

# How the UK can stop contributing to climate change

November 2018

# Introduction

The case for making the UK a 'net zero' carbon economy is compelling: it would give the country a head start in the clean industrial revolution and forestall the worst effects of climate change. But focusing just on 2050 risks making a net zero economy look more difficult than it will likely prove to be.

This is because the technologies needed by 2050 aren't yet commercial, at least in some areas: for example, zero carbon aviation is still in its infancy, and carbon capture and storage still needs to come down in cost. Getting to net zero with existing technology and incremental policy change might seem implausible.

However, as the UK's extraordinary progress on renewables and phasing out coal shows, innovation can rapidly turn what seems impossible into business as usual: five years ago, over 65 per cent of UK power came from fossil fuels. By August 2018, over 60 per cent came from zero carbon sources. The result is that the UK's emissions are lower than any time since the 19<sup>th</sup> century.

Here, we look at how the UK can make rapid progress towards net zero by acting now. We show that doing so is both readily achievable and desirable. We show that the government can pledge to end climate change within a generation, and set this goal into law. In doing so, it should act to cut emissions now, and continue to support innovation to enable longer term emissions reductions.

# Summary of recommendations

The UK can get on track to net zero emissions in line with its Paris agreement commitments, by either 2050 or, as suggested by climate campaigners, 2045. We show what this would mean for activity before 2032, the end of the 5<sup>th</sup> carbon budget. Our assessment is that:

**Getting on track to net zero by 2050** could be done via four straightforward policies:

- making all new car and van sales electric or plug-in hybrid by 2030
- upgrading all homes to meet EPC C levels of efficiency by 2035
- adopting 'best practice' resource efficiency in industry
- returning to 1970s levels of afforestation alongside habitat restoration and farm payments for soil carbon sequestration.

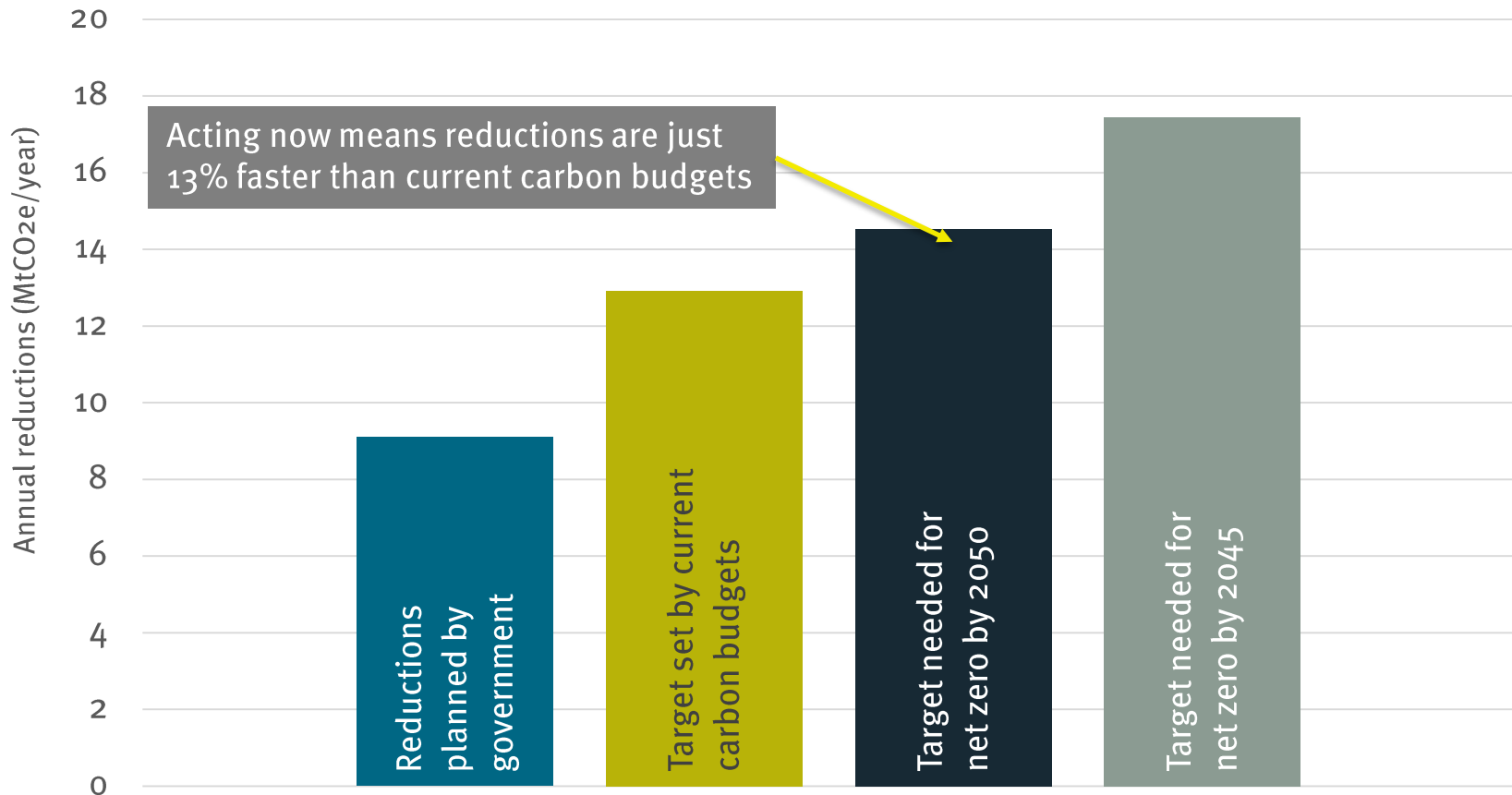
**Aiming for net zero by 2045** would be harder. As well as the four actions above, it would mean doubling the pace of current emissions reductions, for example through the early retirement of fossil fuelled power, heating and transport infrastructure, limiting aviation emissions and influencing dietary choices toward low carbon options.

