June 2025

Progress in reducing emissions

2025 report to Parliament

Climate Change Committee

Climate Change Committee

Progress in reducing emissions - 2025 report to Parliament

June 2025

Presented to Parliament pursuant to Section 36 (1) of the Climate Change Act 2008.

ISBN: 978-1-5286-5636-8
E03340161 06/25

Contents

The Committee

The Climate Change Committee (CCC) is an independent, statutory body established under the Climate Change Act 2008. Our purpose is to advise the UK and devolved governments on emissions targets and to report to Parliament on progress made in reducing greenhouse gas emissions and preparing for and adapting to the impacts of climate change.

Members of the Committee include:

Professor Piers Forster, Interim Chair
Piers Forster is Director of the Priestley Centre for Climate Futures and Professor of Physical Climate Change at the University of Leeds. He has played a significant role authoring Intergovernmental Panel on Climate Change (IPCC) reports, and is a coordinating lead author role for the IPCC's sixth assessment report.

Professor Keith Bell FRSE
Keith Bell is a co-Director of the UK Energy Research Centre (UKERC), a Chartered Engineer and a Fellow of the Royal Society of Edinburgh. He has been at the University of Strathclyde since 2005, was appointed to the Scottish Power Chair in Smart Grids in 2013 and has been involved in energy system research in collaboration with many academic and industrial partners.

Dr Steven Fries
Steven Fries is a Senior Associate Fellow at the Institute for New Economic Thinking at the Oxford Martin School, University of Oxford, and Nonresident Senior Fellow at the Peterson Institute for International Economics. Steven has previously held roles as group chief economist at Shell and chief economist at the Department of Energy and Climate Change.

Professor Corinne Le Quéré CBE FRS
Corinne Le Quéré is a Royal Society Research Professor at the University of East Anglia (UEA), specialising in the interactions between climate change and the carbon cycle. She was lead author of several assessment reports for the UN's Intergovernmental Panel on Climate Change (IPCC) and previously chaired the French Haut Conseil pour le Climat.

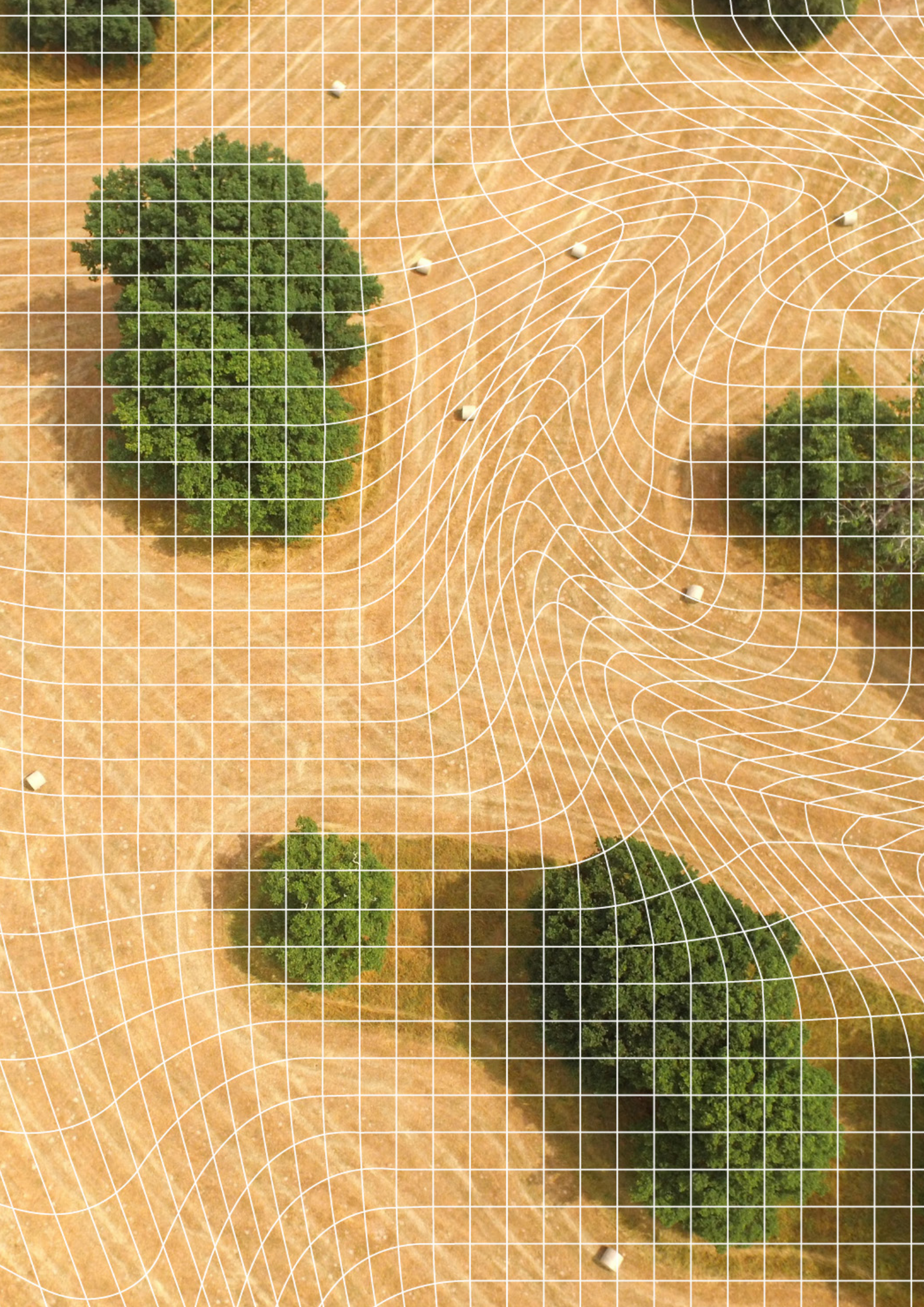
Professor Swenja Surminski
Swenja Surminski is Chair of the Munich Climate Insurance Initiative, Managing Director Climate and Sustainability at Marsh McLennan and Professor in Practice at the Grantham Research Institute at the London School of Economics (LSE). Her work focuses on capacity building and knowledge transfer between science, policy and industry, building on her work in industry and as advisor to governments, private sector and civil society, including as Visiting Academic at the Bank of England.

Nigel Topping CMG
Nigel Topping was appointed by the UK Prime Minister as UN Climate Change High Level Champion for COP26. In this role Nigel mobilised global private sector and local government to take bold action on climate change, launching the Race To Zero and Race To Resilience campaigns and, with Mark Carney, the Glasgow Financial Alliance for Net Zero.

Acknowledgements

The Committee would like to thank:

The team that prepared this report and its analysis. This was led by Emma Pinchbeck, James Richardson, Emily Nurse, Eoin Devane, and Luke Maxfield and included Rose Armitage, Florence Bates, Owen Bellamy, Sandra Bogelein, Marta Calore, Rachel Carr-Whitworth, Selina Dagless, Bianca de Farias Letti, Victoria de la Cruz, Joshua Deru, Caitlin Douglas, Kim Dowsett, Kieron Driscoll, Jana Fakhreddine, Elizabeth Fuller, Ruth Gregg, Esther Harris, Rachel Hay, Cilla Hellgren, Robbie Herring, Gemma Holmes, Ariana Jessa, Luke Jones, Sam Karslake, Miriam Kennedy, Michael Lord, Grace Macready, Luke Maxfield, Harley McCourt, Moryse McInniss, Aaron McMahon, Richard Millar, Frances Molesworth, Bea Natzler, Chris Parker, Emma Patterson, Simon Rayner, Andrew Romang, Karina Rodríguez Villafuerte, Elena Saggioro, Miranda Schroder, Viv Scott, Penny Seera, Olivia Shears, Bryony Sheridan, Thomas Smith, Rachael Steller, Thea Stevens, Isabelle Stuart, Jamie Tarlton, Felicity Taylor, Seán Taylor, Indra Thillainathan, Sam Van Stroud, Emma Vause, Sophie Vipond, Chloe Welsh, Eveline White, Hannah Williams, Kate Williamson, Louis Worthington, Fergal Wraith, and Charley Wright.



Executive summary

Climate change is here, now. Until the world reaches Net Zero CO_2 emissions, with deep reductions in other greenhouse gases, global temperatures will continue to rise. That will inevitably lead to increasingly extreme weather, including in the UK.*

The current record pace of human-induced climate change will mean that the UK's weather and climate will continue to change over the decades ahead. The UK will experience warmer and wetter winters - raising flood risk for properties, agriculture, and infrastructure. Continued shifts towards drier and hotter summers will increase the intensity of summer heatwaves and droughts, with rising risks of surface water flooding when rainfall does occur. Sea levels around the UK will continue to rise for centuries to come.

At the same time, continued reliance on fossil fuels undermines UK energy security. Household energy bills rose sharply following Russia's invasion of Ukraine and have remained high since. It is the price of gas that has driven up both gas and electricity bills (see Annex 3). With North Sea resources largely used up, a fossil-fuelled future would leave the UK increasingly dependent on imports, and energy bills would remain subject to volatile fossil fuel prices.

The UK should therefore be proud of its place among a leading group of economies demonstrating consistent and sustained decarbonisation. In the UK, greenhouse gas emissions have more than halved since 1990, with the pace of reduction having more than doubled since the introduction of the UK's Climate Change Act in 2008. Previous UK Governments invested in low-carbon technologies in their early, relatively expensive stages. Now we have the opportunity to build on these early investments and realise the benefits of falling costs.

Today, more than half the energy used in the economy is wasted because of the inherent inefficiency of fossil-fuelled technology. Electrification could halve that waste. The transition to a predominantly home-grown energy supply system powering modern, efficient, electric technologies will reduce household bills, increase energy security, and improve air quality, as well as keeping the UK on the path to Net Zero.

Globally, we are seeing a shift towards low-carbon technologies. In 2024, worldwide, one in seven of all new car sales were fully electric, a record 117 GW of wind generation capacity was installed, and total investment in clean energy technologies and infrastructure reached $2 trillion - twice the investment in fossil fuel technologies. Rising demand and falling prices reinforce each other, creating powerful market forces which, combined with effective policy, mean that rapid change is possible.

The UK has an ambitious target to reduce emissions by 68% on 1990 levels by 2030, our Nationally Determined Contribution (NDC) to the Paris Agreement and the first UK target consistent with achieving Net Zero in 2050. This target is within reach, provided the Government stays the course. Progress to date has been primarily driven by decarbonisation of the electricity system, with renewables replacing both coal and, increasingly, gas. Future progress will require a broader change, especially using low-carbon electricity to replace oil and gas in surface transport, heat in buildings, and industry, alongside nature-based solutions such as tree planting, and engineered removals.

* Net Zero implies any residual emissions are balanced by removals.

In surface transport, we are now seeing clear signs of that broader change occurring, with emissions reducing for the second year in a row. With the number of electric cars on the road doubling roughly every two years, we expect to see rapid further progress. Increasingly, manufacturers are bringing new, lower-cost electric vehicles (EVs) onto the market, such as the Renault 5, Vauxhall Frontera, and Fiat Grande Panda. Price parity with petrol cars has already been reached in parts of the second-hand market. Emissions reductions from EVs, alongside continued decarbonisation of the electricity system, should drive progress towards the 2030 NDC.

In the past year, we have also seen significant increases in roll-out rates in other areas such as heat pumps, tree planting, and peatland restoration, though still falling short of the rates required to hit targets. There has been some positive progress in policy development. For example, the Government has removed planning barriers in areas such as onshore wind and heat pumps. It has also implemented policies originally developed by previous governments, such as the Clean Heat Market Mechanism.

We assess that 61% of the required reduction in emissions to hit the 2030 NDC is covered by either credible plans or has some associated risks, mostly in the electricity supply and surface transport sectors. For the remaining 39%, there are either significant risks, or insufficient or unquantified plans. The biggest risks are around ensuring the required scale-up in roll-out of heat pumps and the support for industrial electrification. These issues need to be addressed urgently in the Government's forthcoming Warm Homes Plan and Industrial Strategy, both due this year.

Last year, we made making electricity cheaper our first recommendation. When people and businesses switch to electric technologies, they are paying more than the actual cost of supplying the extra electricity they demand, because of policy decisions taken many years ago. Removing policy costs from electricity would ensure the underlying cost-savings of switching to efficient electric technologies are captured by households and businesses, encouraging take-up. The Government has made no clear progress on removing policy costs since the election. Making electricity cheaper remains our first recommendation.

Progress in reducing emissions

Emissions in the UK have been steadily decreasing, with levels in 2024 50.4% below those in 1990.

- The UK's territorial emissions, including international aviation and shipping, were 413.7 $MtCO_2e$ in 2024, a 2.5% reduction from 2023, which marks the tenth consecutive year of sustained reduction in emissions, excluding the COVID-19 pandemic years 2020 and 2021.

- The emissions reduction in 2024 was driven by the electricity supply and industry sectors, with the UK's last coal-fired electricity power station, Ratcliffe-on-Soar, closing in October 2024.

- This was partially offset by an increase in emissions from flying. As a result of this increase, aviation now contributes a greater share of total UK emissions than the entire electricity supply sector. Continued emissions growth in this sector could put future targets at risk.

Over 80% of the required emissions savings between now and 2030 need to come from sectors other than energy supply (Figure 1).*

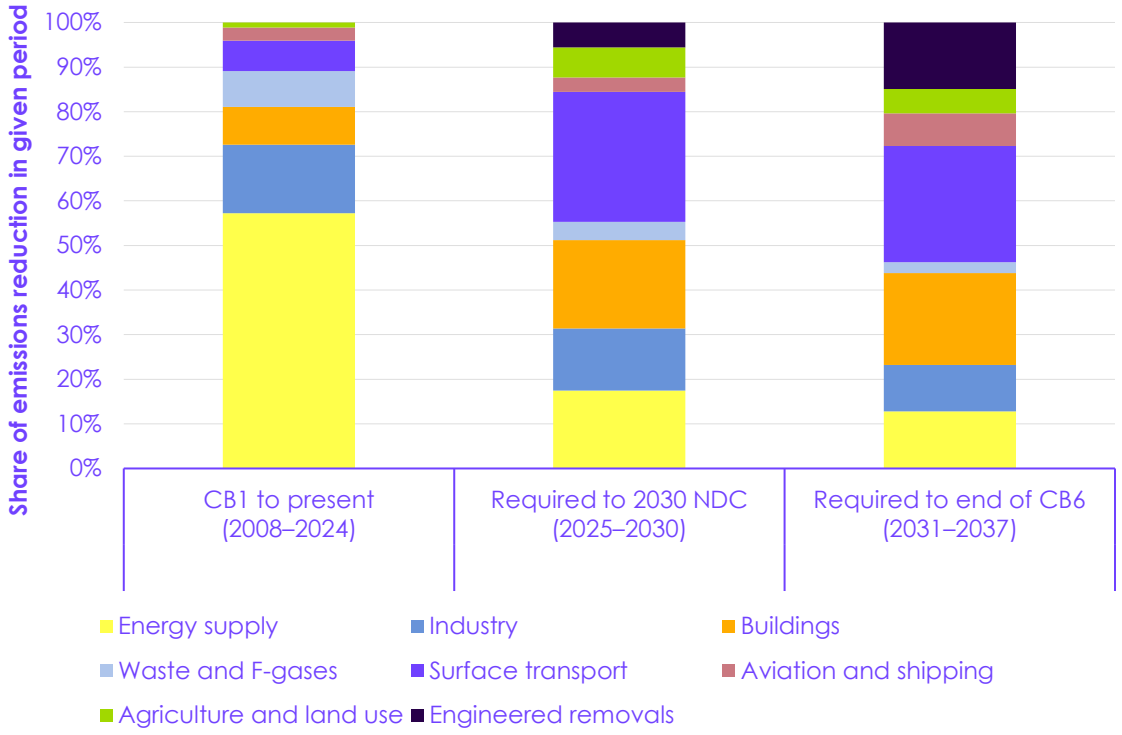
* Energy supply comprises our electricity supply and fuel supply sectors, which are grouped together in Figures 1 and 2.

- The majority of this required reduction in emissions comes from the electrification of key technologies, including in surface transport, buildings, and industry. Surface transport alone contributes almost 30% of the emissions reduction required during this period.

- The continued decarbonisation and expansion of the electricity system will play a key role to enable this widespread electrification.

- Beyond 2030, to achieve the Sixth Carbon Budget, surface transport, buildings, and industry continue to make major contributions to emissions reduction. There will also be increasing contributions from reducing emissions in aviation, agriculture, and land use, and in ramping up engineered removals.

Figure 1 Distribution of past emissions reductions and future emissions savings by sector



Description: Over half of emissions reductions to-date have come from the energy supply sectors. To meet the UK's 2030 NDC, reductions will increasingly need to come from other sectors, with surface transport, buildings, and industry playing key roles. Engineered removals are expected to play a crucial role in offsetting residual emissions.
Source: Department for Energy Security and Net Zero (DESNZ) (2025) *Provisional UK greenhouse gas emissions national statistics 2024*; DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023*; DESNZ (2023) *Carbon Budget Delivery Plan (CBDP)*; CCC analysis.
Notes: See Chapter 1.

The pace of emissions reductions in sectors outside energy supply needs to increase in order to meet the 2030 NDC and the Sixth Carbon Budget (Figure 2).

- Emissions from sectors other than energy supply have fallen by 8 $MtCO_2e$ per year on average since 2008. This pace of emissions reduction is approximately in line with the average pace required during the Fourth Carbon Budget period (up to 2027) in the Government's Carbon Budget Delivery Plan (CBDP).

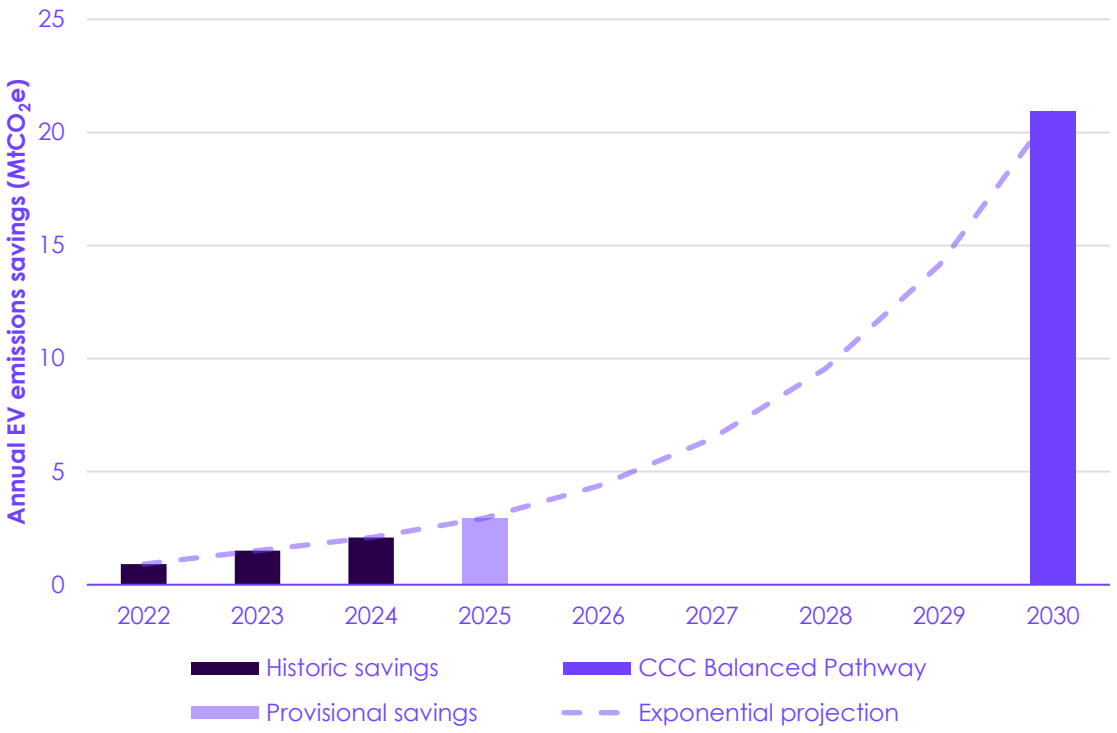
- However, the pace will need to more than double towards the end of this decade, with the CBDP requiring the average annual reduction to increase to 19 $MtCO_2e$. This pace is then maintained over the Sixth Carbon Budget period.

- One of the key factors in delivering this increase will be the uptake of EVs. The emissions savings from petrol or diesel vehicles being replaced by EVs are now having a measurable and rapidly growing effect on overall emissions savings. Approximately half the emissions savings from EVs in 2024 were due to new vehicles registered in the previous two years. If the compound annual average growth rate seen since 2022 continues, the emissions savings from EVs will increase significantly by 2030 (Figure 3). While this is a simplified projection, these 'S-curve' dynamics are typical of the take-up of new technologies. Change starts slowly but escalates rapidly, diverging substantially from linear projections. Our assessment of progress against upcoming carbon targets is based in part on data on S-curve dynamics from other leading countries.

Figure 2 Pace of past and required future emissions reduction

Description: The rate of emissions reduction outside of the electricity and fuel supply sectors since 2008 is at the level required over the rest of the Fourth Carbon Budget period. This rate of reduction will need to more than double to meet the 2030 NDC and the Sixth Carbon Budget.
Source: DESNZ (2025) *Provisional UK greenhouse gas emissions national statistics 2024*; DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023*; DESNZ (2023) *Carbon Budget Delivery Plan*; CCC analysis.
Notes: See Chapter 1.

Figure 3 Historic and projected emissions savings from electric cars in the fleet, assuming a more-than-doubling every two years



Description: Emissions savings from EVs have grown exponentially since 2022, doubling every two years. Continuation of this trend will enable the surface transport sector to achieve the emissions reductions required to contribute to meeting the UK's 2030 NDC target.
Source: Department for Transport (DfT) (2025) *Vehicle licensing statistics*; Solera cap hpi (2025) *Vehicle registration data*; The Society of Motor Manufacturers and Traders (SMMT) (2024, 2025) *Monthly sales data*; DESNZ (2025) *Provisional UK greenhouse gas emissions national statistics 2024*; DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023*; CCC analysis.
Notes: See Chapter 1.

Indicators of delivery progress

There have been some encouraging signs of progress in our delivery indicators in the last year, with material year-on-year increases in roll-out rates of low-carbon technologies and nature-based solutions. Despite this, some key indicators remain off track. A significant increase in roll-out rates is needed in many areas in the next few years to achieve the UK's 2030 NDC. This can be achieved if government policies and plans, such as the Warm Homes Plan, Industrial Strategy, and Land Use Framework, are effective in supporting markets to grow.

- **Electric vehicles:** growth in the market share of new electric cars resumed in 2024, reaching 19.6%. Although this is slightly below the zero-emission vehicle (ZEV) headline mandate target of 22%, the growth in the market - which has continued in the early months of 2025 - demonstrates that the mandate is working.

  - There are 1.5 million electric cars on UK roads, with this number having roughly doubled in the past two years.

  - The average price premium of a new EV fell from 37% in 2023 to 24% in 2024 and trends appear on track to reach price parity between 2026 and 2028.

  - Public charge point installations increased by nearly 40% last year.

  - The market share of new electric vans did not grow in 2024, remaining at only 6.3% compared to 10% in the ZEV mandate. Early 2025 data look more promising, with market share in the first quarter increasing to 8.3%. Both car and van sales will need to accelerate fast, driven by the falling prices of EVs and continued government support, including the ZEV mandate.

- **Heat pumps**: there was an increase of 56% in heat pump installations in 2024, driven by increased support from government schemes. The compound annual average growth rate since 2021 is 37%, implying a near-doubling of emissions savings from heat pumps every two years. Government has also acted to remove planning barriers, in line with our recommendation from last year. Currently, only around 1% of homes are heated with a heat pump in the UK, among the lowest in Europe, so installation rates will need to continue to accelerate.

  - The ratio of electricity to gas prices remains significantly off track. This is crucial for heat, as well as cross-economy, electrification.

- **Electricity used in industry:** the proportion of industrial energy use coming from electricity is currently 28%. This will need to increase rapidly, as many industrial processes electrify. The UK's high electricity-to-gas price ratio is a barrier to some industries choosing to electrify. The ratio of industrial electricity-to-gas prices remains above 4:1.

- **Trees and peatland:** there was a significant increase in tree planting and peatland restoration last year.

  - 20,700 hectares of new trees were planted in 2023/24, an increase of 59% compared to the year before and the highest planting rate in two decades. This demonstrates that a rapid increase in rates is feasible. However, we have concerns that recent reductions in funding for woodland creation in Scotland could reverse this trend.

  - Peatland restoration rates increased significantly by 47% in 2023/24.

- **Renewable electricity generation:** total roll-out of offshore and onshore wind and solar capacity increased in 2024 by more than the increase seen in any of the previous six years. To achieve the Government's ambition in the Clean Power 2030 Action Plan, total operational capacity of renewables will need to more than double by 2030.

  - This will require a tripling in annual installations of both offshore and onshore wind and a four-fold increase in solar compared to the average rate seen since the start of this decade.

  - Offshore and onshore wind indicators have a strong pipeline of capacity and are judged to be on track, (even allowing for the decision by Ørsted not to progress with the Hornsea 4 offshore wind project). However, solar capacity is judged to be off track.

- **Aviation:** the share of sustainable aviation fuel (SAF) as a proportion of all jet fuel used in UK aviation increased substantially, from 0.7% in 2023 to 2.1% in 2024. This must increase further to reach the 10% required by the UK SAF Mandate by 2030. Emissions in aviation are very close to the indicative sectoral pathway in the CBDP and are increasing. Aviation emissions will likely exceed the CBDP trajectory if they continue to increase, posing a risk to the UK's emissions targets.

Assessment of policy effectiveness

There have been positive policy developments in the past year. Combined with the progress seen in emissions reduction and delivery indicators, this has led to some improvement in our assessment of the Government's policies and plans. However, significant risks remain in some areas.

We assess the credibility of the Government's policies and plans to deliver the emissions reductions set out in the CBDP. This year's assessment considers policy developments since the UK General Election in July 2024, up until 23 May 2025 when this assessment was completed. However, the CBDP was published under the previous Government and does not necessarily reflect the current Government's intended policies and plans.

- Improvements this year are mostly from removing planning barriers from renewables deployment, together with increasing roll-out rates of renewables and EVs. This is coupled with the clarity provided by the Clean Power 2030 Action Plan and reinstatement of the 2030 phase-out for new fossil fuel cars.
  - These developments represent strong progress against several of the key actions recommended in our 2024 Progress in reducing emissions report.
  - However, the recently announced changes to the ZEV mandate have limited the improvement in our assessment this year. In particular, manufacturers will be able to continue to base their emissions savings from plug-in hybrid sales on an estimate of the proportion of driving done using the battery in electric mode which underestimates real-world emissions by almost 250%. Combined with the expanded and extended ability to convert non-ZEV emissions improvements into ZEV credits, this risks some weakening of manufacturers' effective EV sales targets under the ZEV mandate.
- There has been a significant increase in heat pump installations last year, along with the removal of some planning restrictions in England. There is also some improvement in our assessment from the introduction of the Clean Heat Market Mechanism. This requires boiler manufacturers to meet targets for the installation of heat pumps in existing properties. However, risks remain with the mechanism, in particular whether the level of the incentives will be sufficient to drive action.
  - Growing take-up of government-funded schemes has contributed significantly to the increase in heat pump installations. Funding for the Boiler Upgrade Scheme in England and Wales was increased, to allow for greater take-up. However, funding for the Boiler Upgrade Scheme remains uncertain beyond 2028.
  - These improvements have been balanced by a downgrade in our assessment due to the lack of clarity about whether the Government will replace or continue with the 2035 phase-out date for new fossil fuel boiler installations in the previous Government's CBDP. The forthcoming Warm Homes Plan will need to set out alternative plans, if the Government chooses not to go ahead with the proposed phase-out.

- Final investment decisions have been reached on CO_2 transport and storage infrastructure at both Track 1 carbon capture and storage (CCS) clusters. However, our assessment for engineered removals has worsened due to delays to finalising business models.

- The Government has agreed to link the UK Emissions Trading Scheme (ETS) with the EU ETS. We lack sufficient detail to score the impact of this measure, but it is likely to promote further decarbonisation in sectors within scope of the scheme.

For the required emissions savings to achieve the 2030 NDC:

- **Credible plans exist for 38%.** This mostly covers emissions savings from the projected roll-out of renewable electricity generation and EVs, as well as some progress in decarbonising the iron and steel sector in industry.

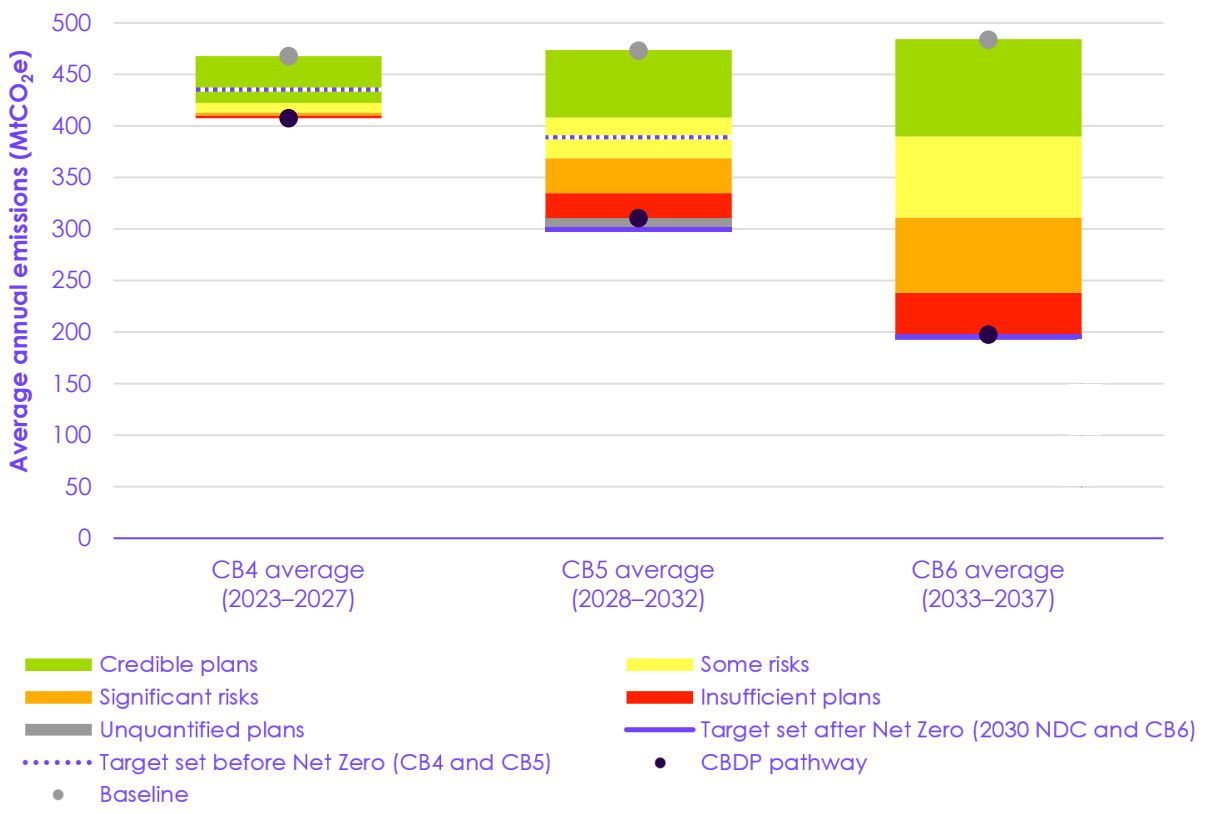
- **Some risks are attached to 23%.** These are predominantly delivery risks for planning, grid connections, and successful Contracts for Difference auctions to deliver the rest of the renewables deployment required by 2030 under the Clean Power 2030 Action Plan. There are also some risks around the ability of the Clean Heat Market Mechanism to deliver the required roll-out of heat pumps.

- **Significant risks are attached to 20%.** This is predominantly for policies to drive industrial electrification and the uptake of CCS in industry, improvement to efficiencies of petrol, diesel, and hybrid vehicles, the decarbonisation of public sector buildings, and plans for peatland restoration and tree planting.

- **Insufficient plans exist for 14%.** The key area this applies to is the roll-out of heat pumps, where existing programmes and funding cover only a portion of the required market scale-up. There are also insufficient plans for a proportion of the engineered removals required in the Government's plans. There is a gap of 4% between the quantified plans in the CBDP and the 2030 NDC.

In our 2024 progress report, we made 35 priority recommendations for actions that the UK Government should take to put the UK on track to meet its emissions targets. Among these, we assess that good or moderate progress has been made on 20. However, four have seen no progress at all. In particular, there has been no progress on our first recommendation last year, to make electricity cheaper.

Figure 4 Assessment of policy and plans



Description: Credible plans are in place to overachieve the Fourth Carbon Budget (CB4), as required to be on a sensible path to Net Zero. Plans that are either credible or have some risks attached cover three-fifths of the emissions reductions required to meet the UK's 2030 NDC and the Sixth Carbon Budget (CB6). But there remain significant areas in which plans are currently insufficient.
Source: Department for Energy Security and Net Zero (DESNZ) (2023) *Carbon Budget Delivery Plan*; DESNZ (2023) *Energy and emissions projections: 2021 to 2040;* CCC analysis.
Notes: See Chapter 3.

Priority actions

Meeting the UK's emissions targets is achievable but relies on urgent action in several critical areas - the ten priority actions for the year ahead are as follows:

- **Make electricity cheaper.** Our highest-priority recommendation is to remove policy costs from electricity prices. This will support industrial electrification and ensure the underlying lower running costs of heat pumps compared to fossil fuel boilers are reflected in household bills (R2025-046).
  - Our analysis shows that doing this could reduce the ratio of domestic electricity to gas prices from around 4:1 currently to between 2:1 and 3:1. This would bring the UK price ratio into the range of other countries, such as Ireland and France, who are ahead on heat pump roll-out, and ensure that households installing a heat pump would see savings from its greater efficiency.

  - The Government has committed to consulting on this, but without any timetable. It should set out its preferred option and consult on it urgently.

- **Provide confidence and certainty to scale heat pump deployment in existing buildings**. By 2035, the market for low-carbon heating - and its supporting supply chains - needs to scale up to deliver all new and replacement heating installations. The Government should ensure that plans in the upcoming Warm Homes Plan are consistent with this (R2025-059; R2025-061; R2025-062).

- **Implement regulations to ensure that new homes are not connected to the gas grid.** Currently, 71% of new homes include fossil fuel boilers, which creates additional emissions, bakes in costs for the future owners of these homes for retrofitting with low-carbon heating, and means poorer air quality for the families who move in. With high ambition on building new homes, it is essential for the Government to ensure that these are built in a manner that is fit for the future (R2025-060).

- **Introduce a comprehensive programme to decarbonise public sector buildings.** A strategic, coordinated plan and long-term funding are needed to deliver decarbonisation across the entire public sector estate. This would also provide an opportunity to grow heat pump supply chains and, with action on electricity prices, enable operational cost savings (R2025-064).

- **Accelerate the electrification of industrial heat.** The upcoming Industrial Strategy and Industrial Decarbonisation Strategy must support a rapid transition to electric heat across much of industry, including ensuring that financial barriers and non-financial issues such as grid connections do not hinder electrification. Linking the UK ETS with the larger EU market should promote further decarbonisation in industry (R2025-065).

- **Effectively deliver rapid expansion of the low-carbon electricity system.** An effective Allocation Round 7 will be critical to achieving this, given that projects typically take several years to come onstream (R2025-071; R2025-072).

- **Put policies and incentives in place to ramp up tree planting and peatland restoration.** It is vital to ensure planting rates increase quickly due to the time it takes for trees to grow and sequester substantial levels of CO_2. The proposed Land Use Framework for England is an important step in setting out how land use can be balanced to deliver on a wide range of objectives such as climate change mitigation and adaptation, food security, and nature. However, it remains unclear how this framework will drive change on the ground (R2025-068; R2025-069).

- **Develop policy to ensure that the aviation industry takes responsibility for its emissions reaching Net Zero by 2050.** The cost of decarbonising aviation and addressing non-CO_2 effects should be reflected in the cost to fly. This will help manage growth in aviation demand in line with Net Zero and generate the revenues needed to pay for sustainable aviation fuel and engineered removals. Including more of the aviation sector (alongside engineered removals) in a strengthened UK ETS could be one option to deliver this. Low-carbon aviation technologies are at an early stage of development and the balance between them is uncertain - multiple options should be pursued. Government may need to take additional demand management measures if aviation sector emissions are not developing in line with Net Zero (R2025-075).

- **Finalise business models for engineered removals.** The Government needs to finalise business models for engineered removal operations, so that these can be opened to the market. Despite the progress on CCS infrastructure for removals to connect to, without a clear funding source it is becoming increasingly challenging for engineered removals to deliver the emissions savings of around 6 $MtCO_2e$ in the CBDP by 2030 (R2025-084).

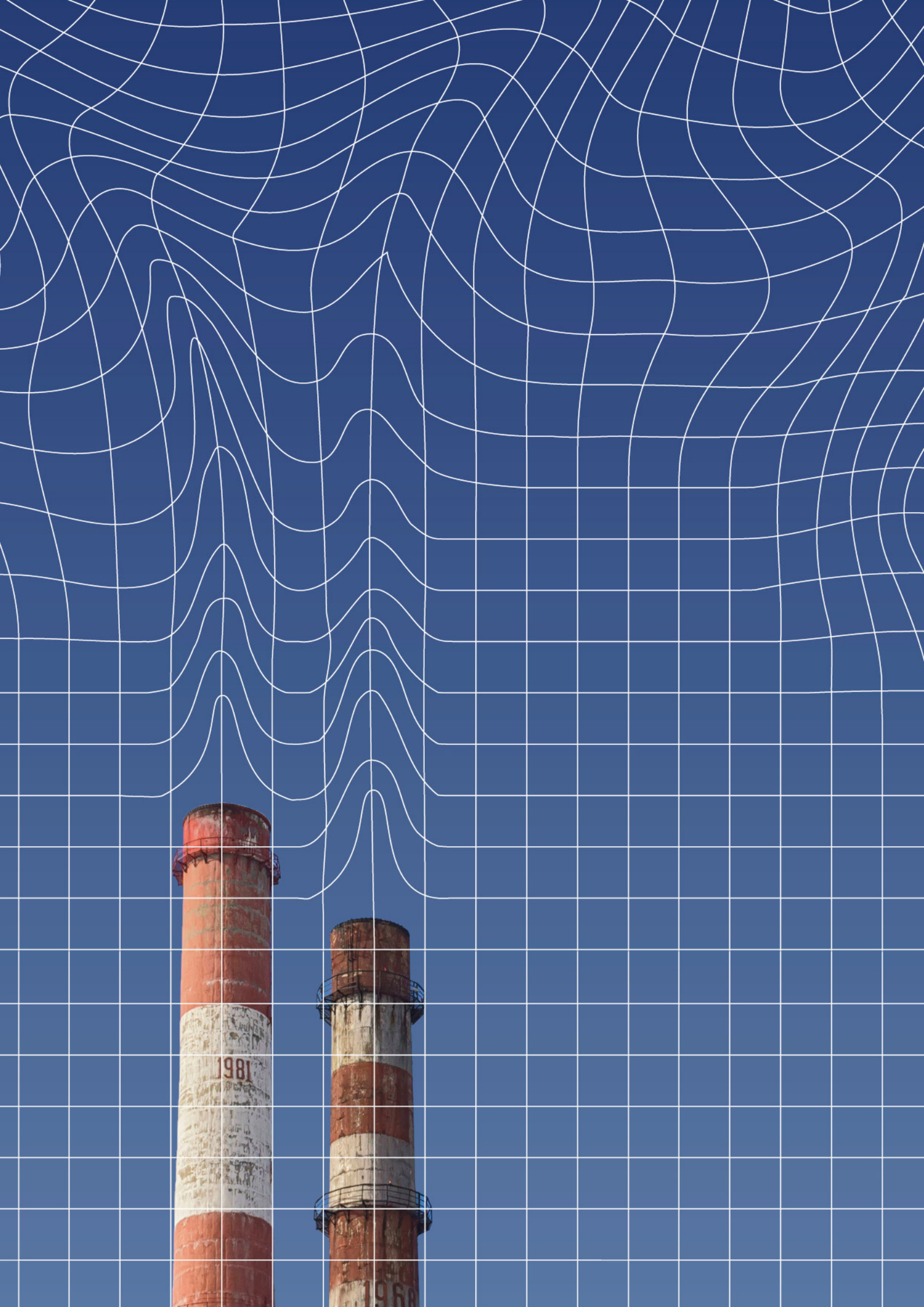
- **Publish a strategy to support skills.** Proactively growing the workforce is a critical enabler in areas such as heat pump installation and tree planting. The new Office for Clean Energy Jobs and Skills England should develop a strategy to support workers in sectors which need to grow or transition and in communities that may be adversely impacted (R2025-051; R2025-052).

The science is unambiguous. Only by achieving Net Zero CO_2 emissions, with deep reductions in other greenhouse gases, can the UK stop contributing to an ever-warmer climate. The UK's Net Zero by 2050 target, along with interim carbon targets, represent a credible contribution to meeting the goals of the Paris Agreement. Our Seventh Carbon Budget advice, published in February this year, shows that the 2050 Net Zero target for the UK remains deliverable and affordable, with whole-economy costs estimated at an annual average of 0.2% of GDP between 2025 and 2050.

Most of the world is investing heavily in low-carbon technologies, driven by falling costs, energy security concerns, and a realisation of the need to respond to rising climate impacts. The pace of progress globally remains too slow, but the direction of travel is increasingly the right one. New NDCs for 2035, likely to be set by the time of COP30 in Brazil later this year, offer a chance to ratchet up ambition. As we have already seen with renewables, and are starting to see with EVs, when market forces and consistent policies work together, rapid change is possible.

Our Seventh Carbon Budget citizens' panel felt the Net Zero transition could be made accessible and affordable to all households, provided that policies and business action make household low-carbon choices easy, attractive, and affordable, and trusted information is provided.

The UK can hit its upcoming emissions reduction targets, and remain on track for Net Zero, but only with further policy action. With 39% of policies and plans needed to hit the 2030 NDC rated as having significant risks, or insufficient or unquantified plans, the Government must act swiftly. New strategies and plans have been promised in a number of crucial areas over the next few months, including an updated Carbon Budget Delivery Plan. These represent an important opportunity to address many of the key actions above, as well as delivering co-benefits such as improved air quality. Well-designed policy can enable markets to grow, costs to reduce, energy to become more secure, and emissions to continue to fall.


1981

Chapter 1: Progress in reducing UK emissions

In this chapter, we review trends in the latest emissions data in total and by sector.[*]

Our key messages are:

- **UK greenhouse gas emissions:** emissions were 413.7 $MtCO_2e$ in 2024, including the UK's share of international aviation and shipping (IAS).
  - Emissions were 50.4% lower than in 1990, making the UK the first major economy to halve its emissions. The UK is part of a leading group of nations who have achieved strong emissions reductions since the Paris Agreement was signed in 2015.
  - Reductions since 1990 have been mainly driven by the electricity supply sector, with smaller contributions from the industry, fuel supply, and waste sectors.
- **Change from 2023 to 2024:** emissions fell by 10.8 $MtCO_2e$ (2.5%), marking the tenth consecutive year of emissions reductions, not counting the pandemic years.
  - The change was mainly driven by the electricity supply (41% of the total in-year reduction in emissions) and industry (30% by the same measure) sectors, with smaller reductions in the surface transport and fuel supply sectors. These reductions were partially offset by increases from aviation and residential buildings.
- **Required pace of change:** 2024 marks the third consecutive year of emissions reductions since the pandemic. This overall progress is encouraging, but the pace of emissions reductions will need to increase to achieve the UK's 2030 NDC and longer-term targets. This will increasingly require focus on transport, buildings, agriculture, and aviation.
  - Over half of the emissions reductions seen since 2008 have been in energy supply.[†] As we advance towards a decarbonised electricity system, emissions reductions need to broaden to other sectors, driven by the electrification of key technologies.
  - Progress in surface transport is promising, with emissions savings from electric vehicles (EVs) doubling every two years over recent years. This sector will need to deliver much of the reductions for the remaining years of this decade.
  - Substantial acceleration is also needed in the buildings sector, where emissions reductions from heat pump deployment are also growing but do not yet register meaningfully as a proportion of sectoral emissions.
  - While IAS emissions are not included in the 2030 NDC, recent trends in aviation emissions raise concerns for meeting later targets.

[*] Further detail on CCC-defined sectors is given in the CCC monitoring framework.

[†] The term "energy supply" is used to refer to the grouping of the electricity and fuel supply sectors.

- **Emissions in Scotland, Wales, and Northern Ireland:** emissions fell in Scotland, Wales, and Northern Ireland in 2023, driven by reductions in the electricity supply sector. The majority of emissions reductions to date have been in mostly reserved sectors, such as electricity supply, fuel supply, and industry.

- **Emissions from imports:** emissions from imports increased by 7% between 2021 and 2022, but have changed very little since 2008. It will be increasingly important to minimise carbon leakage as the UK decarbonises domestically.

- **International progress:** the UK is among a leading group of countries demonstrating consistent and sustained decarbonisation, developing effective policies, and deploying key technologies. Low-carbon investment ($2 trillion) is now double that invested into fossil fuel technologies. As a result, emissions in developed economies are consistently reducing year on year, and the rate of growth in developing economies is markedly slowing.

