clarity.	Summer 2018	Ongoing – Ofgem consultation published
BEIS	Continue to work with nuclear developers on their new build proposals, including on financing plans.	2018	Ongoing – Wylfa negotiations announced

Lead Department	Description	Timing [as set out in Clean Growth Strategy]	Progress
<b>Enhancing the Benefits and Values of our Natural Resources</b>			
BEIS	Set out approach to bring together biological industries, academia and innovators, linking up farmers and land managers with high tech industries to make the most of existing resources and develop advance feed stocks that are essential for the future low carbon economy.	By end of 2018	Ongoing
BEIS	New Bioeconomy Strategy.	By end of 2018	On track
Defra and BEIS	Set up a stronger and more attractive domestic carbon offset market that will encourage more businesses to support cost-effective emissions reductions such as through planting trees. We will also explore how we could extend this market to include other land activities.	2017 onwards	Ongoing
Defra	Establish forestry investment zones.	2017 onwards	Ongoing
Defra	Set out 25 Year Environment Plan.	2017 onwards	Complete ✓
Defra	Publish a new Resources and Waste Strategy.	2018	On track
Defra	Publish a Clean Air Strategy.	2018	On track
Defra	£10 million capital grant scheme for peat restoration.	Funds available from April 2018 for three years	Ongoing
<b>Leading in the Public Sector</b>			
BEIS	Continue to fund further improvements in the wider public sector with £295 million of funding allocated to the public sector energy efficiency loan scheme, across the UK, in the 2015 Spending Review.	Ongoing	Ongoing
BEIS	Introduce a voluntary wider public and higher education sector target of 30% reduction in greenhouse gases by 2020/21, against a 2009/10 baseline, and will publish a Call for Evidence. We will review progress against this voluntary target by 2020, with a view to moving to a more ambitious target during the 2020s (e.g. 50% reduction by 2030). Once a reporting framework is in place, and there is clear evidence of the impact of voluntary action, a mandatory target could be considered.	2018	Complete ✓ On track – Reviewing more ambitious targets
BEIS	Review existing carbon saving policies impacting the public sector to assess whether changes or new policies are needed to realise the carbon and costs savings potential. We will explore this further through a Call for Evidence.	2017	On track – Call for Evidence completed Roadmap to be published in 2019
BEIS	Currently assessing how much the current 2020 greenhouse gas emission reduction target under the GGCs could be stretched to be more ambitious yet achievable. We also aim to set an appropriate level of ambition beyond 2020.	2018	Ongoing
BEIS	Continue to support the expansion of Energy Performance Contracts in the public sector which can offer a new route for investment in energy efficiency alongside guaranteed savings.	We are providing continuing support in 2017/18	Ongoing

## Annex C:

# Updated Actions and Milestones

In this section we provide an update to the table of actions and milestones set out in Annex B of the Clean Growth Strategy. This enables us to clearly set out what we expect to have achieved over the coming months, and provide industry and stakeholders with a clear sense of policy development.

Lead Department	Description	Timing
<b>Green Finance</b>		
BEIS/HMT	Respond to Green Finance Taskforce recommendations.	Spring 2019
<b>Improving Business and Industry Efficiency and Supporting Clean Growth</b>		
BEIS	Launch innovation funding competition to pilot business models that scale up energy efficiency projects from SMEs.	Oct 2018
BEIS	Exploring voluntary building standards.	2018
BEIS	Publish Deployment Pathway for CCUS.	By year end
BEIS	Consult on trajectory for non-domestic PRS.	Early 2019
MHCLG	Consult on improving the energy efficiency of new and existing commercial buildings.	Spring 2019
BEIS	Secondary Legislation for Streamlined Energy Carbon Reporting Implementation comes into force.	April 2019
BEIS	Consult on the delivery and investment frameworks for CCUS.	2019
BEIS	Next steps on industrial energy efficiency.	2019
BEIS/HMT	Ensure incentives for investment in energy efficiency are regularly reviewed, for instance the list of products that qualify for enhanced capital allowances tax relief.	On-going
BEIS	Beyond support through the RHI, ambition to phase out high fossil fuel heating in businesses off the gas grid during the 2020s. Businesses and industry will be involved in developing the new policy.	During the 2020s
BEIS	Develop a clear policy framework to support decarbonisation in energy intensive industries.	By 2022
<b>Improving our Homes</b>		
MHCLG/BEIS	Publish the Government response to consultation on amending domestic PRS regulations.	Autumn 2018
BEIS	Launch of the quality mark scheme as part of the implementation of the Each Home Counts review.	Autumn 2018
BEIS	Publication of guidance on the new innovation element of the Energy Company Obligation.	Autumn 2018
BEIS	Launch PRS enforcement pilots with a number of local authorities to develop best practice and learn lessons.	Autumn 2018
MHCLG	Consultation on a possible review of the Decent Homes Standard.	Autumn 2018
BEIS	Publish the Government response to consultation on whether to set standards for smart appliances.	Autumn 2018
BEIS/MHCLG	Further stakeholder engagement on options around a private rented sector trajectory and social housing standard.	Autumn 2018
BEIS	Publish action plan around building a market for energy efficiency, focussed in particular amongst owner occupiers.	End 2018
BEIS	Publish the Government Response to Urban Biomass Consultation.	January 2019