**Waiting until after 2032 to act would be a mistake:** going slowly now would mean a 70-120 per cent increase in effort in the 2030s and 2040s. By contrast, lowering emissions now would make ending the UK's contribution to climate change by 2050 achievable, using policy that is both attractive and implementable today.

**Lowering emissions before 2030**

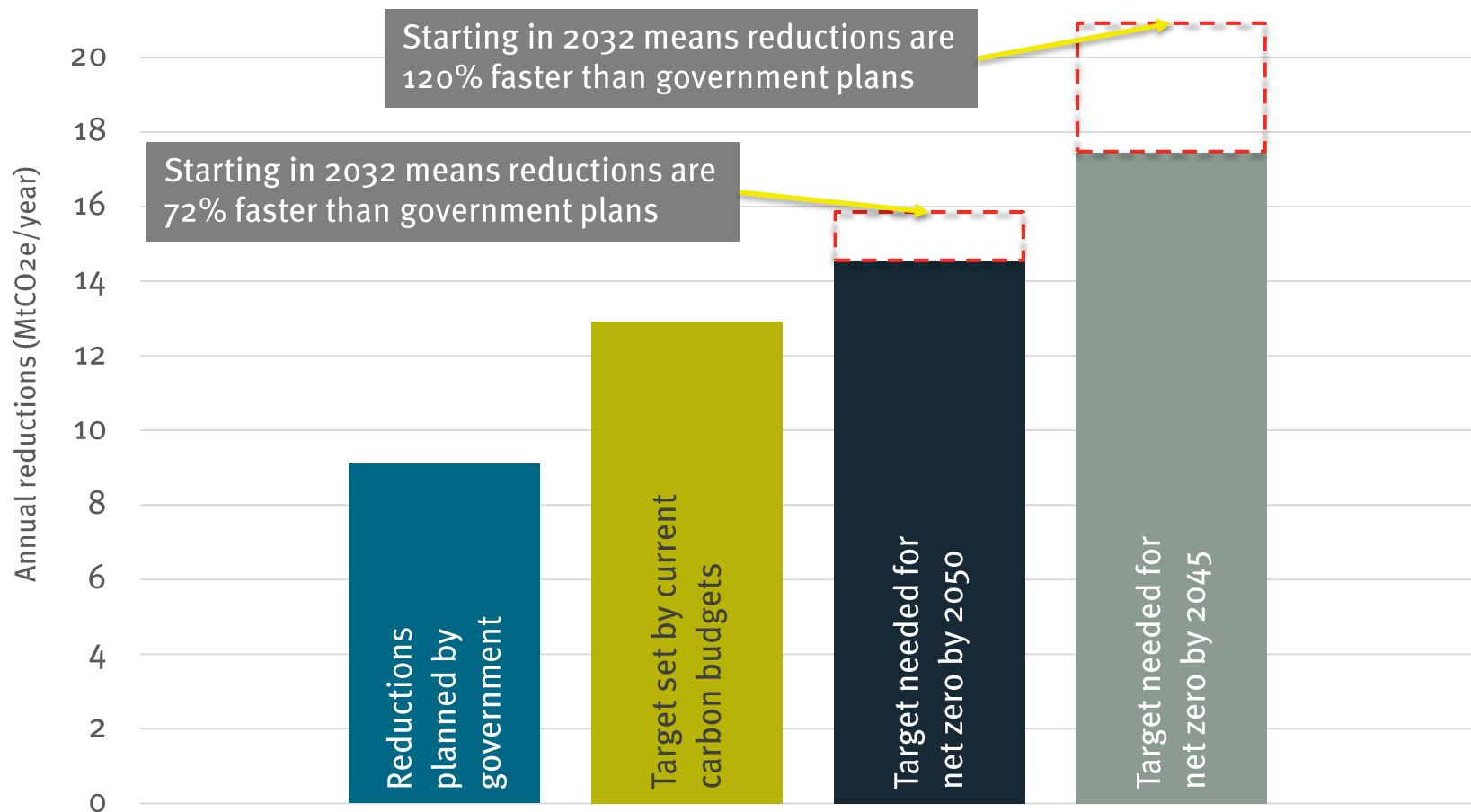
# Acting now makes net zero relatively easy