1.1 UK territorial emissions

1.1.1 Overall UK emissions

Total emissions have fallen steadily since 1990, and after just over three decades the UK is now more than halfway to Net Zero emissions by 2050. Including its share of emissions from IAS, which will count towards the sixth and later carbon budgets, the UK has achieved a 50.4% reduction in emissions when compared to 1990 levels.[*;†]

The rate of decarbonisation has more than doubled since the introduction of the Climate Change Act, with 69% of total reductions against the 1990 baseline achieved since 2008 (Table 1.1). As of 2023, the UK has met the first three carbon budgets and is on target to overachieve the Fourth Carbon Budget, covering the period 2023 to 2027 (Figure 1.1).[‡]

Future legislated carbon budgets cover the period 2028 to 2037. The UK also has international commitments covering the same period – its 2030 and 2035 Nationally Determined Contributions (NDCs) under the legally binding Paris Agreement – to reduce emissions by 68% by 2030 and 81% by 2035, excluding IAS. In February this year, we published our advice on the level for the Seventh Carbon Budget (2038 to 2042), including our Balanced Pathway, a deliverable pathway for emissions reductions from 2025 to Net Zero by 2050.

Emissions in 2023

Final emissions for 2023 were 424.4 $MtCO_2e$, which is 49.1% below 1990 levels.[§] This is a 14.9 $MtCO_2e$ (3.4%) reduction from 2022.[1]

[*] Regulations to formally include the UK's share of IAS emissions in carbon budgets from the Sixth Carbon Budget onwards and the Net Zero target are still not complete.

[†] All emissions numbers include IAS unless stated otherwise.

[‡] The Fourth Carbon Budget was set on a trajectory to an 80% reduction in emissions, so the UK needs to overachieve it to be on a sensible path to Net Zero.

[§] This is 1.1 $MtCO_2e$ higher than the provisional estimates released last year and discussed in our 2024 Progress in reducing emissions report.

- The change between 2022 and 2023 was driven by reductions in emissions from the electricity supply and residential buildings sectors (Figure 1.2).

  - Emissions from electricity supply showed the largest sectoral decrease, falling by 11.6 $MtCO_2e$. This represents a decrease of 24% for the sector. This was largely due to electricity imports and exports returning to more typical levels, following from 2022 when the UK was a net exporter of electricity.

  - Emissions from residential buildings decreased by 4.4 $MtCO_2e$, equating to an 8% fall within the sector. Behavioural responses to high gas prices played a role in this fall in emissions.

  - The agriculture and land use sectors, for which 2023 are the latest data, saw little change in emissions over this period, with a small reduction observed in the former and a slightly larger increase in the latter.

Emissions in 2024

Emissions in 2024 are provisionally estimated to be 413.7 $MtCO_2e$, which is 50.4% below 1990 levels. This is a 10.8 $MtCO_2e$ (2.5%) reduction from 2023.[2] Total provisional emissions for 2024 are slightly lower than the 418 $MtCO_2e$ expected in the Government's Carbon Budget Delivery Plan (CBDP) indicative pathway.[3] This remains true even when adjusting to account for warmer-than-expected temperatures (Table 1.2).[4]

- If confirmed by the final 2024 data, the UK is now over halfway to reaching Net Zero emissions by 2050. This first half has been achieved in 34 years, with 26 years remaining to the target. Emissions have reduced by 18 $MtCO_2e$/year on average since 2008.

- This marks the tenth consecutive year of sustained reduction in emissions, excluding the pandemic years of 2020 and 2021. The last year in which emissions increased outside the pandemic years was 2012.

- Excluding the UK's share of IAS, the provisional emissions for 2024 are 54.2% lower than in 1990. This equates to a reduction of 439.3 $MtCO_2e$ over the entire period, with a further 111.2 $MtCO_2e$ reduction required to achieve the UK's 2030 NDC, set at 68% below 1990 levels.

- The main drivers of the reduction between 2023 and 2024 were the electricity supply and industry sectors (Figure 1.2).

  - Emissions in electricity supply and industry fell by 17% and 9% respectively. Smaller reductions were also seen in the fuel supply sector (6%), where the long-term trend of falling domestic fossil fuel production has been central, and in the surface transport sector (2%).

  - However, the net reduction was weakened by an increase in other sectors, with emissions from aviation and residential buildings rebounding by 9% and 3% respectively. In the case of aviation, this marks a return from reduced aviation demand during the pandemic. For buildings, emissions increased after the previous year's fall, likely driven by behavioural responses to gas prices.

  - The driving factors behind these sectoral changes are discussed in Section 1.1.2 below.

Table 1.1

UK territorial emissions and emissions changes for selected periods

	Period	Including IAS	Excluding IAS
Emissions ($MtCO_2e$)	1990	834.4	810.7
	2008	703.8	658.0
	2022	439.3	404.7
	2023	424.4	385.0
	2024	413.7	371.4
% change in emissions	1990–2024	-50.4%	-54.2%
	2008–2024	-41.2%	-43.6%
	2022–2023	-3.4%	-4.9%
	2023–2024	-2.5%	-3.5%
Annual average reduction ($MtCO_2e$)	1990–2008	7.3	8.5
	2008–2024	18.1	17.9

Source: Department for Energy Security and Net Zero (DESNZ) (2025) *Provisional UK greenhouse gas emissions national statistics 2023*; DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023*.
Notes: 'IAS' refers to the UK's share of emissions from international aviation and shipping.

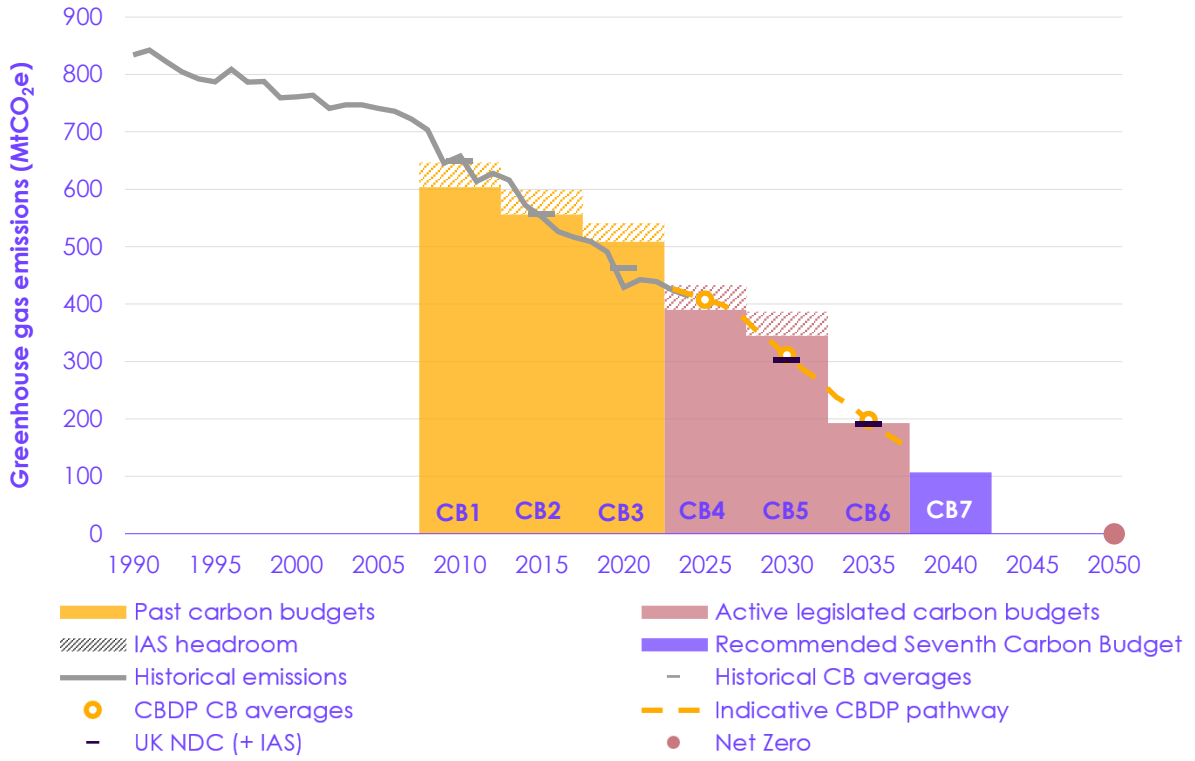
Table 1.2

Historical and temperature adjusted emissions 2023–2025 compared to Carbon Budget Delivery Plan and the CCC Seventh Carbon Budget Balanced Pathway, all including international aviation and shipping.

Emissions ($MtCO_2e$)	**2023**	**2024**	**2025**
GHG inventory	424.4	413.7	-
Temperature-adjusted GHG inventory	426.4	416.5	-
CBDP indicative pathway	427.0	417.6	407.8
CB7 Balanced Pathway	-	-	413.9

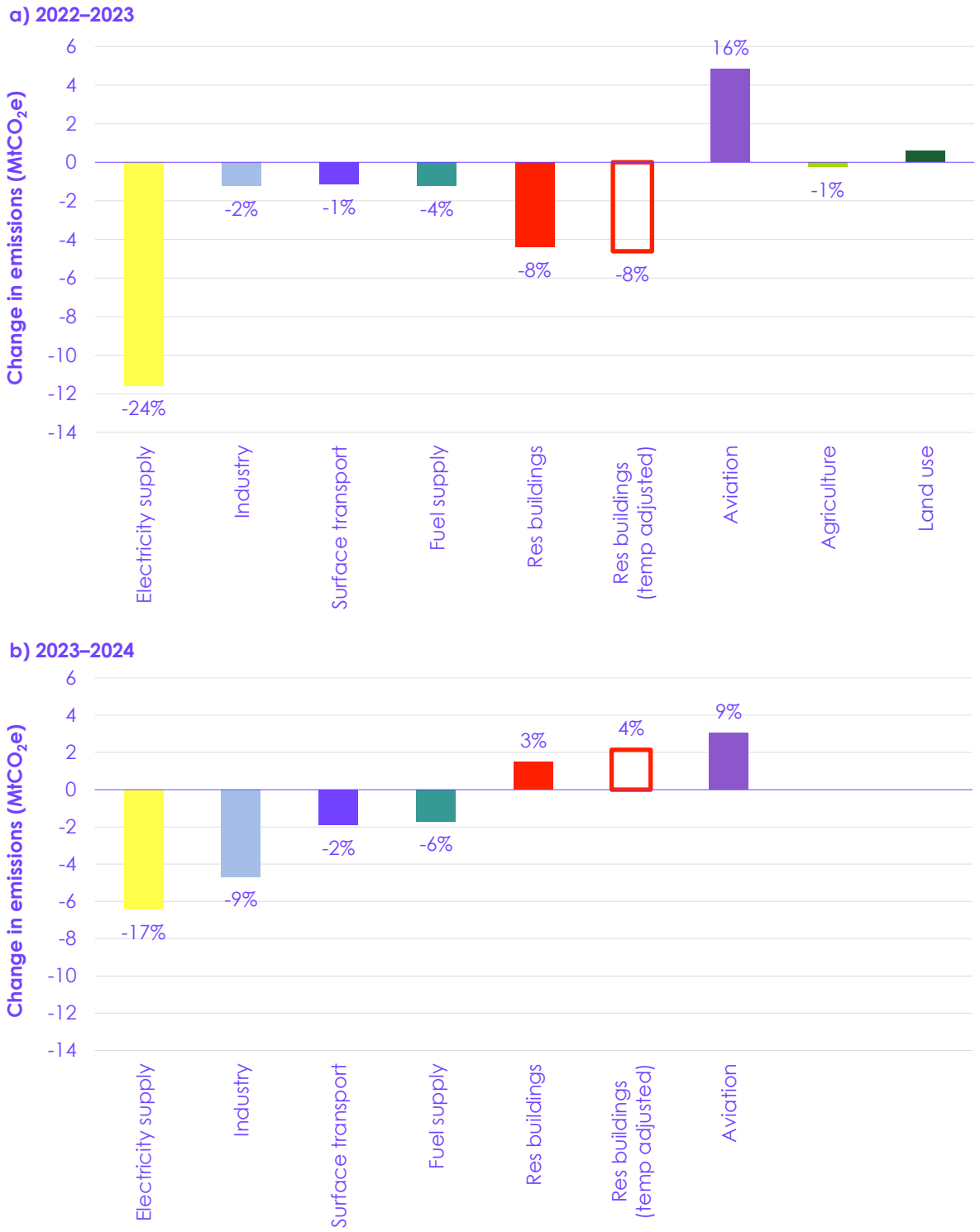
Source: DESNZ (2025) *Provisional UK greenhouse gas emissions national statistics 2023*; DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023*; DESNZ (2023) *Carbon Budget Delivery Plan*; Climate Change Committee (CCC) (2025) *The Seventh Carbon Budget*.
Notes: (1) 'GHG inventory' refers to the greenhouse gas inventory. (2) The CBDP indicative pathway has been adjusted to account for methodological changes since publishing. The Government's CBDP pathway is indicative only; the UK does not have annual targets.

Figure 1.1 UK historical emissions, the Government's existing pathway, and the UK's targets



Description: UK emissions have halved since 1990, and the UK met its first three carbon budgets.
Source: DESNZ (2025) *Provisional UK greenhouse gas emissions national statistics 2023*; DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023*; DESNZ (2023) *Carbon Budget Delivery Plan*; Department for Business, Energy, and Industrial Strategy (BEIS) (2021) *Net Zero Strategy*; CCC (2025) *The Seventh Carbon Budget*.
Notes: (1) Emissions from international aviation and shipping (IAS) are included in historical emissions and the Carbon Budget Delivery Plan (CBDP) pathway and added to the Nationally Determined Contribution (NDC) to allow for a direct comparison. (2) The CBDP projections include only the quantified plans. Unquantified plans may lead to further emissions reductions. (3) The annual pathway is an indication of emissions reduction. The UK does not have annual targets but the five-year carbon budgets and 2030 NDC must be achieved. (4) We have adjusted the Government's published CBDP pathway and baseline for land use to account for changes in emissions accounting. (5) 'CB' refers to the UK's carbon budget. 'CB1' refers to the First Carbon Budget; subsequent numbers refer to subsequent carbon budgets. (6) CB7 refers to our recommended level for the Seventh Carbon Budget.

Figure 1.2 Change in UK emissions for key sectors (2022–2023 and 2023–2024)



Description: The main reductions in emissions in 2024 were in electricity supply (by 17%), industry (9%), and surface transport (2%), with an increase of 9% from aviation.
Source: DESNZ (2025) *Provisional UK greenhouse gas emissions national statistics 2024*; DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2022*; CCC analysis.
Notes: (1) Temperature-adjusted emissions are displayed to better represent the change in activities without the interannual fluctuations in temperature. (2) The year-on-year percentage change for land use has not been displayed in the first panel due to this sector being comprised of a mixture of sources and sinks, making relative changes appear very dramatic. (3) Provisional 2024 estimates are based on projections rather than real-world statistics for non-energy use activities, so the changes in 2024 emissions for the agriculture and land use sectors are not shown.

1.1.2 Emissions trends in key sectors

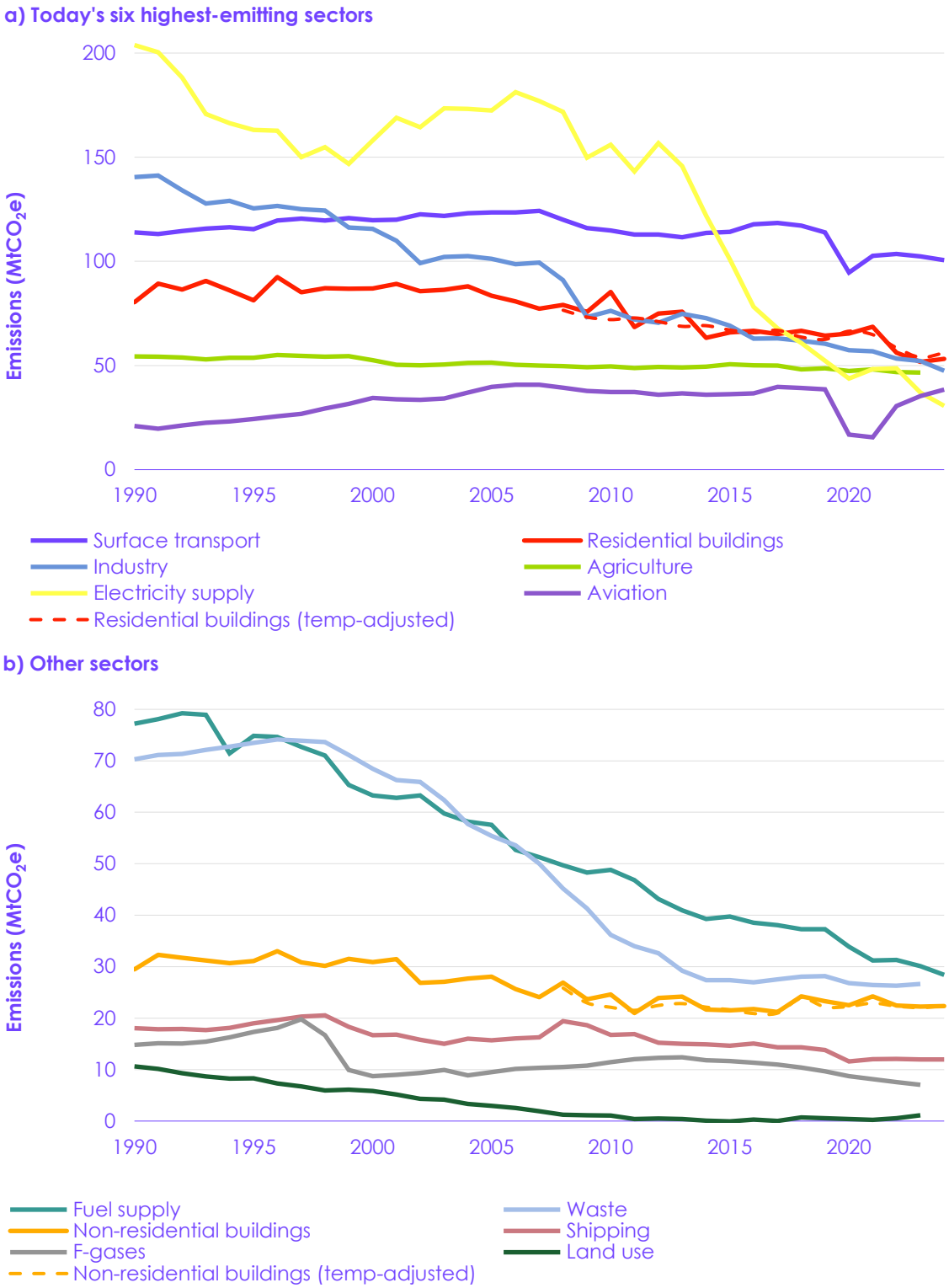
In this section, we discuss recent and longer-term trends in emissions, and the main factors driving these, within key sectors (Figure 1.3 and Table 1.3). The subset of sectors discussed in more detail below are the most significant for understanding recent overall changes in emissions.

Table 1.3
Emissions by sector in 2024

Sector	Emissions ($MtCO_2e$)	Sector	Emissions ($MtCO_2e$)
Surface transport	100.5	**Fuel supply**	28.4
Residential buildings (temp-adjusted)	53.2 (56.1)	**Waste***	26.7
Industry	47.5	**Non-residential buildings (temp-adjusted)**	22.4 (22.4)
Agriculture*	46.6	**Shipping**	12.0
Aviation	38.4	**F-gases***	7.0
Electricity supply	30.6	**Land use***	1.1

Source: DESNZ (2025) *Provisional UK greenhouse gas emissions national statistics 2024*; DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023*.
Notes: Sectors marked with an asterisk are those for which provisional emissions are mostly based on projections rather than real-world data. For these sectors, the final 2023 emissions have been used instead of the 2024 provisional emissions. Numbers in parentheses for the two buildings sectors are temperature-adjusted emissions.

Figure 1.3 UK emissions by sector since 1990



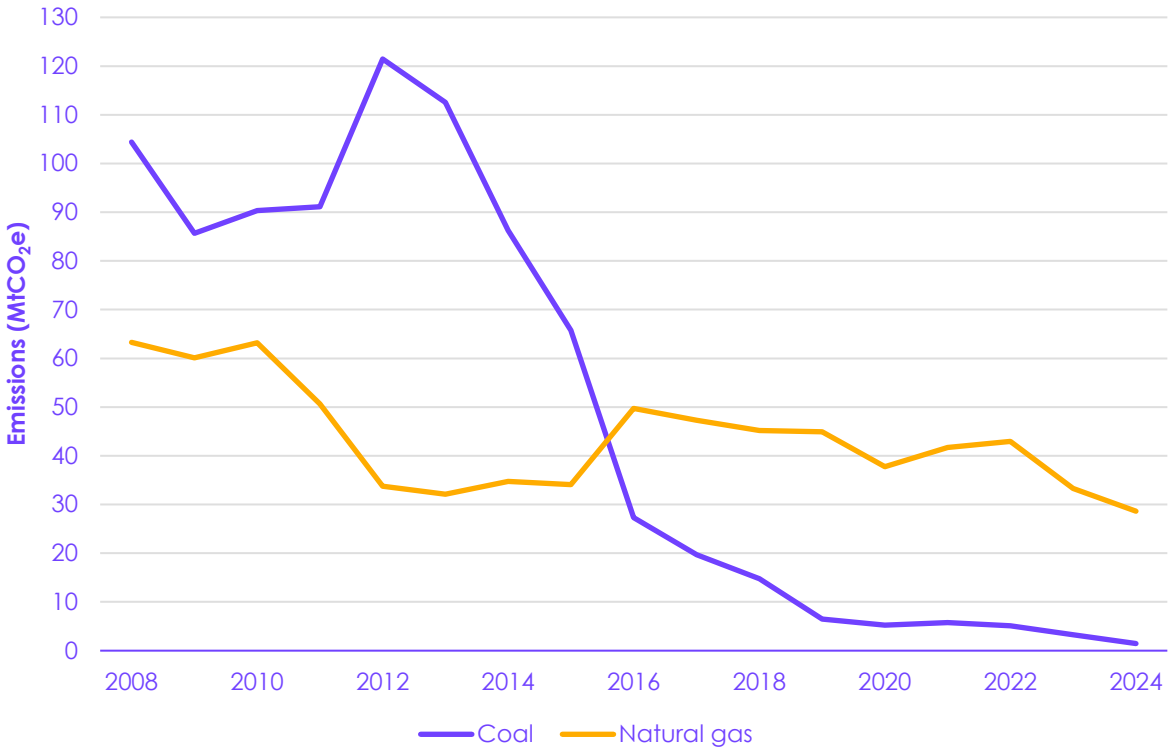
Description: Large reductions in emissions have been observed since 1990 in the electricity supply, industry, fuel supply, and waste sectors, with smaller changes across other activities.
Source: DESNZ (2025) *Provisional UK greenhouse gas emissions national statistics 2024*; DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023*.
Notes: (1) Temperature-adjustment is performed for buildings sectors where the impact of interannual variability in temperature has a noticeable impact on emissions. (2) The land use sector is a combination of positive sources of emissions and negative sinks of emissions. (3) The land use sector is a combination of positive sources of emissions and negative sinks of emissions. Agriculture, waste, F-gases, and land use emissions are only shown up to 2023 because the provisional 2024 estimates for these sectors are mostly derived from projections rather than real-world data.

Electricity supply

The electricity supply sector has been the key driver of overall emissions reductions and has seen sustained progress over recent years. Emissions in the sector are now 82% lower than in 2008.

- Emissions from electricity supply were 6.4 $MtCO_2e$ lower in 2024 relative to the previous year, reflecting further progress in displacing fossil fuel generation.
- The electricity supply sector has been the main driver of recent progress in decarbonisation, with the sector accounting for 41% of annual reductions in 2024, and 49% of reductions over the period since 2008.
- 2024 is the first year of emissions data to capture the effect of the closure of Ratcliffe-on-Soar, which was the UK's last remaining coal-fired electricity generation plant.[5]
  - Coal emissions from electricity generation were 99% lower in 2024 than in 2008 (Figure 1.4).
  - With the phase-out of coal from the power system now complete, these emissions will drop to zero in 2025. This is a major milestone on the UK's path to a decarbonised power system.
- The main driver of emissions reduction was falling gas generation, which accounted for 72% of in-sector emissions reductions.
  - Supply of electricity from gas fell by 15% in 2024, despite a slight increase in total electricity demand.[6]
  - This reduction in supply from gas was made up with roughly equal proportions of imports and low-carbon generation. Most of the imports came from Norway, France, and Denmark, all of which have lower grid carbon intensities than the UK.[7]
  - Emissions from the use of gas to generate electricity have now reduced by 55% since 2008.
- An increase in renewable generation capacity is expected by the end of next year, following the success of the Sixth Allocation Round of Contracts for Difference (see Section 2.2.5). This should increase displacement of fossil generation by renewables, which is required to continue the reduction of emissions from electricity supply.

Figure 1.4 Decline in emissions from coal and natural gas in the electricity supply sector since the Climate Change Act (2008)



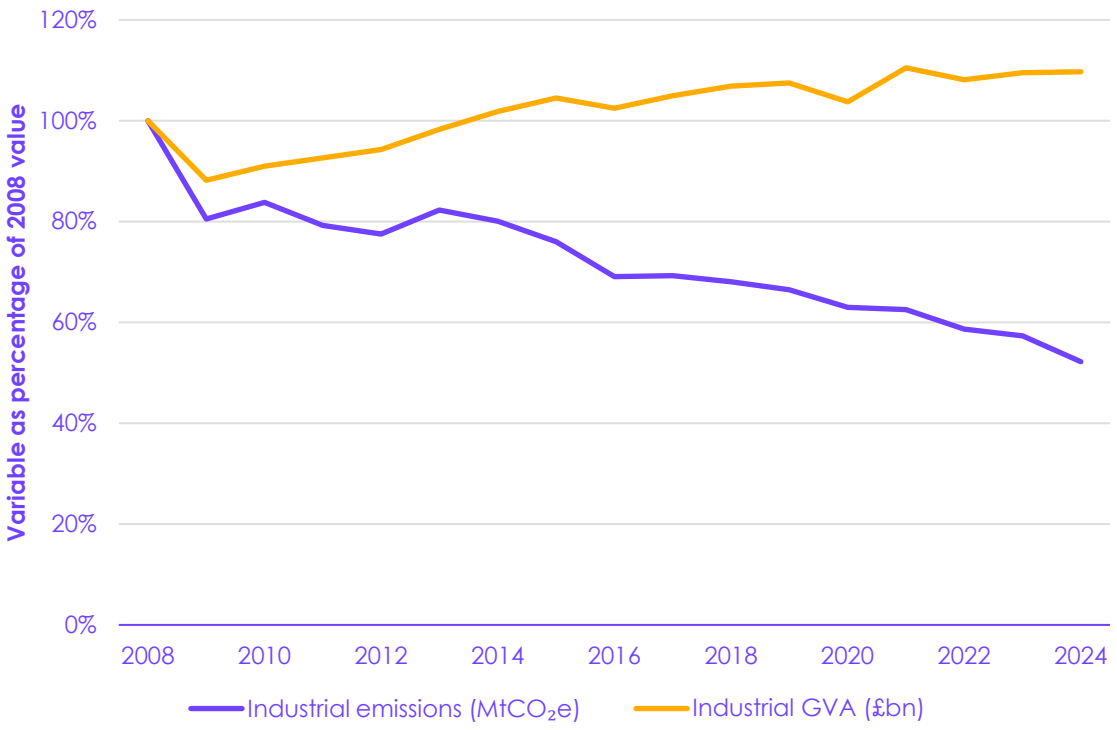
Description: Emissions from coal and natural gas in the electricity supply sector have declined substantially since 2008.
Source: DESNZ (2025) *Provisional UK greenhouse gas emissions national statistics 2024*; DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023*; CCC analysis.
Notes: The Climate Change Act was enacted in 2008, establishing the system of carbon budgets.

Industry

Emissions from the industry sector fell by 4.7 $MtCO_2e$ in 2024 compared to the previous year and are now 48% lower than 2008 levels.

- The industry sector saw a large increase in the annual amount of emissions reduction between 2023 (a 2% reduction compared to 2022) and 2024 (a 9% reduction compared to 2023). This is partly due to the removal of blast furnaces at Port Talbot steelworks in 2024, which are due to be replaced by 2027 with electric arc furnaces through a joint investment of £1.25 billion from Tata Steel and the UK Government (see Section 3.3.1).
  - This big drop was expected to occur later in the decade in the Government's CBDP but was accounted for in our Seventh Carbon Budget Balanced Pathway.
- Reductions in industry emissions since 2008 have largely been achieved by shifting from high-emissions-intensive to lower-emissions-intensive industry (Figure 1.5).

Figure 1.5 Emissions and GVA in the UK's industry sector since 2008



Description: Emissions in the industry sector have declined since 2008, despite a slight increase in sectoral GVA over the same period.
Source: DESNZ (2025) *Provisional UK greenhouse gas emissions national statistics 2024*; DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023*; Office for National Statistics (2025) *UK Output gross value added (GVA)*; CCC analysis
Notes: Gross Value Added (GVA) is calculated using a GDP output approach.

Surface transport

Emissions from the surface transport sector fell by 1.9 $MtCO_2e$ in 2024, despite vehicle-kilometres rising. A factor in this change is the uptake of electric vehicles (EVs), slightly reducing emissions from cars, which currently account for 60% of sectoral emissions. Before the COVID-19 pandemic, there were many years of traffic growth, and a shift towards the use of larger vehicles like SUVs, which meant that emissions from surface transport increased despite efficiency improvements in vehicles. Overall, emissions are now 16% lower than in 2008.

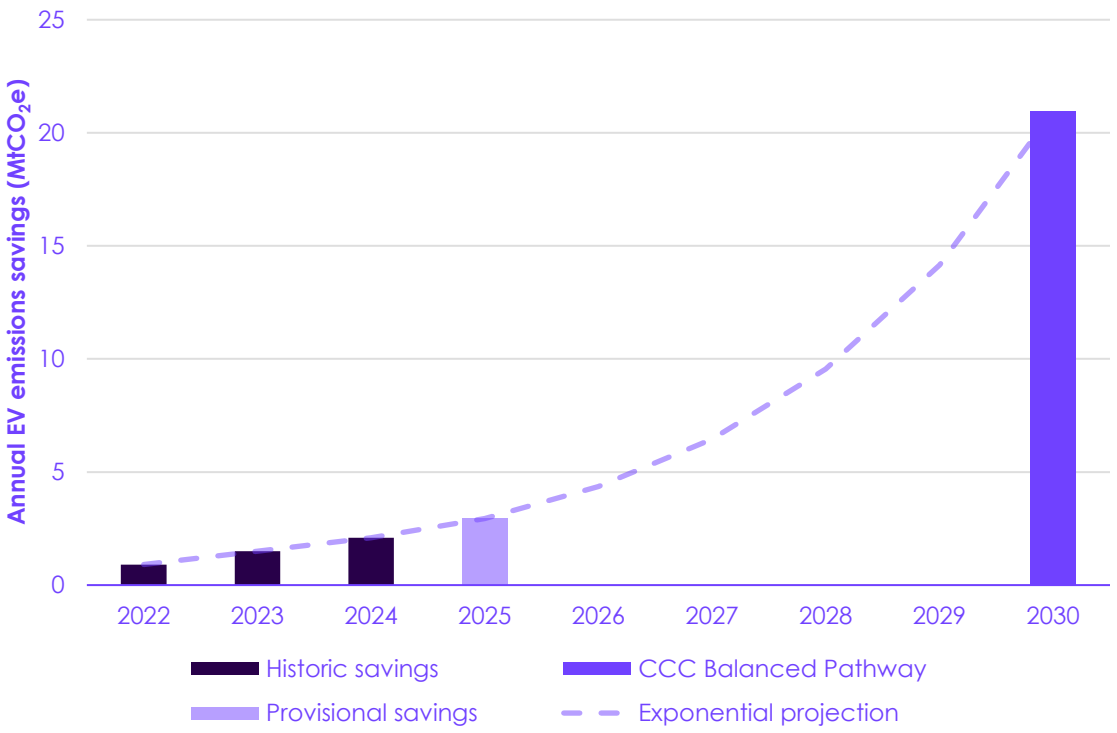
- The uptake of electric cars is having a measurable and rapidly growing effect on emissions (Figure 1.6). This has more than offset growing car-kilometres, leading car emissions to fall slightly in the past year.*
  - The emissions saving from electric cars has been rising rapidly over recent years, with a compound annual growth rate of 48% since 2022. Approximately half of emissions savings in 2024 were due to new vehicles registered in the previous two years.

* Increased electricity demand due to addition of EVs to fleet is captured in emissions from electricity supply. However, given the higher efficiency of EVs relative to internal combustion engine vehicles (ICEs), and the lower carbon intensity of the grid relative to that of petrol or diesel, new EVs have a strong net reducing effect on total emissions.

– The year-to-year impact of electric cars is still relatively small, with annual savings in 2024 equating to only 3% of total sectoral emissions. However, continuation of the exponential trend observed over recent years should see this technology emerge as one of the biggest sources of emissions reductions by the end of the decade (Figure 1.6). The projection in Figure 1.6 is purely an exponential projection of current trends and does not attempt to model past or future policy, or the flattening of the deployment curve as the EV market reaches saturation. However, these 'S-curve' dynamics, where change starts slowly but escalates rapidly, are typical of the take-up of new technologies.

- Progress in this sector will be increasingly central to delivering economy-wide emissions reductions (see Figure 1.8). With emissions savings more than doubling every two years on current trends, EV uptake should allow emissions reductions to reach the subsector's contribution to the UK's 2030 NDC target.

Figure 1.6 Historic and projected emissions savings from electric cars in the fleet, assuming a more-than-doubling every two years



Description: Emissions savings from EVs have grown exponentially since 2022, doubling every two years. Continuation of this trend will enable the surface transport sector to achieve the emissions reductions required to contribute to meeting the UK's 2030 NDC target.
Source: Department for Transport (DfT) (2025) *Vehicle licensing statistics*; Solera cap hpi (2025) *Vehicle registration data*; The Society of Motor Manufacturers and Traders (SMMT) (2024, 2025) *Monthly sales data*; DESNZ (2025) *Provisional UK greenhouse gas emissions national statistics 2024*; DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023*; CCC analysis.
Notes: (1) Emissions savings are estimated based on the share of EVs in the fleet by the middle of each year, adjusted to account for data on the relative numbers of kilometres driven by EVs and ICEs. (2) The impact in 2025 is calculated based on an estimate of the share of EVs expected to be in the fleet by the middle of 2025, from EV sales data up to the end of Q1 2025. (3) Includes cars only. (4) The exponential projection is based on the observed compound annual growth rate of emissions savings between 2022 and 2025, and does not include any assumptions about the influence of past or future policy, or saturation in market share. (5) The "CCC Balanced Pathway" bar shows the amount of emissions savings expected from electric cars by 2030 in the Balanced Pathway from our Seventh Carbon Budget advice (as this breakdown in not available in the CBDP). The Balanced Pathway is based on a detailed analysis of feasible roll-out rates – see our Seventh Carbon Budget advice report for further details.

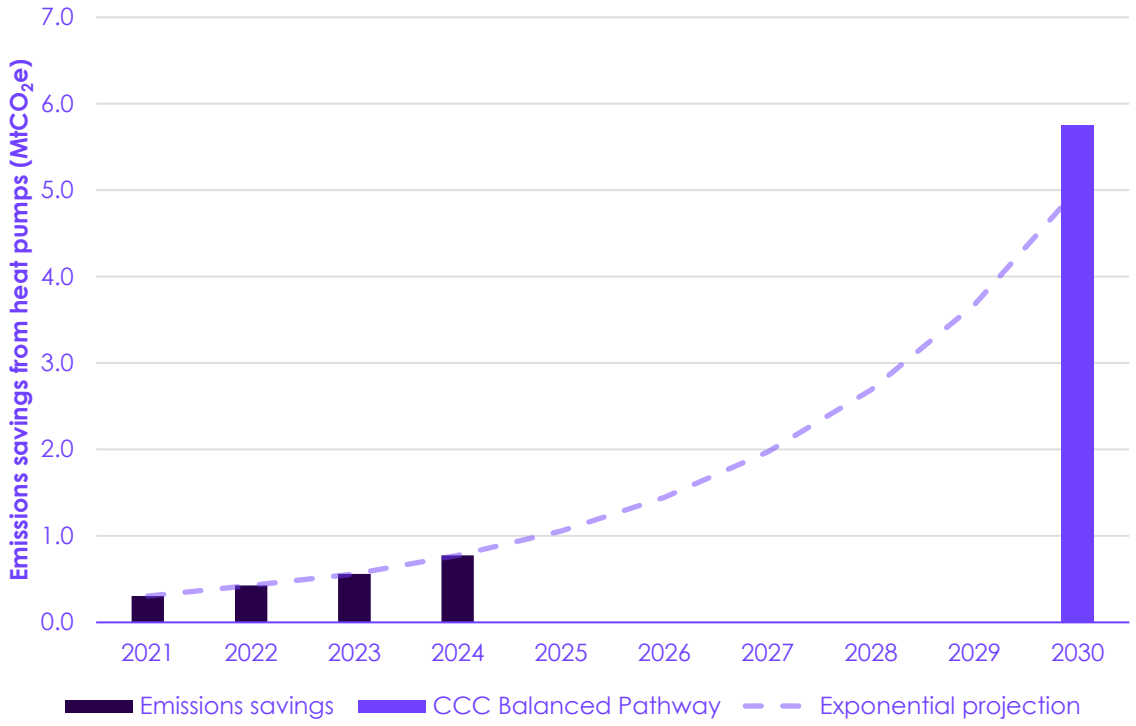
Residential buildings

Emissions in the residential buildings sector increased by 1.5 $MtCO_2e$ in 2024, likely due to an increase in heating demand following reductions in gas prices. Emissions are now 33% lower than in 2008.

- Emissions are still substantially lower than the levels seen before the 2022 gas price shock, with 2024 emissions 15.4 $MtCO_2e$ lower than those in 2021.
  - However, this reduction is much less emphatic when accounting for the effect of warmer-than-average temperatures over the past two years. The temperature-adjusted emissions for residential buildings show a much smaller reduction of 8.8 $MtCO_2e$ since 2021, as well as a more significant increase between 2023 and 2024 of 2.1 $MtCO_2e$.[*]
- Heat pump sales grew strongly last year (see Chapter 2), but these are not yet at a volume where they are having a measurable impact on emissions, with annual savings accounting for only 1% of total sectoral emissions. The compound annual growth rate since 2021 is 37%, implying a near-doubling of emissions savings from heat pumps every two years. However, acceleration beyond observed trends is needed in the adoption of low-carbon heating to meet the 2030 NDC (Figure 1.7).
  - This projection is purely an exponential projection of current trends and does not attempt to model past or future policy. Further policy action is needed to guarantee deployment (see Section 2.2.2 and Section 3.3).
- The buildings sector, for which 70% of emissions currently are from residential buildings and the remaining 30% from non-residential (commercial and public) buildings, is expected to be central to delivering emissions reductions throughout the 2030s (Figure 1.8). This means that even if a shortfall in emission reductions from buildings can be met in the current decade with accelerated action in other sectors, falling behind on buildings decarbonisation will have severe implications for longer-term decarbonisation.

[*] Temperature-adjustment of emissions is performed to smooth out fluctuations resulting from interannual variability in temperature. See Chapter 3 of the CCC monitoring framework for more detail.

Figure 1.7 Historic and projected emissions savings from residential heat pump installations, assuming a near-doubling every two years



Description: Heat pump deployment has accelerated in recent years, but resulting emissions savings are still low in absolute terms. Observed growth rates will need to increase to meet the level of abatement required to contribute to meeting the UK's 2030 NDC target.
Source: UK Heat Pump Association (HPA) (2025) *Heat pump sales statistics*; Nesta (2022) *Carbon calculator*; DESNZ (2025) *Provisional UK greenhouse gas emissions national statistics 2024*; DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023*; CCC analysis.
Notes: (1) Average emissions savings are estimated with respect to an average UK home with a mains gas heating system, as calculated by Nesta. Total emissions savings are given as the product of cumulative deployed heat pumps up to the end of 2024, and this estimated average saving per home. (2) Projected savings are estimated using the observed compound annual growth rate in savings since 2021, without any further assumptions made about the effect of past or future policies. (3) The "CCC Balanced Pathway" bar shows the amount of emissions savings expected from heat pump installations in residential homes by 2030 in the Balanced Pathway from our Seventh Carbon Budget advice report (as this breakdown is not available in the CBDP). The Balanced Pathway is based on a detailed analysis of feasible roll-out rates – see our Seventh Carbon Budget advice report for further details.

Aviation

Emissions in the aviation sector increased by 9% in 2024 to reach a total of 38.4 $MtCO_2e$, marking a return to pre-pandemic levels. The Government's 2022 Jet Zero Strategy (JZS) and CBDP, and our Seventh Carbon Budget Balanced Pathway all require emissions to stay flat and start decreasing slowly over the rest of the decade.[8] Limiting emissions in this way will be difficult if passenger numbers increase without sufficient counterbalancing uptake of low-carbon solutions.

- The most significant driver of aviation emissions since 1990 has been rising demand for international flights, particularly leisure.[9;10] Aviation emissions now contribute a greater share to the UK emissions total than the electricity supply sector (Table 1.2). This stands in stark contrast to the situation in 1990, when aviation emissions were ten times lower than emissions from electricity, and close to half their current level.

- This increase means that aviation emissions are now above both the emissions expected in the JZS and where we expected our Seventh Carbon Budget baseline to begin in 2025. Emissions in 2024 are very similar to levels expected in the CBDP indicative delivery pathway.

- It is still too early to say whether emissions in the sector will continue to grow or plateau at a level close to the relatively flat average observed over the decade preceding the pandemic. However, the rate of increase over the past year is cause for concern, and future changes will need to be monitored closely.

1.2 Pace and distribution of future emissions reduction

1.2.1 Broadening emissions reductions to more sectors

We have now seen three years of emissions reduction since the pandemic, with total provisional emissions for 2024 slightly lower than the Government's CBDP pathway. This overall rate of reduction is encouraging, but will need to increase to achieve the UK's 2030 NDC and longer-term targets. Achieving the required pace of decarbonisation will increasingly require focus on transport, buildings, agriculture and aviation.

- Over half of the emissions reductions seen since 2008 have been in energy supply. As we advance towards a decarbonised electricity system, there is progressively less scope for further reduction in this sector.

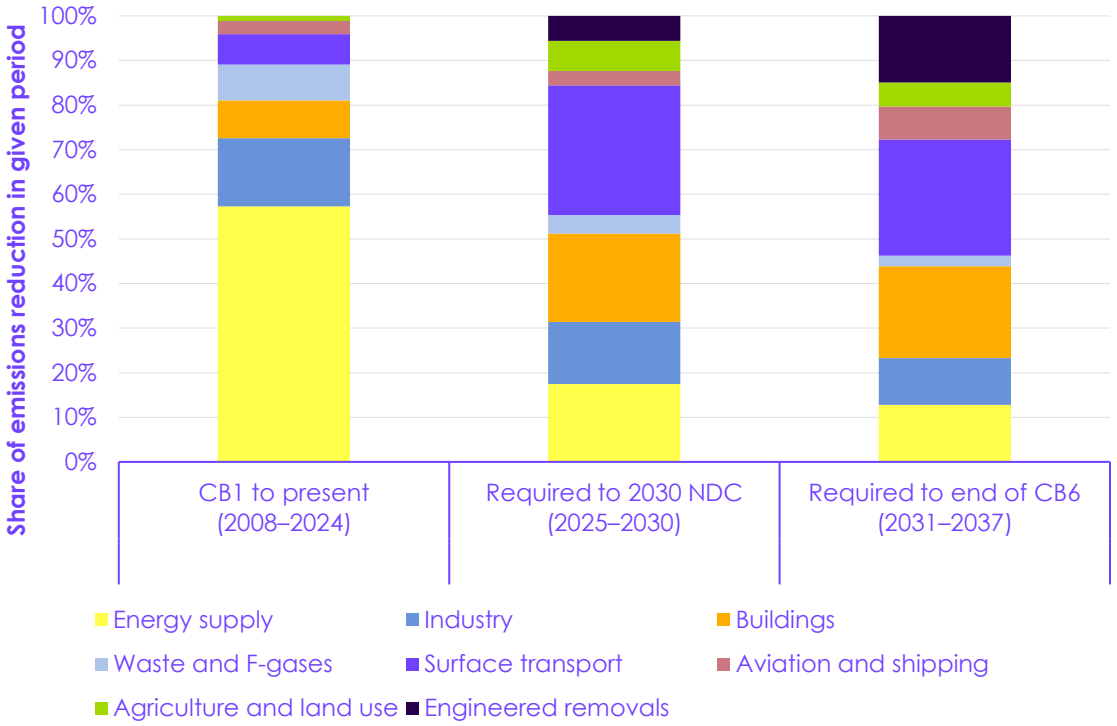
- Therefore, emissions savings need to broaden, with over 80% of the savings required between now and 2030, and almost 90% by 2037, needing to come from other sectors (Figure 1.8).