Lead Department	Description	Timing
MHCLG	Consultation on Part L of the Building Regulations.	Spring 2019
BEIS	Update 2015 Fuel Poverty Strategy for England.	Summer 2019
BEIS	Consultation on options for the future heat networks market framework.	Summer 2019
BEIS	Publication of an evidence gathering report of bioenergy and electric heating options in off-gas-grid buildings.	2019
BEIS	Consult on longer term domestic trajectory for the Private Rented Sector.	2019
BEIS/ MHCLG	Explore innovative solutions to energy performance improvements not performing as well as predicted, including potential actions on compliance and enforcement of energy performance.	By 2019
BEIS	Continue smart meter roll out.	Roll out complete by end of 2020
BEIS	Funding allocated in the Spending Review 2015 to grow the UK's heat networks market.	By 2021
BEIS	Beyond support through the RHI, ambition to phase out high fossil fuel heating in homes off the gas grid during the 2020s. Consumers and industry will be involved in developing the new policy.	During the 2020s

#### Accelerating the Shift to Low Carbon Transport

DfT	EU HGV CO <sub>2</sub> emission reporting and monitoring starts.	January 2019
DfT	Publish Aviation Strategy/White Paper.	First half of 2019
DfT	Publish Clean Maritime Plan.	Spring 2019
HMT	Additional funding to support uptake of ULEVs.	Autumn 2019
DfT	Clarify the UK regulatory approach to the EU 2020/21 new car and van CO <sub>2</sub> targets.	Autumn 2019
DfT	Report from Low Emission Freight and Logistics Trial.	2019
DfT	Decision on domestic regulatory regime for car/van CO <sub>2</sub> regulations in context of EU exit.	2019
HMT	Decisions on support for cycling and walking following end of current funding period (to 2019/20).	2020
DfT	Decision on next steps in light of platooning and longer semi-trailer trials.	2020 onwards
DfT	Decision on domestic regulatory regime for freight CO <sub>2</sub> regulations in context of EU exit.	Mid-2020s
DfT	Active participation in the IMO to address GHG emissions from shipping.	Ongoing
DfT	Set targets for EU CO <sub>2</sub> emissions reductions from new HGVs.	Ongoing
HMT	Decision(s) on future fiscal support/tax incentives for ULEVs.	Ongoing

#### Clean, Smart, Flexible Power

BEIS	Legislate definition of storage in the Electricity Act.	When Parliamentary time allows
BEIS	Take powers to set regulatory requirements for smart appliances.	When Parliamentary time allows
BEIS	Publish the Government response to consultation on Feed-in Tariffs scheme.	End 2018
BEIS	Response to Professor Dieter Helm's Review of the Cost of Energy.	End 2018
Ofgem/BEIS	Ofgem to implement price cap on standard variable and default tariffs across the whole market.	End 2018
Ofgem/ National Grid	Increase the independence of the electricity system operator within the National Grid group.	April 2019
BEIS	Planned Pot 2 Contract for Difference allocation round.	By May 2019 and every two years thereafter.
BEIS	Nuclear Sector Deal Annual Review.	June 2019
BEIS	The Government will publish a draft National Policy Statement for nuclear power with single reactor capacity over 1 gigawatt beyond 2025, including a draft list of sites, for consultation.	Summer 2019
BEIS	Set out next steps on alternatives to the EU ETS.	Summer 2019

Lead Department	Description	Timing
BEIS	Publish Electricity Market Reform Review.	Summer 2019
BEIS	Consult on the delivery and investment frameworks for CCUS.	2019
BEIS	Unabated coal phase out – consider appropriate legislative vehicle for introducing the emissions intensity limit from 2025.	Before 2021/2022 CM auctions
BEIS	Continue to work with Ofgem and industry to implement the 29 actions in the Smart Systems and Flexibility Plan.	2022

Enhancing the Benefits and Values of our Natural Resources		
Defra	Introduce an Agriculture Bill.	This Parliamentary session
UKRI/Defra/BEIS	Apply the £90 million Industrial Strategy Challenge fund on Transforming Food Production to deliver R&D to support increasing agricultural productivity, sustainability and resilience with improved environmental impacts (which includes GHG emissions reduction).	Autumn 2018
Defra	Continue working with the Organisation for Economic Co-operation and Development (OECD) on their project to improve the modelling of macroeconomic effects of the transition to a circular economy.	Project concludes end of 2018
Defra	Publish new Resources and Waste Strategy.	End 2018
Defra	Publish England Peat Strategy.	End 2018
Defra	Publish a Clean Air Strategy.	2018
Defra	Publish consultations on a deposit return scheme or restrictions on single use plastics.	End 2018
Defra	Scoping study on viable options for reducing the environmental impact of England's landfill sites.	End 2018
Defra	£10 million capital grant scheme for peat restoration.	Funds available from April 2018 for three years
Defra	Establish a Lowland Agricultural Peat Taskforce.	2019
Defra	Commit to make available up to £200 million to support rural communities over the next two years and set out agroforestry decisions.	By end of 2019
Defra	Allocated funding to woodland planting to plant 11 million trees.	2020
Defra	Interim steps on post-CAP scheme.	Pilot from 2021 to 2023
Defra	Next F-gas quota reduction of 55% from baseline level.	January 2021
Defra	Woodland Carbon Fund: £19.2 million to fund larger-scale woodland and forest creation.	By 2021
Defra	Next steps on planting 11 million trees.	2022
Defra	Work with industry to encourage the use of low emissions fertiliser, and review the levels of take up using data from the British Fertiliser Practice Survey.	Ongoing over the next five years

Leading in the Public Sector		
BEIS	Support Local Leadership on decarbonisation via the Local Energy Programme.	2018
BEIS	Publish a Roadmap for Public Sector.	2019
BEIS	Review post-2020 targets for central Government and wider public sector.	By 2020

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978-1-5286-0814-5