The government's plans, set out in 2017's Clean Growth Strategy, won't meet even the UK's current carbon budgets. Faster emissions reductions are needed now, even if the UK were not aiming for a net zero goal, but starting now makes net zero achievable.



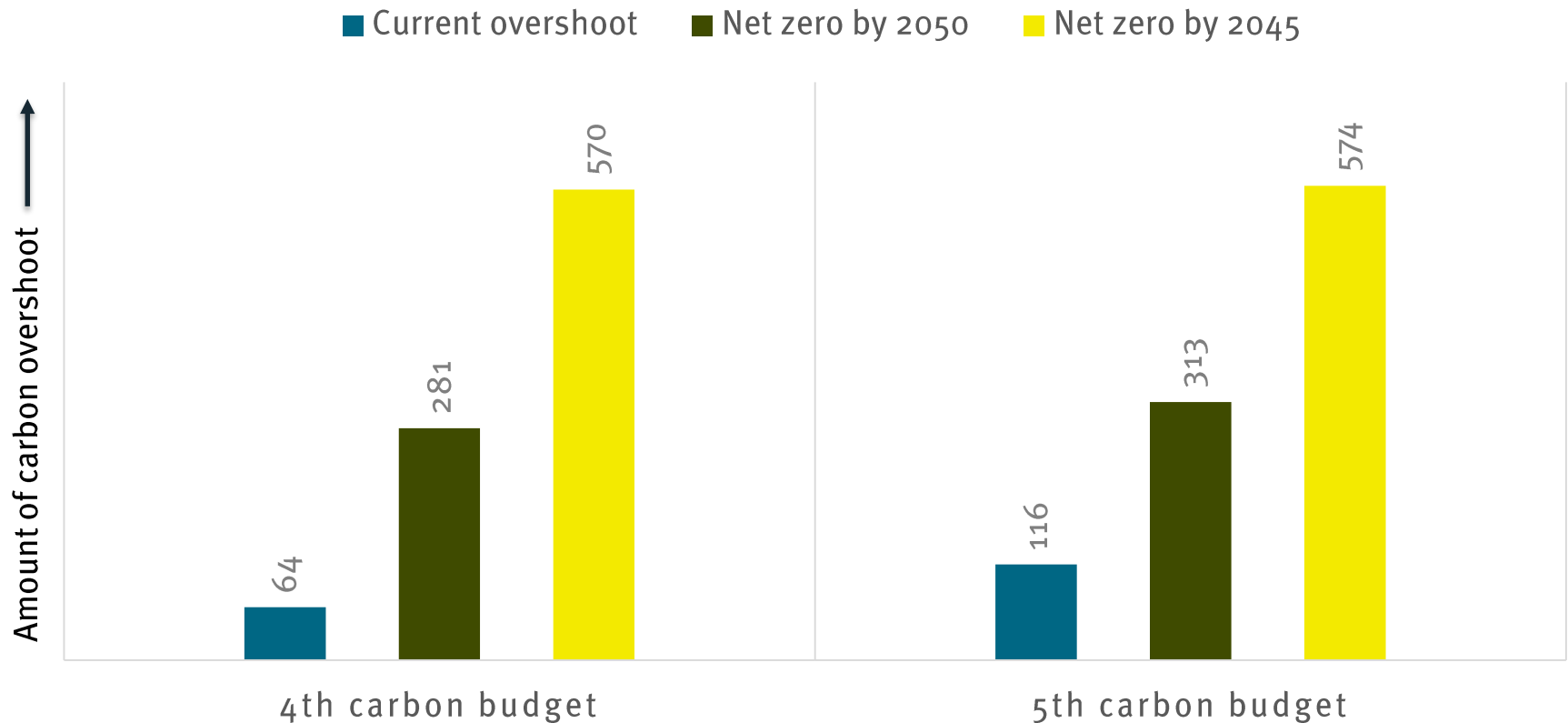
# Waiting until after 2032 to cut carbon faster is risky