  - The majority of this comes from the electrification of key technologies, including in surface transport, buildings, and industry. Surface transport alone contributes almost 30% of the emissions savings required from now until 2030.

  - The continued decarbonisation and expansion of the electricity system is required to enable this widespread electrification.

  - Little progress has been made on emissions from the agriculture and land use sectors in recent years. Substantial action is needed to meet future targets.

Figure 1.8 Distribution of past emissions reductions and future emissions savings by sector



Description: Over half of emissions reductions to-date have come from the energy supply sectors. To meet the UK's 2030 NDC, reductions will increasingly need to come from other sectors, with surface transport, buildings, and industry playing key roles. Engineered removals are expected to play a crucial role in offsetting residual emissions.
Source: DESNZ (2025) *Provisional UK greenhouse gas emissions national statistics 2024*; DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023*; DESNZ (2023) *Carbon Budget Delivery Plan (CBDP)*; CCC analysis.
Notes: (1) Future reductions are calculated using indicative sectoral splits of the Government's CBDP baseline scenario and pathway. The energy supply category is a grouping of the electricity and fuel supply sectors. (2) The baseline is an adjustment of the Government's CBDP baseline, with the impact of some policies removed so that they can be assessed. Refer to our 2023 UK Progress Report for additional notes on our methodology. (3) We have adjusted the Government's published CBDP pathway and baseline for land use to account for changes in emissions accounting. (4) The CBDP industry pathway is adjusted to account for the sooner-than-expected closure of Port Talbot steelworks. (5) IAS is included in the middle bar, despite these emissions being excluded from the NDC target, to better represent reductions that need to be made to meet other targets in this period.

1.2.2 Required pace of future emissions reductions

With energy supply dominating the pace of emissions reductions so far, the pace in other sectors will need to increase in order to meet the 2030 NDC and the Sixth Carbon Budget (Figure 1.9).

- Emissions from sectors other than energy supply have fallen by 8 $MtCO_2e$ per year on average since 2008. This pace of emissions reduction is approximately in line with the average pace required during the Fourth Carbon Budget period (up to 2027) in the CBDP. However, the pace will need to more than double towards the end of this decade, with the CBDP requiring the average annual reduction to increase to 19 $MtCO_2e$. This pace is maintained over the Sixth Carbon Budget period (Figure 1.9).
  - The growth in emissions savings from EVs in surface transport is promising (Figure 1.6), as this sector will need to deliver much of the reductions for the remaining years of this decade.

– Substantial acceleration is needed in the buildings sector to meet the 2030 NDC. It is not clear that current policy is sufficient to ensure the growth in installations needed. Despite rapid growth in recent years, the number of heat pumps installed to date is not yet sufficient to make a significant difference to total sectoral emissions (see Figure 1.7). Action in this sector is particularly crucial to targets beyond 2030, with one-fifth of the emissions savings required by the end of the Sixth Carbon Budget period projected to come from buildings.

- Emissions from IAS have increased by 7% in 2024 relative to 2023 and are up 78% relative to the 1990 baseline. Significant progress also needs to be made in this area to meet future carbon budgets.

- Aside from small-scale testing, there have been no engineered removals recorded to date in the UK. In the CBDP, these account for around 6 $MtCO_2e$ of negative emissions in 2030. This sector will need to develop and scale up notably over the coming five years.

Figure 1.9 Pace of past and required future emissions reduction

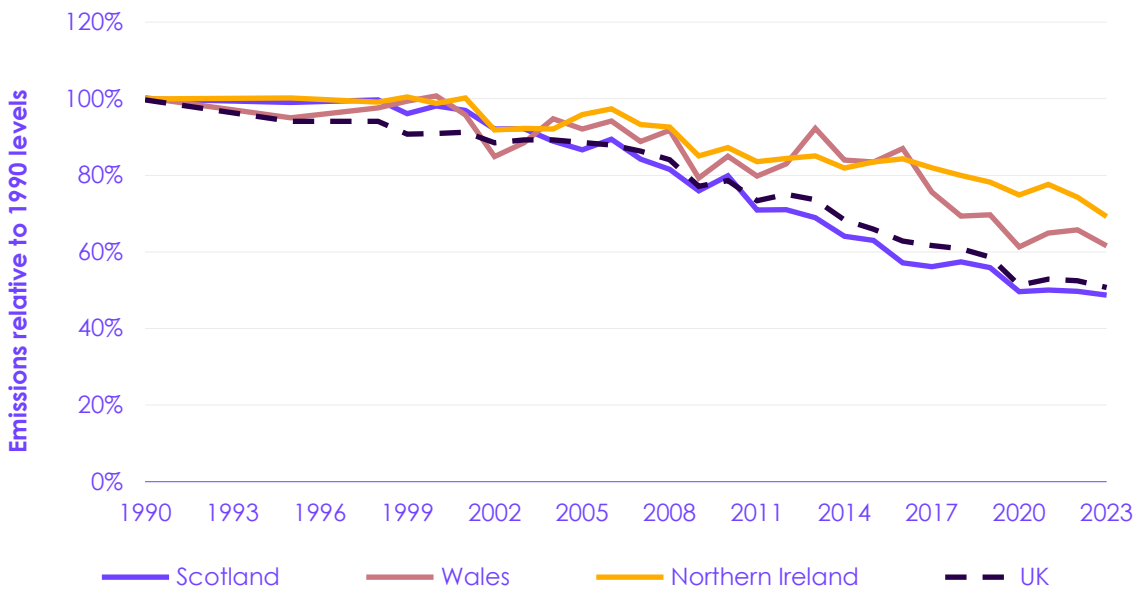
Description: The rate of emissions reduction outside of the electricity and fuel supply sectors since 2008 is at the level required over the rest of the Fourth Carbon Budget period. This rate of reduction will need to more than double to meet the 2030 NDC and the Sixth Carbon Budget.
Source: DESNZ (2025) *Provisional UK greenhouse gas emissions national statistics 2024;* DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023;* DESNZ (2023) *Carbon Budget Delivery Plan;* CCC analysis.
Notes: (1) Hollow bars represent the energy supply sector and solid bars represent all other sectors. (2) Average emissions reductions are calculated as the average year-on-year change for the years referenced. (3) The purple bar shows achieved reductions and orange bars show required future reductions, as calculated from indicative sectoral splits of the Government's CBDP pathway.

1.3 Emissions in Scotland, Wales, and Northern Ireland

Emissions fell in Scotland, Wales, and Northern Ireland in 2023 (the latest available data). The reduction in Scotland was similar to that UK-wide, with larger reductions seen in Wales and Northern Ireland (Figure 1.10). These were all mainly driven by reductions in emissions in the electricity supply sector (Figure 1.11). The majority of emissions reductions to date in Scotland, Wales, and Northern Ireland have been in mostly reserved sectors, such as electricity supply, fuel supply, and industry. Action in future will need to broaden to more sectors of the economy, including areas with substantial devolved powers.

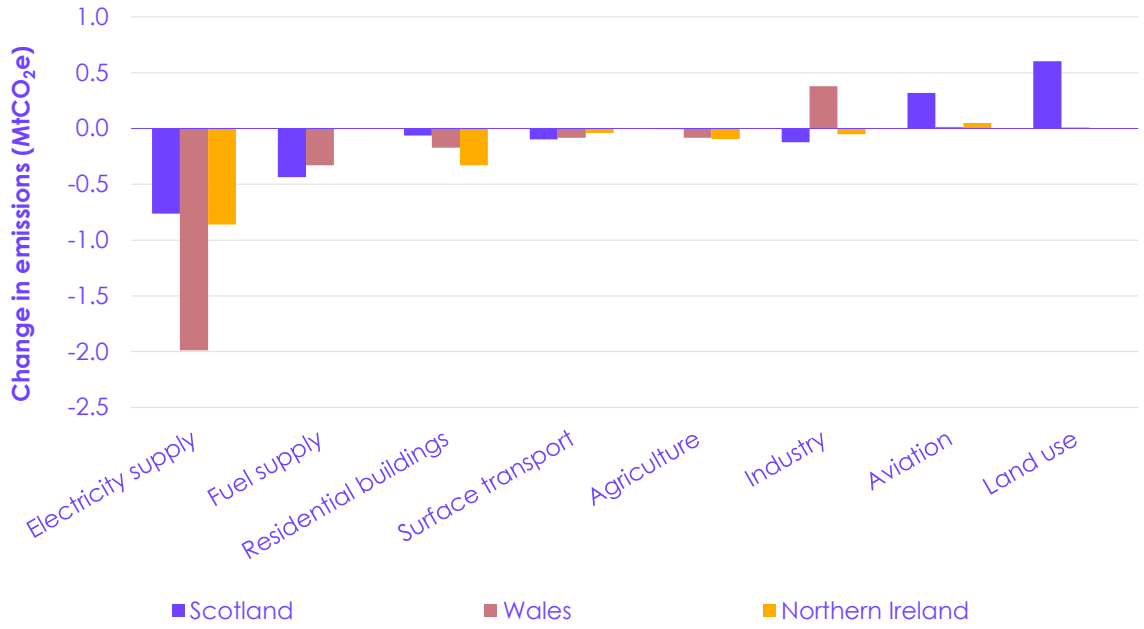
- **Scotland:** emissions in 2023 were 39.6 $MtCO_2e$, 2% lower than in 2022 and 51% lower than 1990 levels.
  - In 2023, emissions reductions in the electricity supply and fuel supply sectors were largely offset by increases in emissions from land use and aviation.
  - Scotland's electricity supply has been almost completely decarbonised, with emissions in 2023 95% lower than in 1990. Since 1990, 61% of emissions reductions in Scotland have been in the electricity supply, fuel supply, and industry sectors.
- **Wales:** emissions in 2023 were 34.1 $MtCO_2e$, 6% lower than in 2022 and 38% lower than 1990 levels.
  - Electricity supply emissions in Wales fell by 30% in 2023 compared to 2022. There was a small increase in industry emissions, reflecting annual variation seen in recent years.
  - Since 1990, 66% of emissions reductions in Wales have been in the electricity supply, fuel supply, and industry sectors.
  - The rate of emissions reductions in Wales has increased since 2016, with around two-thirds of the emissions reductions since 1990 occurring since 2016.
- **Northern Ireland:** emissions in 2023 were 18.5 $MtCO_2e$, 7% lower than in 2022 and 31% lower than 1990 levels.
  - The largest emission reductions were in the electricity supply sector, with a smaller reduction in emissions from residential buildings.
  - Since 1990, 65% of emissions reductions in Northern Ireland have been in the electricity supply and industry sectors.

Figure 1.10 Emissions reductions in Scotland, Wales, and Northern Ireland compared to the UK



Description: Emissions fell in Scotland, Wales, and Northern Ireland last year, driven by reductions in electricity supply.
Source: DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023*; National Atmospheric Emissions Inventory (2025) *Greenhouse Gas Inventories for England, Scotland, Wales and Northern Ireland: 1990-2023*; CCC analysis.

Figure 1.11 Change in Scotland, Wales, and Northern Ireland emissions for key sectors (2022–2023)



Description: Compared to 2022, emissions reductions in 2023 in Scotland, Wales, Northern Ireland were concentrated in the electricity supply sector, in line with the UK-wide trend.
Source: DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023*; National Atmospheric Emissions Inventory (2025) *Greenhouse Gas Inventories for England, Scotland, Wales and Northern Ireland: 1990-2023*; CCC analysis.

1.4 Emissions from imports

The UK's legally binding targets are set on the basis of territorial emissions (that is, emissions within the UK's territorial borders). However, it is important to also consider emissions associated with UK imports, to ensure that territorial emissions reductions are not just being offset by higher emissions in other countries from producing UK imports. The latest published imported emissions data is for 2022. This shows a year-on-year rise of 7% compared to 2021, with imported emissions now at their highest level since 2007 (Figure 1.12).

- The increase in imported emissions comes mostly from regions outside of the EU, partially offset by a decrease in EU imports following the end of the Brexit transition period. Import volumes in 2022 also increased in absolute terms.[11;12]

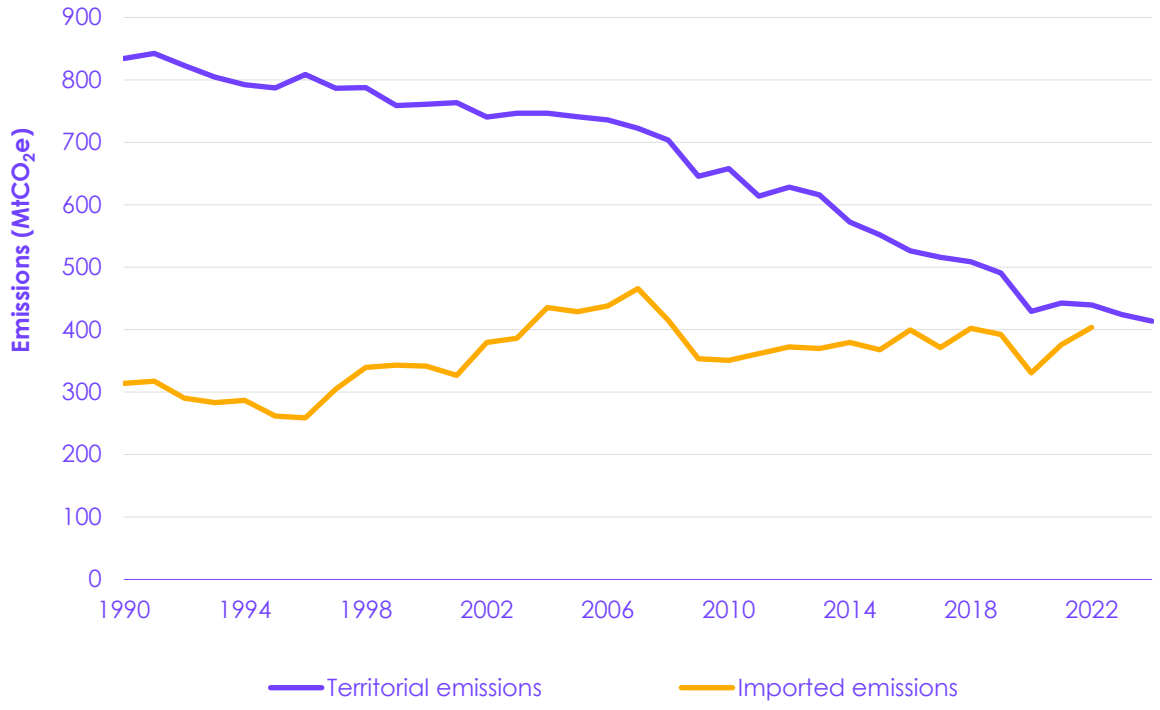
- Between 1990 and 2007, imported emissions had risen by 48%, before falling significantly during the financial crisis in 2008. Since then, imported emissions have stayed fairly flat, and 2022 levels remain 13% lower than the 2007 peak. The reduction in territorial emissions since 1990 significantly outweighs the increase in emissions from imports over that period, reflecting the fact that emissions reductions in the UK have largely occurred without offshoring emissions.

Minimising future carbon leakage, through addressing emissions from imports and ensuring competitiveness for UK industry, would prevent the UK's strong domestic policy from being undermined by slower progress elsewhere.

- In our Seventh Carbon Budget advice report, we highlighted that the risk of carbon leakage, though limited, remains, particularly in energy-intensive sectors and in agriculture.

- The report also set out a hierarchy of available policy levers and proposed that the Government set a non-legally binding benchmark against which to track imported emissions.

Figure 1.12 Comparison of imported and territorial emissions



Description: UK territorial emissions have fallen since 1990 while imported emissions rose until 2007 and have been broadly flat since.
Source: Department for Environment, Food, and Rural Affairs (Defra) (2025) *UK and England's carbon footprint to 2022*; DESNZ (2025) *Provisional UK greenhouse gas emissions national statistics 2024*; DESNZ (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023.*

1.5 The international context for reducing UK emissions

This section sets out the global context of emissions, global warming, and climate policy in 2024. It assesses the UK's international role and contribution towards global efforts to mitigate climate change.

1.5.1 Global greenhouse gas (GHG) emissions and warming

Global emissions of CO_2 and other GHGs are at record high levels, albeit they are growing at a slower rate. This is resulting in increasing levels of atmospheric CO_2 concentrations, and corresponding increases in global temperatures and climate change impacts.

- Initial projections for 2024 indicate that CO_2 emissions from fossil fuels and industry increased by 1% on 2023 levels to around 38 $GtCO_2$.[13] The rate of growth in global fossil CO_2 emissions peaked at nearly 3% per year during the 2000s but has slowed in the last decade to less than 1% per year on average.[14] Methane emissions from the fossil fuel sector are also estimated to have stayed at a high level of 120 million tonnes in 2024.[15]

- Global GHG emissions per capita (excluding emissions from land use, for which uncertainty is larger) broadly plateaued in the 2010s and in 2023 were 1% below peak levels, which occurred in 2012.*

- Atmospheric CO_2 concentration reached 422.8 ppm in 2024, with an unprecedented increase of nearly 3.4 ppm on 2023 levels, and an overall level around 50% higher than pre-industrial levels.[16]

- 2024 was the warmest year on record globally with annual anomalies reaching over 1.5°C above pre-industrial levels for the first time. Continued climate change is inevitable. Current projections for global greenhouse gas emissions indicate that warming is expected to exceed 1.5°C above pre-industrial levels in the early 2030s.

1.5.2 International climate policy

The UK is among a leading group of countries demonstrating consistent and sustained decarbonisation, developing effective policies, and deploying key technologies (Figure 1.13). Within the G20 group of leading economies:

- The majority of OECD members have seen significantly faster emissions reductions since the signing of the Paris Agreement in 2015.

- Developing and emerging economies outside the OECD continue to see increasing emissions. But that rate of increase has generally slowed since 2015, in most cases substantially.

In November 2025, the UNFCCC Climate Summit hosted by Brazil will set out global emissions reduction ambition for the coming decade through the collation of 2035 NDCs as part of the Paris Agreement process.

- Alongside the UK, Japan, Canada, and Brazil (of the G20) as well as around 20 other countries have submitted 2035 NDCs to the UN. The Executive Secretary of the UNFCCC has called on all countries to submit their 2035 NDCs by September 2025, ahead of COP30 in Brazil.[17]

- The new US administration has announced its withdrawal from the Paris Agreement, as the previous Trump administration did in 2017. International relations more generally have entered a period of uncertainty following the US election. It is too early to tell the impact of this on US and global emissions. However, falling costs, energy security concerns, and a realisation of the need to respond to rising climate impacts are reinforcing national commitments and consumer uptake of clean energy technologies in many countries worldwide.

1.5.3 Global low-carbon investment

Global low-carbon technology deployment has continued to accelerate, with global investment at record levels.

- Total global investment in clean energy technologies in 2024 totalled around $2 trillion, around twice the amount invested in fossil fuel technologies.[18]

* 2023 is the latest year for which emissions per capita data is available as global population data for 2024 is not yet available.

- Global investment in solar photovoltaic electricity generation grew 5% on 2023 levels and for the second year running exceeds investment in all other electricity generation technologies combined.[19] A new record of 117 GW of wind generation capacity was installed in 2024.[20] Investment in electricity transmission grids and electricity storage has also correspondingly risen.

- End use electrification also continues to accelerate globally especially in road transit. In 2024, around one in seven new cars were electric.*;[21] In Norway, electric cars accounted for nearly 90% of new car sales in 2024 as the transition there reaches maturity. In China, the world's largest vehicle market, 27% of new car sales in 2024 were electric.[22] Over 10% of new heavy goods vehicles in China were also electric.[23]

1.5.4 UK international climate actions

As well as reducing the UK's direct contribution to global emissions, UK emissions reduction actions serve as an influential example to international partners and markets. This reinforces the UK's efforts to progress international climate diplomacy both through the UN process and in partnerships with key countries and sectors.

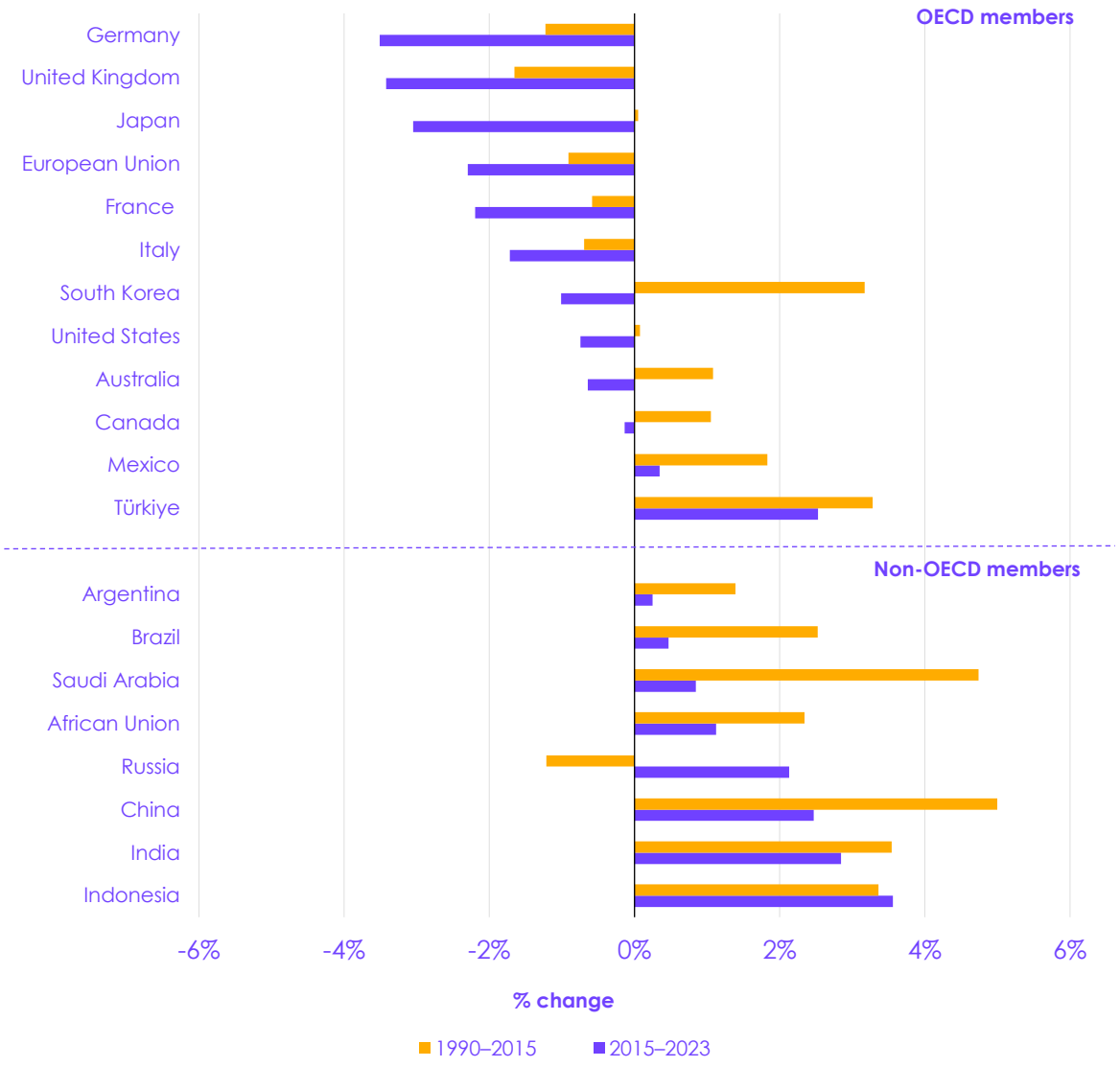
- The phase out of coal from UK electricity generation, and ongoing expansion of the second largest national offshore wind capacity, continue to provide a key demonstration of a power sector transition which receives worldwide interest.

- Following its announcement at COP29 in November, the UK's formal submission of its 2035 NDC to the UNFCCC to timetable in January 2025 demonstrated firm commitment to the Paris Agreement process. This NDC represents an ambitious and deliverable commitment, in line with Paris Agreement goals. The formal submission includes a clear and transparent technical annex, in line with best practice.

- The UK has further strengthened climate cooperation with key countries, notably supporting the Brazil presidency of the forthcoming COP30 across a range of agendas and working with Brazil on the Global Clean Power Alliance launched at the G20 in Rio in November 2024.[24] The UK has also opened a high-level climate dialogue with China, noting its crucial role as both the largest emitter and largest producer of many low-carbon technologies.[25] In April 2025 the UK and International Energy Agency co-hosted a major Energy Security summit.[26] The majority of attending countries recognised the clear alignment between transition away from fossil fuels and strengthening their energy security, and committed to continued action on improving energy efficiency and deploying clean energy technologies.

* Electric here means battery electric cars (EVs). EV and plug-in hybrid vehicle (PHEV) sales together accounted for over one-fifth of new cars globally in 2024.

Figure 1.13 International average annual reductions in GHG emissions, before and after the Paris Agreement (2015)



Description: The chart shows annual average relative changes in emissions for G20 countries before and after the Paris Agreement negotiations of 2015. Members of the G20 are split into those who are members of the OECD and those who are not. All countries shown have either reduced their emissions or slowed the rate of emissions increase since the Paris Agreement, except for Russia.
Source: European Commission (2024) *GHG emissions of all world countries*; CCC analysis.
Notes: (1) Based on 2023 data. (2) GHG emissions include CO_2 (fossil only), CH_4, N_2O, and F-gases, which are aggregated using Global Warming Potential values from IPCC AR5 (GWP-100 AR5). Emissions from LULUCF (Land Use, Land Use Change, and Forestry) are not included.

Endnotes

[1] Department for Energy Security and Net Zero (2025) *Final UK greenhouse gas emissions national statistics: 1990 to 2023*. https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-statistics-1990-to-2023.

[2] Department for Energy Security and Net Zero (2025) *Provisional UK greenhouse gas emissions statistics 2024*. https://www.gov.uk/government/statistics/provisional-uk-greenhouse-gas-emissions-statistics-2024.

[3] Department for Energy Security and Net Zero (2023) *Carbon Budget Delivery Plan*. https://www.gov.uk/government/publications/carbon-budget-delivery-plan.

[4] Climate Change Committee (2025) *The Seventh Carbon Budget*. https://www.theccc.org.uk/publication/the-seventh-carbon-budget.

[5] Uniper (2024) *The end of an era – Ratcliffe-on-Soar power station ends coal generation*. https://www.uniper.energy/news/the-end-of-an-era---ratcliffe-on-soar-power-station-ends-coal-generation.

[6]Department for Energy Security and Net Zero (2025) *Energy Trends: UK electricity*. https://www.gov.uk/government/statistics/electricity-section-5-energy-trends.

[7] Ember (2025) *Yearly electricity data*. https://ember-energy.org/data/yearly-electricity-data.

[8] Department for Transport (2022) *Jet Zero strategy: delivering net zero aviation by 2050*. https://www.gov.uk/government/publications/jet-zero-strategy-delivering-net-zero-aviation-by-2050.

[9] Civil Aviation Authority (2025) *Departing passenger survey*. https://www.caa.co.uk/data-and-analysis/uk-aviation-market/consumer-research/departing-passenger-survey/survey-reports/.

[10] Civil Aviation Authority (2025) *Departing passenger survey*. https://www.caa.co.uk/data-and-analysis/uk-aviation-market/consumer-research/departing-passenger-survey/survey-reports/.

[11] Civil Aviation Authority (2025) *Departing passenger survey*. https://www.caa.co.uk/data-and-analysis/uk-aviation-market/consumer-research/departing-passenger-survey/survey-reports/.

[12] Department for Business and Trade (2025) *UK trade in numbers*. https://www.gov.uk/government/statistics/uk-trade-in-numbers/uk-trade-in-numbers-web-version.

[13] Forster et al. (2025) *Indicators of Global Climate Change 2024: annual update of key indicators of the state of the climate system and human influence*. https://essd.copernicus.org/preprints/essd-2025-250/.

[14] Forster et al. (2025*) Indicators of Global Climate Change 2024: annual update of key indicators of the state of the climate system and human influence*. https://essd.copernicus.org/preprints/essd-2025-250/.

[15] International Energy Agency (2025) *Global Methane Tracker 2025*. https://www.iea.org/reports/global-methane-tracker-2025.

[16] Forster et al. (2025) *Indicators of Global Climate Change 2024: annual update of key indicators of the state of the climate system and human influence*. https://essd.copernicus.org/preprints/essd-2025-250/.

[17] United Nations Framework Convention on Climate Change (UNFCCC) (2025) *Ten Years Since the Paris Agreement: How Far We Have Come & the Journey Ahead – UN Climate Chief Delivers Major Speech in Brasília*. https://unfccc.int/news/ten-years-since-the-paris-agreement-how-far-we-have-come-the-journey-ahead-un-climate-chief-delivers.

[18] International Energy Agency (2024) *World Energy Investment 2024*. https://www.iea.org/reports/world-energy-investment-2024.

[19] International Energy Agency (2024) *World Energy Investment 2024*. https://www.iea.org/reports/world-energy-investment-2024.

[20] Global Wind Energy Council (2025) *Global Wind Report 2025*. https://www.gwec.net/reports/globalwindreport.

[21] International Energy Agency (2025) *Global EV Outlook 2025*. https://www.iea.org/reports/global-ev-outlook-2025.

[22] International Energy Agency (2025) *Global EV Outlook 2025*. https://www.iea.org/reports/global-ev-outlook-2025.

[23] International Council on Clean Transportation (2025) *Zero-emission medium and heavy-duty electric vehicle market in China, 2024*. https://theicct.org/publication/ze-mhdv-market-china-2024-mar25/.

[24] UK Government (2024) *UK-Brazil Clean Energy Finance Mission to launch the Global Clean Power Alliance*. https://www.gov.uk/government/news/joint-statement-by-the-governments-of-the-united-kingdom-and-brazil-19-november-2024.

[25]Department for Energy Security and Net Zero (2025) *UK and China restart meaningful climate change dialogue*. https://www.gov.uk/government/news/uk-and-china-restart-meaningful-climate-change-dialogue.

[26] International Energy Agency (2025) *Chairs' summary – summit on the future of energy security 2025*. https://iea.blob.core.windows.net/assets/e9c913b8-4efe-4e25-8c50-460f800cc2a6/ChairsSummary_FutureofEnergySecurity.pdf.

Chapter 2: Indicators of current delivery progress

In this chapter, we assess progress in delivering the changes that are required to meet the UK's emissions targets. This includes monitoring the pace at which markets for low-carbon technologies are growing, their prices are falling, and low-carbon choices by households and businesses are developing.

Our key messages are as follows:

- **Surface transport:** electric vehicle (EV) market share growth resumed in 2024, reaching 19.6%, and has continued in the early months of 2025. Sales will need to grow quickly to get on track to meet or exceed the zero-emission vehicle (ZEV) mandate targets. But early signs are promising – the number of EVs on the road has more than doubled since 2022.[1] National-level charge point deployment is also growing at the required pace, although some areas remain underserved.[2]

- **Buildings:** heat pump installations are growing fast, with an increase of 56% in 2024. Incentives are working, with sales in 2024 similar to what we assumed in our Seventh Carbon Budget Balanced Pathway, although rollout needs to continue to accelerate. The ratio of electricity-to-gas prices is still too high for households who switch to heat pumps to see the full benefits of their greater efficiency.

- **Industry:** the proportion of industry energy use coming from electricity needs to increase. Switching to electric technologies is key to decarbonising much of industry. However, a relatively high ratio of industrial electricity-to-gas prices presents a barrier to uptake.

- **Agriculture and land use:** 20,700 hectares of new trees were planted in 2023/24, an increase of 59% compared to the year before. While there was a large rise in England, most of the increase occurred in Scotland. However, we have concerns that recent reductions in funding for woodland creation in Scotland could reverse this trend. Peatland restoration rates also increased by 47% in 2023/24. Reductions in the average consumption of meat and in livestock numbers are continuing. These are key to freeing up land required to increase tree planting and peatland restoration.

- **Electricity supply:** based on the pipeline of contracted capacity, offshore and onshore wind roll-out both appear on track. The roll-out of solar appears significantly off track and will need to improve to deliver its contribution to a decarbonised electricity system. Renewables prices have fallen substantially over the past decade, but supply chain pressures have led to increases in strike prices in recent auctions.

- **Aviation:** emissions are very close to the level expected in the Government's Carbon Budget Delivery Plan (CBDP). The share of sustainable aviation fuel (SAF) as a proportion of all jet fuel used in UK aviation increased from 0.7% in 2023 to 2.1% in 2024. While early sustainable aviation fuel (SAF) uptake appears promising, the growing emissions trend is concerning as, if continued, it could pose a risk to the UK's emissions targets.

2.1 Principles of progress monitoring

Effective mechanisms to monitor progress are essential to allow barriers and risks to delivery of the UK's emissions targets to be identified and addressed. We do this by tracking progress on a range of key delivery indicators. Tracking these indicators allows us to identify at an early stage whether progress is on or off track for the pace of change required, providing an early signal for areas at risk.

- Further details on our approach to progress monitoring can be found in our 2022 Mitigation Monitoring Framework.

- Following our Seventh Carbon Budget advice this framework has been updated (with a more comprehensive update envisaged in the future).

In Section 2.2, we assess progress on 23 key indicators. These indicators cover: surface transport, buildings, industry, agriculture and land use, electricity supply, and aviation.

- This represents a subset of our full indicator set, (see our Mitigation Monitoring Framework) in order to allow us to focus our assessment on the actions and changes leading to the most significant emissions reductions, subject to data availability. For the targets up to the 2030s, this is mostly the roll-out of electric technologies and renewable electricity generation. For the Net Zero target, this is additionally action in aviation, agriculture, and land use.

- Where available, we assess progress against the pace of change required to meet government targets. We do not do this for targets which the new Government has not endorsed and where a forthcoming strategy has been announced. If there is no government target, we assess how trends compare to our Seventh Carbon Budget Balanced Pathway where possible.

In Section 2.3, we discuss trends in a range of cross-cutting impacts on the economy, health, and knowledge and awareness of Net Zero. While we do not have benchmarks against which to judge progress on these, they provide a useful insight into the wider impacts of the Net Zero transition.

2.2 Assessment of progress on key indicators

We assess progress on 23 key indicators. Of the 16 that have a relevant benchmark or target to compare against and for which it is not too early to make a judgement, we assess eight as being on track (Table 2.1). Four further indicators – EV car sales, heat pump installations, woodland creation, and peatland restoration – are assessed as being slightly off track. However, in each of these critical areas there has been strong progress in the latest data which has the potential to get the indicator back on track if it continues in future years. We assess four indicators, including the ratio of electricity to gas prices for both domestic and industrial consumers, as being significantly off track.

Table 2.1
Summary of indicator scores

Surface transport	Buildings	Industry	Agriculture and land use	Electricity supply	Aviation
Battery electric vehicle (BEV) car share of new sales. Government target: 80% by 2030. (O)	Number of heat pump installations. (O)	Electricity used in industry. (W)	New woodland creation. (O)	Offshore wind operational capacity. Government target: 43–50 GW by 2030. (G)	Sustainable aviation fuel. Government target: 10% by 2030. (G)
BEV van share of new sales. Government target: 70% by 2030. (R)	Ratio of residential electricity to gas prices. (R)	Ratio of industrial electricity to gas prices. (R)	Peatland restored. (O)	Onshore wind operational capacity. Government target: 27–29 GW by 2030. (G)	Distance travelled by plane. (W)
Number of public EV charge points. Government target: 300,000 by 2030. (G)	Proportion of homes with insulated cavity walls. (W)	Energy consumption per unit of Gross Value Added in industry. (W)	Number of livestock. (G)	Solar operational capacity. Government target: 45–47 GW by 2030. (R)	
BEV car price premium. (G)			Consumption of meat. (G)	Unabated gas share of generation. Government target: 5% by 2030. (W)	
Distance travelled by car. (G)				Offshore wind Contracts for Difference (CfD) clearing price. (LGr)	
Distance travelled by van. (W)					

Legend:

- On track (G)
- Slightly off track (O)
- Significantly off track (R)
- Too early to say (W)
- Data not reported (Gr)
- No benchmark or target (LGr)

Notes: (1) An indicator is on track if it is going in the right direction at an appropriate rate. This is determined by comparing the historical data to government ambition or the CCC's recommended path and considering the wider contextual factors that may have a temporary impact (such as recovery from COVID-19). Government ambition is an umbrella term encompassing stated targets, projections and modelling assumptions – and does not necessarily represent a formal commitment from the Government. (2) Indicators are only included for the UK's six highest-emitting sectors. (3) Government target for the 2030 share of unabated gas generation is for Great Britain and reflects generation under a 'typical' weather year.

2.2.1 Surface transport

The market share for new EVs resumed growth in 2024, following stagnation in 2023. The number of EVs on the road has doubled since 2022, and prices are falling quickly. Charge point deployment is growing well at an aggregate level (although some areas remain underserved).

- **Electric cars:** EVs made up 19.6% of new car sales in 2024, which has increased from 16.1% in the previous year (Figure 2.1a).[3;4] This has risen further to 20.7% in the first quarter of 2025, more than 5 percentage points higher than the same period last year.[5] This represents strong growth, although sales are still below the headline targets of the ZEV mandate which the Government assumes in its CBDP (22% for 2024; 28% for 2025).[*] Our Balanced Pathway assumes that once EVs reach price parity with internal combustion engine (ICE) vehicles, sales for electric cars exceed the ZEV mandate to reach 94% of new sales by 2030 (compared to the ZEV mandate target of 80%).
  - There are 1.5 million electric cars on UK roads, with this number having roughly doubled in the past two years.[6] Investment in new technologies and products has delivered over 130 ZEV models to the UK market as of 2024, a third of all models available.[7]
  - While, on average, new EVs remain more expensive to buy than a comparable ICE vehicle, their price premium fell from 37% in 2023 to 24% in 2024 (Figure 2.1d). This continues the trend of considerable declines in recent years and is in line with our expectations of price parity being met between 2026 and 2028.
  - The increasing availability of lower-cost models and competitiveness of the second-hand market means EVs are increasingly affordable to people on lower incomes.[8;9] The lower running costs of EVs mean their overall lifetime costs are now cheaper than petrol or diesel vehicles for many drivers.[†]
- **Electric vans:** the EV market for vans has not grown as quickly as it has done for cars, with the 2024 market share remaining similar to 2023 at 6.3% (Figure 2.1b). Early 2025 data is more promising, with sales in the first quarter increasing to 8.3% of the market.[10] Nonetheless, sales remain significantly below the ZEV mandate target (10% for 2024; 16% for 2025). In our Balanced Pathway we assume that by 2030, electric vans reach 100% of new sales, compared to the 70% ZEV mandate target.
  - More than half of all models available on the new van market are now electric.[11]
  - Many of the UK's biggest fleet operators are considerably ahead of the market-wide average in EV uptake. This includes DPD, who recently reached one-third of their fleet being electric, and Royal Mail, who have a fleet of over 6,000 EVs – the UK's largest EV fleet.[12;13] Vehicles in these types of operation are typically driven further than the average van, and on journeys that are more stop-start in nature.[14] Therefore, these EVs are likely delivering disproportionately high emissions savings.
- **Public charge points:** the number of public charge points across the UK increased by nearly 40% to over 70,000 in 2024 (Figure 2.1c). This growth is ahead of the rate required to meet the Government's target of 300,000 by 2030.

[*] While EV sales are currently below the headline targets of the ZEV mandate, manufacturers are currently on track to meet the mandate for a second successive year by making use of various flexibilities built into the regulation (such as converting non-ZEV emissions savings into equivalent EV sales).

[†] Cost comparisons depend on annual mileage, car type, and charging infrastructure used (home or public charging).

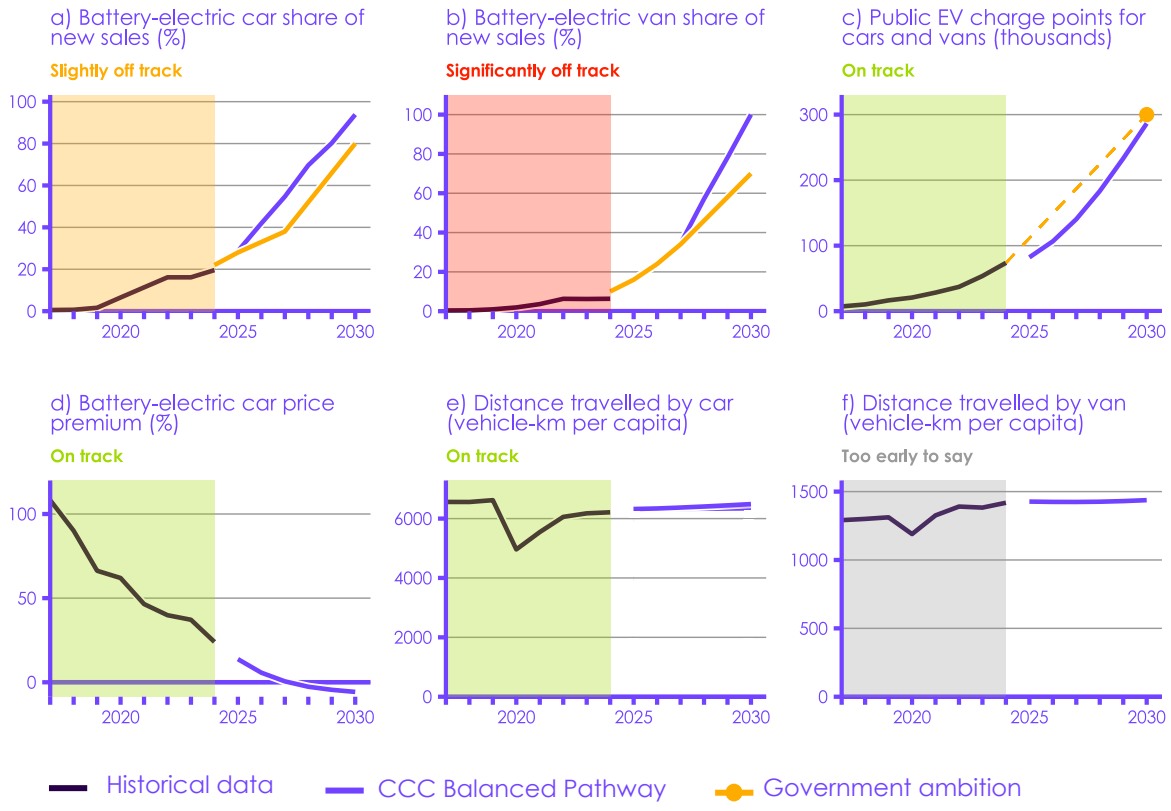
- The distribution of charging devices is uneven, with London having more than double the number of chargers per capita compared to any other region of the UK, and with Northern Ireland significantly underserved.[15] Rural locations are also underserved but have higher potential for off-street parking.

- Public charging is significantly more expensive than charging at home, though rates vary across different types of public charge point.[16;17]

- Around 65% of households in Great Britain have the potential for off-street parking.[18]

- **Vehicle-kilometres:** car-kilometres per capita increased by nearly 1% in 2024, signalling a return to typical pre-pandemic growth rates. This metric remains 6% below 2019 levels (Figure 2.1e) and is on track compared to our pathway (the Government has no target for this). By contrast, van-kilometres per capita grew by nearly 3% and are now 8% above 2019 levels (Figure 2.1f). It is too early to say how this compares to our Seventh Carbon Budget Balanced Pathway.

Figure 2.1 Key indicators for surface transport



Description: Battery-electric car sales increased last year but remain slightly below the ZEV mandate. Battery-electric van sales did not increase. There was a significant increase in public EV charge points, and the battery-electric car price premium is continuing to fall.
Source: Refer to the charts and data file, published alongside this report, for details on the data sources used.
Notes: (1) An indicator is on track if it is going in the right direction at an appropriate rate. This is determined by comparing the historical data to government ambition or the CCC's recommended path and considering the wider contextual factors that may have a temporary impact (such as recovery from COVID-19). (2) Government ambition is an umbrella term encompassing stated targets, projections and modelling assumptions – and does not necessarily represent a formal commitment from the Government. (3) Dashed lines represent the linear path from the latest historical value to the Government's ambition.

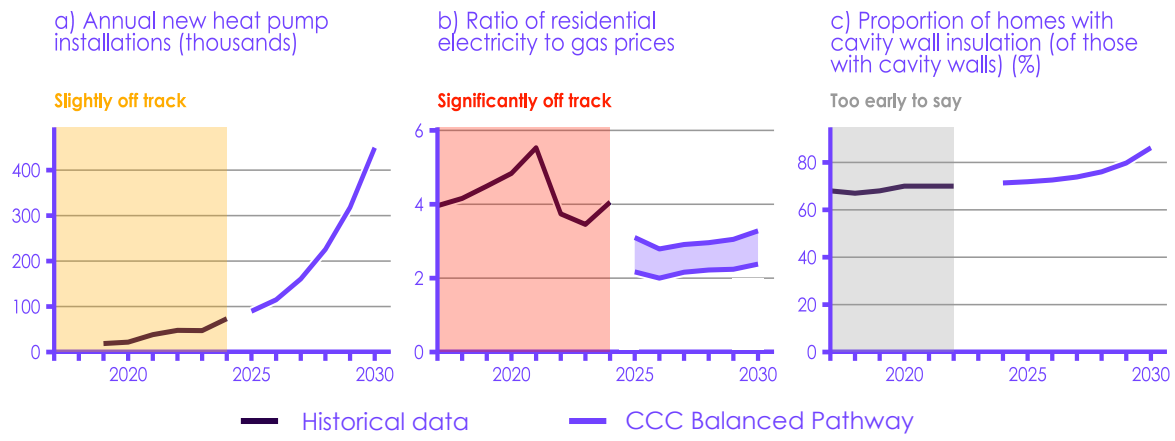
2.2.2 Buildings

Heat pump deployment grew last year, but a significant scale-up in roll-out is still needed. The lack of action to make electricity cheaper by removing policy costs from electricity bills means that the UK's electricity-to-gas price ratio remains too high to ensure the underlying cost-savings of heat pumps' greater efficiency are captured by households.