The government has proposed to get on track to net zero only after the 5<sup>th</sup> carbon budget, in 2032. Waiting until then would mean much faster annual carbon reductions over a shorter period in the 2030s and 2040s.



# A net zero target means lower carbon budgets

The UK's Clean Growth Strategy foresees higher carbon output than allowed in the governments' future carbon budgets. A more stretching net zero goal for either 2045 or 2050 implies lower carbon budgets, and, therefore, increased carbon 'overshoot'.



**New policy to cut emissions now**



# What policies might limit carbon overshoot?

Finding new ways to lower emissions before 2030 would put the UK on track to cut emissions to zero before 2050.

Three new policy approaches would lower emissions faster during the 4<sup>th</sup> and 5<sup>th</sup> carbon budget periods:

- **Adopting ‘best practice’ resource efficiency in five sectors**
- **Moving the UK’s 2040 petrol and diesel ban to 2030**
- **Upgrading all buildings to EPC band C by 2035**

These policies fit well with the UK’s existing climate narrative: they would increase economic growth, pay for themselves, require limited industrial and behavioural change and are supported by many businesses.

They are also readily achievable, and require only limited, incremental changes to existing government policies.

# Policy 1: resource efficiency

Resource efficiency has, so far, been overlooked by government climate policy. It could make a major contribution to meeting the UK's carbon budgets, as outlined by researchers at the Centre for Industrial Energy, Materials and Products (CIEMAP).

Designing products and buildings to use less material, more efficient supply chains, longer lasting products, and increased product reuse and sharing would reduce the carbon overshoot in the future carbon budgets by at least 79 per cent.

	Fourth carbon budget	Fifth carbon budget
Resource efficiency industrial programme	-67 MtCO <sub>2</sub> e	-92 MtCO <sub>2</sub> e
Reduction in carbon overshoot	-104%	-79%

Industrial resource efficiency would also:

- Address materials costs, which have risen nine times faster than labour cost
- Raise economic productivity in the UK's lagging manufacturing regions
- Cut supply chain waste by up to 90 per cent

## Policy 2: electric vehicles

In July 2017, the UK announced it would ban sales of diesel and petrol vehicles by 2040. However, electric vehicles (EVs) are now cheaper than conventional vehicles on a total cost of ownership basis. So, EVs could be deployed more rapidly than originally planned.

Our analysis shows that bringing forward the 2040 ban to 2030 would reduce the projected overshoot of the 4<sup>th</sup> and 5<sup>th</sup> carbon budgets by at least 66 per cent.

	Fourth carbon budget	Fifth carbon budget
<b>Diesel and petrol vehicle ban by 2030</b>	<b>-42 MtCO<sub>2</sub>e</b>	<b>-98 MtCO<sub>2</sub>e</b>
Reduction in carbon overshoot	-66%	-85%

Banning diesel and petrol vehicles by 2030 would also:

- cut air pollution by 40 per cent by 2025
- support UK automotive manufacturing (the UK is the best placed country in Europe to move rapidly to EVs, with 88 per cent of automotive jobs and value in EV-ready production)
- halve the UK's oil imports by 2035

## Policy 3: efficient homes

The Clean Growth Strategy aims to retrofit all homes to EPC band C by 2035 but has yet to show how this will be achieved. However, Verco and Cambridge Econometrics have modelled a comprehensive retrofit package which could achieve it.

They calculate that their package of measures would cover most of the projected overshoot of both the 4<sup>th</sup> and 5<sup>th</sup> carbon budgets.

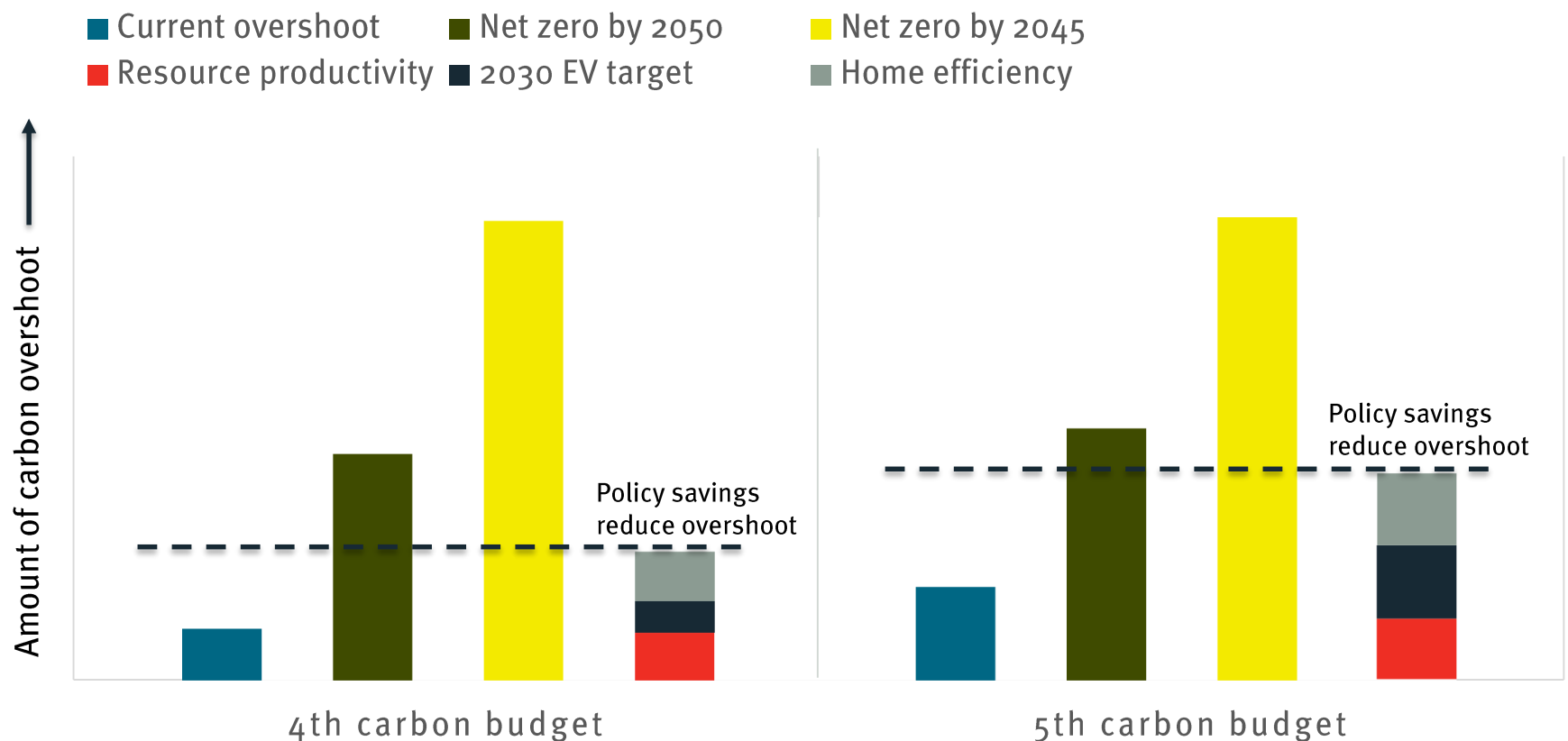
	Fourth carbon budget	Fifth carbon budget
<b>Major buildings retrofit programme</b>	<b>-66 MtCO<sub>2</sub>e</b>	<b>-96 MtCO<sub>2</sub>e</b>
Reduction in carbon overshoot	-103%	-83%