- **Heat pumps:** 98,000 heat pumps were installed in 2024, of which 73,000 were in existing homes (Figure 2.2a). This volume is similar to what we assume in our Balanced Pathway. The overall market growth of 56% this year is ahead of the year-on-year growth rate needed to deliver our pathway through to 2030.[*;19] However, we assess that further policy will be needed to meet the roll-out rates needed (see Chapter 3).
  - Incentives are working, with 23,000 heat pumps installed under the Boiler Upgrade Scheme in 2024, an increase of 83% on 2023. However, a significant scale-up in roll-out is still needed. Much, but not all, of the sales growth seen in recent years has been supported by government schemes – around 43% of installations in 2024 (Figure 2.3).
  - The UK's heat pump market share remains low at around 4%, significantly behind comparable countries such as Ireland (30%) and the Netherlands (31%).
  - Only 13% of new builds completed in 2024 have a heat pump. While some of the rest are being constructed with other forms of electric heating, 71% have a fossil fuel boiler (see Box 3.5).
- **Electricity prices:** the ratio of residential electricity to gas prices is significantly off track (Figure 2.2b). Action has not been taken to remove policy costs from electricity prices which would address this, despite it being our first recommendation last year. This is important to ensure the underlying cost savings of switching to efficient electric technologies are reflected in the bills paid by households and businesses.
  - The ratio remains too high, at around four from 2022 to 2024 compared to a range of around two to three, which we estimated in our Seventh Carbon Budget analysis to be achievable through removing policy costs from electricity bills.
  - Currently, a typical household with a heat pump is paying around £490 per year in policy costs, which inflate their bills above the underlying cost of the additional electricity used.
  - Data from comparable countries suggests that the market share of heat pump installations are correlated with more favourable electricity-to-gas price ratios (Figure 2.4).
- **Energy efficiency:** the proportion of homes with insulated cavity walls has steadily increased over recent years, but this will need to accelerate later in the decade to match our Seventh Carbon Budget Balanced Pathway (Figure 2.2c).

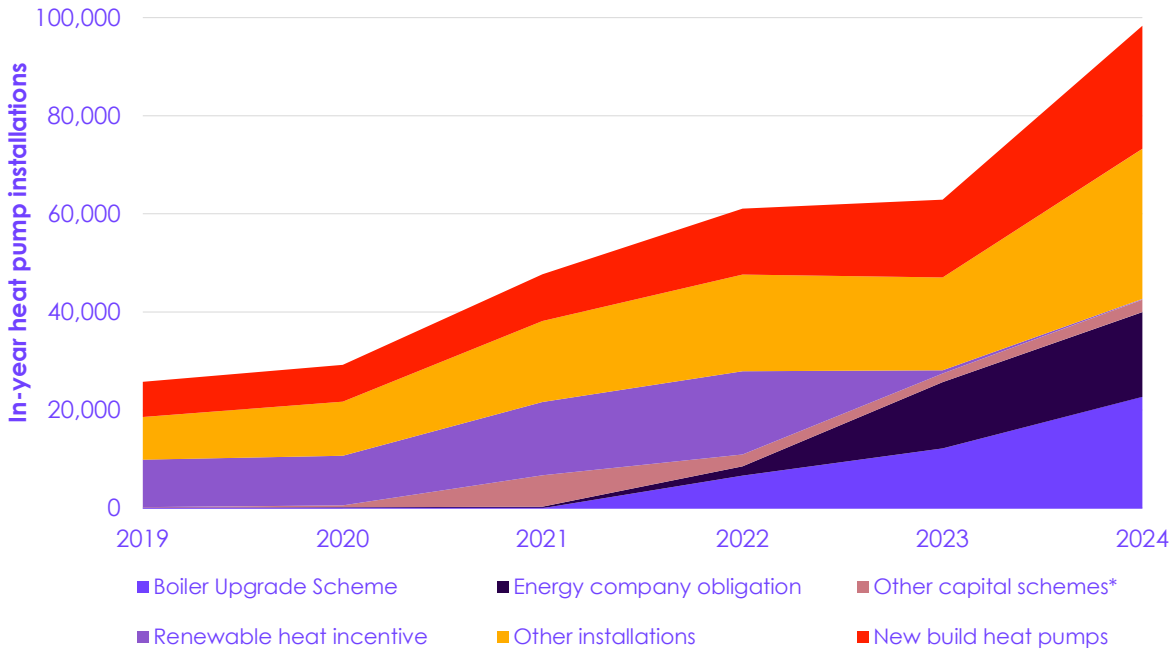
[*] Including both new builds and existing homes. This figure differs from other published figures due to revisions to the historical data. Data have been sourced from the latest Heat Pump Association statistics.

Figure 2.2 Key indicators for buildings



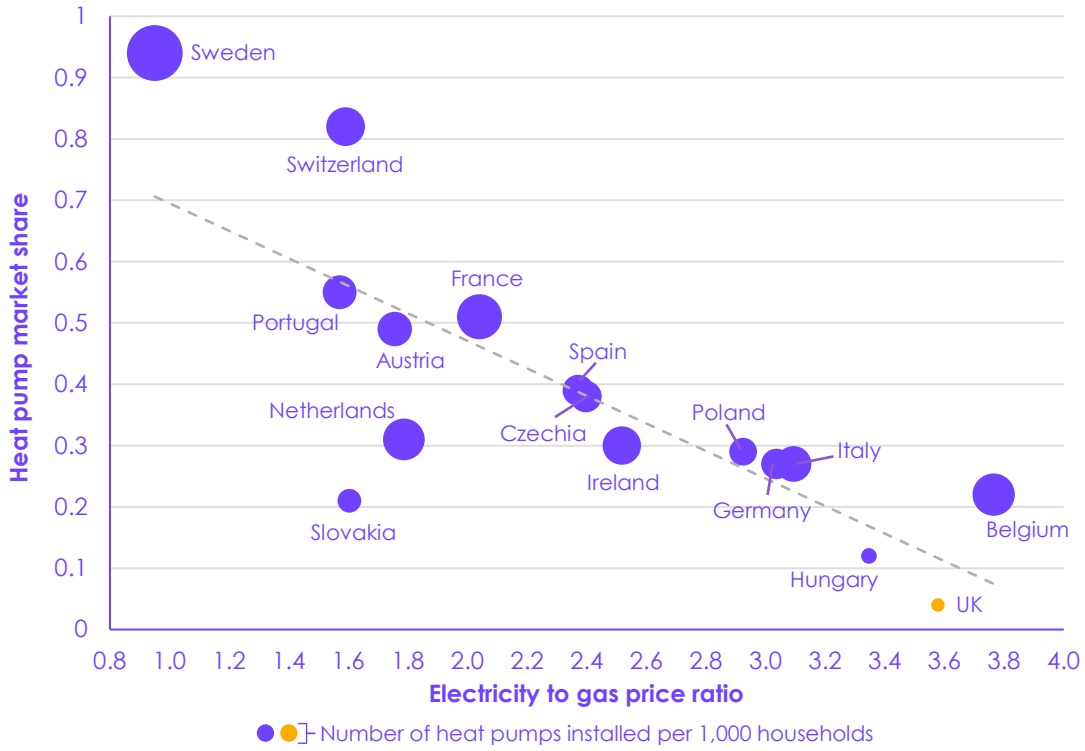
Description: Heat pump installations have increased in the last year. The ratio of residential electricity to gas prices is still too high.
Source: Refer to the charts and data file, published alongside this report, for details on the data sources used.
Notes: (1) An indicator is on track if it is going in the right direction at an appropriate rate. This is determined by comparing the historical data to government ambition or the CCC's recommended path and considering the wider contextual factors that may have a temporary impact (such as recovery from COVID-19). (2) Indicator a) shows new heat pump installations in existing buildings. Installations in new build properties are not included. (3) In indicator b) our pathway assumes policy costs (averaging around £190 on an annual bill) are removed from electricity bills and either shifted onto gas bills (the lower line) or funded by the Exchequer (the upper line). The ratio rises between 2025 and 2030 as we model gas prices falling faster than electricity prices in that period. The ratio increased in 2024 largely due to a decrease in the wholesale price of gas, which comprises a greater proportion of retail gas prices than retail electricity prices.

Figure 2.3 Heat pump installations by scheme



Description: Heat pump installations increased substantially in 2024, with many completed using a government-backed scheme.
Source: DESNZ (2024) *Heat pump deployment statistics December 2024*; UK Heat Pump Association (2025) *Statistics: Heat pump sales in the UK*; CCC analysis.
Notes: (1) *Other capital schemes include current schemes (Warm Homes: Local Grant, Warm Homes: Social Housing Fund), historic schemes (Home Upgrade Grant, Social Housing Decarbonisation Fund Phases 1 and 2, Local Authority Delivery, Green Homes Grant Vouchers), and government funded installations in non-domestic premises. (2) Other installations include heat pumps that are not accounted for in published datasets and as such is uncertain. This could include: government funded installations in Scotland and Northern Ireland, and new build installations in Scotland and Northern Ireland.

Figure 2.4 Comparison between the heat pump market share, the number of heat pumps installed, and electricity and gas price ratio for countries in Europe in 2023



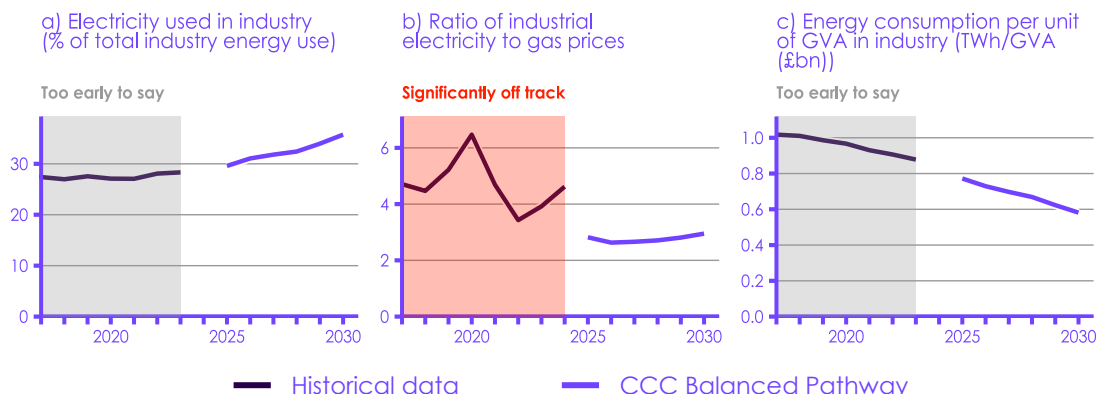
Description: The UK has the one of the highest electricity to gas price ratios and the lowest uptake in heat pump installations in Europe.
Source: DESNZ (2024) *Energy Prices International Comparisons: Domestic electricity and gas prices in the IEA 2023*; EHPA (2024) *European heat pump market and statistics report 2024*; CCC analysis.
Notes: (1) Size of markers indicates the number of heat pumps installations that took place in 2023 per 1,000 households in each country. In the UK, this is two heat pumps per 1,000 households; in Sweden, this is 36 heat pumps per 1,000 households. (2) The dashed line shows the linear regression best-fit line through the data shown.

2.2.3 Industry

To deliver the required reductions in industry emissions, firms will increasingly need to switch to electric alternatives to fossil-fuelled technology. A high ratio of electricity-to-gas prices currently presents a barrier to this.

- **Electricity used in industry:** the proportion of industry energy use coming from electricity is currently 28%. In our Balanced Pathway, this increases as many heat processes electrify, reaching 36% by 2030 (Figure 2.5a).
  - The UK's high electricity-to-gas price ratio is a barrier to some industries choosing to electrify. The ratio of electricity-to-gas prices remains above four (Figure 2.5b).
- **Energy consumption in industry:** energy consumption per unit of Gross Value Added (GVA) in industry has been decreasing, with energy demand falling but GVA continuing to grow. This continues in our Balanced Pathway, driven in particular by the switch to more efficient electric technologies (Figure 2.5c).

Figure 2.5 Key indicators for industry



Description: Electricity used in industry needs to increase, yet electricity prices relative to gas prices remain too high. Energy consumption per unit of GVA has been falling.
Source: Refer to the charts and data file, published alongside this report, for details on the data sources used.
Notes: (1) An indicator is on track if it is going in the right direction at an appropriate rate. This is determined by comparing the historical data to government ambition or the CCC's recommended path and considering the wider contextual factors that may have a temporary impact (such as recovery from COVID-19). (2) In indicator b) the future price ratio is based on estimates of retail energy prices for manufacturers minus the climate change levy, which is also removed in historical data. The Balanced Pathway series also deducts policy costs on electricity from which some energy-intensive manufacturers are currently exempt. The historic ratio is based on government surveys of manufacturers, and will vary for individual sites.[20] (3) The historic reduction in indicator c) is largely due to a decline in the output of emissions-intensive goods and greater production of less-emissions-intensive goods. In the Balanced Pathway, it is due to deployment of decarbonisation technologies.

2.2.4 Agriculture and land use

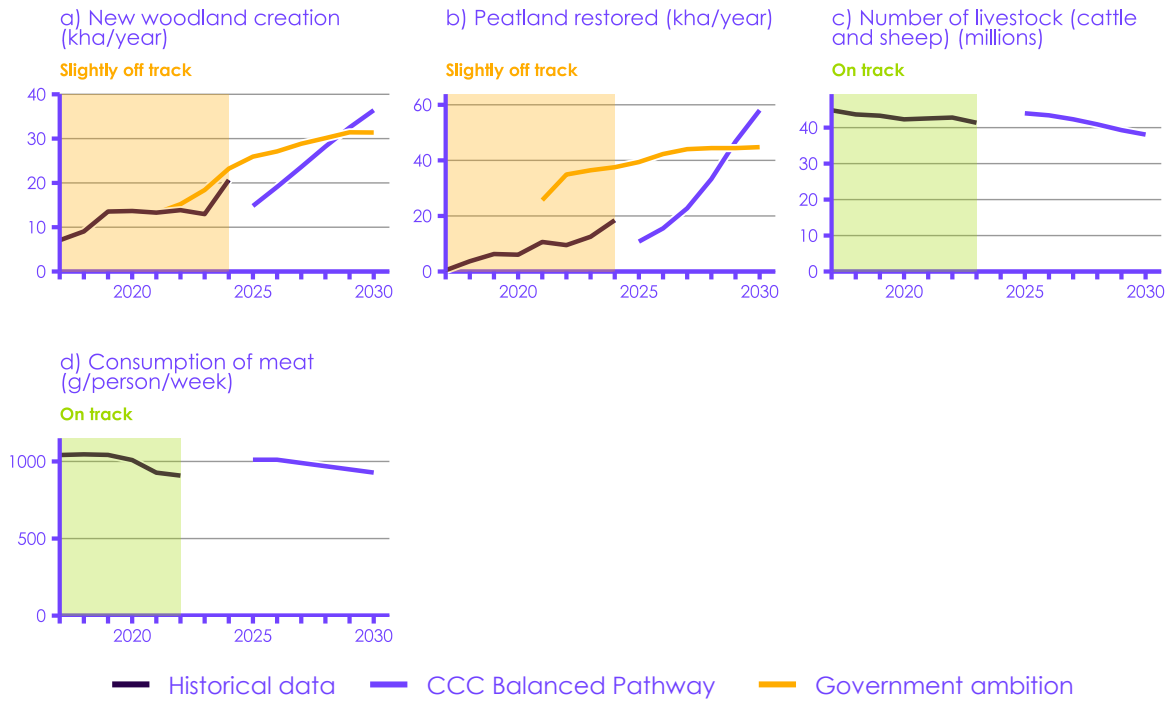
Both woodland creation and peatland restoration are behind the combined UK and devolved administration government targets. Reductions in average meat consumption are ahead of our Seventh Carbon Budget Balanced Pathway. Land use change at scale will require land to be released from livestock agriculture. This will be facilitated by a change in diets and supply-side incentives for farmers to diversify land use.

- **Woodland creation:** new woodland creation is slightly off track, despite a substantial increase in 2023/24, with 20,700 hectares of new trees planted across the UK, an increase of 59% compared to the year before (Figure 2.6a).
  - Scotland accounted for 73% of the total trees planted in 2023/24 as rates reached 15,000 hectares. However, we have concerns that recent reductions in funding for woodland creation in Scotland could reverse this trend. England also saw a large annual increase (45%) to 4,550 hectares, the highest planting rates in almost two decades (Figure 2.7).
  - UK woodland creation was at the highest rate for over three decades, demonstrating that rapid increases in planting rates are feasible. From 1971 to 1979, the UK was creating an average of 33,000 hectares of new woodland per year, rates reached in the Balanced Pathway by 2030. This was due in part to both strong backing from the Government and the Crown Estate and generous tax breaks for expenditure on woodland creation (Box 2.1).

- **Peatland restoration:** the rate of peatland restoration in the UK increased by around 6,000 hectares to 18,500 hectares in 2023/24 (a 47% increase in restoration rates), the fourth annual increase in a row.* However, annual restoration rates are still below the combined ambition of the four governments (Figure 2.6b).

- **Livestock numbers:** the number of livestock (cattle and sheep) has been falling over recent years (Figure 2.6c). Meat consumption has been falling steadily over the long term and has fallen more steeply in recent years. This may be partly due to cost-of-living pressures, so this short-term trend may not continue. Nonetheless, this indicator is ahead of our assumed Balanced Pathway starting point (Figure 2.6d).

Figure 2.6 Key indicators for agriculture and land use



Description: Woodland creation and peatland restoration rates increased last year but remain off track. The number of livestock and average weekly consumption of meat are falling and assessed to be on track.
Source: Refer to the charts and data file, published alongside this report, for details on the data sources used.
Notes: (1) An indicator is on track if it is going in the right direction at an appropriate rate. This is determined by comparing the historical data to government ambition or the CCC's recommended path and considering the wider contextual factors that may have a temporary impact (such as recovery from COVID-19). (2) Government ambition is an umbrella term encompassing stated targets, projections and modelling assumptions – and does not necessarily represent a formal commitment from the Government. (3) In indicator a) for woodland creation, ambition data is compiled from UK and devolved administration government pledges with each working to different timeframes and milestones. All nations except England have indicated annual rates of planting in the near-term. For England we annualised this based on ambition/area set out in the Environmental Improvement Plan, aligned to delivery rates proportional to our advice in the Seventh Carbon Budget. (4) In indicator b), peatland restoration, ambition data is compiled from UK and devolved administration government pledges with each working to different timeframes and milestones. Where annual delivery targets have not been provided, we have annualised these based on the ambition/timeframes provided delivery rates proportional to our advice in the Seventh Carbon Budget. Historical data has been derived from published annual reports (Scotland and Wales), or personal communication (England and Northern Ireland). England: The England Peat Action Plan (2021) and Environmental Improvement Plan (2023), pledge to restore 35,000 hectares of peatland by 2025, and 280,000 hectares by 2050. Scotland: Climate Change Plan Update 2018–2032 (2020) – In February 2020, the Scottish Government announced its commitment to invest £250 million over ten years to restore 250,000 ha of degraded peatland by 2030; Wales: Wales pledged to raise the ambition set out in our National Peatland Action Programme (2022) in the Biodiversity Deep Dive (2022), so that by 2030 the programme will be delivering at a scale capable of reaching the Net Zero 2050 target of 45,000 ha of peatland restored; the Northern Ireland Peatland Strategy 2022–2040 (2022) pledged 150,000 ha of restored peatland by 2050.

* Peatland restoration activity is not formally reported across the UK, and this value should not be considered definitive. We derive this number via annual reports and personal communications with delivery agencies.

Box 2.1
Historical rates of tree planting in the UK

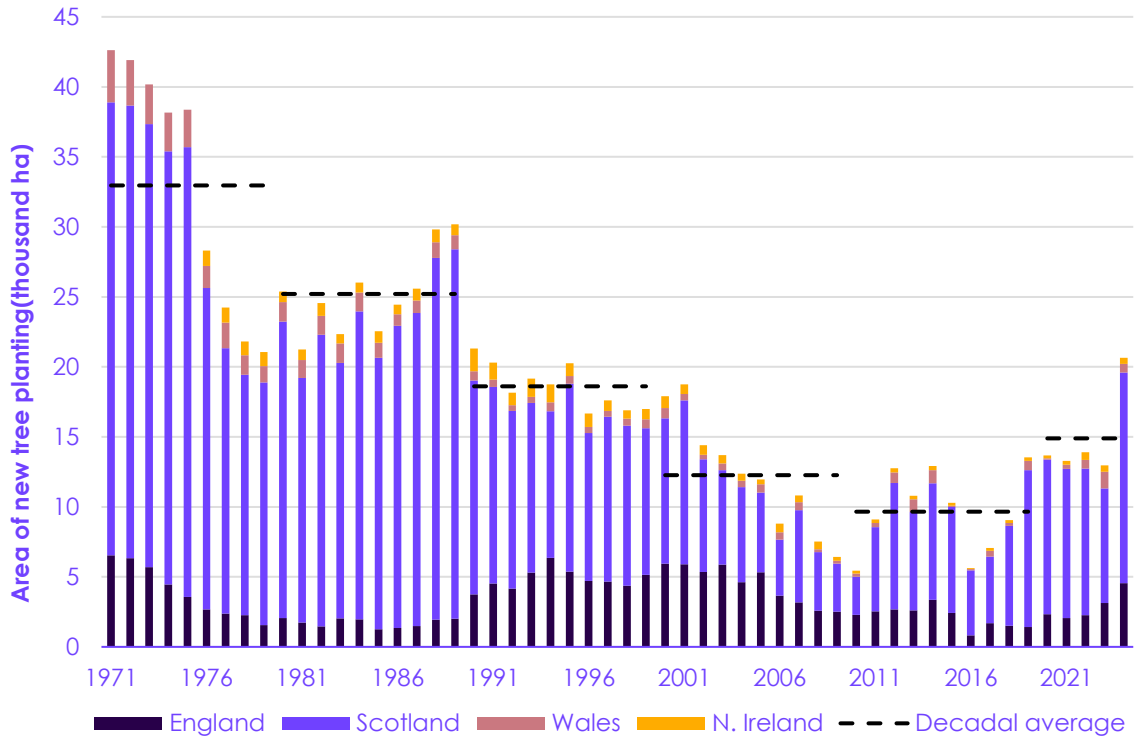
Our Balanced Pathway will require woodland creation rates to increase to almost double current levels by the end of the decade. Similar rates of tree planting have previously been achieved in the UK in the 1970s and 80s (Figure 2.7).

- An average of 33,000 hectares of new woodland were planted annually throughout the 1970s.
- Several factors contributed to this, including tax incentives and support for the forestry and timber sectors, and the use of inexpensive land for planting. In 1984, changes to capital allowances promoted investment in commercial woodland schemes.
- However, much of the land used for forestry was former peat bogs and moorland. This later drew criticism as peatlands are a vital natural carbon store and sensitive habitat. The establishment of trees led to the loss and degradation of these ecosystems. Planting was dominated by dense plantations of non-native conifers, which offered little to no benefits for biodiversity.
- Alongside the upscaling of commercial forestry, 'Plant a Tree in '73' was a national campaign to promote tree planting and increase woodland cover in the wake of Dutch Elm disease. With government sponsorship, the Forestry Commission provided thousands of trees to schools and local councils.

Woodland creation rates fell following the removal of commercial forestry from the tax system in the late 1980s and remained low over subsequent decades. However, rates are starting to rise, with 2024 having the highest number of hectares of planting in the past three decades.

Source: Forestry Commission (2023) *National Tree Week 2023*, Forest Research (2024) *Forestry facts and figures 2024*.

Figure 2.7 Historical comparison of the annual area of new tree planting in the UK 1971–2024



Description: The rate of tree planting increased in 2024 to reach the highest levels seen in the last three decades but is still well below that of the 1970s and 1980s.
Source: Forest Research (2024) Forestry Statistics.
Notes: No data for N. Ireland 1971–1975.

2.2.5 Electricity supply

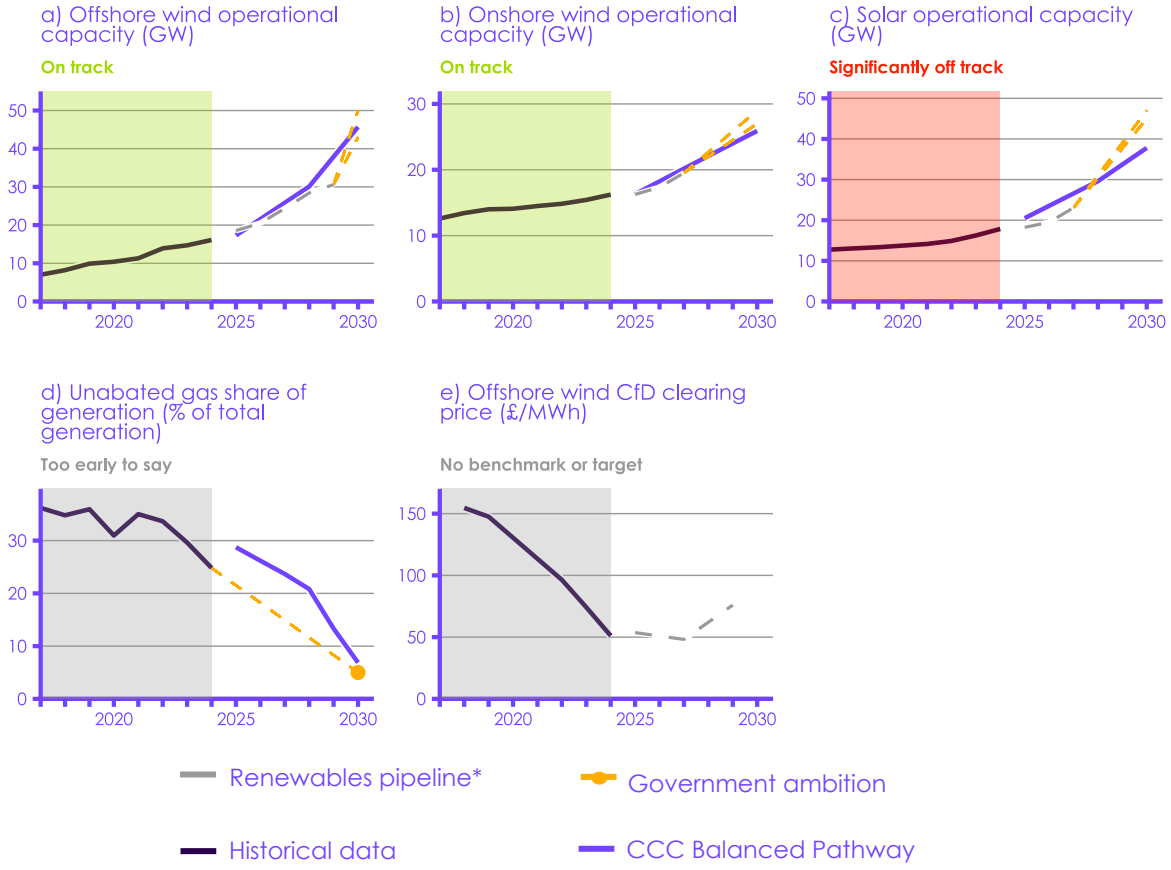
Total roll-out of offshore and onshore wind and solar capacity increased in 2024 by more than the increase seen in any of the previous six years. To achieve the Government's ambition in the Clean Power 2030 Action Plan, total operational capacity of renewables will need to more than double by 2030.[21] Based on the pipeline of contracted capacity, offshore and onshore wind roll-out both appear on track. Roll-out of solar is significantly off track and will need to improve to deliver its contribution to a decarbonised electricity system. The pipeline of renewables projects has improved since last year. Transmission network developments, which are essential to enabling the utilisation of renewables, are also progressing. However, timely progress depends on removing barriers in supply chains, planning, and access to grid connections.

- **Offshore wind:** offshore wind operational capacity has been increasing and is on track, with the contracted project pipeline set to nearly double installed capacity by 2029 (Figure 2.8a). Further capacity will need to be procured in the next two-to-three Contract for Difference (CfD) auctions in order to meet the capacity range identified in the Government's Clean Power 2030 Action Plan.
  - Total operational capacity for offshore wind was 16 GW in 2024, and an additional 15 GW is contracted to come online by 2029, bringing total capacity to 31 GW. Achieving 43 GW by 2030 – the lower end of the Government's Clean Power capacity range – will require around 4.5 GW to be added each year on average. This is triple the average annual installation rate seen since the start of this decade.
  - The decision by Ørsted not to progress with the 2.4 GW Hornsea 4 project does not substantively change our assessment that the overall project pipeline remains on track.[22] This lost capacity will need to be made up over the next two-to-three CfD auctions to meet the Government's ambitions.
  - The prices paid for offshore wind through the CfD auctions have fallen rapidly in the past decade. However, supply chain inflation has increased prices in the most recent auctions (Figure 2.8e).
- **Onshore wind:** onshore wind operational capacity has been increasing gradually. The decision to remove the effective ban on onshore wind installations, together with the growing future pipeline, mean that we assess this indicator as being on track (Figure 2.8b).
  - Total operational capacity for onshore wind was 16 GW in 2024, and further capacity is currently contracted to bring total capacity to 20 GW by 2027.
  - Achieving 27 GW by 2030 – the lower end of the Government's capacity range - will require more than 1.8 GW to be added each year on average, the same as the peak seen in 2017. However, only 0.8 GW of onshore wind was installed in 2024. Onshore wind installation rates will need to triple compared to the average pace of deployment since the start of the decade.
- **Solar:** solar operational capacity has been increasing but deployment will need to accelerate significantly beyond the currently contracted pathway in order to meet the Government's target range for 2030 (Figure 2.8c).
  - Currently around 18 GW of solar capacity is installed, with a further 5 GW contracted to bring total capacity to 23 GW in 2027.

– Meeting the lower end of the Government's capacity range - 45 GW - will require this ambition to be matched with supportive policy developments that enable a considerable increase in roll-out rates, to 4.5 GW installed each year on average. This is over quadruple the amount added over the past three years but is similar to the highest annual installations seen to date, with 4.1 GW installed in 2015.

- **Unabated gas:** the share of unabated gas in electricity generation has been falling, with the reduction seen in 2024 consistent with the pace required for the rest of the decade to deliver a decarbonised electricity system (under the Government's definition) by 2030 (Figure 2.8d).* However, this was partly driven by increasing electricity imports, so it is too early to say whether these trends are on track.

Figure 2.8 Key indicators for electricity supply



Description: Offshore and onshore wind operational capacity increased last year and are judged to be on track. Solar operational capacity also increased but remains off track. The unabated gas share of generation continues to fall. The offshore wind CfD clearing price has fallen rapidly in the past decade, however, supply chain inflation has increased prices in the most recent auctions
Source: Refer to the charts and data file, published alongside this report, for details on the data sources used.
Notes: (1) An indicator is on track if it is going in the right direction at an appropriate rate. This is determined by comparing the historical data to government ambition or the CCC's recommended path and considering the wider contextual factors that may have a temporary impact (such as recovery from COVID-19). (2) Government ambition is an umbrella term encompassing stated targets, projections and modelling assumptions – and does not necessarily represent a formal commitment from the Government. (3) *For renewable energy generation, the pipeline represents the capacity of future projects which have signed Contracts for Difference (Ørsted's decision not to progress with Hornsea 4 has been accounted for in the pipeline). There is a risk of delivery falling short of these pipeline numbers. Future allocation rounds would also be expected to add capacity to the later years of this pipeline. (4) Government ambitions are for Great Britain. Government target for the 2030 share of unabated gas generation reflects generation under a 'typical' weather year. (5) Dashed orange lines represent the linear path from the latest historical value to the Government's ambition.

* The Clean Power 2030 Action Plan sets a target for 'clean sources' to produce at least 95% of Great Britain's generation by 2030 under a 'typical' weather year.

2.2.6 Aviation

In 2024 aviation emissions were above both the emissions expected in the Government's 2022 Jet Zero Strategy (JZS) and where we expected our Seventh Carbon Budget baseline to begin in 2025. Emissions in 2024 are very similar to levels expected in the CBDP indicative delivery pathway (Figure 2.9a). Aviation emissions will likely exceed the trajectories assumed in all three pathways if they continue to increase, posing a risk to the UK's emissions targets.

In 2024, distance travelled by plane (passenger-km) rebounded to 2019 levels. The rollout of sustainable aviation fuel (SAF) has accelerated between 2023 and 2024. SAF supply must now start to diversify away from HEFA* to ensure the Government's SAF Mandate is achieved in 2030.[23] It is difficult to quantify and monitor the impact of efficiency improvements on aviation emissions.

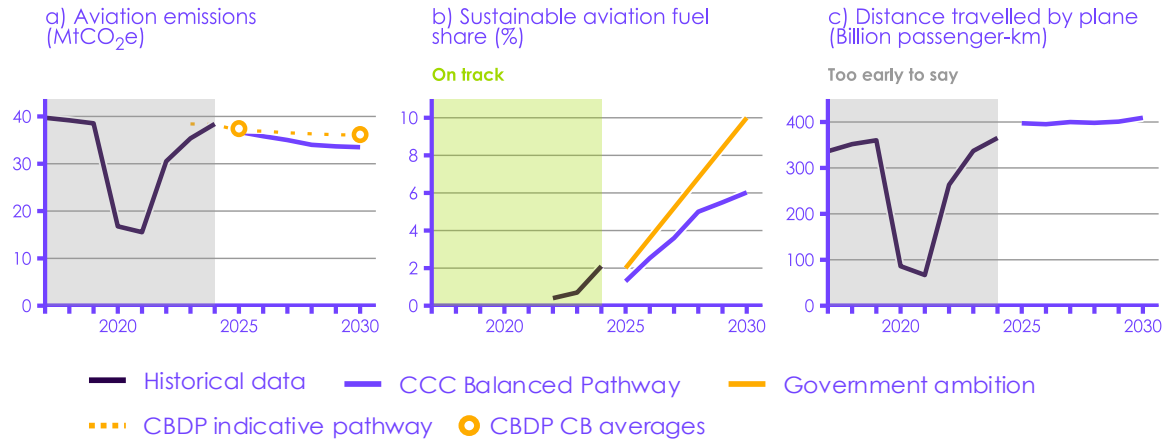
It is too early to say whether potential future increased aviation demand will be sufficiently offset by abatement to keep the sector on track to delivering UK emissions targets.

- **Sustainable aviation fuel**: the share of sustainable aviation fuel (SAF) as a proportion of all jet fuel used in UK aviation increased from 0.7% to 2.1% of total jet fuel supplied between 2023 and 2024. SAF rollout is currently on track but achieving the Government's target of 10% SAF share in 2030 remains uncertain as different types of SAF will need to scale up (Figure 2.9b). Currently, there are no operational UK SAF plants, however construction is underway.[24]

- **Distance travelled by plane**: the distance travelled by plane rebounded to around 2019 levels, reaching 365 billion passenger-km in 2024 compared to 360 billion passenger-km in 2019. This growth was driven by international passenger-km, which have increased by 2% on 2019 levels, whereas domestic passenger-km have decreased by 11%. Aviation demand is forecasted to increase, which must be sufficiently counterbalanced with uptake of low-carbon solutions to keep the aviation sector on track (Figure 2.9c).

* Hydrotreated Esters and Fatty Acids (HEFA) refers to a process where waste oils, such as vegetable oil and animal fat, are converted into SAF.

Figure 2.9 Key indicators for aviation



Description: 2024 aviation emissions are very slightly above the UK Government's Carbon Budget Delivery Plan. SAF uptake is currently on track to be achieved. It is too early to say whether the distance travelled by plane indicator is on track.
Source: Refer to the charts and data file, published alongside this report, for details on the data sources used.
Notes: (1) An indicator is on track if it is going in the right direction at an appropriate rate. This is determined by comparing the historical data to government ambition or the CCC's recommended path and considering the wider contextual factors that may have a temporary impact (such as recovery from COVID-19). (2) Government ambition is an umbrella term encompassing stated targets, projections and modelling assumptions – and does not necessarily represent a formal commitment from the Government.

2.3 Cross cutting impacts and enablers

The number of green jobs in the economy is growing and air quality is improving. Public concern about climate change and overall knowledge of the Net Zero target remain high.

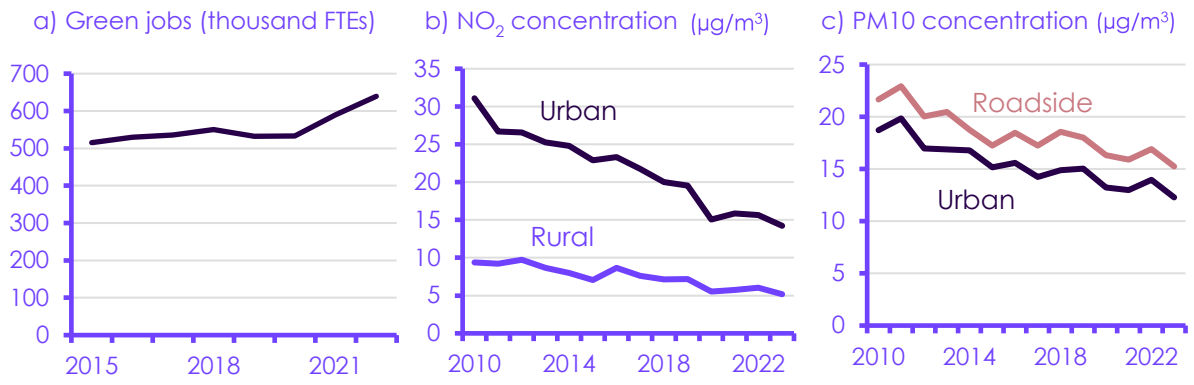
- **Net Zero economy**: the number of green jobs, as defined in experimental statistics by the Office for National Statistics, has increased by 20% in the past two years (see Figure 2.10a). According to the CBI, the Net Zero economy has added £7.7 billion to the UK economy in the past year, with GVA from the Net Zero economy growing three times faster than total GVA in the UK.[*];[25]

- **Air quality**: the concentration of NO_2 has approximately halved and the concentration of PM10 has declined by about a third since 2010. This will have been driven by a range of factors (moving away from coal towards cleaner fuels, reduced emissions from industry and improved emissions standards for vehicles) some of which are linked to decarbonisation efforts (see Figures 2.10b and 2.10c).[26];[27];[28] As electric vehicles and heat pumps replace petrol and diesel cars and fossil fuel boilers, we will see further improvements in air quality, with knock-on impacts on health.

- **Public perceptions:** UK citizens continue to have a high level of concern about climate change, with 80% reporting they are fairly or very concerned about climate change. Knowledge of Net Zero (78%) also remains high (see Figure 2.11).

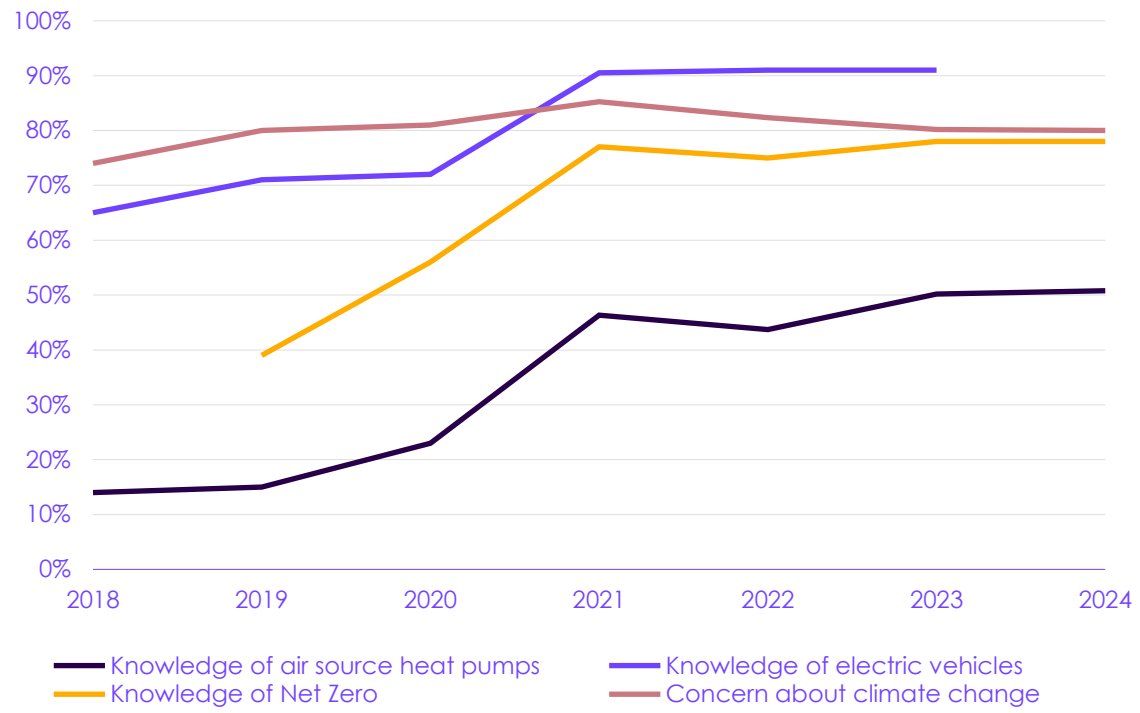
[*] This analysis defines 16 sub-sectors which together form the Net Zero economy, such as low-emissions vehicles, energy storage, and green finance. The estimate also includes GVA from the supply chains of these sub-sectors.

Figure 2.10 Trends in green jobs and air quality



Description: Green jobs have increased in the last five years. Air quality has improved in the last fifteen years in terms of reductions in mean concentration of nitrogen dioxide and particulate matter (PM10).
Source: Office for National Statistics (ONS) (2024) *Experimental estimates of green jobs, 2024*; Department for Environment Food and Rural Affairs (2024) Annual mean concentrations of NO_2 in the UK, 1990 to 2023; Department for Environment Food and Rural Affairs (2025) *Air quality statistics in the UK, 1987 to 2023 – Particulate matter (PM10/PM2.5)*.
Notes: ONS define green jobs as jobs in green industries, which include energy efficient products (including installing), repairs, renewable energy, waste, water quantity, environmental charities, and others. It is expected that the Balanced Pathway will lead to an increase in the number of green jobs over time, and a decrease in the concentration of NO_2 and PM10. However, there is no quantified pathway for these indicators.

Figure 2.11 Public knowledge of Net Zero, low-carbon technologies, and concern about climate change



Description: Knowledge of EVs and Net Zero and concern about climate change remain high. Knowledge of heat pumps is lower but has slightly increased in the last few years.
Source: Department for Energy Security and Net Zero (2024) *Public Attitudes Tracker*; Department for Transport (2024) *Transport and Technology Public Attitudes Tracker*.
Notes: (1) 'Knowledge' is defined as people indicating that they know either a lot, a fair amount, or a little about a concept or technology. It does not include responses that indicate people have heard of it (but know hardly anything about it). 'Knowledge' does not indicate a positive or negative attitude. (2) The Transport and Technology Tracker (which relates to knowledge of EVs) only covers England. (3) Both surveys changed to being online in 2020 to 2021. For public knowledge of heat pumps, the response options provided to survey participants changed at this point to include 'a fair amount' rather than only 'a lot' or 'a little'. (4) 'Concern about climate change' is defined as people indicating that they are very concerned or fairly concerned about climate change. (5) Polling data comes with limitations in what can be inferred about people's attitudes and views. See Chapter 8 of our Seventh Carbon Budget Advice for a summary of findings from a citizens' panel.

Endnotes

[1] Zapmap (2025) *EV market stats 2025*. https://www.zap-map.com/ev-stats/ev-market.

[2] House of Commons, Committee of Public Accounts (2025) *Public charge points for electric vehicles.* https://publications.parliament.uk/pa/cm5901/cmselect/cmpubacc/512/report.html#heading-3.

[3] Society of Motor Manufacturers and Traders (2025) *Record EV market share but weak private demand frustrates ambition.* https://www.smmt.co.uk/record-ev-market-share-but-weak-private-demand-frustrates-ambition/.

[4] Department for Transport (2024) *VEH1153: Vehicle licensing statistics data tables.* https://www.gov.uk/government/statistical-data-sets/vehicle-licensing-statistics-data-tables.

[5] Society of Motor Manufacturers and Traders (2025) *Electric vehicle data.* https://www.smmt.co.uk/vehicle-data/electric-vehicle-registrations/. (Accessed: 14 May 2025).

[6] ZapMap (2025) *EV market stats 2025*. https://www.zap-map.com/ev-stats/ev-market.

[7] Society of Motor Manufacturers and Traders (2025) *Record EV market share but weak private demand frustrates ambition.* https://www.smmt.co.uk/record-ev-market-share-but-weak-private-demand-frustrates-ambition/.

[8] Office for Zero Emission Vehicles (2025) *Guidance Electric vehicles: costs, charging and infrastructure*. https://www.gov.uk/government/publications/electric-vehicles-costs-charging-and-infrastructure/electric-vehicles-costs-charging-and-infrastructure.