A comprehensive buildings retrofit programme would also:

- make all low income homes energy efficient, cutting bills by an average of £408 per year
- raise GDP by 0.6 per cent per year, equal to £14 billion per year in 2030
- cut UK gas imports by a quarter by 2030

# These policies almost get the UK on track to net zero

Together, these carbon savings are larger than the overshoot for the UK's current carbon budgets, and are almost enough to get the UK on track to net zero by 2050. Significantly higher savings are needed to achieve net zero by 2045.



# New policy for net zero: land use and agriculture

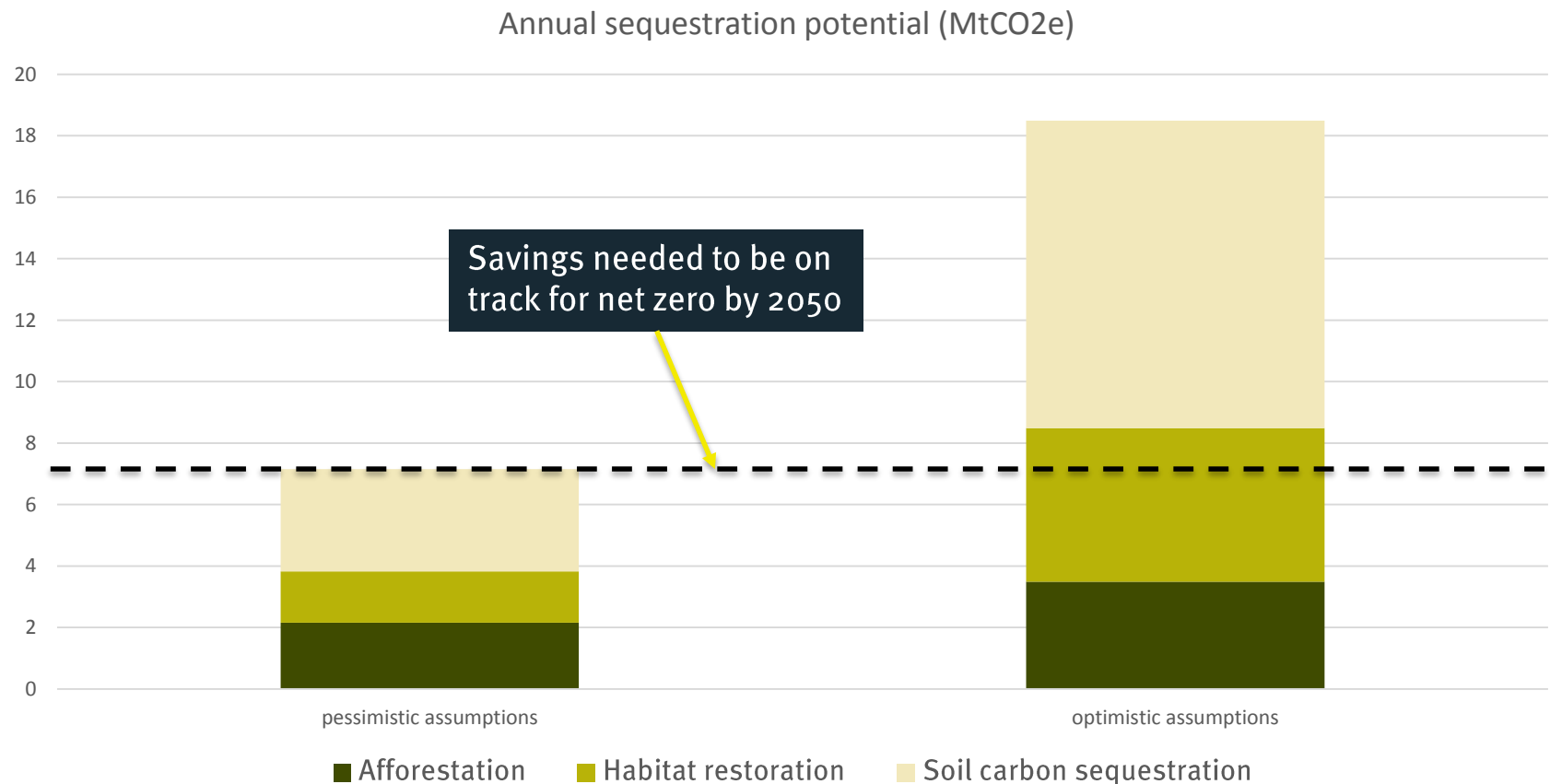
The land use and agriculture sector has not yet done much to decarbonise, but is full of opportunities. Recent work by the Royal Society provides a basis to estimate how land could be used to sequester more carbon by 2030. Its analysis suggests that a three strand approach would get the UK on track to becoming a net zero economy:

- **A ten year programme of habitat restoration** of salt marsh, wetlands and peat areas. Savings depend mainly on how quickly conservation funding is made available.
- **A return to 1970s tree planting rates**, which were 60 per cent higher than today. Going faster, via a phased plan to plant 60,000 hectares per year, is feasible and would see greater carbon sequestration.
- **A framework to restore soils, using new ‘public money for public goods’ payments.** The UK already sequesters some carbon in soils, but there is still scope to improve.

Together, these approaches could sequester between 36 and 93 MtCO<sub>2</sub>e over the 5<sup>th</sup> carbon budget period, which is more than enough to put the UK on track to a net zero target. These measures would be in addition to agricultural emissions reductions achieved by better livestock management, lower fertiliser use, electrification of farm equipment or greater farm efficiency.

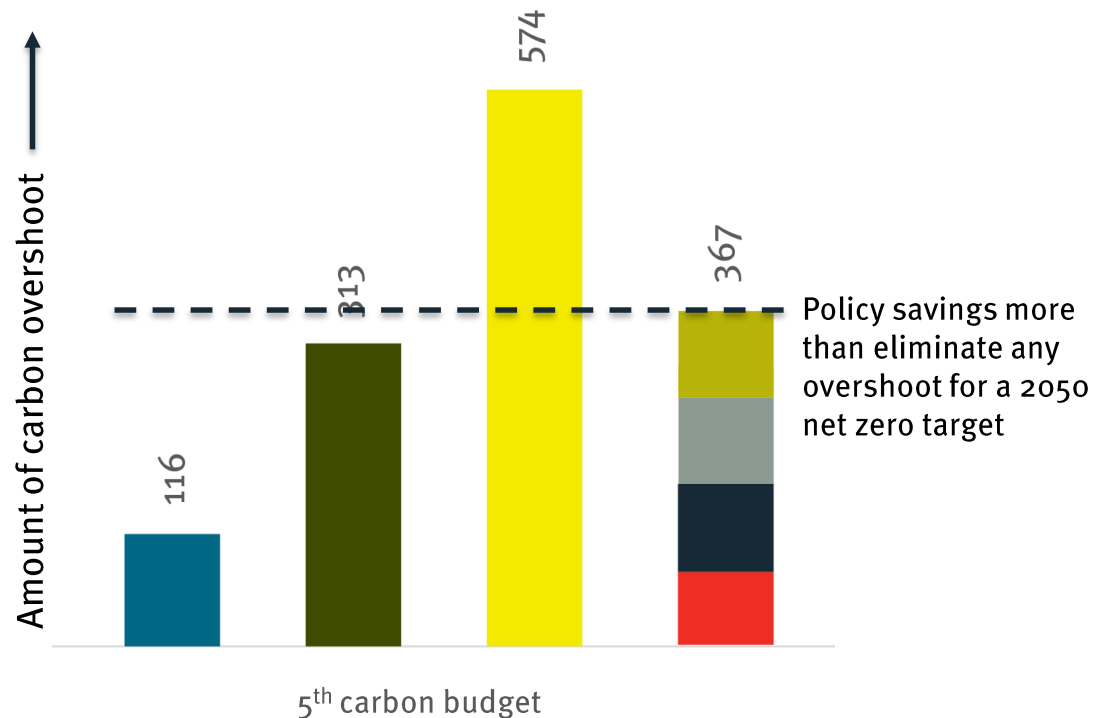
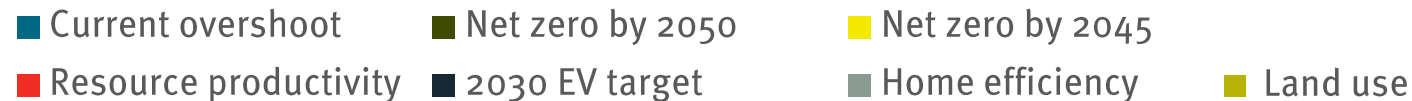
# The potential for natural carbon sequestration