[9] Autocar (2025) *Listed: The cheapest electric cars available in the UK.* https://www.autocar.co.uk/car-news/electric-cars/cheapest-electric-cars.

[10] Society of Motor Manufacturers and Traders (2025) *UK demand for new vans shrinks for fourth month running*. https://www.smmt.co.uk/uk-demand-for-new-vans-shrinks-for-fourth-month-running/.

[11] Society of Motor Manufacturers and Traders (2025) *Electric van demand static in 2024 despite biggest overall market in three years.* https://www.smmt.co.uk/electric-van-demand-static-in-2024-despite-biggest-overall-market-in-three-years/.

[12] DPD (2025) *Sustainable delivery dashboard*. https://sustainability.dpd.co.uk/.

[13] Fleet News (2025) *Royal Mail deploys 6,000th electric vehicle*. https://www.fleetnews.co.uk/news/royal-mail-deploys-6-000th-electric-vehicle.

[14] Department for Transport (2021) *Van statistics*. https://www.gov.uk/government/collections/van-statistics.

[15] Department for Transport (2025) *Electric vehicle public charging infrastructure statistics: January 2025.* https://www.gov.uk/government/statistics/electric-vehicle-public-charging-infrastructure-statistics-january-2025/electric-vehicle-public-charging-infrastructure-statistics-january-2025.

[16] Zapmap (2025) *Zapmap Price Index*. https://www.zap-map.com/ev-stats/charging-price-index. (Accessed: 21 May 2025).

[17] House of Commons, Committee of Public Accounts (2025) *Public charge points for electric vehicles.* https://publications.parliament.uk/pa/cm5901/cmselect/cmpubacc/512/report.html#heading-3.

[18] RAC Foundation (2021) *Standing Still. https://www.racfoundation.org/research/mobility/still-standing-still.*

[19] Heat Pump Association (no date) *Heat pump sales in the UK*. https://www.heatpumps.org.uk/resources/statistics/. (Accessed: 21 May 2025)

[20] Department for Energy Security and Net Zero (2025) *Prices of fuels purchased by manufacturing industry*. https://www.gov.uk/government/statistical-data-sets/prices-of-fuels-purchased-by-manufacturing-industry.

[21] Department for Energy Security and Net Zero (2024) *Clean Power 2030 Action Plan*. https://www.gov.uk/government/publications/clean-power-2030-action-plan.

[22] Ørsted (2025) *Ørsted to discontinue the Hornsea 4 offshore wind project in its current form*. https://orsted.com/en/company-announcement-list/2025/05/orsted-to-discontinue-the-hornsea-4-offshore-wind--143901911.

[23] Department for Transport (2024) *Sustainable Aviation Fuel (SAF) Mandate*. https://www.gov.uk/government/collections/sustainable-aviation-fuel-saf-mandate.

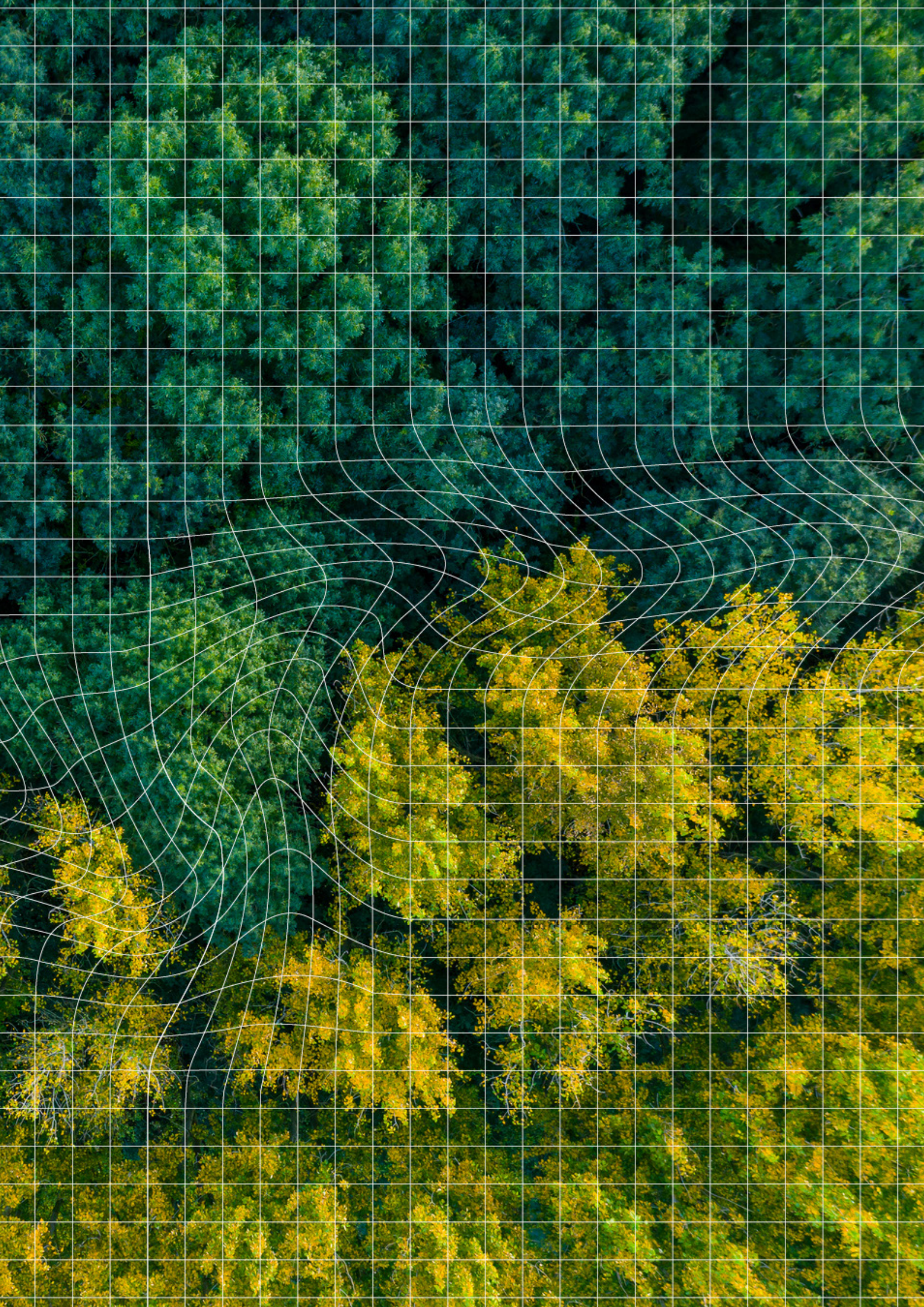
[24] Argus Media (2025) *Global SAF Capacity*. https://view.argusmedia.com/global-saf-capacity-map.html. (Accessed: 15 May 2025).

[25] Confederation of British Industry (2025) *The Future is green*. https://www.cbi.org.uk/media/owxdidg1/cbi-economics-eciu-the-future-is-green-report-2025.pdf.

[26] The UK National Atmospheric Emissions Inventory (2025) *Nitrogen Oxides.* https://naei.energysecurity.gov.uk/air-pollutants/nitrogen-oxides#:~:text=Transport%20sources%2C%20and%20the%20energy%20and%20manufacturing,producers%2C%20and%208%%20from%20other%20industrial%20sites.

[27] Department for Environment, Food, and Rural Affairs (2025) *Emissions of air pollutants in the UK – Summary*. https://www.gov.uk/government/statistics/emissions-of-air-pollutants/emissions-of-air-pollutants-in-the-uk-summary.

[28] Department for Transport (2023) *Transport and environment statistics: 2023 (2021 data)*. https://www.gov.uk/government/statistics/transport-and-environment-statistics-2023/transport-and-environment-statistics-2023.



Chapter 3: Assessment of policy progress

In this chapter, we assess the credibility of the Government's plans to deliver the emissions reductions required to meet the UK's carbon targets and discuss progress in developing and implementing policies over the past year. This assessment considers policy developments since the UK General Election in July 2024, up until 23 May 2025 when this assessment was completed, reflecting the decisions and actions taken by the current UK Government (and the devolved administrations during this time period).

Our key messages are:

- There has been a small improvement to our overall assessment on the credibility of Government plans for the 2030 Nationally Determined Contribution (NDC) and Sixth Carbon Budget. This comes mostly from the electricity supply sector, with smaller improvements in the surface transport and agriculture sectors.

- In our 2024 Progress in reducing emissions report, we made 35 priority recommendations for actions that the UK Government should take to put the UK on track to meet its emissions targets. Among these, we assess that good or moderate progress has been made on 20. However, four have seen no progress at all. In particular, there has been no progress on our first recommendation last year, to make electricity cheaper.

- We have restated the new priority recommendations published in our advice reports on the UK's Seventh Carbon Budget, Scotland's Carbon Budgets, Wales' Fourth Carbon Budget, and Northern Ireland's Fourth Carbon Budget (see Annex 1).

3.1 Progress against priority recommendations

In our 2024 progress report, the Committee set out a range of priority recommendations for the UK Government and the devolved administrations. Here, we assess the progress that has been made. We will defer assessing progress on our recommendations to the Scottish Government to our 2025 Scotland Progress Report.

3.1.1 Progress against priority recommendations to the UK Government

Overall assessment of progress against recommendations

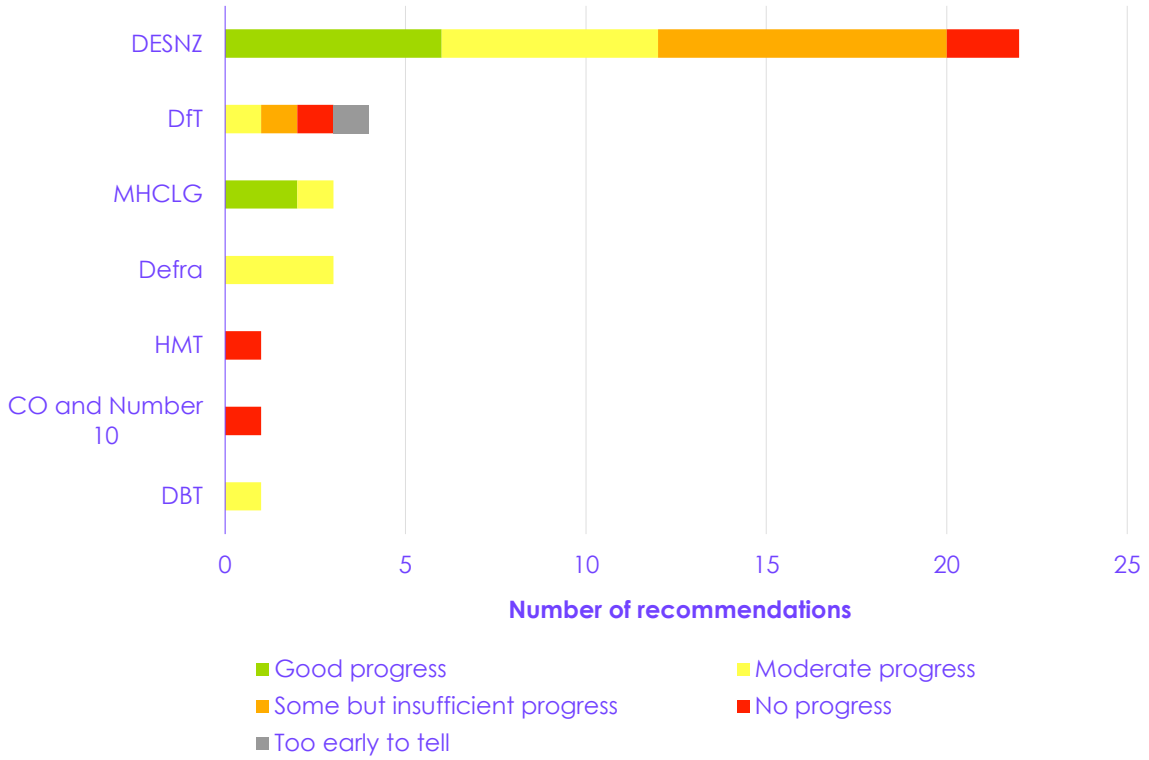
The Committee made 35 priority recommendations to the UK Government in our 2024 progress report, including both recommended cross-cutting actions to enable effective delivery and specific changes needed to deliver decarbonisation in particular sectors. Among these, we assess that there has been 'good progress' on eight and 'moderate progress' on a further 12 (Figure 3.1). The full scores can be found in the supporting data published alongside this report.

- This represents an improvement from our assessment last year, in which 'good progress' or 'moderate progress' had been made on only four recommendations.

- However, there has been 'no progress' on five of the recommendations and 'some but insufficient progress' on nine, leaving gaps or shortfalls in the policy landscape which will need to be addressed to avoid the UK going off track.

- For one recommendation, it is too early to make an assessment.

Figure 3.1 Progress on last year's priority recommendations to the UK Government



Description: There has been good progress on eight and moderate progress on a further 12 of the priority recommendations we made to the UK Government in our 2024 progress report.
Source: CCC analysis.
Notes: (1) See the supplementary material for our assessment of each individual recommendation. (2) The department name acronyms refer to: the Department for Energy Security and Net Zero (DESNZ); the Department for Transport (DfT); the Ministry of Housing, Communities and Local Government (MHCLG); the Department for Environment, Food and Rural Affairs (Defra); His Majesty's Treasury (HMT); Cabinet Office and Number 10 (CO and Number 10); and the Department for Business and Trade (DBT).

Progress against our top ten key actions

Among our 35 priority recommendations, we highlighted ten key actions that were required within the first six months of the new Parliament. There has been strong progress in a number of these key areas, but some have as yet seen little or no progress. Without these being delivered urgently, we remain concerned that time could run out to achieve the emissions reductions required for the 2030 NDC.

- **Make electricity cheaper.** This was our first recommended action last year but has not yet seen any progress. The Government acknowledged that the high price of electricity compared to gas means that the incentives are not yet good enough for all consumers to switch to low-carbon technologies. It is planning to consult on this 'in due course' – this needs to happen with more urgency to avoid undermining the case for people and businesses to make the switch (R2024-011: no progress).*

* Recommendation ID numbers refer to the full list of scores published alongside this report, see the supporting material.

- **Reverse recent policy rollbacks.** This key action included three recommendations, two of which the Government has largely met by reinstating the 2030 phase-out of new fossil fuel cars (although vans are not included) and proposing to raise minimum energy efficiency standards for privately rented properties. There is a lack of clarity about whether the Government will replace or continue with the 2035 phase-out date for new fossil fuel boiler installations and ensure it covers all homes. The forthcoming Warm Homes Plan will need to set out alternative plans, if the Government chooses not to go ahead with the proposed phase-out (R2024-070: moderate progress, R2024-058: moderate progress, R2024-01: no progress).

- **Remove planning barriers for heat pumps, electric vehicle charge points, and onshore wind.** Again, this key action covered three recommendations. All three have been achieved, with the 1m rule for heat pump installations, restrictions on charge point size and location, and the effective ban on onshore wind all being removed. Further progress through revisions to National Policy Statements for energy infrastructure and the Planning and Infrastructure Bill should also help streamline the grid infrastructure expansion that is needed (R2024-015: good progress, R2024-032: good progress, R2024-019: good progress).

- **Introduce a comprehensive programme for decarbonisation of public sector buildings.** The Government has launched Phase 4 of the Public Sector Decarbonisation Scheme. While this moves to a more targeted approach, based on carbon cost effectiveness, this represents only some progress towards our recommendation as it still does not provide a comprehensive programme supported by long-term capital settlements. (R2024-013: some but insufficient progress).

- **Effectively design and implement the upcoming renewable energy Contracts for Difference (CfD) auctions.** There has been strong progress in this area, with the Sixth Allocation Round (AR6) securing a record 9.6 GW of new renewables capacity, supported by the Government increasing the budget by 50%.[*] The Government aims to go even further in AR7 and has recently consulted on potential changes to help achieve this (R2024-007: good progress).

- **Accelerate electrification of industrial heat.** There has been little progress in this key area, with the Government acknowledging the existence of barriers to electrification but not yet taking action to address them.[†] The Government has agreed to link the UK Emissions Trading Scheme (ETS) with the EU ETS. We lack sufficient detail to score the impact of this measure. (R2023-080: some but insufficient progress, R2024-012: some but insufficient progress).

- **Ramp up tree planting and peatland restoration.** There has been moderate progress in both of these areas, with rates of planting and restoration increasing in the past year. A cross-UK tree planting taskforce has been established to strengthen collaborative working across the four nations, but this will need to demonstrate its effectiveness and be backed by long-term funding to build upon the progress seen this year and enable tree planting targets to be reached (R2023-192: moderate progress, R2023-171: moderate progress).

[*] While this was a positive result, Ørsted have since taken the decision not to progress with the 2.4 GW offshore wind project, Hornsea 4. Nonetheless, industry analysis indicates that several other viable offshore wind projects were either not selected or unable to participate in AR6, providing confidence that this shortfall could yet be made up in future allocation rounds.

[†] The deal to electrify steelmaking at Port Talbot was recognised in last year's report.

- **Finalise business models for large-scale deployment of engineered removals.** Reaching financial close on CO_2 transport and storage infrastructure for the HyNet and East Coast Clusters represents an important step towards enabling carbon capture and storage (CCS) to begin in the UK. However, there has been little progress in finalising business models for specific engineered removals projects. This puts the contribution of engineered removals to the UK's 2030 NDC at increasing risk (R2024-006: some but insufficient progress).

- **Publish a strategy to support skills.** The Government has not yet published a full assessment of when, where, and in which sectors there will be skills gaps specific to Net Zero, but the creation of the new Office for Clean Energy Jobs within DESNZ, and its work with Skills England, represent some progress towards achieving this key action (R2022-128: some but insufficient progress, R2023-169: some but insufficient progress).

- **Strengthen the Third National Adaptation Plan (NAP3).** There has been no progress on strengthening NAP3, and the Committee's recent Adaptation Progress Report concluded that the UK's preparations for climate change are inadequate. While recognising the Government's manifesto pledge to 'improve resilience and preparation across central government, local authorities, local communities, and emergency services', the report found little evidence of progress towards achieving this goal (R2024-030: no progress).

Other notable recommendation areas in which there has been strong progress include the publication of the Clean Power 2030 Action Plan, improved plans for addressing emissions from energy from waste (EfW) with CCS, campaigns to improve awareness of and information about heat pumps and electric cars, and the launch of a consultation on the Government's Land Use Framework. These are all significant steps forward in important areas of the transition.

3.1.2 Progress against priority recommendations for Scotland, Wales, and Northern Ireland

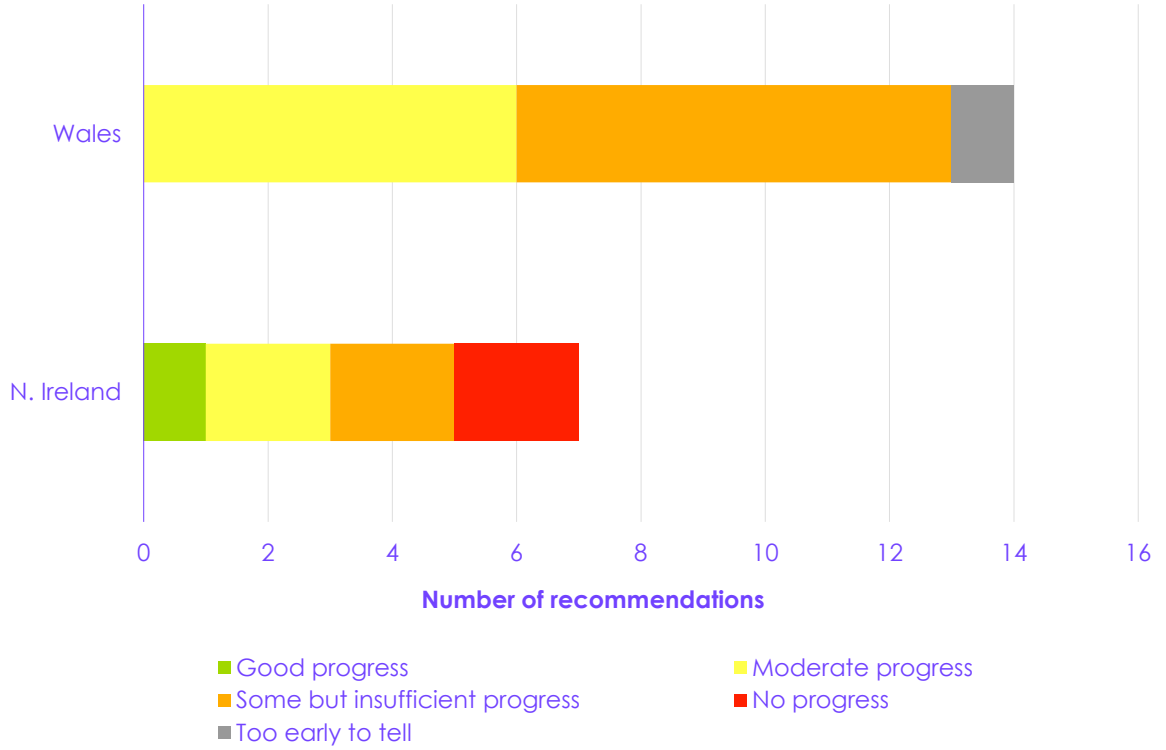
The Committee will report on progress in reducing emissions in Scotland later in 2025, so we will defer our assessment of progress against our recommendations to the Scottish Government until that report. Figure 3.2 displays our assessment of priority recommendations for the Welsh and Northern Irish governments from our 2024 report.

- The Welsh Government achieved 'moderate progress' on six recommendations out of 14, with the majority (seven) being scored as 'some but insufficient progress' and one being 'too early to tell'.

- The Northern Ireland Executive made 'good' or 'moderate' progress on three recommendations, with four recommendations being scored as 'some but insufficient progress' or 'no progress'.

The scores for each recommendation can be found in the supporting data published alongside this report.

Figure 3.2 Progress on last year's priority recommendations to the Welsh Government and Northern Ireland Executive



Description: The Welsh Government has made moderate progress on six out of 14 priority recommendations, with most of the rest showing some but insufficient progress. The Northern Ireland Executive has made good or moderate progress on three out of seven priority recommendations, with the rest split between areas showing some but insufficient progress and those with no progress.
Source: CCC analysis.
Notes: (1) See the supplementary material for our assessment of each individual recommendation. (2) We will assess progress on our priority recommendations to the Scottish Government in our 2025 Scotland Progress Report.

3.2 Assessment of policies and plans

3.2.1 Our approach to assessing the effectiveness of policies and plans

Factors we consider in assessing government policies and plans

In this section, we analyse the risks to the UK achieving its emissions reduction targets. We do this by assessing the credibility of the Government's policies and plans to deliver the emissions reductions set out in the Carbon Budget Delivery Plan (CBDP). See Annex 2 for more detail on our scoring criteria.

- The CBDP lists all the policies and plans expected to contribute to meeting the UK's carbon budgets and the 2030 NDC, quantifying the total amount of emissions reduction that each is projected to deliver.

- These quantified policies and plans fall slightly short of meeting the UK's 2030 NDC and the Sixth Carbon Budget (by 4% and 1% respectively); these shortfalls are assumed to be covered by a range of unquantified policies and plans which are listed in the CBDP.

- The CBDP was published in March 2023, under the previous Government. An update to this CBDP is due to be published in October this year, which is expected to set out the current Government's approach to the policies and proposals that will deliver the emissions reductions required to meet the UK's targets. Until that update is published, we continue to use the 2023 CBDP as the basis for our assessment, as this represents the latest set of quantified government plans to meet future emissions targets.

We focus our assessment on short- and medium-term targets: the 2030 NDC and the Sixth Carbon Budget (2033 to 2037), which is the period covered by the CBDP.

- Our scores for each quantified area are based on our assessment of the credibility of the specified amount of abatement being delivered. In making judgements on this, we consider both firm policies (that is, those that are confirmed) and delivery that can be expected to occur without further policy (that is, whether it is credible that a particular solution could develop without further intervention from government).

  - The private sector has a proven record of innovating and delivering rapid transitions in technologies and consumer choices, provided the right conditions and incentives are in place to enable this. Many low-carbon markets are already growing quickly, both in the UK and overseas.

  - In most cases, effective delivery is likely to require both government and market action. Where technology trends are not clear and robust, policy is needed to provide confidence to investors and consumers; manage risks in new markets; remove barriers to delivery; and, in some cases, provide financial incentives. To assess our confidence in the delivery of the emissions reductions required in these areas, we assess both the policy developments set out in Section 3.3 as well as current and projected levels of delivery (including the indicators presented in Chapter 2).

- The policies and plans that the Government left unquantified and are expected to act as general enablers of the transition are included in our assessment. But those unquantified policies and plans that are expected to contribute specific additional emissions savings in the CBDP are not included in our assessment because of a lack of clarity in what they are expected to achieve.

Risk tolerance

Our assessment does not prescribe a specific level of acceptable risk in the Government's plans. Some degree of risk may be justifiable where policies are expected to be deliverable, provided they are supported by contingency measures. The appropriate balance between 'credible plans' and those with 'some' or 'significant' risks depends on the Government's tolerance for, and ability to mitigate, risk.

- Where higher levels of risk are deemed acceptable, it becomes especially important to have deliverable contingency plans to address potential shortfalls in delivery, and sufficient monitoring processes in place to learn from experience and improve policies as quickly as possible over time.

- As technologies mature and government and industry views coalesce around an agreed vision of how the transition will be delivered, the level of risk will typically fall. Identifying the right time to provide clarity and certainty to support market development is crucial to this, for example with clear strategic decisions like ruling out hydrogen for home-heating.

Our priority recommendations set out the key actions required to address areas in which shortfalls or risks are identified (see Section 3.4 and Annex 1).

3.2.2 Upcoming policy developments

This assessment considers policy developments since the UK General Election in July 2024, up until 23 May 2025 when this assessment was completed. Government has committed to a number of strategies and other relevant publications in coming months. At the time of writing, these are not yet published, so cannot directly influence our assessment of progress:

- **Updated plan for meeting the carbon budgets and NDCs** (to be published in October 2025). This will set out the new Government's view on its path to meeting the UK's climate targets and is in response to the High Court's judgment that the existing CBDP did not meet all of the requirements of the Climate Change Act.

- **Further detail to the Warm Homes Plan** (to be published in 2025). This was first announced in November 2024, with more detail expected following the spending review in June. The plan aims to help lower energy bills and support households to install energy efficiency and low-carbon heating measures.

- **New industrial strategy 'Invest 2035'** (to be published in 2025). The upcoming strategy aims to remove the barriers to investment for UK industry. It is scheduled to be published alongside the spending review.

- **Land Use Framework** (to be published in 2025). A consultation was launched in January 2025. The final framework has the potential to be an important step in setting out how land use can be optimised to deliver its multiple objectives, including mitigating and adapting to climate change.

- **Onshore Wind Policy Statement** (to be published 'shortly'). The Onshore Wind Industry Taskforce will publish a report on the actions required to increasing onshore wind deployment.

- **Net Zero Skills plan** (to be published 'in due course'). To be developed by the Government in collaboration with Skills England and the devolved administrations, this aims to identify the workforce needs of the transition and set out the role of the Office for Clean Energy Jobs.

- **Publications scheduled for 2026**. Other publications are planned for beyond 2025, including the Strategic Spatial Energy Plan, and the Industrial Decarbonisation Strategy, both of which are due in 2026.

3.2.3 Overall cross-economy assessment

There has been a small overall improvement in our assessment of the credibility of the Government's policies and plans to meet the 2030 NDC and the Sixth Carbon Budget, but there remain substantial areas in which there are significant risks or insufficient plans (Figure 3.3). Meeting these targets is essential to be on track to meet the UK's Net Zero target. New strategies and plans have been promised in a number of crucial areas over the next few months, including an updated CBDP (see Section 3.3.3). These represent an important opportunity to address many of the key gaps in policies and plans.

The Fourth Carbon Budget (2023 to 2027)

Credible plans are in place to overachieve the Fourth Carbon Budget, which is important as this target was set before the UK's Net Zero target was legislated and so emissions reductions will need to go further than implied by the budget level.

- Of the emissions savings compared to the baseline required to achieve the CBDP over this period, we assess that 75% are covered by credible plans, with more than 90% having either credible plans or some risks attached.

- This includes recognition that two of the five years of the budget period have now passed, and emissions in both of those years have been slightly lower than the CBDP pathway (Table 1.2). Provisional 2024 emissions (see Chapter 1) are already considerably below the annual average level required by the legislated Fourth Carbon Budget.

The 2030 NDC

Our assessment of the credibility of the Government's policies and plans for meeting the 2030 NDC has improved slightly compared to last year, with the share of credible plans increasing to 38% (up from 32%).[*] 61% of the required emissions reductions are assessed as being supported by plans that are either credible or have only some risks attached. But there remains 34% of emissions reductions (down slightly from 38% last year) for which plans either have significant risks or are completely insufficient and a further 4% which are unquantified:[†]

- **Credible plans exist for 38% of the required emissions reductions for the 2030 NDC**, reflecting policy areas in which funding, enablers, and clear timelines are all assessed as being in place, or areas in which observed delivery progress gives strong confidence in future outcomes.

  - These are primarily in the electricity supply and surface transport sectors. Strong progress in rolling out renewables and electric vehicles, coupled with the clarity provided by the Clean Power 2030 Action Plan and the zero-emission vehicle mandate, give us increasing confidence in these sectors delivering the majority of their expected emissions reductions.

  - Emissions reductions in parts of the iron and steel sector of industry are also certain, given the plans underway for the electrification of steel-making at Port Talbot, which will receive a total investment of £1.25 billion, including the Government's contribution of £500 million. However, there are no clear plans for decarbonisation at Scunthorpe steelworks, which is now under the Government's control.

[*] As with the Fourth Carbon Budget, the Fifth Carbon Budget will need to be overperformed to be on a sensible pathway to Net Zero. So, we base our assessment for this time period on the emissions reductions required to meet the 2030 NDC.

[†] The percentage values stated here do not add up to 100% due to rounding.

  - Existing regulations requiring the blending of biofuels into standard petrol and the use of lower-GWP (Global Warming Potential) refrigerants in place of F-gases also contribute to this assessment category. The Government has introduced the sustainable aviation fuel (SAF) mandate, which has allowed us to score some associated emissions reductions as having credible plans.*

- **There are some risks attached to 23% of the required emissions reductions,** reflecting areas in which policies are relatively positive but may require some adjustment to mitigate delivery risk.

  - The largest contribution is from delivery risks around planning, consenting, grid connections, and successful implementation of Contracts for Difference auctions required to deliver the full extent of renewables deployment required. The amount of emissions reduction assessed as being affected by these risks has reduced due to progress over the past year.

  - Meeting the full target levels in the zero-emission vehicle mandate carries some risk, given the flexibilities included in the scheme and slower ramp-up in van sales to date. However, due to falling costs, we still assess the majority of the emissions reductions required through this policy as being credible.

  - There are also some risks around the ability of the Clean Heat Market Mechanism to incentivise the required changes to the market, given that the current payments required for failing to meet the targets are significantly lower than originally proposed. Early evidence of the Boiler Upgrade Scheme driving growth in the market has been reflected in a small improvement in our assessment in this area.

  - Policies associated with heat networks and various home energy efficiency improvements also carry some risks, as do the uptake of methane-suppressing feed additives in agriculture and energy efficiency and hydrogen measures in industry.

- **There are significant risks attached to 20% of the required emissions reductions,** where plans are either under development without a clear timeline for next steps or need further work to mitigate a significant delivery risk.

  - The required improvement in the efficiencies of conventional vehicles and hybrids is the largest contributor to this assessment category, although we have improved our assessment of a portion of this due to progress observed to date.

  - There are significant risks around policies to drive electrification and the uptake of CCS in many areas of industry.

  - The Boiler Upgrade Scheme and Clean Heat Market Mechanism are both potentially strong policies but will require adjustment or expansion to deliver the heat pump roll out required. Beyond 2028, these policies carry significant risks as there is a lack of clarity on the long-term plans for these schemes.

  - There are significant risks around the full uptake of SAF required, although recent growth in SAF share, together with recent policy commitments, mean we now assess a portion of this to be credible.

* While emissions from international aviation and shipping are not included within the NDC, we include it in our assessment because abatement in this area is required to meet CB6 and subsequent targets.

  - Despite an increase in recent rates of tree planting and peat restoration in Scotland and England, it remains uncertain whether this momentum will continue as there is a lack of long-term strategy and funding in these areas. This uncertainty also poses a risk to the UK's long-term emissions targets, given the considerable time lag between trees being planted and delivering meaningful levels of carbon sequestration. These changes in turn require land to be released from livestock.

  - Decarbonisation of public sector buildings, mechanisms to improve energy performance in domestic and non-domestic buildings, and collection and packaging reforms to reduce biodegradable waste going to landfill also carry significant risks. In residential buildings, significant risks remain for some plans around energy efficiency and biomethane.

- **There are insufficient plans for 14% of the required emissions reductions.** This represents areas where plans are either completely missing or assessed as currently being inadequate to give any confidence in the emissions reductions being deliverable.

  - The key area in which this is the case is the roll-out of low-carbon heating beyond the assumed extension of the existing Clean Heat Market Mechanism and Boiler Upgrade Scheme. These are assumed to continue beyond 2028, but only covering a portion of the required market, leaving a significant gap, the impact of which grows beyond 2030.

  - The lack of progress on business models for greenhouse gas removals means that it is becoming increasingly challenging for engineered removals to deliver the emissions savings of around 6 $MtCO_2e$ in the CBDP by 2030.

  - Emissions reductions from proposed policies to accelerate the turnover of the vehicle fleet, improve industrial resource efficiency, and decarbonise non-road mobile machinery were all quantified in the CBDP, but policies and plans are currently missing.

- **The remaining 4% of required emissions reduction is not covered by the quantified plans.** The CBDP lays out unquantified policies and plans that are supposed to make up this shortfall. Because these are unquantified, we cannot say how much of this total reduction would be in each score category.

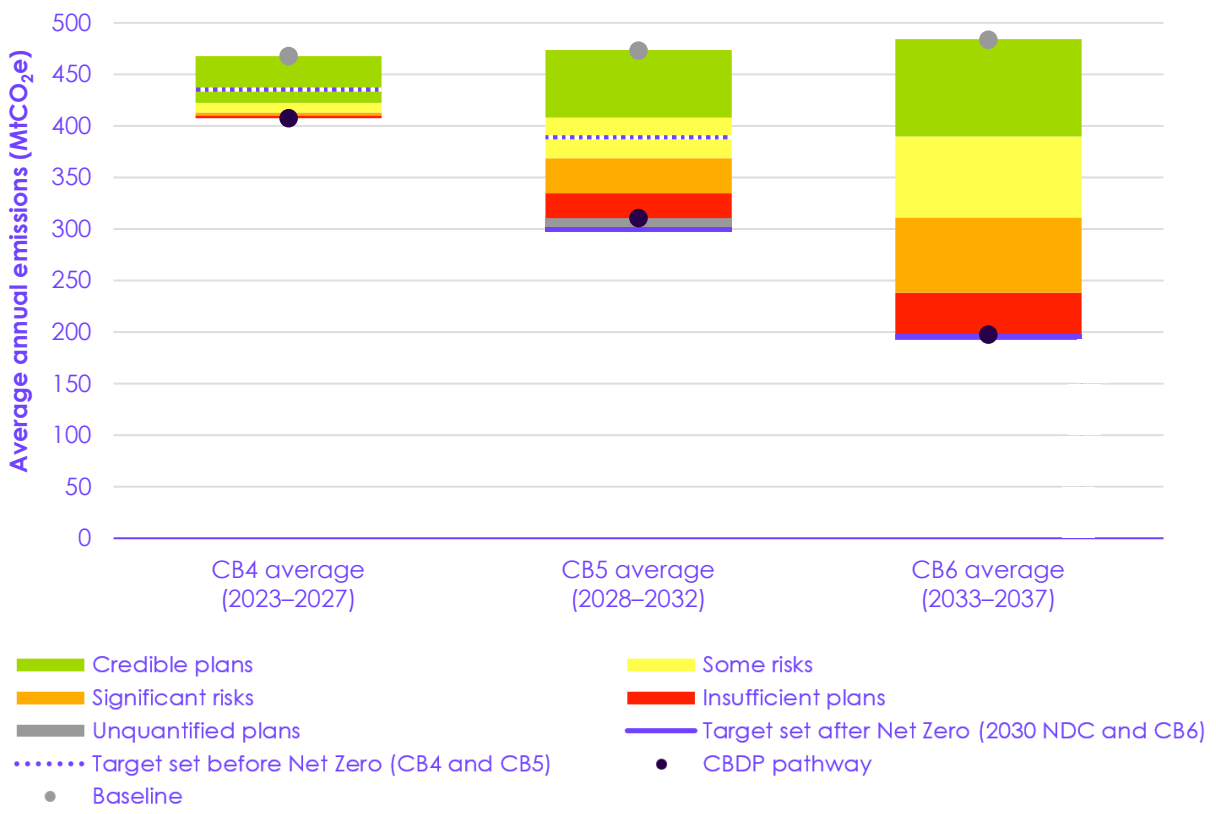
The Sixth Carbon Budget (2033 to 2037)

The proportion of emissions reduction with credible plans for the Sixth Carbon Budget period is 32%.[*] Plans scored as credible or with some risks make up 60%, while the proportion of plans considered to be insufficient or with significant risks is 39%, with 1% unquantified.

- Many of the key factors behind this assessment are similar to those detailed for the 2030 NDC above. In addition, it is to be expected that there will be greater risk in some areas, since this target period is further away and certain key markets that will play a role are likely at an earlier stage of development.

[*] The 2035 NDC is consistent with the level of the Sixth and Seventh Carbon Budgets; our assessment refers to the Sixth Carbon Budget.

Figure 3.3 Assessment of policy and plans



Description: Credible plans are in place to overachieve the Fourth Carbon Budget (CB4), as required to be on a sensible path to Net Zero. Plans that are either credible or have some risks attached cover three-fifths of the emissions reductions required to meet the UK's 2030 NDC and the Sixth Carbon Budget (CB6). But there remain significant areas in which plans are currently insufficient.
Source: DESNZ (2023) *Carbon Budget Delivery Plan*; DESNZ (2023) *Energy and emissions projections: 2021 to 2040*; CCC analysis.
Notes: (1) This assessment uses government plans listed in Annex B, Tables 5 and 6, of the Carbon Budget Delivery Plan (CBDP). See Annex 2 for the assessment criteria. (2) The baseline is an adjustment of the Government's CBDP baseline, with the impact of some policies removed so that they can be assessed. Refer to our 2023 Progress in reducing emissions report for additional notes on our methodology. (3) We have adjusted the Government's published CBDP pathway and baseline for land use to account for changes in emissions accounting. (4) For comparability, international aviation and shipping (IAS) emissions from the CBDP are added to CB4, CB5, and the NDC, so that they can be displayed together with CB6 (which does include IAS). (5) Emissions reductions in 2023 and 2024 are already sufficient for what is required to meet CB4, so these have been scored as green. (6) The CBDP projections include only the quantified plans. Unquantified plans may lead to further emissions reductions.

3.3 Key policy developments

This section focuses on changes to the Government's plans that have directly affected our assessment of progress since last year's report. We also acknowledge that the Government has committed to publishing a number of strategies in key areas for the Net Zero transition, as set out in its response to our 2024 progress report (see Section 3.3.3).

3.3.1 Sectoral changes in our policy assessment

In the past year, policy developments have resulted in changes in our assessment for the 2030 NDC for most sectors (Figure 3.4). The individual policy areas in which our assessment has changed are set out in Table 3.1.

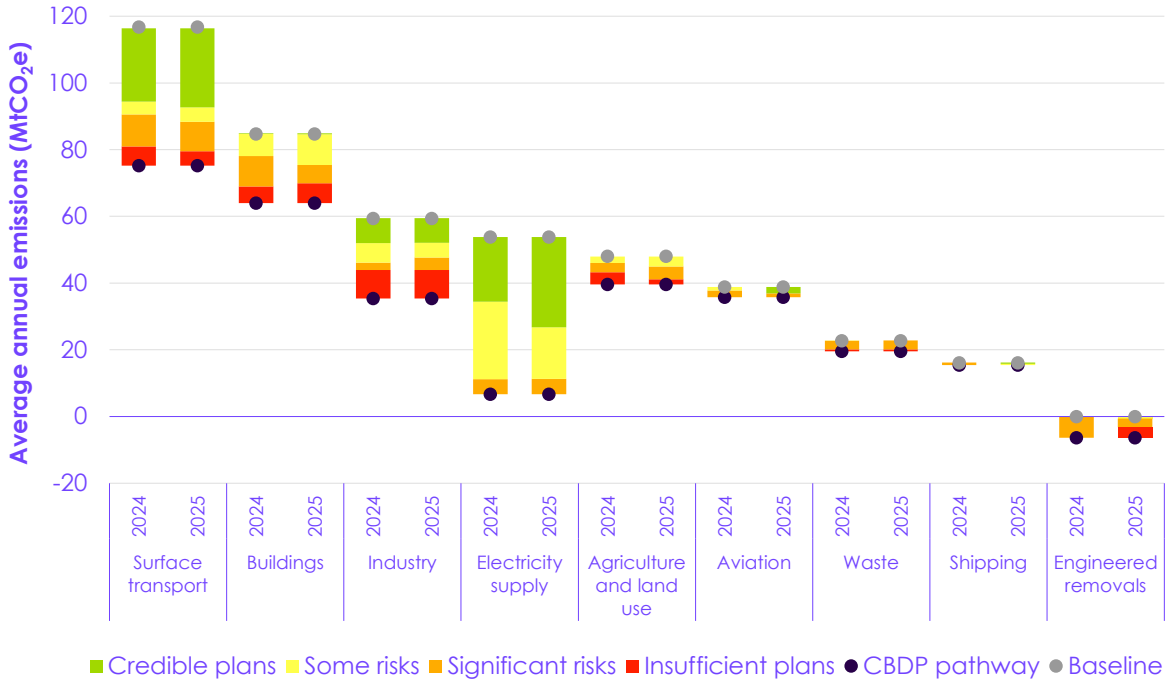
- The largest area of improvement is electricity supply, due to the introduction of the Clean Power 2030 Action Plan, along with other progress in removing barriers to the deployment of onshore wind, transmission infrastructure, and grid connections.

- Surface transport and agriculture and land use have also seen small improvements in our assessment. In surface transport, this follows the reinstatement of a 2030 phase-out date for new petrol and diesel cars. For agriculture and land use, the improvement in our assessment comes from the progress in delivery for woodland and peatland (see Chapter 2).

- The buildings sector has seen improvements to our assessment in places, largely due to the policy developments included in the announcement of the upcoming Warm Homes Plan. However, other areas of our assessment have been downgraded – a notable example being the lack of clarity on whether the proposed phase-out of new fossil fuel boiler installations from 2035 will go ahead or what an alternative will be.

- Our assessments for industry and engineered removals have been downgraded slightly. In industry this is due to the lack of funding allocated in Track 1 for CCS deployment at industrial sites. While real progress has been made in CO_2 transport and storage infrastructure, industrial emitters that require CCS are unlikely to reduce emissions at the rate set out by the CBDP. For engineered removals, the downgrade in our score is due to the delay to the development of greenhouse gas removals (GGR) business models.

Figure 3.4 Changes in our assessment of policies and plans for meeting the 2030 NDC, compared to our 2024 progress report



Description: In the past year, policy developments across nine sectors have resulted in changes in our assessment of policies and plans for the 2030 NDC and Sixth Carbon Budget.
Source: DESNZ (2023) *Carbon Budget Delivery Plan*; DESNZ (2023) *Energy and emissions projections: 2021 to 2040*; CCC analysis.
Notes: (1) This assessment uses government plans listed in Annex B, Tables 5 and 6, of the Carbon Budget Delivery Plan (CBDP). See Annex 2 for the assessment criteria. (2) The baseline is an adjustment of the Government's CBDP baseline, with the impact of some policies removed so that they can be assessed. Refer to our 2023 Progress in reducing emissions report for additional notes on our methodology. (3) We have adjusted the Government's published CBDP pathway and baseline for land use to account for changes in emissions accounting. (4) The level of emissions covered by credible plans in industry is higher than 2024 sectoral emissions. This is because, since publication of the CBDP, changes in the emissions inventory have resulted in around 10 $MtCO_2e$ being reclassified into non-residential buildings, agriculture, and surface transport. When these are accounted for, credible plans would be in place to bring industry emissions below 2024 levels.

Table 3.1
Policies and developments which have led to changes in our policy assessment for the 2030 NDC

Sector	Policy/development	ID	Emissions savings affected	Improves/ worsens our assessment	Change in score for the 2030 NDC
Surface transport	2030 phase-out: confirmation of phase-out for new petrol and diesel cars in 2030.	ST01	0.9 $MtCO_2e$	Improves ↑	From some risks/ significant risks to credible plans.
	2030 phase-out: confirmation of emission standards in the non-ZEV fleet from 2030–2035.	ST02	1.4 $MtCO_2e$	Improves ↑	From insufficient plans to some risks/ significant risks.
	ZEV mandate: extension of flexibilities including overcompliance on CO_2 standards.	ST03	0.5 $MtCO_2e$	Worsens ↓	From credible plans to significant risks.
	Conventional vehicle efficiency: improvements delivered to date.	ST04	1.3 $MtCO_2e$	Improves ↑	From significant risks to credible plans.
Buildings	Low-carbon heat roll-out: lack of clarity on the phase-out for new fossil fuel boiler installations.	BU01	2.7 $MtCO_2e$	Worsens ↓	From significant risks to insufficient plans.
	Low-carbon heat roll-out: Clean Heat Market Mechanism.	BU02	1.5 $MtCO_2e$	Improves ↑	From significant risks/insufficient plans to some risks/ significant risks.
	Low-carbon heat roll-out: Boiler Upgrade Scheme.	BU03	0.3 $MtCO_2e$	Improves ↑	From some risks/ insufficient plans to credible plans/ significant risks.
	Private rented sector minimum energy efficiency regulations.	BU04	1.0 $MtCO_2e$	Improves ↑	From insufficient plans to some risks.
	Phase 4 of the Public Sector Decarbonisation Scheme.	BU05	0.5 $MtCO_2e$	Improves ↑	From significant risks to some risks.
Industry	CCS: no industrial sites are funded in Track 1.	IN01	0.9 $MtCO_2e$	Worsens ↓	From credible plans to some risks.
	CCS: no confirmed funding or timetable for Track 2 industrial clusters.	IN02	1.4 $MtCO_2e$	Worsens ↓	From some risks to significant risks.
	Failure to launch the latest round of the Industrial Energy Transformation Fund.	IN03	0.2 $MtCO_2e$	Worsens ↓	From credible plans to significant risks.

Electricity supply	Introduction of the Clean Power 2030 Action Plan, along with progress in supporting low-carbon technologies and removing barriers to their deployment.*	ES01	7.7 $MtCO_2e$	Improves ↑	From some risks to credible plans.
			0.2 $MtCO_2e$	Worsens ↓	From some risks to significant risks.
Agriculture and land use	England: peatland restoration delivery progress.	AL01	0.8 $MtCO_2e$	Improves ↑	From insufficient plans to some risks/ significant risks.
	England: grants for on-farm measures.	AL02	0.1 $MtCO_2e$	Improves ↑	From insufficient plans to significant risks.
	England: grants and support to increase woodland cover.	AL03	<0.1 $MtCO_2e$	Improves ↑	From insufficient plans to significant risks.
	England: animal health review expanded.	AL04	<0.1 $MtCO_2e$	Improves ↑	From significant risks to some risks.
	Scotland, Wales, and Northern Ireland: progress on woodland creation and peatland restoration.	AL05	1.2 $MtCO_2e$	Improves ↑	From significant risks/insufficient plans to some risks/ significant risks.
	Northern Ireland: agriculture support framework in place.	AL06	0.6 $MtCO_2e$	Improves ↑	From insufficient plans to significant risks.
	Scotland: agricultural support framework in place.	AL07	0.1 $MtCO_2e$	Improves ↑	From significant risks to some risks.
	England: retail ban on horticultural peat delayed.	AL08	<0.1 $MtCO_2e$	Worsens ↓	From some risks to insufficient plans.
Aviation	SAF scale-up: SAF Mandate enforced and Sustainable Aviation Fuel Bill (covering 70% of required SAF uptake).†	AV01	1.9 $MtCO_2e$	Improves ↑	From some risks to credible plans.
	No policy agreed on UK ETS and CORSIA interactions and CORSIA carbon pricing remains weak.	AV02	<0.1 $MtCO_2e$	Worsens ↓	From some risks to significant risks.
Waste	Lack of a clear plan to improve data for industrial wastewater treatment.	WA01	0.1 $MtCO_2e$	Worsens ↓	From some risks to significant risks.

Shipping	Policy commitments and targets in the Maritime Decarbonisation Strategy.	SH01	0.3 $MtCO_2e$	Improves ↑	From significant risks to some risks.
	Agreement on a fuel standard and emissions pricing mechanism at the IMO's 83rd meeting of the Marine Environment Protection Committee.	SH02	0.4 $MtCO_2e$	Improves ↑	From significant risks to credible plans.
Engineered removals	Delay to business models to support greenhouse gas removals (covering 50% of required GGR).	RE01	3.2 $MtCO_2e$	Worsens ↓	From significant risks to insufficient plans.
	Final investment decision for first EfW projects and supporting CCS infrastructure.	RE02	0.6 $MtCO_2e$	Improves ↑	From significant risks to credible plans/some risks.

Note: (1) *The CBDP provides no breakdown on electricity supply emissions savings due to interdependencies between policies. (2) †The remaining 30% of required SAF uptake is scored 'significant risks' and is unchanged from last year. The SAF abatement split reflects the level of the HEFA cap in the SAF Mandate in 2030, which is 71%. (3) The final column is colour-coded to reflect the new score for the relevant quantity of abatement. Where the change is split across multiple new scores, the colour of the largest part of the change is used.

Surface transport

The reinstatement of the 2030 phase-out date for new petrol and diesel cars is a welcome market signal to accelerate the transition to electric vehicles (EVs). It does so alongside the zero-emission vehicle (ZEV) mandate, which has so far worked effectively to support rapid growth in electric car sales and the charging network. For the transition to accelerate, further reductions in the cost of purchasing EVs, as well as improved access to, and reduced costs of, local public charging, are needed. Action is particularly important in the van market.

Updates to the flexibilities of the ZEV mandate are moderate but risk allowing existing planned plug-in hybrid vehicle (PHEV) sales to slightly reduce the emissions savings from EVs. It is also possible that manufacturers could divert investment towards PHEVs, diluting the consumer offer for EVs – we currently think that this risk is minimal due to progress in scaling up the EV market to date, but it is something that we will monitor closely. Overall, there are more credible plans and fewer insufficient plans in our 2025 assessment compared to 2024.

Cars

Reinstatement of the 2030 phase-out for new petrol and diesel cars sends a welcome signal on the transition to EVs. Accompanying updates to the ZEV mandate appear moderate but introduce some risk that hybrids could divert investment and sales from pure-EVs.

- **Confirmation that new pure petrol and diesel cars cannot be sold after 2030.** This is a clear signal to the market to accelerate away from fossil fuel cars and complements the ZEV mandate in driving adoption of EVs (ST01).
  - This decision also confirmed that non-ZEV vehicles that continue to be sold after 2030 will need to have CO_2 intensities at least 10% better than 2021 levels. This addresses a gap in previous policy (ST02), although the decision to allow 'mild-hybrids' (which have no substantive battery-powered range) to be sold until 2035 could delay some investment into EVs.

- **Disapplying an updated utility factor for PHEVs.** Manufacturers will be able to continue to base their emissions savings from PHEV sales on a utility factor which underestimates real-world emissions by almost 250%.[*,1] Coupled with an expansion of the option to convert non-ZEV CO_2 savings to credits in the ZEV mandate, this significantly increases the risk associated with a small portion of the expected emissions savings from the ZEV mandate, as existing planned PHEV sales could be used to lower manufacturers' effective EV sales targets (ST03).

  - Beyond this, we expect the impact of the expanded flexibilities within the ZEV mandate to be moderate (Box 3.1).

- **Changes to company car tax and vehicle excise duty (VED) for electric vehicles introduced in April 2025.** While these changes moderately reduce the tax benefits of buying an EV, these continue to offer a significant incentive for people to purchase an EV rather than a petrol/diesel or hybrid/plug-in-hybrid vehicle. This is particularly the case for benefit-in-kind, which is a key reason for business keepership accounting for 81% of new EV registrations in 2023.[2] The duty on 'expensive cars' could affect sales of more expensive EVs, but could also support the expanding market of cheaper models.

  - The benefit-in-kind rate for company car tax on electric cars has increased from 2% to 3% and will increase by 1% each year up to a total of 5% by 2028. In contrast, the most polluting petrol and diesel cars will pay a 37% rate in 2028.[3]

  - EVs will now pay a first-year VED rate of £10 until 2029, before paying the standard rate of £195 in subsequent years. In contrast, the first-year rate for new non-ZEV cars escalates in line with emissions intensity (for example, £350 for 91–100 gCO_2/km). The expensive car supplement now also applies to EVs that cost more than £40,000 and has been increased to £425.[4]

Vans and HGVs

There have been some regulatory changes and investments made to support the more nascent transitions to electric vans and HGVs.

- **Confirmation of a 2035 phase-out date for new ICE vans**. This is less ambitious than the original commitment to phase out new petrol and diesel vans by 2030. However, this reflects the electric van market being further behind the electric car market.

- **Introduction of a bi-directional ZEV car-van transfer mechanism** in the ZEV mandate. The favourable exchange rate for van-to-car transfers may stimulate electric van sales.

- **Funding to support the purchase of new electric vans**. The Autumn Statement confirmed £120 million in 2025/26 to be made available via the plug-in vehicle grant.[5]

- **Consultation on zero-emission goods vehicle regulations**.[6] Flexibilities in the categorisation of heavier electric vans would allow for their use without the additional requirements for vehicles in larger weight categories.

[*] The utility factor (UF) is a variable used in emissions standards testing for PHEVs to represent the proportion of driving done using the battery in electric mode versus driving using the internal combustion engine. In the regulations which govern emissions standards testing, the UF is being updated in 2025, and again in 2027, to better reflect the real-world performance of PHEVs. The Government has confirmed that manufacturers can continue to base ZEV compliance on the previous UF.

- **Confirmation by Innovate UK of 54 new infrastructure hubs for zero emission HGVs**.[7] While this is a positive development, the UK Government is yet to firm up a mechanism by which to drive uptake of ZEV-HGVs and the phase-out of diesel HGVs by 2040.

Charging

Funding in the Autumn Statement and changes to planning rules will support the roll-out of charging infrastructure.

- **The Autumn Statement committed £200 million in 2025/26 to support the rollout of electric vehicle charging infrastructure**.[8] This includes funding to support local authorities to install on-street charge points across England. Government has also made regulatory changes to support charge point rollout, including giving installers the same road-working rights as utility companies, and expanding permitted development rights in line with our recommendation in 2024.

- **No progress has been made on making electricity cheaper.** This remains a major barrier for households and businesses investing in the transition, across multiple sectors.

Public transport and active travel

The Government has pledged some funding and additional powers for local authorities to improve public transport and active travel.

- **The Government has pledged funding to improve city and local public transport and active travel.** This includes City Region Sustainable Transport Settlements, support for bus services and extending the national bus fare cap (albeit increased from £2 to £3 which may reduce the affordability for some users).[9] Government has also committed £300 million into walking and cycling infrastructure in England.[10]

- **The Government put out a call for evidence for an Integrated National Transport Strategy** and introduced new powers for local authorities to improve bus services.[11;12] This could build on and expand successful integrated transport networks such as Transport for London and the Bee Network in Greater Manchester.

Box 3.1
Progress in the EV transition and policy changes announced by the Government

Progress in the EV transition

The transition to EVs in the UK is gaining momentum, driven by strong policy signals and falling technology costs.

- The ZEV mandate provides a strong mechanism to encourage car companies to invest in the transition to electric vehicles in the UK. It is working effectively, with successful compliance across all manufacturers in 2024.[*;13]
- The mandate has helped to improve the consumer offer for EVs in the UK, with a large number of new models entering the market and continued reductions in EV purchase prices.[14;15] We are also seeing rapid expansion of the charging network, which is giving consumers greater confidence to make the switch to EVs.[16;17]
- Many used EVs are now cheaper to buy than equivalent used petrol and diesel cars.[18;19] Furthermore, EVs are four times more energy-efficient than petrol cars and are already generally cheaper to run.[20;21]
- Progress in the UK is underpinned by continued technological advancements and cost reductions of EVs at a global level. These have seen the cost of lithium battery packs fall by 20% between 2023 and 2024 and recent innovations in rapid charging capabilities.[22;23]

Policy changes announced by the Government

The UK and devolved governments recently confirmed a series of changes to the ZEV mandate and wider policies which support the transition to electric vehicles.[24] The most substantive changes are:

- Reinstatement of the 2030 phase-out date for pure petrol and diesel cars.
- Confirmation that plug-in hybrid and 'mild'-hybrid cars can be sold until 2035.
- Manufacturers of non-ZEV fleets sold after 2030 will need to be at least 10% less emissions-intensive than their 2021 baseline.
- Confirmation that petrol and diesel vans can be sold until 2035.
- Changes to flexibilities of the ZEV mandate.
  - Extension of 'carry-over' flexibility which allows manufacturers to borrow credits, with interest, to pay back by overperforming targets in future years. This flexibility now tapers from allowing borrowing to be used to meet up to 25% of a manufacturer's ZEV sales target in 2026 to 10% in 2029 and 0% from 2030 (previously cut to 0% after 25% in 2026).
  - Increase and extension of 'non-ZEV' CO_2 transfer credits which allow manufacturers to convert the CO_2 savings from non-ZEVs to offset shortfalls in ZEV sales. This flexibility now tapers from 90% in 2025 to 50% by 2029 and 0% from 2030 (previously cut to 0% after 25% in 2026).
  - Disapplying the updated Utility Factor (UF) applied to PHEVs. This determines the emissions rating of PHEVs used for compliance with the mandate. It means that manufacturers will be able to continue to use the same UF which applied when the mandate was introduced, rather than retrospectively applying an updated UF which better reflects PHEV's real-world emissions.
  - Introduction of a new bi-directional car-van transfer mechanism will allow manufacturers to convert electric car sales into electric van sales and vice versa. One car credit can be exchanged for 0.4 van credits, and one van credit can be exchanged for two car credits.

[*] Compliance was achieved in 2024 through use of the allowed flexibilities. UK EV sales reached 19.6% in 2024. Although below the headline target of 22%, this figure exceeds the 18% required for compliance when accounting for flexibilities.

Buildings

There has been some positive progress on residential buildings decarbonisation, but there is still significant uncertainty on how the emissions reductions required for the 2030 NDC and Sixth Carbon Budget will be met. Most near-term policies have credible plans or some risks, however, in the 2030s policy scoring is dominated by insufficient plans and significant risks.

The Government has announced its upcoming Warm Homes Plan, which aims to support delivery of energy efficiency and low-carbon heating measures. Initial announcements have included some positive policy developments, such as funding for capital schemes, including the Boiler Upgrade Scheme and the Warm Homes Social Housing Fund. The Government is also consulting on plans to increase minimum energy efficiency standards for the private rented sector and has revised planning regulations to remove the 1m rule for heat pump installations.

Further proposals for the Warm Homes Plan are expected following the Spending Review. The Government has not yet provided clarity on how to ensure low-carbon heating is installed at the required rates and whether it will replace or continue with the 2035 phase-out date for new fossil fuel boiler installations in the previous Government's CBDP. The Government's plans should include immediate proposals to make electricity cheaper, incentives for households to install low-carbon heating, and longer-term funding commitments to enable low-income households to install energy efficiency measures.

Existing homes

- **Low-carbon heating:** recent progress on installing low-carbon heating has been positive, however there is still significant uncertainty on how it will be incentivised in the longer term.
  - Heat pump installations in existing homes increased to 73,000 per year in 2024 but are still below the trajectory needed to meet required emissions reductions. 23,000 heat pumps were installed under the Boiler Upgrade Scheme (BU03), an increase of 83% on 2023. A similar number of heat pump installations were funded through the Energy Company Obligation.[25]
  - The Clean Heat Market Mechanism (BU02), which requires boiler manufacturers to increase heat pump installations, has been implemented. However, the current cost of payments for failing to meet the targets in the policy are unlikely to incentivise the required changes to the market, and the obligation level will need to be increased incrementally to drive the heat pump sales required.
  - Planning policy in England has been amended to remove the requirement for planning permission for heat pump installations located less than 1m from a property boundary.
  - The Government has not yet provided clarity on whether they will continue with the proposed phase-out of new fossil fuel boiler installations from 2035 (BU01), or make alternative plans to ensure that low-carbon heating reaches the installation rates required.[26]
    - No proposals have been made for removing levies on electricity bills which currently distort the retail price of electricity relative to gas.
    - The lack of clear, long-term policy creates uncertainty for low-carbon heating suppliers at a time when rapid growth in supply chains is needed.

- **Energy efficiency:** the Government have reinstated plans to require landlords to upgrade properties to meet new minimum energy efficiency standards and have committed to introducing similar standards for social housing (BU04). The new consultation proposes that the regulation will take effect in 2030, which is two years behind the original proposal.

- **Other policies:**

  - The Government has committed funding of £1.29 billion for the Warm Homes Social Housing Fund and £0.5 billion for the Warm Homes Local Grant to provide energy efficiency and low-carbon heating measures to low-income households.

  - The Government is consulting on reforms to the metrics used on domestic Energy Performance Certificates (EPCs). These should make EPC ratings easier to understand and better suited to delivering emissions reductions in buildings.

  - The Scottish Government withdrew its Heat in Buildings Bill, which had included plans to require heating systems to be upgraded when a property is sold and setting minimum energy efficiency standards for privately owned homes.[27] A revised bill is planned, with a target that all homes should be zero emissions by 2045. However, alternative policies and plans to reach this target are currently lacking.

Non-residential buildings

There has been little policy development for commercial and public sector buildings in the last year.

- Phase 4 of the Public Sector Decarbonisation Scheme (PSDS) is delivering funding through a targeted allocation approach that prioritises projects based on their carbon cost-effectiveness. However, funding is only allocated to 2028, and significant investment is required for future phases (BU05).

- There is a continuing lack of policies for decarbonising commercial buildings.

New buildings

Revisions to Building Regulations to implement the Future Homes and Buildings Standards have been delayed, and the proposed transition arrangements mean that buildings will still be constructed with fossil fuel boilers in 2027. This will increase emissions and costs, as these buildings will require retrofitting to eliminate emissions from buildings by 2050 (see Box 3.4).

- Revisions to the Building Regulations were due to be legislated in 2024 and come into force in 2025. The legislative changes have not been made, and the consultation for the new calculation methodology for energy performance in residential buildings is awaiting Government response.

- The Government is proposing a 6- or 12-month period between legislating and implementing the revised regulations, followed by a 12-month transition period. Buildings for which construction has commenced during the transition period may be built to the old standards. The proposed implementation and transition timescales mean that once the new regulations are legislated there will be a period of up to two years when construction may commence on buildings which will produce direct emissions for years to come.

Industry

Following mixed progress in the last year, the Government must use its upcoming Industrial Strategy and Industrial Decarbonisation Strategy to accelerate efforts to reduce industry emissions.[28] Key priorities are to incentivise and enable electrification, resource efficiency and low-carbon non-road mobile machinery. Our overall assessment is similar to last year, though we now assess there to be significant risk to the Government's 2030 industrial CCS target, despite agreements which pave the way for the UK's first CO_2 transport and storage systems (Box 3.2).

- **Electrification:** the UK Government has acknowledged electrification should play a central role in industrial decarbonisation but this will only happen with more action to address substantial barriers.[29]
  - There is now no major source of government support for manufacturers to invest in electrification. The UK Government did not launch the latest round of the Industrial Energy Transformation Fund which was due in December 2024 (IN03). It has not clarified whether this or similar funding will continue.
- **Industrial CCS:** it is now expected that CO_2 transport and storage infrastructure will be available in both Track-1 clusters by around 2028 (IN01) (Box 3.2). This could help enable industrial CCS at sites close to these clusters, although to date no industrial emitters yet have funding to do this. There is also no confirmed funding or timetable for Track-2 industrial clusters (IN02). An overall lack of progress with industrial CCS means it is now very unlikely it will start reducing emissions in the period of the Fourth Carbon budget and it is not on track to be deployed at the pace required in the CBDP.
- **Iron and steel sector:** the Government has signed a grant funding agreement worth £500 million with Tata Steel to build an electric arc furnace at the steelworks in Port Talbot.[30]
  - The challenges facing the UK steel sector have been clear for many years and, given the significance of this site to the local economy, a more proactive and decisive transition plan should have been developed for Port Talbot – one which might have considered a wider range of levers that the UK and Welsh Governments have at their disposal and which could have mitigated some of the impacts on the local economy (see our advice on Wales' Fourth Carbon Budget).
  - The Government plans to issue a steel strategy this year.[31] This is an opportunity to set out plans for the low-carbon transition at Scunthorpe steelworks and other UK steel production.
- **UK ETS and CBAM:** the Government has agreed to link the UK ETS with the EU ETS. We lack sufficient detail to score the impact of this measure, but it is likely to promote further decarbonisation in industry and other sectors in scope of the scheme. The carbon border adjustment mechanism (CBAM) will operate alongside the ETS to mitigate risks to competitiveness.
  - Government has confirmed the CBAM will start on 1 January 2027, for steel, cement, aluminium, fertiliser and hydrogen.[32] It has delayed the start of planned changes to free allocations in the UK ETS to 2027 to align with the start of the CBAM.[33]
- **Resource efficiency:** there is currently little policy in this area. However, the Government's upcoming Circular Economy Strategy for England is an opportunity to set out further plans.
- **Non-road mobile machinery**: there is currently no policy or plan to incentivise decarbonisation of non-road mobile machinery.

- **Industrial hydrogen**: the Government has signed contracts to fund 11 green hydrogen projects under its Hydrogen Allocation Round 1 (HAR1).[34] Several HAR1 projects plan to sell their hydrogen to industrial users. A further 27 projects have been shortlisted in the Second Hydrogen Allocation Round (HAR2).[35] Several HAR2 projects expect to supply manufacturers such as brickworks and glass producers. Blue hydrogen projects aiming for Track-1 cluster funding are planning to supply to manufacturers in northern England.[36;37]

Box 3.2
Progress on industrial clusters

- There has been significant progress on two industrial clusters in the last year. However, the timeline for other clusters and the medium- and long-term targets for CCS remain unclear.
- The UK Government announced up to £21.7 billion over 25 years to fund carbon capture and storage and hydrogen projects at Track-1 clusters.[38] Funding has been allocated for five projects: two transport and storage networks, a power plant, a hydrogen production plant and an energy from waste facility.[39]
- Following this announcement, the projects to build transport and storage infrastructure at both Track-1 clusters (Hynet and East Coast Cluster) reached financial close. This means it is now expected that CCS infrastructure will be available in these clusters by 2028. This is a crucial development that could help enable CCS in industry, electricity supply, fuel supply, waste, and engineered removals.
- The Government has not confirmed funding for three additional projects that had been part of the Track-1 process (two industrial and one energy from waste), though negotiations are likely ongoing.
- To date no industrial sites (manufacturers) have received confirmed funding for CCS and the pipeline of industrial CCS falls short of what is needed to meet current government targets for 2030.
- The Government has acknowledged it will not meet the previous Government's overall CCS target of 20–30 $MtCO_2$ per year by 2030, but has not set revised goals.[40]
- There is no clarity on the plans or timelines for Track-2 clusters, or other industrial clusters such as the Peak District Cluster.

Agriculture and land use

The UK Government has recently made a series of announcements on developing policy areas, including plans for a National Food Strategy, a twenty-five year Farming Roadmap, and the launch of the Land Use Framework consultation, all of which could impact emissions reduction across the agriculture and land use sectors.[41;42;43] Progress in delivering to current commitments over the last year has been mixed.

- **Land Use Framework:** a consultation on a Land Use Framework for England was published in January 2025, with the final framework expected before the end of 2025.
  - The consultation is an important step in setting out a framework for how land use can be balanced to deliver on a wide range of objectives such as climate mitigation and adaptation, food security and nature whilst building resilience to climate impacts.
  - Though the scale and type of land use change in the consultation are similar to the Committee's advice on the Seventh Carbon Budget, it remains unclear how this Framework will drive change on the ground.
- **Farming in England:** there has been mixed progress in providing incentives and addressing barriers for sustainable farming measures and land use change to farmers and landowners.

  - The Sustainable Farming Incentive (SFI), part of the Environmental Land Management (ELM) schemes, was paused by Defra in March 2025 due to the funding being fully allocated. This is a positive change from earlier years, where underspend was reported, but the decision has left a gap in delivery grants for on-farm actions. The SFI is not expected to reopen until 2026.

  - Details on the SFI's future scope and size of the funding pot has yet to be determined which is creating significant uncertainty for those wanting to enter the scheme for the 2025/26 period.

  - From Spring 2025, a range of competitive grants and funding will be launched by Defra.* These will allocate around £110 million to support on-farm technology, small infrastructure, and innovation to deliver objectives including productivity, animal health, slurry management and emissions reduction (AL02).[44]

  - Defra has expanded the Animal Health Review to include a follow up that provides financial support intended to eradicate endemic diseases, leading to an improvement in the policy score regarding improved animal health to reduce emissions (AL04).

- **Methane suppressing feed products (MSFP):** details on the plans to mandate the use of MSFPs in cattle remains lacking.

  - Defra has recently commissioned work to develop a BSI standard regarding a minimum efficacy of emissions reduction in MSFP products, and expected monitoring, reporting and evaluation in their use.

- **Farming policy in Scotland, Wales, and Northern Ireland:** progress continues in the development of post-Common Agricultural Policy support across the devolved administrations, although uncertainty remains in new scheme design, incentives, and implementation.

  - In Scotland and Northern Ireland, frameworks of agricultural support are now partly underway via actions under the Agricultural Reform route map and the Sustainable Agriculture Programme respectively. This has led us to downgrade risk and increase confidence in this policy area (AL06; AL07).

  - In Wales, the Sustainable Farming Scheme is delayed to 2026, but a new framework was published in early 2025 following an extensive consultation. This represents improvement on our previous assessment where no plans were in place. We have therefore reduced the risk over the Fourth Carbon Budget period.

- **Nature for Climate Fund**: in England, the Nature for Climate fund which provides grant support for woodland creation and peatland restoration, has been extended by one year. The Government announced a commitment in the autumn budget of up to £400 million across 2024/25 to 2025/26 as part of the Fund. However, longer-term plans to incentivise delivery remain uncertain.[45;46]

  - The Landscape Recovery Scheme is expected to play a significant role in delivering land use change actions at scale. Despite a third round of funding being scheduled for 2024, this has yet to be announced.[47]

* These include the Farming Equipment and Technology Fund, Farming Innovation Programme and Accelerating Development of Practices and Technologies Fund.

- **Woodland creation:** UK planting rates reached 20,700 hectares over the year 2023/24, a significant increase from the previous year and the largest annual area of planting since 1990 (see Chapter 2).[48]

  - This was driven mainly by an almost doubling of tree planting rates in Scotland. It is uncertain if this trend will be maintained, particularly given the cut to Scotland's public forestry 2024/25 budget.

  - Planting in England increased for the third successive year, suggesting approaches to simplify applications and delivery are starting to be effective (AL03).

  - All nations of the UK lack forestry delivery strategies beyond 2030. However, in 2024 a Ministerial-level UK Taskforce was established to consider challenges to expanding woodland cover and improve planting rates and woodland resilience.[49] Based on current activity, we have reduced the risk over the Fourth and Fifth Carbon Budget periods (AL05).

- **Peatland restoration and protection**: for the fourth year in a row, peatland restoration is increasing, with strong progress over the past year (see Chapter 2). We have reduced the risk over the Fifth Carbon Budget to reflect this progress (AL01; AL05). However, the Defra target to achieve 35,000 hectares of peat under restoration in England between 2020 to 2025 is expected to be missed.

  - Natural England have published a peat map for England.[50] This will provide improvements in understanding the extent, depth and condition of England's organic soils and will support prioritisation of peatland restoration.

  - The Government announced a consultation in March 2025 to extend the ban on burning of deep peat in the uplands. The expected ban on the retail sale of horticultural peat continues to be delayed, leading to increased risk in our assessment of horticultural peat policy over the Fifth Carbon Budget period (AL08).

Electricity supply

Positive policy progress has been made in decarbonising electricity supply over the past year. Concrete steps have been made to remove barriers and support the deployment of low-carbon technology, while an overarching decarbonisation strategy is now in place through the Clean Power 2030 Action Plan. As such, we have upgraded our policy assessment in this area (ES01). There are, however, remaining uncertainties on the future electricity market arrangements and further challenges to deploying infrastructure to overcome.

- **Coal:** the UK's last coal-fired power station, Ratcliffe-on-Soar, closed in September 2024. This was a historic moment – the UK becoming the first major economy to phase-out coal received worldwide attention.

- **Decarbonisation strategy:** the UK Government announced its 'Clean Power 2030' mission, setting out a 2030 ambition for the Great Britain electricity system to, under a typical weather year, produce as much power from low-carbon sources as is consumed and produce at least 95% of generation from low-carbon sources. In December 2024, the Clean Power 2030 Action Plan was published, providing a clear strategy for decarbonising the electricity supply system.[51] This is an important step forward.

- **Barriers**: progress has been made in addressing key barriers, with reforms targeting burdensome approval processes for renewable energy production and transmission infrastructure, grid connection constraints, and better integrated long-term supply planning.

- **Onshore wind**: additional planning barriers for onshore wind developments have been removed from the National Planning Policy Framework.[52]

- **Renewable energy and transmission infrastructure:** the Planning and Infrastructure Bill, published in March 2025, proposes to streamline approval of Nationally Significant Infrastructure Projects, including renewable energy and energy transmission infrastructure and, to offer financial incentives for households living near new or upgraded electricity transmission infrastructure.[53]

- **Connections reform**: in April, Ofgem approved significant reforms to the system governing connections to the grid for new generation capacity, moving from a 'First-Come, First-Served' queuing system to a 'First Ready, First Connected'.[54] As part of this, projects must meet readiness and needed criteria, with projects that are ready and aligned with strategic plans prioritised and those that are not deprioritised.

- **Long-term energy planning**: positive steps continue to be made on the whole system strategic planning of the future energy system, with NESO's methodology for the Strategic Spatial Energy Plan approved and Ofgem publishing its decision on the Regional Energy Strategic Plan (RESP) policy framework.[55;56] The new RESP framework has the potential to promote better integrated energy planning by giving NESO a coordinating role, linking local priorities (such as local authority Net Zero plans) with energy networks and national plans, and supporting long-term planning. Ofgem also published its decision on its framework for the next electricity distribution price control period (2028 to 2033), with distribution network operators expected to align their plans to the RESPs, encouraging a more anticipatory approach to network upgrades.[57]

- **Deployment support:** the Government has taken important steps to strengthen support for the deployment of low-carbon technologies, responding to recent challenges in the Contracts for Difference scheme and introducing financial support for emerging technologies not yet deployed at scale.

  - **Contracts for Difference**: following the failure to receive any bids for offshore wind in Contracts for Difference Allocation Round 5 (AR5), the Government successfully procured 5.3 GW of offshore wind in AR6, as well as 3.3 GW of solar and 1.0 GW of onshore wind.[58] While this was a positive result, Ørsted have since taken the decision not to progress with the 2.4 GW offshore wind project, Hornsea 4.[59] As such, the next two to three allocation rounds remain crucial for delivering the capacity ranges set out in the Clean Power 2030 Action Plan (see Figure 2.8a).

  - **Low-carbon dispatchable**: progress has been made on the deployment of low-carbon dispatchable projects.

    - The first low-carbon dispatchable power plant has secured a final investment decision, with the gas CCS project aiming to become operational in 2028.[60]

    - Funding has been confirmed for CO_2 transport and storage infrastructure at two industrial clusters.[61] Support will need to be extended to other sites, and potentially to non-pipeline transportation for projects outside of industrial clusters.

    - The Government has also confirmed that it will introduce a business model for hydrogen-to-power projects.[62]

  - **Electricity storage**: the Government has introduced its 'Long Duration Electricity Storage investment support scheme'.[63] The scheme will use a cap and floor model with its first allocation round expected this year.

  - **Biomass**: following a consultation, the government has outlined plans to provide short-term support between 2027 and 2031 to large-scale biomass generators transitioning to bioenergy with carbon capture and storage (BECCS).[64] Under the new arrangement, large-scale unabated biomass plants will be supported to operate at a maximum load factor of 27% – operating less than half as often as currently.

- **Market arrangements**: the Government has outlined that its ambition is to conclude the policy development phase of the Review of Electricity Market Arrangements programme by around mid-2025 and confirmed the timetable for decisions will align with AR7.[65] It is important that this provides clarity on the future electricity market arrangements, including on timelines and any transition arrangements, with any reforms urgently put in place to enable the necessary investment decisions to be taken.

Aviation

The SAF Mandate came into force in January 2025. SAF supply is increasing, and the Sustainable Aviation Fuel Bill was introduced to Parliament in May 2025.[66;67] CORSIA has made some encouraging progress in the past year, but the global CORSIA credit price remains weak. Aviation emissions in 2024 increased 9% on 2023 levels to 38 $MtCO_2e$, close to emissions in the CBDP. This corresponded to 292 million terminal passengers and 365 billion passenger-km. UK emissions targets could be at risk if growth in aviation demand and emissions continues to increase.

- **Aviation demand and emissions**: future aviation demand and emissions are uncertain. In the Committee's Seventh Carbon Budget advice, flying stays close to today's levels until technology develops in the mid-2030s.[68] The Committee recommends that the UK Government should develop and implement policy that ensures the aviation sector takes responsibility for mitigating its emissions and ultimately achieving Net Zero for the sector by 2050. This includes paying for permanent engineered removals to balance out all remaining emissions. Robust contingencies should also be in place to address any delays in decarbonisation, including through managing the forecasted increase in aviation demand.

  - In the last year, the Government has approved and indicated support for several airport expansions, and in January 2025 the Government confirmed that the Airports National Policy Statement (ANPS) will be reviewed.[69;70;71;72] Any plan to increase airport capacity needs to be based on realistic projections of future demand. These demand projections need to be consistent with climate change targets and take account of the costs to the sector of getting aviation to Net Zero emissions.

- **SAF Mandate and revenue certainty mechanism**: the SAF Mandate came into force in January 2025, SAF deployment is increasing (2.1% in 2024), and the Sustainable Aviation Fuel Bill was introduced to Parliament in May 2025. We have therefore upgraded our SAF policy assessment for the 2030 NDC (AV01). Delivery risks remain for meeting the full 10% by 2030 SAF share target due to the various challenges facing supply, such as uncertain global SAF supply and diversifying away from HEFA. Currently, there are no operational UK SAF plants, but they are under construction and will be important for developing second and third generation SAF.[73]

- **CORSIA**: the Government began consulting on CORSIA in December 2024, seeking views on offsetting requirements and how the UK ETS should apply to flights in scope of both schemes (flights that depart the UK and arrive in the European Economic Area or Switzerland).[74] CORSIA also established new binding standards for aircraft fuel efficiency, to take effect in 2031.[75] The CORSIA carbon price remains weak and CORSIA policy post-2035 has not been internationally agreed – a strong CORSIA credit price is vital for making progress on reducing international aviation emissions (AV02).

- **Efficiency improvements**: the Government launched a UK airspace modernisation programme in October 2024, which could reduce aviation emissions.[76]

- **Low- and zero-emission aircraft**: Airbus announced that their previous target to get a hydrogen aircraft concept to market by 2035 has been delayed.[77] Government funding for new aircraft has continued, but industry has a key role to play in bringing new concepts to market.

Fuel supply

The main progress in the fuel supply sector in the past year has been around low-carbon hydrogen production, where the Government has confirmed funding for initial projects and associated CCS infrastructure. However, risks remain around decarbonisation of fossil fuel supply in particular.

- **Investment in carbon capture and hydrogen technologies**: the Government announced a commitment of up to £21.7 billion over the next 25 years to develop CCS and hydrogen technologies in Track 1 clusters in northern England (Merseyside and Teesside). As with industry, while infrastructure is now in development, no specific refinery CCS projects have been awarded funding.

- **Hydrogen production projects** the Government has confirmed funding for the first round of hydrogen production projects and announced the shortlist for the second round.

  - In the 2024 Autumn Budget the Government confirmed support for 11 electrolytic hydrogen production projects from the first hydrogen allocation round (HAR1). This includes £90 million in capital grant support and over £2 billion of revenue support. These projects are expected to become operational by the end of 2026.

  - In April 2025 27 hydrogen production projects were shortlisted in the Second Hydrogen Allocation Round (HAR2).[78]

Waste

There has been some progress in waste policy, particularly in implementing packaging and collection reforms and with the Track-1 clusters.

- **Collection and packaging reforms**: we have improved our assessment of collection and packaging reforms for the Fourth Carbon Budget period. Simpler Recycling, which covers England, has come into effect for businesses, along with the Extended Producer Responsibility for Packaging (pEPR), which applies across the UK.*[;79;80] Scores in the longer term are unchanged as there remain risks that these reforms will not deliver the expected emissions reductions.

  - The Government is yet to confirm its intention to prevent bio-degradable waste from going to landfill, a key measure to reduce emissions from waste in the CBDP. Requiring separate food waste collections from all local authorities and businesses will be key to delivering this. There are no plans to replace the Renewables Obligation Certificates (ROCs) incentive for capturing methane at landfill sites, which is due to end in 2027.

* Legislation for Simpler Recycling, which introduces consistent recycling collections for businesses (from 2025) and households (from 2026), as well as the pEPR scheme (enacted from 2025), was laid in December 2024.

- **CCS at EfW**: there has been progress in the development of the Track-1 clusters (see Box 3.2), along with a clarification of future EfW capacity needs, and integrating EfW in the ETS.*

  - Following a consultation in May 2024 we await confirmation of plans to include EfW in the UK ETS.[81]

  - The Government's residual waste infrastructure capacity note provides a welcome signal as to the future capacity needs for EfW in England. The note concludes that, following planned reforms, there is sufficient infrastructure capacity to treat residual municipal waste.[82]

- **Wastewater:** Ofwat's 2024 price review provides an allowance for spend on alternative treatments for wastewater to improve emissions. However, they expect emissions to increase over this price review period (2025 to 2030).[83] We have downgraded our assessment of data improvement in industrial wastewater due to delays (WA01).

  - Ofwat's 2024 price review (PR24) is the first price review to have common performance commitments for operational emissions. However, Ofwat expects the sector to increase operational emissions over the PR24 period to meet their statutory commitments (for example to reduce storm overflows). They expect the sector to limit this increase to less than 2%.[84] PR24 includes an allowance to spend £467 million across 31 wastewater enhancement schemes through the Net Zero challenge fund. These projects include the use of membrane aerated biofilm reactor and digital twins.[85]

Shipping

The publication of the Government's Maritime Decarbonisation Strategy and the International Maritime Organization's (IMO's) agreement on a fuel standard and emissions pricing mechanism for international shipping have led us to upgrade our assessment of decarbonisation policy in shipping.[86;87] Delivery of the CBDP pathway for shipping for the Fourth and Fifth Carbon Budget periods have very limited delivery risk, as shipping emissions are already below these levels. This is largely a result of decreased shipping activity rather than policy measures. Some delivery risks remain in the Sixth Carbon Budget period, as the design of relevant policies and measures have not been confirmed.

- **Maritime Decarbonisation Strategy**: the Strategy sets out the aim to reduce the UK domestic maritime sector's fuel lifecycle emissions to zero by 2050, with interim goals for at least a 30% reduction by 2030 and 80% reduction by 2040, compared to 2008 levels (SH01).† These targets are slightly more ambitious than the domestic CBDP pathway for the Fourth and Fifth Carbon Budget periods, but still around the level of today's domestic shipping emissions. They therefore imply negligible reduction in shipping emissions by 2030. The targets are broadly aligned with the CBDP for the Sixth Carbon Budget period. The policy commitments included in the Strategy change our assessment of domestic shipping policies, as they fill policy gaps that have previously existed in the sector.

  - **Fuel regulation**: subject to consultation in 2026, the Government said it will introduce domestic fuel regulations (no later than by 2032) to drive uptake of low-carbon energy.

* Abatement for CCS at EfW sites is not specified in the CBDP, emissions savings are included within savings for power sector decarbonisation and engineered removals.

† Fuel lifecycle emissions are also commonly referred to as well-to-wake emissions. This is a different accounting approach than what is used in our Seventh Carbon Budget Balanced Pathway for shipping or in the UK GHG inventory, which only count emissions from fuel use, or tank-to-wake emissions.

  - **Emissions pricing**: emissions from domestic shipping are planned to be included in the UK ETS from 2026. The exact scope of maritime emissions to be covered is still being decided, following a consultation that closed in January 2025.

  - **Decarbonisation at ports and while at berth**: the Government launched a call for evidence on Net Zero Ports and will publish a consultation from 2026. Related policy may come into effect in the late 2020s or early 2030s.

  - **Measures for smaller vessels and accelerating uptake in targeted subsectors:** the Government launched a call for evidence on emission reduction measures for small, sub-400 gross tonnes vessels and accelerating uptake in targeted subsectors. Informed by this, it said it will develop "proportionate measures" for reducing emissions, subject to formal consultation in 2026.

  - **Energy efficiency**: the Government said it will explore domestic measures for incentivising energy efficiency. It said it will also push for IMO's upcoming (by 1 January 2026 at the latest) review of its efficiency measures to further incentivise energy efficiency.

- **IMO midterm measures**: the IMO has approved a fuel standard and an emissions pricing mechanism for international shipping (SH02). They are due to be refined before being formally adopted in October 2025, to then enter into force in 2027. This development improves our assessment of international shipping policies.

  - **Global fuel standard**: ships are required to progressively reduce their annual greenhouse gas fuel intensity (GFI), measured as the amount of emissions per unit of energy used. This is calculated using a fuel lifecycle emissions approach.

  - **Global economic measure**: ships emitting above GFI thresholds will have to acquire remedial units to balance their emissions, while those using zero or near-zero emissions technologies will be eligible for financial rewards.

  - These measures will apply to ships over 5,000 gross tonnage – which contribute to around 85% of CO_2 emissions from international shipping.

Engineered removals

Progress in developing the key policy enablers for engineered removals remains slower than required. With no public update to engineered removals business models since December 2023, we downgrade our assessment in this area, slightly offset by plans for some BECCS removals becoming more robust with agreement reached on CO_2 infrastructure. The review into GGRs launched in March 2025 raises important questions but should not delay existing policy development processes.

- **Engineered removals business models:** GGR and power BECCS business models are expected to be the key drivers of engineered removals deployment in the near term. Whilst the Government has recently launched a consultation into amending the underpinning revenue support regulations, the last material development relating to the design and implementation of these business models was a government update in December 2023.[88;89] The lack of progress in the last year calls further into question the ability of these business models to deliver operational removals projects at the scale foreseen in the CBDP in time for the 2030 NDC. Our assessment for a share of the engineered removals for the 2030 NDC is downgraded to 'insufficient plans' (RE01).

- **CCS cluster infrastructure and funding**: financial close has been reached on CO_2 transport and storage infrastructure for both Track-1 CCS clusters (RE02, see Box 3.2).[90;91] These are important steps in getting essential infrastructure required for direct air carbon capture and storage (DACCS) and BECCS up and running. We now consider plans for the two EfW BECCS plants included in Track-1 cluster negotiations – one with funding assigned, one without – to be more robust.[92;93]

- **GGR review**: in March 2025 the Government launched an independent review of greenhouse gas removals, due to report in October 2025.[94] The review will consider how options for GHG removals can assist the UK in meeting its Net Zero targets out to 2050, including those approaches that are not reliant on CCS infrastructure, such as enhanced weathering and biochar.

- **Wider enablers**: there has been some progress in enabling policy and infrastructure for engineered removals. In February 2025 the Government published its decision to proceed with a support mechanism which would be expected to run to 2031, maintaining the possibility that existing large-scale biomass power generators can transition to power BECCS in the early 2030s. The Government ran a consultation on integrating GGR into the UK ETS, confirming an intention to integrate engineered removals into the ETS.[95] This is in line with recent Committee advice.

3.3.2 Key developments on enablers of effective delivery

Public engagement and awareness of household low-carbon choices

The Government has made progress in providing consumer-focused information about key household low-carbon technologies. The need to support people in shifting towards lower-carbon food has been acknowledged for the first time.

- The Government committed to publishing a Public Participation Strategy in 2025, which will set out how it will engage the public, seek its views as part of policy development, and support households' adoption of low-carbon technologies.[96] It is an opportunity to engage with the public on key household choices around home heating, driving, meat and dairy, and flying.

- The Government launched a campaign titled 'Feel all warm and fuzzy inside' to increase awareness on heat pumps and the Boiler Upgrade Scheme grant with the aim to increase the adoption of heat pumps in residential homes.[97;98]

- The Office for Zero-Emission Vehicles partnered with Charge UK, AutoTrader, and the Society of Motor Manufacturers and Traders (SMMT) to publish an electric vehicle fact sheet on the technology and its running costs.[99]

- The upcoming National Food Strategy presents an opportune moment for the Government to explore how it can support consumers to replace some beef and lamb consumption with lower-carbon foods.

Workers and skills

The Government has increased efforts to support the development of low-carbon skills in emerging industries, in the context of broader labour market reforms. However, further detail and implementation are still required, with an opportunity to address this in the Government's upcoming Industrial Strategy and Net Zero Skills Action Plan. The Government has:

- Established the Office for Clean Energy Jobs, Great British (GB) Energy, and Skills England. These bodies are expected to enable the growth of clean power supply chains, support regions transitioning from carbon-intensive industries to clean energy sectors, and ensure clean energy jobs are high-quality.[100] Government has also published an assessment of the current clean energy skills challenge as part of the Clean Power 2030 Action Plan.[101]

- Launched the Energy Skills Passport pilot, a digital platform to support professionals across the energy sector to move into renewables sectors.[102] Alongside it, the Regional Skills Pilot has provided investment and identified hubs for green jobs, an Employer Handbook has been published to support employers to develop a clean energy workforce, and the Clean Industry Bonus for offshore wind has been launched to support clean energy manufacturing and high quality jobs in industrial towns and cities.[103;104;105] There have also been developments in high-carbon industries across the UK with significant implications for the workforce, including a number of key manufacturing sites.