Because these techniques are subject to some uncertainty, we have calculated a range of potential savings. Even at the lower end of projections, these savings would be enough to get the UK on track to be a net zero economy.



# The UK can get on track to net zero now

Action in the four areas we have outlined here would put the UK on track to reach net zero emissions before 2050, using existing technology and business models.





# Conclusion

The UK's experience of clean growth has already proved that reducing carbon emissions and growing the economy can go hand in hand.

In this analysis, we have shown that lowering emissions further, before the end of the 5<sup>th</sup> carbon budget period in 2032, can be done using new, readily achievable clean growth policies.

Taking action now, in resource efficiency, electric vehicles, home retrofits and land use is the key to making a net zero goal possible by or before 2050. There is no reason not to aim for net zero now.

# Endnotes

## Slide 2

Fossil and renewable shares of electricity production from Department for Business, Energy and Industrial Strategy, July 2018, *Digest of UK Energy Statistics (DUKES) 2018*, <https://www.gov.uk/government/statistics/digest-of-uk-energy-statistics-dukes-2018-main-report> and *Energy Trends: electricity*, <https://www.gov.uk/government/statistics/electricity-section-5-energy-trends>

## Slides 5-7

Green Alliance analysis. Underlying data from Committee on Climate Change, November 2015, *The Fifth Carbon Budget - The next step towards a low-carbon economy*, <https://www.theccc.org.uk/publication/the-fifth-carbon-budget-the-next-step-towards-a-low-carbon-economy/> and Department for Business, Energy and Industrial Strategy, January 2018, *Updated energy and emissions projections: 2017*, <https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2017>

## Slide 10

Green Alliance and CIEMAP, May 2018, *Less in, more out*, [https://www.green-alliance.org.uk/less\\_in\\_more\\_out.php](https://www.green-alliance.org.uk/less_in_more_out.php)

## Slide 11

Green Alliance, March 2018, *How the UK can lead the electric vehicle revolution*, [https://www.green-alliance.org.uk/How\\_the\\_UK\\_can\\_lead\\_the\\_electric\\_vehicle\\_revolution.php](https://www.green-alliance.org.uk/How_the_UK_can_lead_the_electric_vehicle_revolution.php) and Vivid Economics for WWF, March 2018, *Accelerating the EV transition*, <https://www.wwf.org.uk/sites/default/files/2018-03/Final%20-%20WWF%20-%20accelerating%20the%20EV%20transition%20-%20part%201.pdf>

## Slide 12

Verco and Cambridge Econometrics, October 2014, *Building the Future: The economic and fiscal impacts of making homes energy efficient*, <http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf>

## Slides 14-15

Green Alliance analysis based on Royal Society and Royal Academy of Engineering, September 2018, *Greenhouse gas removal*, <https://royalsociety.org/~media/policy/projects/greenhouse-gas-removal/royal-society-greenhouse-gas-removal-report-2018.pdf>

# How the UK can stop contributing to climate change

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## Green Alliance

Green Alliance is a charity and independent think tank focused on ambitious leadership for the environment. We have a track record of 35 years, working with the most influential leaders from the NGO, business, and political communities. Our work generates new thinking and dialogue, and has increased political action and support for environmental solutions in the UK.

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