- In April 2025, the UK Government took operational control of British Steel's blast furnaces in Scunthorpe, after the company announced the furnaces' planned closure earlier in the year. This temporarily ended consultations to make up to 2,700 steelworkers redundant. The Government has not yet been able to reach an agreement with British Steel to modernise and decarbonise the plant, with its continued unprofitability leading to ongoing uncertainty for workers and the local community.[106]

- In October 2024, the final blast furnace in Port Talbot was closed. The Government has boosted funding to support Port Talbot steel businesses and workers, including a £500 million investment as part of Tata Steel's plans to build a new electric arc furnace in its place. The challenges facing the sector have been clear for many years and, given the local and national significance of this site, a more proactive and decisive transition plan should have been developed for Port Talbot.[107] Lessons should be learned quickly to avoid similar situations in other manufacturing sectors.

- In April 2025, Petroineos closed its crude oil refinery in Grangemouth due to high costs and falling demand, leading to 430 direct job losses. There has been some investment from the company to convert the plant into an import terminal, but workers and the wider community face continued uncertainty due to lack of clear timelines for the future of the site.[108;109] The Government has announced an additional £200 million in funding for the site, including a training guarantee for refinery staff and a set of proposed ideas for the site as part of Project Willow, but is yet to develop proactive transition plans that enable access to secure employment and opportunities for workers.[110]

Business and finance

The Government has taken some steps to improve clarity for businesses and to develop policies to promote sustainable finance. However, the implementation of key policies including the Green Taxonomy and Sustainability Disclosure Requirements continues to be delayed.

- In November 2024, the Chancellor set out that 'sustainable finance' would be one of the UK's five priorities in the Government's Financial Services Growth and Competitiveness Strategy, due to be published in Spring 2025.[111] The Government published draft legislation for bringing ESG ratings providers in scope of UK regulation. Government also consulted on the implementation of the UK Green Taxonomy (which has been delayed multiple times) and announced a further delay in publishing the full UK Sustainability Disclosure Requirements from late 2024 to early 2025.[112;113]

- The Government published principles for voluntary carbon markets at COP29 and launched a consultation on their implementation in April 2025.[114;115] The principles provide a welcome emphasis on the need for high-integrity credits and go some way to making clear that credits should be used only when businesses are making ambitious progress towards science-aligned climate targets.

- The recommendations of the UK Transition Finance Market Review were published, which emphasise the need for benchmarked sector-specific roadmaps, increased disclosure requirements to provide certainty for investors, and de-risking of investment opportunities. The Government founded the Transition Finance Council to oversee implementation.[116;117]

- The UK Infrastructure Bank has been relaunched as the National Wealth Fund (NWF), with more than £5.8 billion of investment allocated to green hydrogen, carbon capture, ports, gigafactories and green steel.[118] The NWF will work in partnership with Great British Energy.[119]

- The Net Zero Council was relaunched and expanded, bringing together representatives from government, businesses, civil society, and local authorities.[120] To be effective, the council should facilitate alignment between government and the private sector on ambitious sector transition plans, and ensure policy is developed with relevant insights from the private sector including on removing practical barriers to action.

- The Prime Minister's speech at the International Energy Association (IEA) summit offered positive messaging which may help build investor confidence in Net Zero and enable inward investment.[121] By providing further long-term policy certainty, the Government could help rebuild business and investor confidence and unlock private capital into key sectors such as buildings and industry.

3.4 Priority recommendations

3.4.1 Priority actions for the UK Government

In our advice on the UK's Seventh Carbon Budget, the Committee set out 43 priority recommendations that need to be enacted to put the country on track to deliver the emissions reductions that are required. These represent our priority recommendations for this report. They are set out in Annex 1.

Meeting the UK's emissions targets is achievable – most of the technologies and choices that are required are already available today. The markets for many of these are already growing quickly; when this combines with effective policy that provides confidence and certainty to drive these markets forward, change can happen quickly:

- This has been seen in the power sector – government support schemes coupled with clear long-term policy and effective market mechanism have enabled rapid growth and cost reductions for renewables, putting Great Britain on course for delivering a clean power system.

- This is beginning to be seen in surface transport – early purchase incentives followed by the introduction of the ZEV mandate and investment in charging are allowing the EV market to grow quickly, which is now having a measurable effect on emissions.

- The task for Government is to put the conditions in place for this growth to continue and extend across all the areas required. Policy is needed to provide confidence to investors and consumers; manage risks in new markets; remove barriers to delivery; and, in some cases, provide financial incentives where necessary.

Last year, we set out ten priority actions that needed to be acted upon urgently to achieve this. There has been strong progress in a number of these key areas (see Section 3.1.1), but action is needed with more urgency in several critical areas in order to get the country on track to meet its targets – the ten priority actions for the year ahead are set out in the following sections.

The Government will publish important new strategies and plans in a number of crucial areas over the coming months, including an updated Carbon Budget Delivery Plan. These new documents present an important opportunity to address many of the key actions above, ensuring that policy is well set up to support markets to continue to grow, costs to continue to fall, and emissions to continue to reduce.

Make electricity cheaper

As discussed above, making electricity cheaper is key to incentivising households, businesses, and industries to switch to low-carbon technologies. Over time, the transition to renewables will reduce reliance on volatile wholesale gas prices, which are the main driver of current GB wholesale electricity prices (see Annex 3). However, the Government can take immediate action to accelerate this by moving policy costs associated with past schemes, and those that are not directly related to the cost of electricity generation, off electricity bills. This will ensure that the price consumers pay better reflects the actual cost of supplying additional electricity (R2025-046).

- Our analysis shows that removing these policy costs could reduce the ratio of domestic electricity to gas prices from around 4:1 currently, to between 2:1 and 3:1, depending on how and where these costs are moved. This would bring UK prices into the range of other countries who are ahead on heat pump roll-out (see Figure 2.4).

- The Government has committed to consulting on this, but without any timetable. It should set out its preferred option and consult on it urgently. Box 3.3 discusses potential options.

- The Government should also consider options to reduce the cost of local public EV charging in residential areas. Public charging is significantly more expensive than charging at home, though rates vary across different types of public charge point.[122;123]

Box 3.3
Making electricity cheaper by removing policy costs

Policy costs are levied on the unit price of electricity at 20 times the rate of gas. Removing electricity policy costs would reduce annual electricity bills by £190 for the typical household with a gas boiler, and £490 for a typical household with a heat pump.* The Committee has included recommendations to make electricity cheaper since our 2021 Progress in reducing emissions report. In 2023, the Government accepted the Independent Review of Net Zero's recommendation to commit to outlining a clear approach to rebalancing policy costs, but no action has yet been taken.[124] There are different options for implementing this, with varying implications for households and the Exchequer.

- **Shifting policy costs from electricity onto gas bills.** This would not change total household spending on energy, but would shift its distribution. Households with electric heating systems or low gas consumption would see lower energy bills, whereas bills would rise for households with moderate to high gas consumption. This has the benefit of immediately reducing the electricity to gas price ratio from 4.3:1 to 2.1:1 at no Exchequer cost, but requires consideration of impacts for fuel poor households and households requiring high gas consumption.
- **Shifting policy costs from electricity onto the Exchequer.** This has the benefit of immediately reducing electricity bills for all households without increasing gas bills, but would require Exchequer funding, although most of these policy costs are expected to reduce over time as legacy policy costs expire. It would reduce the electricity to gas price ratio from 4.3:1 to 3.1:1.
- **Shifting some policy costs to gas bills, and some to taxes.** Shifting approximately 60% of policy costs to gas bills and the remainder to the Exchequer would decrease electricity bills for all households while reducing the electricity to gas price ratio from 4.3:1 to 2.5:1, without increasing total energy bills for the typical household with a gas boiler. This would still increase costs for households with high gas consumption, and require some Exchequer funding, but significantly less than shifting all policy costs onto the Exchequer. This approach was favoured by many participants in the citizens' panel for our Seventh Carbon Budget advice report.[125]
- **Combined or supplementary approaches:**
  - Energy UK and Nesta have proposed shifting policy costs to gas bills, while also providing targeted support for low-income households (such as expanding the Warm Homes Discount).[126] Similarly, organisations such as the Aldersgate Group and the Resolution Foundation have called for a social tariff providing discounted energy bills for low-income energy users.[127;128;129] Both options would allow Government to shift policy costs to gas bills while mitigating negative effects for households on the gas grid, as long as support can be targeted effectively.
  - Octopus Energy have proposed a consolidation of policy costs into a single envelope each for electricity and gas, which could be adjusted at fiscal events – allowing Government flexibility in balancing its different priorities.[130] The Cost of Energy Review similarly proposed aggregating the Renewables Obligation, Feed-in Tariffs, and legacy Contracts for Difference, to form a 'legacy bank', which would be separated, and the costs of which could be socialised.[131]
  - Other proposals from groups such as Citizens Advice, E3G, and others include accelerated depreciation of gas network assets, differential VAT rates for electricity and gas, carbon pricing for domestic gas, conversion of legacy renewables under the Renewables Obligation to Contract for Difference equivalents, a cap on the ratio of electricity to gas prices, and shifting electricity policy costs from winter to summer to delink them from heating costs.[132;133;134;135;136]

Levers for making electricity cheaper are different in Northern Ireland compared to Great Britain, where policy costs make up a smaller proportion of the typical electricity bill, the majority of homes use oil rather than gas boilers, and elements of the electricity market are integrated with the Republic of Ireland.

Other countries have already acted to make electricity cheaper. For example, the German Government removed the Erneuerbare-Energien-Gesetz-Umlage (a levy to finance the expansion of renewables) from electricity bills in 2022, funded through a combination of funds from ETS revenues and the federal budget.[137] Similarly, the Netherlands have gradually decreased taxes on electricity and increased taxes on gas, while providing income-related energy allowances and targeted rebates to support low-income households.[138]

* Policy costs included in this calculation include the Renewables Obligation, Energy Company Obligation, Feed-in Tariffs and legacy Contract for Difference payments (FIDER, Allocation Round 1, and Allocation Round 2) on unit rates, as well as the Warm Homes Discount on standing charges. A 'typical household with a gas boiler' refers to the Ofgem average dual-fuel usage of 2,700 kWh electricity and 11,500 kWh gas per household per year.

Provide confidence and certainty to scale heat pump deployment in existing buildings

The UK heat pump market grew by 56% in 2024, but uptake is still behind the rest of Europe. By around 2035, the market for low-carbon heating – and its supporting supply chains – needs to have scaled up to be able to deliver all new and replacement heating installations. The Government needs to ensure that its key schemes, including the Boiler Upgrade Scheme and the Clean Heat Market Mechanism, are consistent with this ambition and that its Warm Homes Plan provides confidence and clarity to both businesses and consumers (R2025-059; R2025-061; R2025-062).

- To eliminate emissions from homes by 2050 and avoid unnecessary costs associated with boilers being replaced before the end of their typical lifetime, no new fossil fuel boilers should be installed from 2035. This requires deployment of low-carbon heating systems to reach the replacement rate of existing heating systems by that point.

- Increasing installations of low-carbon heating at the necessary rate requires clear long-term policies to support development of the market and advance innovation in technology and business models for retrofit. Failing to achieve required deployment rates will put emissions targets at risk and increase the cost of delivering them.

Implement regulations to ensure that new homes are not connected to the gas grid

With the Government aiming to build 1.5 million new homes over the course of this Parliament, it is essential to ensure that these are built in a manner that is fit for the future. This means all new homes should be built with low-carbon heating. Last year, 71% of new homes were built with fossil fuel boilers, creating additional emissions, baking in costs for future owners to retrofit these homes with low-carbon heating, and leading to poorer air quality for the families who move in (Box 3.4). The Government's proposed Future Homes Standard should be implemented without further delay, to ensure no new homes are connected to the gas grid (R2025-060).

Box 3.4
The impacts of fossil fuel boiler installations in new homes

Building new homes with fossil fuel boilers creates unnecessary emissions and future costs. The significance of these is increased by the Government's ambitious housebuilding targets.

The Government's proposed Future Homes Standard (FHS) will require all new homes to have low-carbon heating systems. However, delays to changing the Building Regulations to implement this mean that buildings may still be constructed with fossil fuel boilers in 2027.

The Government has set out an ambition to build 1.5 million new homes by 2029, which is an average of 300,000 homes a year.[139] If the proportion of homes built with fossil fuel boilers stays at current rates, this will add 210,000 homes a year with fossil fuel boilers. These additional boilers would increase emissions and generate additional cost for future retrofitting as well as contributing to air pollution.

- **Emissions**: a typical new home with a gas boiler emits about 1.2 tCO_2e per year. Every year of delay in implementing the FHS could therefore create additional annual emissions of around 0.25 $MtCO_2e$. These additional emissions would need to be counterbalanced by additional reductions elsewhere.
- **Costs**: all new homes constructed with fossil fuel boilers will require retrofitting with low-carbon heating by 2050. Retrofitting low-carbon heating is more costly than installing it at the time of construction. Assuming an additional net cost of £5,000 per home, every year of delay to the FHS will add around £1 billion to the cost of reaching Net Zero. These future retrofit costs are likely to be borne by households.

The above figures are estimates for the impact of a one-year delay. Allowing new homes to be built with fossil fuel boilers in 2025, 2026, and 2027, rather than requiring low-carbon heating from today, could result in more than 600,000 new boilers, creating around 0.8 $MtCO_2e$ of additional emissions per year. If these boilers have a lifetime of 15 years, they would generate around 11 $MtCO_2e$ over their lifetime. Retrofitting these homes with heat pumps would cost around £3.2 billion.

Introduce a comprehensive programme to decarbonise public sector buildings

Public sector buildings account for around 9 $MtCO_2e$ of emissions each year. Decarbonising these offers the opportunity to reduce these emissions and help grow heat pump supply chains. A strategic, coordinated plan and long-term funding are needed to deliver this (R2025-064).

- Most departments have made strong progress towards meeting their Greening Government Commitments (due this year), and Phase 4 of the Public Sector Decarbonisation Scheme has begun to deliver funding through a more targeted allocation approach.

- The Government needs to build upon these steps to put in place a comprehensive programme to deliver decarbonisation across the entire public sector estate, supported by long-term funding. This would also provide an opportunity to grow heat pump supply chains and, with action on electricity prices, enable operational cost savings.

Accelerate the electrification of industrial heat

The Government's Industrial Strategy, due this year, and Industrial Decarbonisation Strategy, due in 2026, must support a rapid transition to electric heat across much of industry, including ensuring that financial barriers and non-financial issues such as grid connections do not hinder electrification (R2025-065).

- The Government has agreed to link the UK ETS with the EU ETS, which should promote further decarbonisation in industry.

Effectively deliver rapid expansion of the low-carbon electricity system

The Sixth Allocation Round (AR6) was a success, securing a record 9.6 GW of new renewables capacity.* The pipeline of future capacity looks promising, but will need to continue to grow to meet the Government's goals for a clean power system by 2030 (Box 3.5). The AR7 auctions will be critical to achieving this, given that projects typically take several years to come onstream (R2025-071; R2025-072).

* While this was a positive result, Ørsted have since taken the decision not to progress with the 2.4 GW offshore wind project, Hornsea 4. Nonetheless, industry analysis indicates that several other viable offshore wind projects were either not selected or unable to participate in AR6, providing confidence that this shortfall could yet be made up in future allocation rounds.

Box 3.5
The role of low-carbon electricity in reducing emissions

In the Committee's Seventh Carbon Budget advice, 60% of the required emissions reduction is delivered through electrification and low-carbon electricity.

UK-based renewable energy provides the bulk of generation in a larger, future electricity system. Electricity then replaces oil and gas across most of the economy, including EVs, buildings, and much of industry. This requires twice as much electricity as today by 2040. As well as being low carbon, electric technologies are highly efficient.

- Delivering this requires continued growth of renewables deployment over the coming years, to ensure a rapid scale-up in supply of low-carbon electricity.
  - Renewable generation from wind and solar is well established and is the cheapest form of new electricity generation capacity.
  - The UK also benefits from extensive wind resources.
  - As such, renewables have an essential role to play in achieving Net Zero and meeting the vast majority of demand in the Balanced Pathway. This will require strong and sustained deployment of renewables capacity.
- Alongside renewables, storable forms of energy including nuclear, low-carbon dispatchable generation (either gas CCS or hydrogen), batteries and other forms of storage, as well as interconnection to neighbouring markets and smart demand flexibility, ensure a reliable supply of electricity even in adverse weather years.
- These technologies need to be accompanied by rapidly expanding the transmission grid, upgrading the distribution network, and speeding up the grid connection process.

Put policies and incentives in place to ramp up tree planting and peatland restoration

Due to the lag in sequestration, tree planting must be upscaled in the 2020s for its abatement impact to be felt from 2040 and beyond. There was some progress in 2024 on both tree planting and peatland restoration, but longer-term certainty on funding – across all four nations – is crucial (R2025-068; R2025-069).

- The proposed Land Use Framework for England could provide an effective basis for a policy and incentive landscape that optimises the use of land to deliver on a wide range of objectives such as climate mitigation and adaptation, food security and nature. However, it remains unclear how this framework will drive change on the ground.

Develop policy to ensure that the aviation industry takes responsibility for its emissions reaching Net Zero by 2050

Aviation emissions have risen quickly over the past two years, returning to pre-pandemic levels. As a result, aviation now contributes more to UK emissions than electricity supply. If this growth continues, it could pose a risk to meeting future targets. To mitigate this, the cost of decarbonising aviation and addressing non-CO_2 effects should be reflected in the cost to fly. This will help manage growth in aviation demand in line with Net Zero and generate the revenues needed to pay for sustainable aviation fuel and engineered removals (R2025-075).

- The SAF Mandate coming into force in 2025 and Sustainable Aviation Fuel Bill are positive steps towards this. More needs to be done to ensure the aviation sector has access to and pays for engineered removals. Including more of the aviation sector (alongside engineered removals) in a strengthened UK ETS could be one option to deliver this.

- Low-carbon aviation technologies are at an early stage of development and the balance between them is uncertain – multiple options should be pursued. Government may need to take additional demand management measures if aviation sector emissions are not developing in line with Net Zero.

Finalise business models for engineered removals

Final investment decisions have been reached on CO_2 transport and storage infrastructure at both Track 1 CCS clusters, which is a crucial step towards delivering the first engineered removals in the UK. To build upon this, the Government needs to finalise business models for engineered removal operations, so that these can be opened to the market (R2025-084).

- New projects of significant scale will typically take around three to five years to build and commission following investment. Despite the progress on CCS infrastructure for removals to connect to, without a clear funding source it is becoming increasingly challenging for engineered removals to deliver the emissions savings of around 6 $MtCO_2e$ in the CBDP by 2030.

Publish a strategy to support skills

The number of workers employed in green jobs has grown by 20% over the past two years. This growth will need to accelerate. Growing the workforce is a critical enabler in areas such as heat pump installation and tree planting. The new Office for Clean Energy Jobs and Skills England should develop a strategy to support workers in sectors which need to grow or transition and in communities that may be adversely impacted (R2025-051; R2025-052).

3.4.2 Priority actions for Scotland, Wales, and Northern Ireland

We also set out our recommendations to the Scottish Government, the Welsh Government, and the Northern Ireland Executive in our recent advice reports on their respective carbon budgets. These recommendations also form our recommendations for each nation in this report. These are set out in Annex 1.

In many cases, these priority recommendations overlap with the key actions required at a UK level set out above, emphasising the importance of the four nations working together to design and implement effective decarbonisation plans that deliver emissions reductions that contribute to both UK and devolved emissions targets.

Endnotes

[1] British Vehicle Rental and Leasing Association (2025) *Emission Testing of Plug-in Hybrid Vehicles (Utility Factors) Fact Sheet – January 2025*. https://www.bvrla.co.uk/resource/emission-testing-of-plug-in-hybrid-vehicles.html.

[2] Department for Transport (2024) *VEH11153b_All: Vehicle licensing statistics tables.* https://www.gov.uk/government/statistical-data-sets/vehicle-licensing-statistics-data-tables.

[3] Office for Zero Emission Vehicles (2025) *Guidance Electric vehicles: costs, charging and infrastructure*. https://www.gov.uk/government/publications/electric-vehicles-costs-charging-and-infrastructure/electric-vehicles-costs-charging-and-infrastructure.

[4] Royal Automobile Club (2025) *Car tax bands: a complete guide to car tax*. https://www.rac.co.uk/drive/advice/buying-and-selling-guides/car-tax-bands-explained/.

[5] HM Treasury (2024) *Autumn Statement 2024*. https://assets.publishing.service.gov.uk/media/672b9695fbd69e1861921c63/Autumn_Budget_2024_Accessible.pdf.

[6] Department for Transport (2024) *Zero emission vans: regulatory flexibility*. https://www.gov.uk/government/consultations/zero-emission-vans-regulatory-flexibility/zero-emission-vans-regulatory-flexibility.

[7] Innovate UK (2025) *New infrastructure for zero emission HGVs unveiled at haulage industry summit.* https://iuk-business-connect.org.uk/news/new-infrastructure-for-zero-emission-hgvs-unveiled-at-haulage-industry-summit/.

[8] HM Treasury (2024) *Autumn Statement 2024*. https://assets.publishing.service.gov.uk/media/672b9695fbd69e1861921c63/Autumn_Budget_2024_Accessible.pdf.

[9] Department for Transport (2025) *£3 national bus fare cap.* https://www.gov.uk/guidance/3-national-bus-fare-cap.

[10] Active Travel England (2025) *Almost £300 million to gear up new walking, wheeling and cycling schemes.* https://www.activetravelengland.gov.uk/news/almost-ps300m-gear-new-walking-wheeling-and-cycling-schemes.

[11] Department for Transport (2025) *Integrated National Transport Strategy: a call for ideas.* https://www.gov.uk/government/calls-for-evidence/integrated-national-transport-strategy-a-call-for-ideas/integrated-national-transport-strategy-a-call-for-ideas.

[12] Department for Transport (2024) *Press release: Better buses on the way as government introduces new legislation to boost local control of services.* https://www.gov.uk/government/news/better-buses-on-the-way-as-government-introduces-new-legislation-to-boost-local-control-of-services.

[13] Transport and Environment (2025) *Mission accomplished: carmakers fulfil the 2024 ZEV mandate*. https://www.transportenvironment.org/uploads/files/2025_01_TE_UK_ZEV_mandate_2024_compliance_briefing.pdf.

[14] Society of Motor Manufacturers and Traders (2025) *Brits enjoy best ever EV choice with more than a hundred models now available*. https://www.smmt.co.uk/brits-enjoy-best-ever-ev-choice-with-more-than-a-hundred-models-now-available/.

[15] Autotrader (2025) *Road to 2030*. https://autotraderroadto2030.co.uk/.

[16] Department for Transport (2025) *Electric vehicle public charging infrastructure statistics: January 2025*. https://www.gov.uk/government/statistics/electric-vehicle-public-charging-infrastructure-statistics-january-2025.

[17] Zapmap (2024) *Zapmap EV Charging Survey November 2024*. https://www.zap-map.com/ev-stats/ev-charging-survey.

[18] Office for Zero Emission Vehicles (2025) *Guidance Electric vehicles: costs, charging and infrastructure*. https://www.gov.uk/government/publications/electric-vehicles-costs-charging-and-infrastructure/electric-vehicles-costs-charging-and-infrastructure.

[19] Electric Vehicle UK and New Automotive (2025) *Cost of driving electric: Report 2025*. Electric-vehicles-uk-code-report-27-2-25.pdf.

[20] National Renewable Energy Laboratory (2023) *Electric vehicle efficiency ratios for light-duty vehicles registered in the United States*. https://docs.nrel.gov/docs/fy23osti/84631.pdf.

[21] Royal Automobile Club (2025) *The cost of running an electric car*. https://www.rac.co.uk/drive/electric-cars/running/the-costs-of-running-an-electric-car/.

[22] Bloomberg New Energy Finance (2024*) Lithium-Ion Battery Pack Prices See Largest Drop Since 2017, Falling to $115 per Kilowatt-Hour: BloombergNEF*. https://about.bnef.com/blog/lithium-ion-battery-pack-prices-see-largest-drop-since-2017-falling-to-115-per-kilowatt-hour-bloombergnef/.

[23] International Energy Agency (2025) *Global EV Outlook 2025; electric vehicle charging*. https://www.iea.org/reports/global-ev-outlook-2025/electric-vehicle-charging.

[24] Department for Transport (2025) *Consultation outcome: Phasing out sales of new petrol and diesel cars from 2030 and supporting the ZEV transition: summary of responses and joint government response*. https://www.gov.uk/government/consultations/phasing-out-sales-of-new-petrol-and-diesel-cars-from-2030-and-supporting-the-zev-transition.

[25] Department for Energy Security and Net Zero (2025) *Heat pump deployment statistics*. https://www.gov.uk/government/statistics/heat-pump-deployment-statistics-december-2024.

[26] Energy Security and Net Zero Committee (2025) *Oral evidence: Work of the Department for Energy Security and Net Zero, HC 396, Q397*. https://committees.parliament.uk/oralevidence/15239/html/.

[27] Scottish Government (2023) *Delivering net zero for Scotland's buildings – Heat in Buildings Bill: consultation.* https://www.gov.scot/publications/delivering-net-zero-scotlands-buildings-consultation-proposals-heat-buildings-bill/.

[28] Department for Energy Security and Net Zero (2025) *United Kingdom of Great Britain and Northern Ireland's 2035 Nationally Determined Contribution.* https://www.gov.uk/government/publications/uks-2035-nationally-determined-contribution-ndc-emissions-reduction-target-under-the-paris-agreement/united-kingdom-of-great-britain-and-northern-irelands-2035-nationally-determined-contribution.

[29] UK Parliament Hansard (2025) *Energy Prices: Energy-intensive Industries (Volume 766: Thursday 1 May 2025).* *https://hansard.parliament.uk/Commons/2025-05-01/debates/CF35F9FD-B32E-4D11-A109-598359DBE582/EnergyPricesEnergy-IntensiveIndustries.*

[30] UK Steel (2024) *Tata Steel and UK Government agrees £500 million Grant Funding Agreement*. https://www.uksteel.org/steel-news-2024/tata-steel-and-uk-government-agrees-500-million-grant-funding-agreement-as-part-of-125bn-low-emission-steel-package.

[31] Department for Business and Trade (2025) *The steel strategy: the plan for steel.* https://www.gov.uk/government/consultations/input-into-the-steel-strategy/the-steel-strategy-the-plan-for-steel.

[32] HM Treasury (2025) *Factsheet: Carbon border adjustment mechanism.* https://www.gov.uk/government/publications/factsheet-carbon-border-adjustment-mechanism-cbam/factsheet-carbon-border-adjustment-mechanism.

[33] UK Government (2024) *UK Emissions Trading Scheme: Moving the Second UK ETS Free Allocation Period Authority Response.* https://assets.publishing.service.gov.uk/media/676000e81857548bccbcfa2a/ukets-moving-second-free-allocation-period-authority-response.pdf.

[34] Department for Energy Security and Net Zero (2024) *Hydrogen Strategy Update to the Market: December 2024*. https://assets.publishing.service.gov.uk/media/6761915126a2d1ff18253493/hydrogen-strategy-update-to-the-market-december-2024.pdf.

[35] Department for Energy Security and Net Zero (2025) *Hydrogen Allocation Round 2 (HAR2): projects.* https://www.gov.uk/government/publications/hydrogen-allocation-round-2-har2-projects.

[36] EET Hydrogen (2025) *EET Hydrogen leads the North West's low carbon economy with over 30 customer agreements*. https://eethydrogen.com/2025/04/08/eet-hydrogen-leads-the-north-wests-low-carbon-economy-with-over-30-customer-agreements.

[37] Redcar and Cleveland (2023) *H2Teesside Statutory Consultation*. https://www.redcar-cleveland.gov.uk/sites/default/files/2023-09/Question%20and%20answer%20document.pdf.

[38] Department for Energy Security and Net Zero (2025) *Collection: UK carbon capture, usage and storage (CCUS)*. https://www.gov.uk/government/collections/uk-carbon-capture-usage-and-storage-ccus.

[39] UK Parliament (2024) *Carbon Capture, Usage and Storage Track 1 - Contingent Liabilities*. https://questions-statements.parliament.uk/written-statements/detail/2024-11-13/HCWS211.

[40] Department for Energy Security and Net Zero (2024) *Letter: UK CCUS Programme*. committees.parliament.uk/publications/46070/documents/229364/default.

[41] Department for Environment, Food and Rural Affairs (2025) *Leading food experts join Government food strategy to restore pride in British food.* https://www.gov.uk/government/news/leading-food-experts-join-government-food-strategy-to-restore-pride-in-british-food.

[42] Department for Environment, Food and Rural Affairs (2025) *Government announces reforms to boost profits for farmers with a cast iron commitment to food production.* https://www.gov.uk/government/news/government-announces-reforms-to-boost-profits-for-farmers-with-a-cast-iron-commitment-to-food-production.

[43] Department for Environment, Food and Rural Affairs (2025) *Land Use Consultation.* https://consult.defra.gov.uk/land-use-framework/land-use-consultation/.

[44] Department for Environment, Food and Rural Affairs (2025) *Coming soon: grants for equipment, technology and innovation.* https://defrafarming.blog.gov.uk/2025/02/25/coming-soon-grants-for-equipment-technology-and-innovation/.

[45] Department for Environment, Food and Rural Affairs; Scottish Government; Department of Agriculture, Environment and Rural Affairs of Northern Ireland (Daera); Welsh Government; Forestry Commission (2024) *Government launches Tree Planting Taskforce to oversee planting of millions of trees across our four nations*. https://www.gov.uk/government/news/government-launches-treeplantingtaskforce-to-oversee-planting-of-millions-of-trees-across-our-four-nations#:~:text=The%20announcement%20today%20comes%20after%E2%80%AFa%20commitment%20in%20the%20Budget%20to%20provide%E2%.

[46] Department for Environment, Food, and Rural Affairs; Scottish Government; Department of Agriculture, Environment and Rural Affairs of Northern Ireland; Welsh Government; Forestry Commission (2024) *Government launches Tree Planting Taskforce to oversee planting of millions of trees across our four nations*. https://www.gov.uk/government/news/government-launches-treeplantingtaskforce-to-oversee-planting-of-millions-of-trees-across-our-four-nations#:~:text=The%20announcement%20today%20comes%20after%E2%80%AFa%20commitment%20in%20the%20Budget%20to%20provide%E2%.

[47] Department for Environment, Food, and Rural Affairs (2023) *Landscape Recovery: sharing the successful second round projects.* https://defrafarming.blog.gov.uk/2023/11/29/round-two-projects/.

[48] Forest Research (2024) *Forestry Statistics 2024*. https://www.forestresearch.gov.uk/tools-and-resources/statistics/publications/forestry-statistics/forestry-statistics-2024/.

[49] Department for Environment, Food, and Rural Affairs; Scottish Government; Department of Agriculture, Environment and Rural Affairs of Northern Ireland; Welsh Government;Forestry Commission (2024) *Government launches Tree Planting Taskforce to oversee planting of millions of trees across our four nations*. https://www.gov.uk/government/news/government-launches-treeplantingtaskforce-to-oversee-planting-of-millions-of-trees-across-our-four-nations.

[50] Department for Environment, Food, and Rural Affairs; Natural England (2025) *England Peat Map.* https://environment.data.gov.uk/dataset/3c72669a-1331-4930-a12d-b4f8032aa5cd.

[51] Department for Energy Security and Net Zero (2025) *Clean Power 2030 Action Plan*. https://www.gov.uk/government/publications/clean-power-2030-action-plan.

[52] Ministry of Housing, Communities and Local Government (MHCLG); HM Treasury; Department for Energy Security and Net Zero; Department for Levelling Up, Housing and Communities (DLUHC) (2024) *Policy statement on onshore wind*. https://www.gov.uk/government/publications/policy-statement-on-onshore-wind/policy-statement-on-onshore-wind.

[53] Ministry of Housing, Communities and Local Government (2025) *Guide to the Planning and Infrastructure Bill*. https://www.gov.uk/government/publications/the-planning-and-infrastructure-bill/guide-to-the-planning-and-infrastructure-bill#what-does-the-bill-do.

[54] Ofgem (2025) *Decision on Connections Reform Package (TM04+)*. https://www.ofgem.gov.uk/decision/decision-connections-reform-package-tm04.

[55] Department for Energy Security and Net Zero (2025) *NESO Strategic Spatial Energy Plan methodology*. https://www.gov.uk/government/publications/neso-strategic-spatial-energy-plan-methodology.

[56] Ofgem (2025) *Regional Energy Strategic Plan policy framework decision.* https://www.ofgem.gov.uk/decision/regional-energy-strategic-plan-policy-framework-decision.

[57] Ofgem (2025) *Framework decision: electricity distribution price control (ED3)*. https://www.ofgem.gov.uk/decision/framework-decision-electricity-distribution-price-control-ed3.

[58] Department for Energy Security and Net Zero (2024) *Contract for Difference (CfD) Allocation Round 6: results*. https://www.gov.uk/government/publications/contracts-for-difference-cfd-allocation-round-6-results.

[59] Ørsted (2025) *Ørsted to discontinue the Hornsea 4 offshore wind project in its current form*. https://orsted.com/en/company-announcement-list/2025/05/orsted-to-discontinue-the-hornsea-4-offshore-wind--143901911.

[60] Department for Energy Security and Net Zero (2024) *Contracts signed for UK's first carbon capture projects in Teesside*. https://www.gov.uk/government/news/contracts-signed-for-uks-first-carbon-capture-projects-in-teesside.

[61] Department for Energy Security and Net Zero (2024) *Government reignites industrial heartlands 10 days out from the International Investment Summit.* https://www.gov.uk/government/news/government-reignites-industrial-heartlands-10-days-out-from-the-international-investment-summit.

[62] Department for Energy Security and Net Zero (2024) *Hydrogen to power: market intervention need and design*. https://www.gov.uk/government/consultations/hydrogen-to-power-market-intervention-need-and-design.

[63] Department for Energy Security and Net Zero (2024) *Long duration electricity storage: proposals to enable investment*. https://www.gov.uk/government/consultations/long-duration-electricity-storage-proposals-to-enable-investment.

[64] Department for Energy Security and Net Zero (2025) *Transitional support mechanism for large-scale biomass electricity generators*. https://www.gov.uk/government/consultations/transitional-support-mechanism-for-large-scale-biomass-electricity-generators.

[65] Department for Energy Security and Net Zero (2024) *Review of electricity market arrangements (REMA): autumn update, 2024*. https://www.gov.uk/government/publications/review-of-electricity-market-arrangements-rema-autumn-update-2024.

[66] Department for Transport (2025) *Sustainable Aviation Fuel (SAF) Mandate*. https://www.gov.uk/government/collections/sustainable-aviation-fuel-saf-mandate.

[67] UK Parliament (2025) *Sustainable Aviation Fuel Bill*. https://bills.parliament.uk/bills/3972/publications.

[68] Climate Change Committee (2025) *The Seventh Carbon Budget: Advice for the UK Government*. https://www.theccc.org.uk/wp-content/uploads/2025/02/The-Seventh-Carbon-Budget.pdf.

[69] UK Government (2025) *London Luton Airport Expansion development consent decision announced*. https://www.gov.uk/government/news/london-luton-airport-expansion-development-consent-decision-announced.

[70] UK Government (2024) *Recovered appeal: London City Airport, Hartman Road, Silvertown London E16 2PX (ref: 3326646 - 19 August 2024)*. https://www.gov.uk/government/publications/recovered-appeal-london-city-airport-hartman-road-silvertown-london-e16-2px-ref-3326646-19-august-2024.

[71] Department for Transport (2025) *Transport planning: Gatwick Airport*. https://www.gov.uk/government/speeches/transport-planning-gatwick-airport.

[72] HM Treasury and Department for Transport (2025) *Government backs Heathrow expansion to kickstart economic growth*. https://www.gov.uk/government/news/government-backs-heathrow-expansion-to-kickstart-economic-growth

[73] Argus Media (2025) *Global SAF Capacity*. https://view.argusmedia.com/global-saf-capacity-map.html. (Accessed: 15 May 2025).

[74] Department for Transport (2024) *Implementing the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)*. https://www.gov.uk/government/consultations/implementing-the-carbon-offsetting-and-reduction-scheme-for-international-aviation-corsia.

[75] European Commission (2025) *Commission welcomes ICAO agreement on new aircraft standards for fuel efficiency and noise levels driving sustainability in aviation*. https://transport.ec.europa.eu/news-events/news/commission-welcomes-icao-agreement-new-aircraft-standards-fuel-efficiency-and-noise-levels-driving-2025-03-03_en.

[76] Department for Transport (2024) *Airspace modernisation*. https://www.gov.uk/government/publications/airspace-modernisation/airspace-modernisation.

[77] Reuters (2025) *Airbus postpones development of new hydrogen aircraft*. https://www.reuters.com/business/aerospace-defense/airbus-postpones-development-new-hydrogen-aircraft-2025-02-07/.

[78]Department for Energy Security and Net Zero (2025) *Hydrogen Allocation Round 2 (HAR2): shortlisted projects.* https://www.gov.uk/government/publications/hydrogen-allocation-round-2-har2-projects/hydrogen-allocation-round-2-har2-shortlisted-projects.

[79] Department for Environment, Food and Rural Affairs (2024) *Simpler Recycling in England: policy update*. https://www.gov.uk/government/publications/simpler-recycling-in-england-policy-update/simpler-recycling-in-england-policy-update.

[80] Department for Environment, Food and Rural Affairs; Welsh Government; Scottish Government; Department of Agriculture, Environment and Rural Affairs of Northern Ireland; PackUK (2024) *UK joint policy statement on packaging Extended Producer Responsibility*. https://www.gov.uk/government/publications/uk-joint-policy-statement-on-extended-producer-responsibility-for-packaging/uk-joint-policy-statement-on-packaging-extended-producer-responsibility#fn:1.

[81] Department for Energy Security and Net Zero (2024) *UK Emissions Trading Scheme scope expansion: waste*. https://www.gov.uk/government/consultations/uk-emissions-trading-scheme-scope-expansion-waste.

[82] Department for Environment, Food and Rural Affairs (2024) *Residual waste infrastructure capacity note*. https://www.gov.uk/government/publications/residual-waste-infrastructure-capacity-note/residual-waste-infrastructure-capacity-note#conclusion.

[83] Ofwat (2024) *Our final determinations for the 2024 price review*. https://www.ofwat.gov.uk/wp-content/uploads/2024/12/PR24-FD-sector-summary.pdf.

[84] Ofwat (2025) *PR24 final determinations: Delivering outcomes for customers and the environment*.

[85] Ofwat (2024) *PR final determinations Expenditure allowances*. https://www.ofwat.gov.uk/wp-content/uploads/2024/12/PR24-final-determinations-Expenditure-allowances-V2.pdf. PR24-final-determinations-Expenditure-allowances-V2.pdf.

[86] Department for Transport (2025) *Maritime decarbonisation strategy.* https://www.gov.uk/government/publications/maritime-decarbonisation-strategy.

[87] International Maritime Organisation (2025) *IMO approves net-zero regulations for global shipping*. https://www.imo.org/en/MediaCentre/PressBriefings/pages/IMO-approves-netzero-regulations.aspx.

[88] Department for Energy Security and Net Zero (2025) *Proposals for greenhouse gas removal and power bioenergy with carbon capture and storage regulations.* https://www.gov.uk/government/consultations/proposals-for-greenhouse-gas-removal-and-power-bioenergy-with-carbon-capture-and-storage-regulations.

[89] Department for Energy Security and Net Zero (2023) *Greenhouse Gas Removals – Update on the design of the Greenhouse Gas Removals (GGR) Business Model and Power Bioenergy with Carbon Capture and Storage (Power BECCS) Business Model*. https://www.gov.uk/government/publications/greenhouse-gas-removals-ggr-business-model.

[90] UK Government (2024) *Government reignites industrial heartlands 10 days out from the International Investment Summit.* https://www.gov.uk/government/news/government-reignites-industrial-heartlands-10-days-out-from-the-international-investment-summit.

[91] UK Government (2025) *Major carbon capture project to deliver jobs and growth.* https://www.gov.uk/government/news/major-carbon-capture-project-to-deliver-jobs-and-growth.

[92] UK Parliament (2024) *Carbon Capture, Usage and Storage Track 1 - Contingent Liabilities. Statement made on 13 November 2024.* https://questions-statements.parliament.uk/written-statements/detail/2024-11-13/HCWS211.

[93] Department for Energy Security and Net Zero (2023) *Cluster sequencing Phase-2: Track-1 project negotiation list, March 2023.* https://www.gov.uk/government/publications/cluster-sequencing-phase-2-eligible-projects-power-ccus-hydrogen-and-icc/cluster-sequencing-phase-2-track-1-project-negotiation-list-march-2023.

[94] Department for Energy Security and Net Zero (2025) *Independent Review of Greenhouse Gas Removals: terms of reference.* https://www.gov.uk/government/publications/greenhouse-gas-removals-ggrs-independent-review/independent-review-of-greenhouse-gas-removals-terms-of-reference.

[95] UK Government (2024) *Integrating greenhouse gas removals in the UK Emissions Trading Scheme*. https://www.gov.uk/government/consultations/integrating-greenhouse-gas-removals-in-the-uk-emissions-trading-scheme.

[96] Department for Energy Security and Net Zero (2024) *Accelerating to Net Zero: responding to the CCC progress report and delivering the Clean Energy Superpower Mission.* https://www.gov.uk/government/publications/committee-on-climate-change-2024-progress-report-government-response.

[97] Decision Marketing (2024) *M&C adopts fuzzy characters for Govt heat pump push*. https://www.decisionmarketing.co.uk/news/mc-adopts-fuzzy-characters-for-govt-heat-pump-push.

[98] UK Government (no date) *Heat pumps*. https://energy-efficient-home.campaign.gov.uk/heat-pump/. (Accessed: 7 April 2025).

[99] AutoTrader (no date) *Dispelling the common myths around electric vehicles.* https://www.autotraderinsight-blog.co.uk/auto-trader-insight-blog/dispelling-the-common-myths-around-electric-vehicles. (Accessed: 7 April 2025).

[100] Department for Education (2024) *Skills England: Driving growth and widening opportunities.* https://assets.publishing.service.gov.uk/media/66ffd4fce84ae1fd8592ee37/Skills_England_Report.pdf.

[101] Department for Energy Security and Net Zero (2025) *Assessment of the clean energy skills challenge*. https://www.gov.uk/government/publications/clean-power-2030-action-plan-assessment-of-the-clean-energy-skills-challenge/assessment-of-the-clean-energy-skills-challenge#clean-energy-jobs-statistics-and-analysis-in-government.

[102] Offshore Energies UK (OEUK) (2025) *Energy Skills Passport launches, helping workers transition across the energy mix.* https://oeuk.org.uk/energy-skills-passport-launches-helping-workers-transition-across-the-energy-mix/.

[103] Department of Energy Security and Net Zero (2024*) New industry bonus opens to support good jobs and low carbon manufacturing factories.* https://www.gov.uk/government/news/new-industry-bonus-opens-to-support-good-jobs-and-low-carbon-manufacturing-factories.

[104] Department for Energy Security and Net Zero (2024) *Support for workers to benefit from thousands of clean power jobs.* https://www.gov.uk/government/news/support-for-workers-to-benefit-from-thousands-of-clean-power-jobs.

[105] Department for Energy Security and Net Zero (2025) *Clean Energy Jobs Employer Handbook.* https://oeuk.org.uk/wp-content/uploads/2025/01/Clean-Energy-Jobs-Handbook.pdf.

[106] Adden, R. (2025) *British Steel redundancy plans halted after rescue.* https://www.bbc.co.uk/news/articles/cn4w0ewpjnjo.

[107] UK Government (2024) *UK Government increases funding for Port Talbot steel communities.* https://www.gov.uk/government/news/uk-government-increases-funding-for-port-talbot-steel-communities#:~:text=The%20UK%20Government%20more%20than,Talbot%20steel%20businesses%20and%20workers.&text=Support%20fund%20for%20businesses%20and,on%20Tata%20Steel%20Port%20Talbot.

[108] Just Transition Commission (2024) *The Grangemouth Refinery Closure*. https://www.justtransition.scot/wp-content/uploads/2024/07/The-Grangemouth-Refinery-Closure-Workers-Perspectives-web-edition.pdf.

[109] Scottish Government (2025*) Securing a future for Grangemouth: First Minister's statement – 18 February 2025*. https://www.gov.scot/publications/securing-a-future-for-grangemouth-first-ministers-statement-17-february-2025/.

[110] UK Government (2025) *Prime Minister announcement on Grangemouth.* https://www.gov.uk/government/news/prime-minister-announcement-on-grangemouth.

[111] UK Government (2024) *Financial Services Growth and Competitiveness Strategy.* *https://www.gov.uk/government/calls-for-evidence/financial-services-growth-and-competitiveness-strategy*https://www.gov.uk/government/calls-for-evidence/financial-services-growth-and-competitiveness-strategy.

[112] UK Parliament (2024) *The Financial Services and Markets Act 2000 (Regulated Activities) (Amendment) (No. 2) Order 2024. Draft Statutory Instruments.* https://assets.publishing.service.gov.uk/media/6735d7392469c5b71dbc7b10/The_Financial_Services_and_Markets_Act_2000__Regulated_Activities___Amendment___No._2__Order_2024_-_Draft_Statutory_Instrument.pdf.

[113] UK Government (2024) *Sustainability Disclosure Requirements: Implementation Update 2024*. https://www.gov.uk/government/publications/sustainability-disclosure-requirements-implementation-update-2024.

[114] Department for Energy Security and Net Zero (2024) *Principles for voluntary carbon markets and nature market integrity*. https://www.gov.uk/government/publications/voluntary-carbon-and-nature-market-integrity-uk-government-principles/principles-for-voluntary-carbon-and-nature-market-integrity.

[115] Department for Energy Security and Net Zero (2024) *Voluntary carbon and nature markets: raising integrity – consultation document. https://www.gov.uk/government/consultations/voluntary-carbon-and-nature-markets-raising-integrity/voluntary-carbon-and-nature-markets-raising-integrity-consultation-document-accessible-webpage*.

[116] UK Government (2024) *Transition Finance Market Review Launch.*

[117] The Global City (2024) *Scaling Transition Finance: Findings of the Transition Finance Review.*

[118] HM Treasury (2024) *National Wealth Fund: Mobilising Private Investment.*

[119] Department for Energy Security and Net Zero (2025) *Great British Energy: Developer Role and Partnership with National Wealth Fund*. https://www.gov.uk/government/publications/great-british-energy-developer-role-and-partnership-with-national-wealth-fund/great-british-energy-developer-role-and-partnership-with-national-wealth-fund.

[120] Department for Energy Security and Net Zero (2024) *Net Zero Council*. https://www.gov.uk/government/groups/net-zero-council.

[121] Department for Energy Security and Net Zero (2025) *PM remarks at the IEA Future of Energy Security summit: 24 April 2025*. https://www.gov.uk/government/speeches/pm-remarks-at-the-iea-future-of-energy-security-summit-24-april-2025.

[122] Zapmap (2025) *Zapmap Price Index*. https://www.zap-map.com/ev-stats/charging-price-index. (Accessed: 21 May 2025).

[123] House of Commons, Committee of Public Accounts (2025) *Public charge points for electric vehicles.* https://publications.parliament.uk/pa/cm5901/cmselect/cmpubacc/512/report.html#heading-3.

[124] Department for Energy Security and Net Zero (2023) *Responding to the Independent Review of Net Zero's Recommendations.* https://www.gov.uk/government/publications/independent-review-of-net-zero-government-response/responding-to-the-independent-review-of-net-zeros-recommendations.

[125] Ipsos (2025) *Citizens' Panel for an accessible and affordable household vision of Net Zero.* https://www.theccc.org.uk/wp-content/uploads/2025/02/Citizens-Panel-for-an-accessible-and-affordable-household-vision-of-Net-Zero-IPSOS-1.pdf.

[126] Nesta (2024) *Cheaper electricity, fairer bills.* https://media.nesta.org.uk/documents/Cheaper_electricity_fairer_bills_IXillac.pdf.

[127] Aldersgate Group and UCL (2023) *The case for a social tariff: reducing bills and emissions and delivering for the fuel poor.* https://www.aldersgategroup.org.uk/content/uploads/2023/09/AG-UCL-Reforming-electricity-market-and-tariff-design-to-enable-an-affordable-transition-for-households.pdf.

[128] Resolution Foundation (2022) *A chilling crisis: policy options to deal with soaring energy prices.* https://www.resolutionfoundation.org/publications/a-chilling-crisis/.

[129] National Energy Action (2024) *Written evidence submitted by National Energy Action (ENB0018).* https://committees.parliament.uk/writtenevidence/128137/pdf/.

[130] Octopus Energy (2025) *Written evidence submitted by Octopus Energy (COE0075).* https://committees.parliament.uk/writtenevidence/140189/pdf/.

[131] Helm, D. (2017) *Cost of Energy Review.* https://assets.publishing.service.gov.uk/media/5a749c26ed915d0e8e39997a/Cost_of_Energy_Review.pdf.

[132] Citizens Advice (2023) *Balancing act: the implications of transferring policy levies from electricity to gas bills.* https://assets.ctfassets.net/mfz4nbgura3g/5HluJHlnnUIMmca1he2uIK/cd782e006edcd6a7f51aa11290db1c1f/Balancing_20act_20_4_.pdf.

[133] E3G (2023) *Make clean heat accessible to all: options for lowering heat pump running costs.* https://www.e3g.org/wp-content/uploads/E3G-Briefing-Make-clean-heat-accessible-to-all-UK-households.pdf.

[134] Gross et al. (2022) *Pot-Zero: Can renewables and nuclear help keep bills down this winter?* https://ukerc.ac.uk/publications/can-renewables-help-keep-bills-down/.

[135] Nesta (2024) *Cheaper electricity, fairer bills.* https://media.nesta.org.uk/documents/Cheaper_electricity_fairer_bills_lXillac.pdf.

[136] Leunig, T. (2025) *Sorting out our energy bills.* https://timleunig.substack.com/p/sorting-out-our-energy-bills.

[137] Federal Government of Germany (2023) *Relief for electricity consumers.* *https://www.bundesregierung.de/breg-de/service/archiv/renewable-energy-sources-act-levy-abolished-2011854*.

[138] International Energy Agency (IEA) (2020) *The Netherlands 2020 Energy Policy Review.* *https://www.connaissancedesenergies.org/sites/connaissancedesenergies.org/files/pdf-actualites/The_Netherlands_2020_Energy_Policy_Review.pdf*.

[139] UK Government (2024) *Planning overhaul to reach 1.5 million new homes.* https://www.gov.uk/government/news/planning-overhaul-to-reach-15-million-new-homes.

Annex 1: Priority recommendations

Tables A1.1-A1.4 present our priority recommendations for the UK Government, Scottish Government, Welsh Government, and Northern Ireland Executive. These recommendations are restated from our reports on the UK's Seventh Carbon Budget, Scotland's carbon budgets, Wales' Fourth Carbon Budget, and Northern Ireland's Fourth Carbon Budget. Where there has been progress since these were introduced, we assess that progress in this report and will provide scoring of the recommendations in our 2026 Progress Report.

Table A1.1
Priority recommendations for the UK Government

Sector	Recommendations
Seventh Carbon Budget	**R2025-042** Set the Seventh Carbon Budget at 535 $MtCO_2e$ for the period from 2038 to 2042. This budget should include the UK's share of international aviation and shipping emissions and the Government should plan to meet it through domestic action without resorting to international credits. **R2025-043** Implement regulations to formally include the UK's share of international aviation and shipping emissions in carbon budgets (from the Sixth Carbon Budget onwards) and the Net Zero target. **R2025-044** Produce a draft set of proposals and policies for delivering the Seventh Carbon Budget, to aid parliamentary scrutiny in the setting of the budget level. **R2025-045** Develop a contingency framework to support delivery of the Seventh Carbon Budget and other UK targets. This should include a set of indicators that enable early identification of emissions reductions going off track and a collection of contingency measures that could make up any shortfalls.
Cross-cutting	**R2025-046** Make electricity cheaper by removing levies and other policy costs from electricity bills to help incentivise consumers to switch to lower-carbon electric options across sectors including transport and buildings. **R2025-047** Speed up the grid connection process to ensure businesses do not face barriers to moving to electric options, including electrification of industry and heavy goods vehicle (HGV) depots. **R2025-048** Strengthen the UK Emissions Trading Scheme (ETS) to ensure that its price is sufficient to incentivise decarbonisation. This could include a higher carbon price floor and/or linkages with the EU ETS. **R2025-049** Develop and implement an engagement strategy to provide clear information to households and businesses about how the UK can meet its emissions targets and the role they can play. It should focus on what actions are most impactful in reducing emissions, the benefits of low-carbon choices, and providing trusted information, signposting to available sources of advice and support. **R2025-050** Set out how government will support businesses to make the transition to low-carbon production or operation and how UK businesses could decarbonise early and take advantage of growing global demand for low-carbon goods and services. **R2025-051** Publish a Net Zero skills action plan to identify and address barriers to enable growth of the workforces needed to deliver the Net Zero transition. **R2025-052** Work with communities, workers, and local businesses in areas of the economy that may be adversely impacted by the Net Zero transition to develop proactive transition plans that enable access to secure employment and business opportunities. These efforts should feed into local or regional plans.

	R2025-053 Strengthen implementation of the Third National Adaptation Plan and reorganise government adaptation policy to make adaptation a fundamental aspect of policymaking across all departments, including through setting clear objectives and measurable targets.
Surface transport	**R2025-054** Implement regulations requiring that all new cars and vans sold after 2030 must be able to travel a significant distance using electrical power alone. **R2025-055** Improve the availability and reduce the cost of local public charging for drivers who do not have access to private off-street parking, to make local public charging more comparable to charging at home. **R2025-056** Develop further policies and incentives to accelerate zero-emission van uptake, working with major van fleet operators to understand and overcome barriers to uptake such as charging and access to finance. **R2025-057** Design and implement a regulatory mechanism requiring sales of zero-emission HGVs to scale up to meet the 2040 end-of-sale date for new diesel HGVs (2035 for smaller HGVs) and provide purchase subsidies where required. Develop a strategy to deliver the required charging infrastructure for heavy duty vehicles. **R2025-058** Provide local authorities with powers and access to long-term funding and resources to deliver increases in public transport, walking, and cycling.
Buildings	**R2025-059** Confirm that there will be no role for hydrogen in home heating. **R2025-060** Put in place requirements on housing developers ensuring no new properties completed from 2026 are connected to the gas grid. Deliver changes to Building Regulations with stringent transition arrangements which ensure that, from 2026, all new homes are built with low-carbon heating systems. **R2025-061** Reinstate regulations so that beyond 2035 all heating systems installed are low-carbon. **R2025-062** Provide long-term certainty that upfront costs will not present a barrier to the ramp-up in roll-out of heat pumps, ensuring that the transition is affordable and accessible to households. **R2025-063** Provide long-term funding for energy efficiency improvement to social housing and targeted support to ensure that poorly insulated homes are not a barrier to uptake of low-carbon heating systems for low-income households. **R2025-064** Introduce a comprehensive multi-year programme for decarbonisation of public sector buildings. This should set out strategic plans for when best to take the required decarbonisation actions in buildings across the public estate and should be supported by long-term capital settlements.
Industry	**R2025-065** Develop business models to support industrial electrification, ensuring businesses are incentivised to switch to electric technologies, and complementing the UK ETS. This should play a similar role to existing business models for hydrogen and carbon capture and storage (CCS) in helping speed up early-stage deployment of electric technologies. **R2025-066** Set minimum standards for the whole-life carbon impact of products that are at risk of increasing the UK's imported emissions. **R2025-067** Introduce regulations, supported by subsidies if necessary, to drive decarbonisation of non-road mobile machinery. This could include regulatory measures with proven success in reducing road transport emissions.
Agriculture and land use	**R2025-068** Publish a Land Use Framework that sets out how land can deliver multiple functions, including for climate mitigation and adaptation, sustainable food production, biodiversity, and wider environmental goals. **R2025-069** Provide incentives and address barriers for farmers and land managers to diversify land use and management into woodland creation, peatland restoration, bioenergy crops and renewable energy.

	R2025-070 Provide long-term certainty on public funding for farming practices and technologies which reduce emissions from managing crops and livestock. As part of this, ensure low-regret and low-cost measures are taken up through regulations or minimum requirements in agricultural support mechanisms, especially when they can deliver efficiency improvements.
Energy supply	**R2025-071** Ensure that the funding and auction design for the Seventh Allocation Round and future rounds, are sufficient to secure the level of renewables capacity required to deliver a decarbonised power system. **R2025-072** Reform key processes and rules, including in planning, consenting, and regulatory funding, to enable rapid expansion of the country's energy infrastructure and clear, consistent resolution of tensions between low cost of infrastructure and sensitivity to local conditions. In most cases, overhead lines should be favoured over more expensive methods such as undergrounding. **R2025-073** Provide clarity around the future of electricity market arrangements and any transition arrangements as soon as possible. **R2025-074** Ensure that large-scale biomass power plants are not given extended contracts to operate unabated at high load factors beyond 2027.
Aviation	**R2025-075** Develop and implement policy – such as the existing sustainable aviation fuel (SAF) mandate and the UK ETS – that ensures the aviation sector takes responsibility for mitigating its emissions and ultimately achieving Net Zero for the sector by 2050. This includes paying for permanent engineered removals to balance out all remaining emissions. Ensure robust contingencies are in place to address any delays in decarbonisation, including through demand management. **R2025-076** Commit, as a minimum, to preventing the additional warming impacts from aviation beyond greenhouse gas emissions (known as non-CO_2 effects) increasing after 2050. Begin to monitor these impacts and support investigation, development and trial of mitigation options that complement rather than substitute for CO_2 mitigation. **R2025-077** Seek to strengthen the ambition and effectiveness of International Civil Aviation Organisation (ICAO) objectives and the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). Form alliances with countries who are aligned with the UK to go further than ICAO on both emissions and non-CO_2 effects.
Waste	**R2025-078** Ensure policies enabling improved recycling and waste reduction are in place across the UK ahead of the near elimination of biodegradable waste sent to landfill and the inclusion of energy from waste in the UK ETS. **R2025-079** Enable improved monitoring of wastewater emissions and encourage investment in technology development and deployment to reduce emissions from wastewater. **R2025-080** Prevent energy from waste capacity expansion unless a viable route to connecting CCS can be established.
Shipping	**R2025-081** Include domestic and international shipping emissions in the UK ETS in line with the EU ETS and ensure there are incentives and infrastructure for decarbonisation of all vessel types - from private leisure vessels to large-scale freight ships. **R2025-082** Seek to strengthen and implement the International Maritime Organisation (IMO) objectives. In parallel, collaborate with other parties to establish multilateral partnerships to address international shipping emissions.
Engineered removals	**R2025-083** Publish a common sustainability framework for biomass, along with robust procedures for monitoring, reporting, and verification. This should prioritise domestic supply and should provide clarity on which feedstocks are provably sustainable, both in terms of their climate impact and interactions with wider environmental objectives. **R2025-084** Finalise business models for engineered removals. This should include providing clarity on the near-term funding pathway, including setting out the responsibilities of the public and private sectors.

Table A1.2
Priority recommendations for the Scottish Government

Sector	Recommendations
Scotland's carbon budgets	**R2025-085** Set the First Carbon Budget at an annual average level of emissions that is 57% below 1990 levels for the period from 2026 to 2030. **R2025-086** Set the Second Carbon Budget at an annual average level of emissions that is 69% below 1990 levels for the period from 2031 to 2035. **R2025-087** Set the Third Carbon Budget at an annual average level of emissions that is 80% below 1990 levels for the period from 2036 to 2040. **R2025-088** Set the Fourth Carbon Budget at an annual average level of emissions that is 94% below 1990 levels for the period from 2041 to 2045. **R2025-089** Produce a Climate Change Plan and sectoral plans setting out the Scottish Government's policies and proposals that will play a role in delivering Scotland's carbon budgets. **R2025-090** Amend the Climate Change (Scotland) Act 2009 (which can be done by order) to extend the definition of greenhouse gas removals to include engineered removals when legislating the carbon budget targets.
Cross-cutting	**R2025-091** Work with communities, workers, and businesses to develop proactive transition plans that enable access to secure employment and business opportunities that come with the Net Zero transition. **R2025-092** Work with the UK Government to communicate a clear vision to the public. Provide clear, trusted information about the most impactful low-carbon choices for households and businesses in Scotland to reduce emissions and the benefits of low-carbon choices, signposting to available sources of advice and support.
Surface transport	**R2025-093** Expand provision of charging infrastructure and provide reliable public information on electric vehicles to support the successful implementation of the ZEV mandate. **R2025-094** Improve Scotland's public transport services and active travel infrastructure through strategic investment in integrated networks, enhanced services, and dedicated walking and cycling routes, supported by long-term funding and powers for local councils.
Agriculture and land use	**R2025-095** Provide incentives and address barriers for farmers and land and estate managers to diversify land use and management at a range of scales into woodland creation, peatland restoration, agroforestry, and renewable energy. These policies need to support and empower rural communities to deliver these changes. **R2025-096** Ensure that funding and incentives are set at the correct level to deliver the scale-up in tree planting that is needed this decade. **R2025-097** Provide long-term certainty on public funding for farming practices and technologies to reduce emissions from managing crops and livestock. As part of this, ensure low-regret and low-cost measures are taken up through baseline regulations or minimum requirements in the new agricultural support mechanisms (for example actions to deliver resource protection, enhance nature, and build resilience), especially when they can deliver efficiency improvements.
Industry	**R2025-098** Continue to work with the UK Government to support the development of plans to develop CCS and hydrogen in the Scottish Cluster and work with the UK Government to develop new low-carbon industrial opportunities, such as those identified by Project Willow for Grangemouth.
Buildings	**R2025-099** Urgently consult on the details of the proposal to set minimum energy efficiency standards for privately owned homes, noting that delaying this further could have negative impacts on fuel poverty in Scotland.

	R2025-100 Urgently consult on and implement measures to enable a rapid transition from fossil fuel heating systems to low-carbon heating in privately owned homes. **R2025-101** Develop appropriate governance frameworks to coordinate residents in buildings containing multiple residential dwellings (in particular, tenements) to allow for the installation of communal low-carbon heating systems, where these are appropriate.
Waste	**R2025-102** Ensure that new energy from waste capacity is only permitted where a viable route to connecting CCS can be established.

Table A1.3
Priority recommendations for the Welsh Government

Sector	Recommendations
Wales' Fourth Carbon Budget	**R2025-103** Set the Fourth Carbon Budget at an annual average of 73% below the 1990 baseline for the period from 2031 to 2035. The Welsh Government should plan to meet it through domestic action without using international credits. **R2025-104** As part of the report setting out the Welsh Government's proposals and policies for meeting the Third Carbon Budget, include an assessment of the longer-term actions that are needed to get Wales on track for the Fourth Carbon Budget and beyond.
Cross-cutting	**R2025-105** Work with the UK Government to develop and implement an engagement strategy to provide clear, trusted information about the most effective actions for households and businesses in Wales to reduce emissions and the benefits of low-carbon choices, signposting to available sources of advice and support. **R2025-106** Publish a Net Zero skills action plan to identify and address barriers to enable growth of the workforces needed to deliver the Net Zero transition. **R2025-107** Work with communities, workers, and businesses in areas of the economy that may be adversely impacted by the Net Zero transition to develop proactive transition plans that enable access to secure employment and business opportunities.
Industry	**R2025-108** Continue to work with the UK Government to support the development of plans to develop CCS and hydrogen in the South Wales Industrial Cluster and the HyNet cluster.
Agriculture and land use	**R2025-109** Provide incentives and address barriers for farmers and land managers to diversify land use and management into woodland creation, peatland restoration, agroforestry, and renewable energy. These policies need to support and empower rural communities to deliver these changes. **R2025-110** Provide long-term certainty on public funding for farming practices and technologies which reduce emissions from managing crops and livestock. As part of this, ensure low-regret and low-cost measures are taken up through regulations or minimum requirements in agricultural support mechanisms, especially when they can deliver efficiency improvements.
Surface transport	**R2025-111** Expand provision of charging infrastructure and provide reliable public information to support the successful implementation of the ZEV mandate. **R2025-112** Improve Wales' public transport and active travel infrastructure through strategic investment in integrated networks enhanced services, and dedicated walking and cycling routes, supported by long-term funding and powers for local councils.

Buildings	**R2025-113** Put in place requirements on housing developers ensuring no new properties completed from 2026 use fossil fuel heating systems. Deliver changes to Building Regulations with stringent transition arrangements which ensure that, from 2026, all new homes are built with low-carbon heating systems. **R2025-114** Introduce regulations to ensure that, beyond 2035, all new and replacement heating systems installed are low carbon. **R2025-115** Support improvements to home energy efficiency, particularly in social housing, and provide targeted support to ensure that poorly insulated homes are not a barrier to uptake of low-carbon heating systems for low-income households. **R2025-116** Introduce a comprehensive multi-year programme for decarbonisation of public sector buildings. This should set out strategic plans for when best to take the required decarbonisation actions in buildings across the public estate and should be supported by long-term capital settlements.
Waste	**R2025-117** Introduce policies that deliver ambitious recycling and waste reduction goals, building on Wales' strong record on recycling. **R2025-118** Prevent energy from waste capacity expansion unless a viable route to connecting CCS can be established.

Table A1.4
Priority recommendations for the Northern Ireland Executive

Sector	Recommendations
Northern Ireland's Fourth Carbon Budget	**R2025-119** Set the Fourth Carbon Budget at an annual average of 77% below the 1990 baseline for the period from 2038 to 2042. The Northern Ireland Executive should plan to meet the budget as much as possible through domestic action without using credits. **R2025-120** Produce a Climate Action Plan and sectoral plans setting out the Northern Ireland Executive's policies and proposals that will play a role in delivering the Fourth Carbon Budget and Northern Ireland's other carbon budgets.
Cross-cutting	**R2025-121** Speed up new grid development and the grid connection process for both distribution and transmission networks to ensure that the grid is ready to accommodate necessary clean power infrastructure, and also to enable electrification for businesses and households. **R2025-122** Work with the UK Government to develop and implement an engagement strategy to provide clear, trusted information about the most effective actions for households and businesses in Northern Ireland to reduce emissions and the benefits of low-carbon choices, signposting to available sources of advice and support. **R2025-123** Develop and implement a strategy for working with businesses and communities that may be affected by the Net Zero transition. This should include working with farmers to identify ways to diversify income streams and support farming communities.
Agriculture and land use	**R2025-124** Provide incentives and address barriers for farmers and land managers to diversify land use and management into woodland creation, peatland restoration, bioenergy crops, and renewable energy. **R2025-125** Provide long-term certainty on public funding for farming practices and technologies which reduce emissions from managing crops and livestock. As part of this, ensure low-regret and low-cost measures are taken up through regulations or minimum requirements in agricultural support mechanisms, especially when they can deliver efficiency improvements. **R2025-126** Consider how Northern Ireland could take the lead on developing and deploying solutions that can reduce emissions on farms, including methane-suppressing livestock feed additives and anaerobic digestion.

Surface transport	**R2025-127** Support the deployment of public charge points across Northern Ireland. **R2025-128** Invest strategically to improve Northern Ireland's public transport and active travel infrastructure. This will need to be supported by long-term funding and powers for local authorities and Translink to deliver these improvements.
Energy supply	**R2025-129** Progress Northern Ireland-specific programmes and devolved policy to encourage investment in low-carbon electricity supply. This could include introducing a contract for difference scheme for renewables.
Buildings	**R2025-130** Put in place requirements on housing developers ensuring no new properties completed from 2026 use fossil fuel boilers. **R2025-131** Consider regulations so that beyond 2035 all new and replacement heating systems installed are low-carbon. **R2025-132** Introduce measures to ensure that upfront costs are not a barrier to the roll-out of heat pumps. This could include providing support for households through government funding, similar to the Boiler Upgrade Scheme in England and Wales, incentivising discounted private finance schemes, such as green mortgages or zero-interest loans, or introducing point-of-sale installation requirements. **R2025-133** Introduce a comprehensive multi-year programme for decarbonisation of public sector buildings. This should set out strategic plans for when best to take the required decarbonisation actions in buildings across the public estate and should be supported by long-term capital settlements.
Waste	**R2025-134** Implement policies enabling improved recycling and waste reduction as part of efforts to eliminate biodegradable waste to landfill and minimising fossil-derived (for example, plastics) waste being sent to energy from waste.
Engineered removals	**R2025-135** Explore options and develop a strategy for delivery of or access to the volume of removals necessary for Northern Ireland to meet its Net Zero target. This should include considering the role of and options for delivering direct air carbon capture and storage in Northern Ireland and reviewing the evidence on the long-term impacts and potential of enhanced weathering and biochar removals in Northern Ireland. **R2025-136** Produce a strategy for development of carbon capture and storage infrastructure in Northern Ireland, considering both the requirements of industrial and energy from waste plants and its use for engineered removals. This should include assessing the viable approaches for transporting and storing captured CO_2.

Annex 2: Policy assessment criteria

Our policy assessment charts track progress on what needs to be addressed in each subsector or policy area to meet the Government's targets. For the different sectors of the economy, we have assessed the risks relating to the delivery of the Government's targets and scored them using the criteria in Table A2.1.

Table A2.1
Scoring criteria for assessing policies and plans

Credible plans	Some risks	Significant risks	Insufficient plans
Credible plans with funding, enablers, and timelines in place.	Some adjustment to plans may be needed to mitigate uncertainties and delivery or funding risks.	Plans under development and/or further work needed to enact policies and overcome uncertainties and delivery or funding risks.	Plans are either missing, clearly inadequate, or lack funding, and new proposals are needed.

Annex 3: Electricity prices in Great Britain

This annex sets out how electricity prices in Great Britain have changed and why. It covers the two key types of electricity price: wholesale and retail.

- The wholesale electricity price reflects the cost of making electricity.
- Retail electricity prices, which are what end consumers face, add other costs on top of the wholesale price.
  - These additional costs include the costs of social and energy policies, costs for providing electricity networks, supplier costs, and taxes.
  - Domestic retail prices are regulated by Ofgem through the energy price cap, whereas prices for industrial and commercial users are not.

Our key messages are:

- Changes in wholesale electricity prices in Great Britain are driven by changes in gas prices.
- Increases in wholesale electricity prices are the single largest reason that domestic retail electricity prices have increased since the introduction of the energy price cap.
- The majority of renewables policy costs relate to policies that are now closed. The first of these contracts have already begun to expire and the costs associated with these policies will reduce over the 2020s and 2030s as the remaining contracts end.
- Closed renewables support schemes have been replaced by Contracts for Difference (CfDs). Past investment has helped bring down the cost of renewables. New, cheaper projects coming online from 2025 will nearly halve the average price of electricity provided through low-carbon CfDs by 2030, compared to 2023.

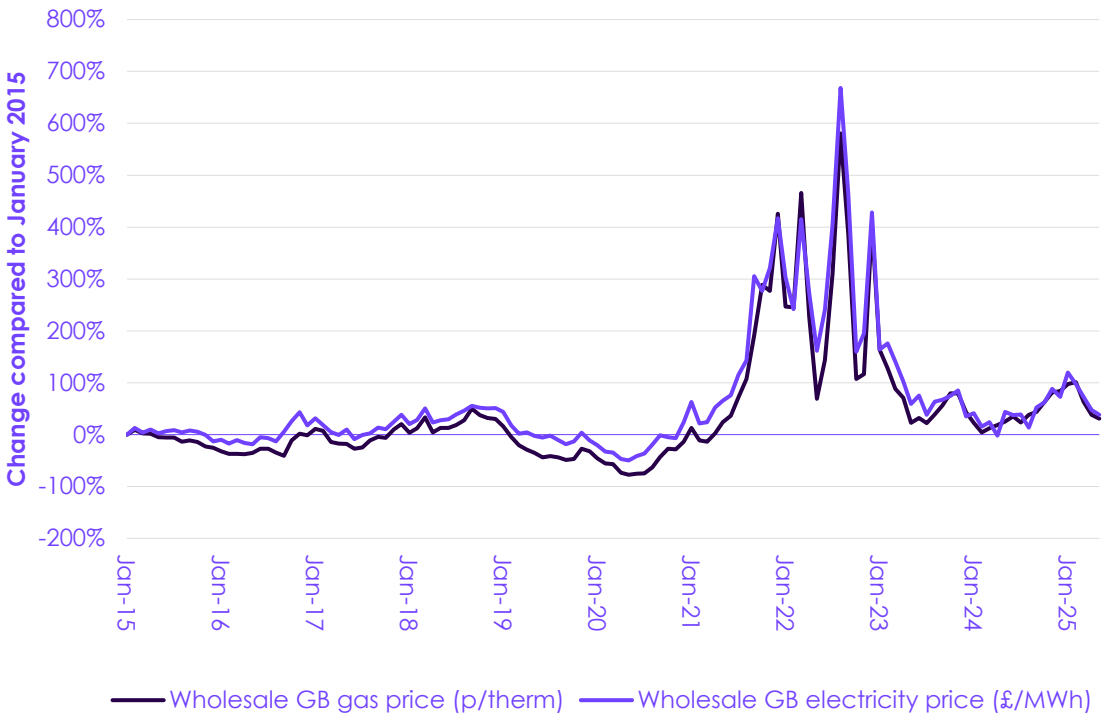
The analysis underpinning these key messages is set out in two sections, covering wholesale and retail electricity prices.

Wholesale electricity prices

The wholesale electricity price reflects the cost of making electricity, which is sold in the wholesale market by electricity generators. In Great Britain, the wholesale price typically reflects the cost of gas generation.

- In general, the wholesale market price reflects the cost of the last unit of generation required to meet the demand for electricity (this is called the 'marginal' price setter).
- In Great Britain, the last unit of generation is typically gas generation. Gas fuel costs are what largely determine the marginal cost of generating electricity with gas.
- As a result, wholesale electricity prices very closely track wholesale gas prices (Figure A1).

Figure A1 Change in GB wholesale gas and electricity prices



Description: Changes in wholesale electricity prices in Great Britain very closely track changes in wholesale gas prices.
Source: Aurora/Elexon (2025) *Historical market data;* CCC analysis.
Notes: (1) Underlying series in £2025 real terms. (2) Covers the period starting in January 2015 and ending in May 2025.

Reducing dependence on unabated gas generation by decarbonising electricity supply will therefore help to reduce the link between wholesale electricity and gas prices.

- Renewables already have a dampening effect on wholesale electricity prices by displacing some higher-cost gas generation plants.*
- As the roll-out of renewables accelerates, this will increasingly reduce the number of periods where unabated gas is the marginal price setter.

Retail electricity prices

The retail electricity price is the cost of electricity for consumers. It is higher than the wholesale price because it includes additional costs associated with government policy and the running of the electricity system.

- Retail suppliers buy electricity on the wholesale market and then sell it on to consumers.

* This is known as the 'merit order effect'.

- Various surcharges are added to the wholesale price (unit rate cost). These cover: system and other supplier operating costs and taxes; the costs of maintaining, building, and operating the electricity networks; and costs associated with government energy and social policies.

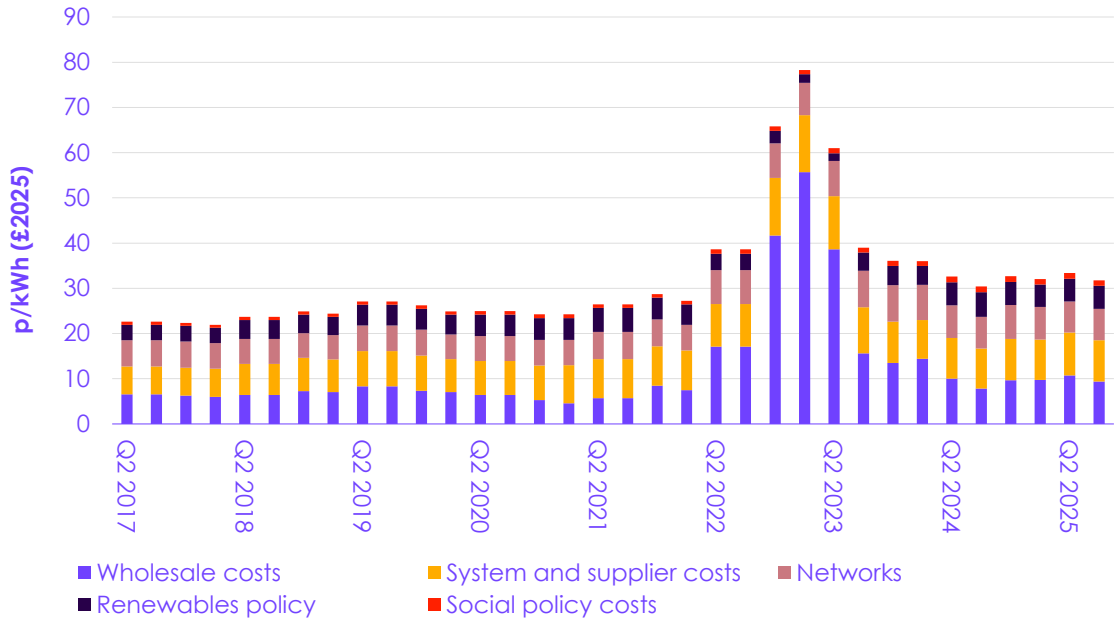
- For domestic consumers, the maximum price for a standard variable tariff is regulated by Ofgem through the energy price cap.[1] We use the Ofgem price cap as the basis for analysis in this annex. Actual prices can differ depending on supplier pricing and business strategies, as well as due to regional variations (for example the cost of distribution networks varies across regions).

- Industrial and commercial electricity prices are not regulated by Ofgem. Businesses can contract with specialist retail suppliers (brokers) for their energy costs. They can also directly contract with generators, such as low-cost renewables generators outside of the wholesale market, and these prices are not visible to the wider market.

- Eligible industrial firms are able to claim exemptions from most policy and network costs, via the Supercharger scheme.[2] These exemptions are not available to all commercial or business users.

Under the energy price cap for Q3 2025, the domestic retail price of electricity for a typical household is 31.8 p/kWh (Figure A2). This is 40% (9.2 p/kWh) higher in real terms compared to the introduction of the price cap in 2017 (Figure A3).*

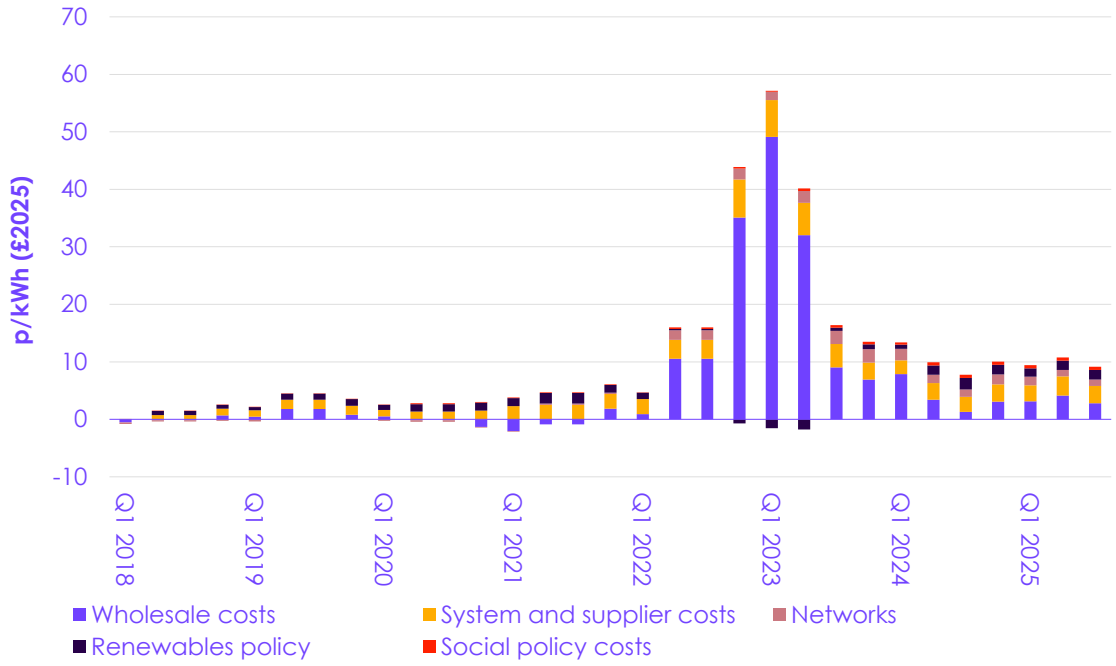
Figure A2 Domestic retail electricity price under the energy price cap (2017–2025), for Great Britain



Description: Domestic retail electricity prices peaked in 2023 driven by higher wholesale costs. Policy costs associated with renewables make up a small share of the retail price.
Source: Ofgem (2025*) Energy Price Cap Q3 2025*; CCC analysis.
Notes: (1) Prices in £2025. (2) Wholesale costs exclude carbon price. (3) System and supplier costs category includes supplier costs, Capacity Market, carbon price, VAT, and other smaller policies. (4) Renewables policy includes Renewables Obligation, Feed-in Tariffs, and Contracts for Difference. (5) Social policy costs include Warm Homes Discount and Energy Company Obligation. (6) Price reflects consumption for a typical household and incorporates the standing charge element.

* All costs in this annex are presented in 2025 prices.

Figure A3 Change in domestic retail electricity prices under the energy price cap relative to 2017, for Great Britain



Description: Changes in the domestic retail price of electricity since 2017 have mainly been driven by changes in wholesale costs rather than renewables.
Source: Ofgem (2025) *Energy Price Cap Q3 2025*; CCC analysis.
Notes: (1) Prices in £2025. (2) Wholesale costs exclude carbon price. (3) System and supplier costs category includes supplier costs, Capacity Market, carbon price, VAT, and other smaller policies. (4) Renewables policy includes Renewables Obligation, Feed-in Tariffs, and Contracts for Difference. (5) Social policy costs include Warm Homes Discount and Energy Company Obligation. (6) Price reflects consumption for a typical household and incorporates the standing charge element.

Wholesale costs are the single largest contributor to both the retail price itself and to the increase in retail prices since 2017 (Table A1), driven by the rising cost of gas.

- **Wholesale cost of electricity**: this contributes 9.4 p/kWh (29%) to the domestic retail price in the Q3 2025 price cap. It reflects the cost of electricity in the wholesale market, driven by the cost of gas, and it accounts for 30% of the increase in the retail price of electricity since 2017. At the peak of the energy crisis in 2023, wholesale costs made up 71% of the retail price and accounted for 88% of the increase from 2017.

- **System and other operating costs**: these include supplier operating costs, as well as the Capacity Market, carbon pricing, and VAT. Together these account for 29% of the retail price and 33% of the increase since 2017, the majority of which is attributable to supplier operating costs.

- **Networks**: this is the cost of maintaining, building, and operating the electricity networks. Costs of system balancing and of managing failed suppliers are also included in this category. Networks account for 22% of the retail price and 12% of the increase since 2017.

- **Renewables policy**: as well as reducing emissions, renewables help reduce the use of gas and therefore exposure to volatile international gas prices. Policies to support renewables include the Renewables Obligation, Feed-in Tariffs, and Contracts for Difference (CfD). They account for 16% of the retail price and 18% of the increase since 2017. At the peak of the energy crisis in 2023, renewables policy costs made up 2% of the retail price and were 44% lower than in 2017 as CfDs were paying back to consumers. These policies reflect the cost of early, more expensive renewables and choices by successive governments to support these through energy bills. New renewables coming online from the mid-2020s have significantly lower costs, which will nearly halve the average cost of installed CfDs by 2030.

  – The majority of renewables policy costs are related to 'legacy' policies which are now closed (the Renewables Obligation and Feed-in Tariffs). These were designed to encourage the market for renewables, at a time when renewables were new and supply chains were less developed. The majority (31 GW) of currently installed wind and solar capacity was developed under these policies.[3;4] The first of these contracts have begun to expire, and the costs associated with these policies will reduce over the 2020s and 2030s as the remaining contracts end.

  – New, cheaper renewables will be coming online from the mid-2020s, nearly halving the average cost of CfD-contracted capacity by 2030 compared to 2023 (Figure A4).

    - 23 GW of new low-cost, low-carbon projects are currently contracted to come online with CfDs by 2030, more than tripling currently installed CfD capacity.[*] Current capacity, made up of earlier projects, was contracted at higher prices.

    - As a result, compared to 2023, the average strike price for installed CfD projects in 2026 will be one-third lower, and will nearly halve by 2030.

    - As the average CfD strike price falls over time, this will reduce the top-up required when wholesale prices are low and increase the amount paid back to consumers when wholesale prices are higher.

- **Social policy costs**: the policies in this category support low-income, fuel-poor, and vulnerable households with their energy bills. They account for 4% of the retail price and 6% of the increase since 2017.

Table A1
Breakdown of domestic retail prices under the energy price cap for Great Britain

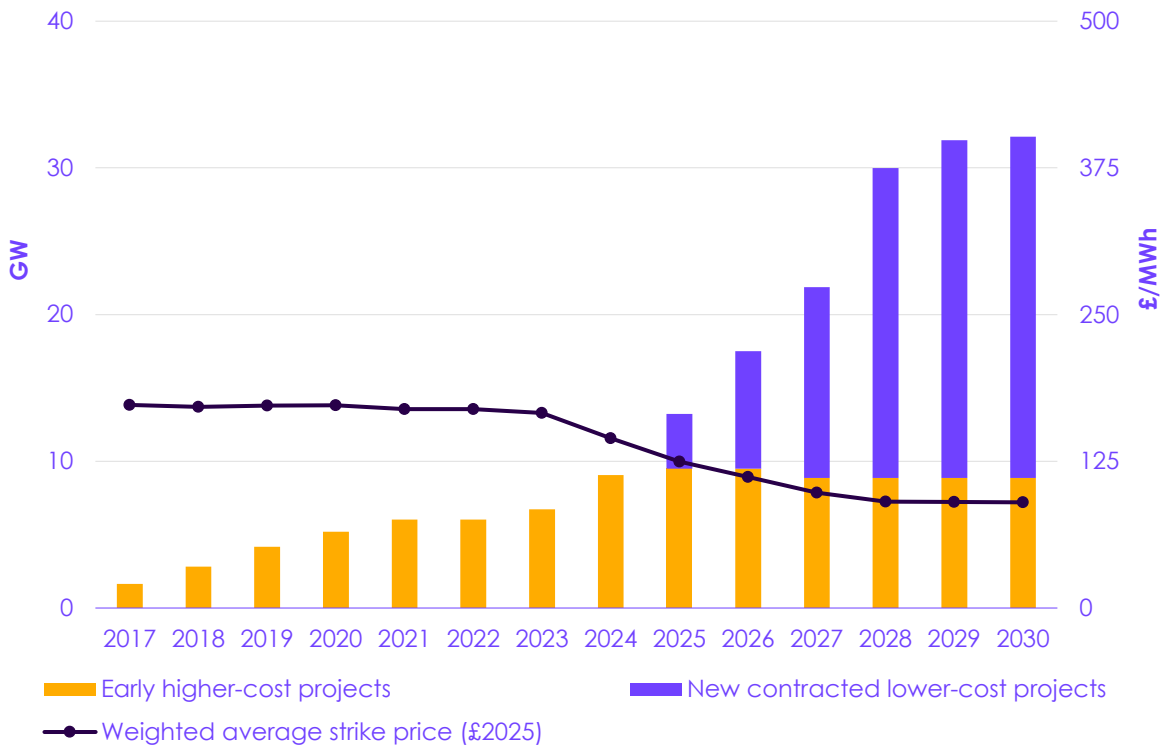
	Share of retail price		Share of increase since 2017	
	Energy crisis peak (Q1 2023)	Latest price cap (Q3 2025)	Energy crisis peak (Q1 2023)	Latest price cap (Q3 2025)
Wholesale cost	71%	29%	88%	30%
Networks	9%	22%	3%	12%
Renewables policy	2%	16%	-3%	18%

[*] We count these projects as those delivered from CfD Allocation Round 3 onwards.

Social policy costs		1%	4%	0%	6%
System and other operating costs		16%	29%	12%	33%
Of which are:	**Supplier costs**	9%	18%	5%	17%
	Carbon price	1%	2%	1%	1%
	Other policies	1%	3%	1%	10%
	VAT	5%	5%	5%	5%

Source: Ofgem (2025) *Energy Price Cap Q3 2025*; CCC analysis.
Notes: (1) Totals may not sum due to rounding. (2) Renewables policy includes Renewables Obligation, Feed-in Tariffs, and Contracts for Difference. (3) Social policy costs includes Warm Homes Discount and Energy Company Obligation. (4) Other policies includes Capacity Market, smart meter roll-out, and other smaller policies.

Figure A4 Contracted CfD capacity and average strike price



Description: The average strike price is set to nearly halve by 2030 compared to 2023, due to the volume of contracted low-cost projects coming online in the second half of the 2020s.
Source: Low Carbon Contracts Company (2025) *CfD Register*; CCC analysis.
Notes: (1) Early projects include FIDER, and CfD Allocation Rounds 1 and 2. New projects are CfD Allocation Round 3 onwards. (2) Includes all currently contracted CfD projects up to and including Allocation Round 6, excluding Hinkley Point C and Hornsea 4. (3) Average strike price weighted by generation and therefore takes into account differing load factors across technologies. (4) The strike price is the fixed price a generator will earn per MWh of electricity generated for the lifetime of the contract.

Endnotes

[1] Ofgem (2025) *Energy price cap*. https://www.ofgem.gov.uk/energy-price-cap.

[2] DESNZ (2024) *British Industry Supercharger gives huge boost to UK businesses.* https://www.gov.uk/government/news/huge-boost-for-uk-industry-as-government-supercharger-rolls-out.

[3] Ofgem (2025) *Renewables Obligation (RO) Annual Report: Scheme Year 22 (April 2023 to March 2024)*. https://www.ofgem.gov.uk/publications/renewables-obligation-ro-annual-report-scheme-year-22-april-2023-march-2024.

[4] Ofgem (2024) *Feed-in Tariffs Annual Report: Scheme Year 14 (April 2023 to March 2024)*. https://www.ofgem.gov.uk/publications/feed-tariffs-annual-report-scheme-year-14-april-2023-march-2024.

June 2025

Progress in reducing emissions – 2025 report to Parliament

Climate Change Committee
10 South Colonnade
Canary Wharf
London, E14 4PU

www.theccc.org.uk
@theCCCuk

Climate Change Committee