

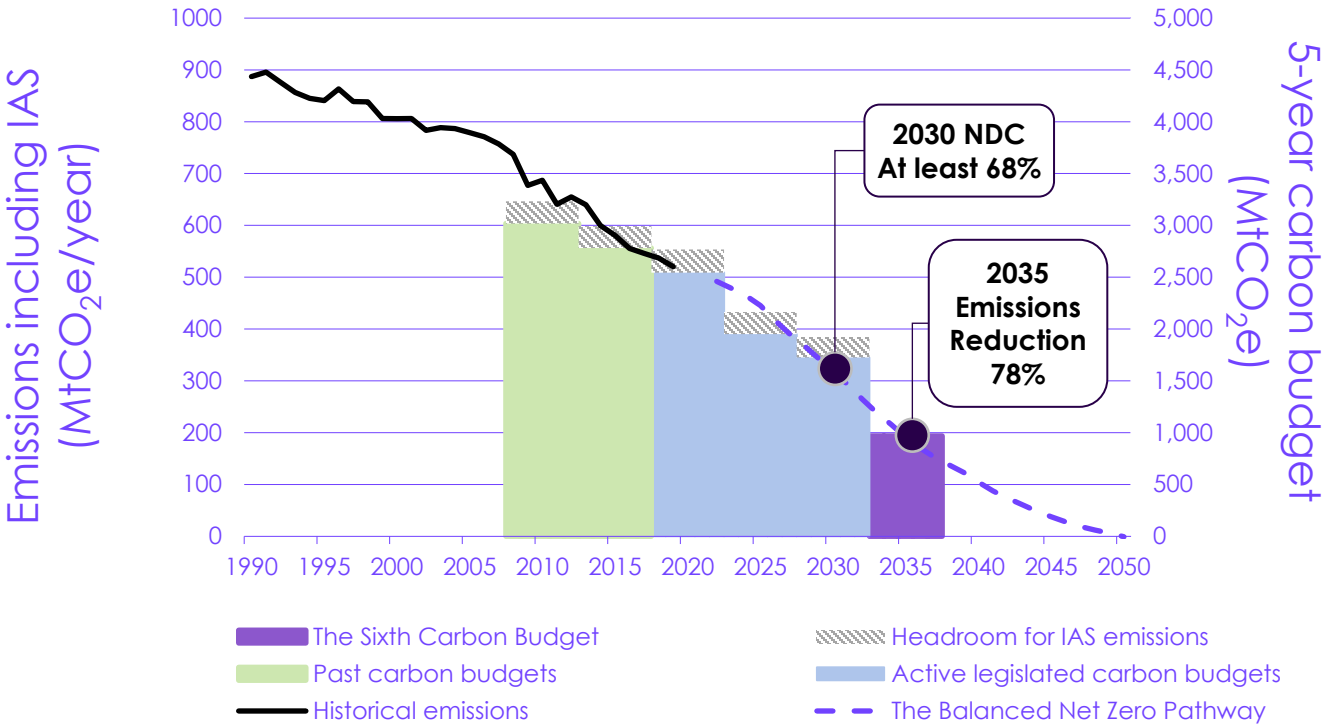
7<sup>th</sup> July 2022

# Progress in delivering CCS in the UK to contribute to reaching Net Zero

Dr. David Joffe

# The legislated path for UK emissions

## Sixth carbon budget and 2030 NDC recommended by the CCC

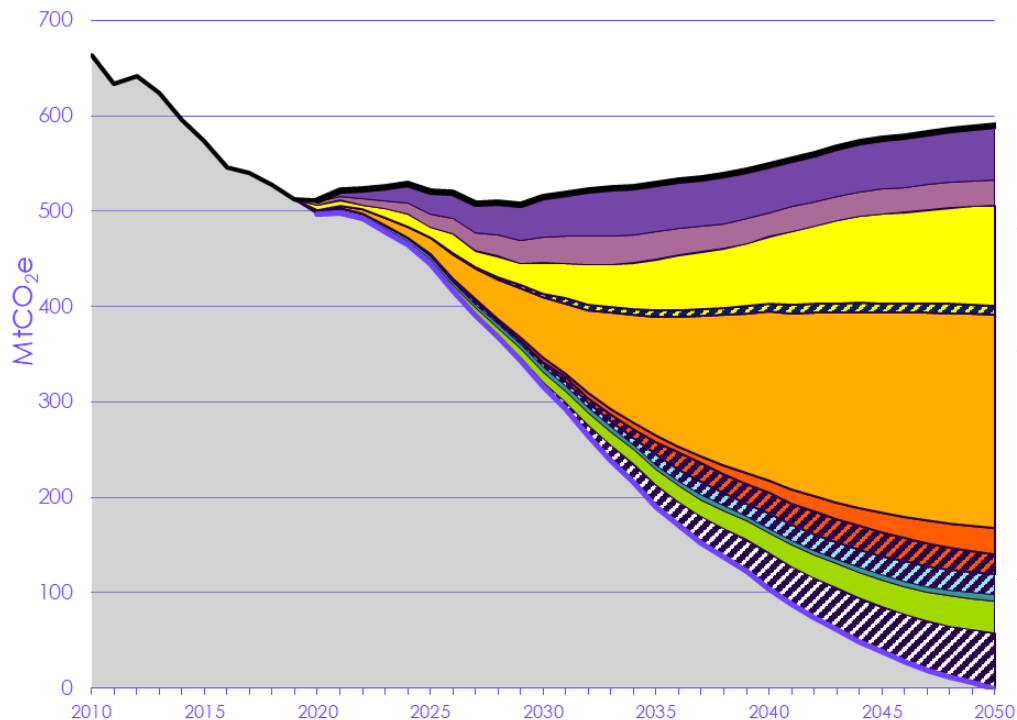


Notes:  
Emissions shown including emissions from international aviation and shipping (IAS) and on an AR5 basis, including peatlands. Adjustments for IAS emissions to carbon budgets 1-3 based on historical IAS emissions data; adjustments to carbon budgets 4 and 5 based on IAS emissions under the Balanced Net Zero Pathway.

Source:  
BEIS (2020) Provisional UK greenhouse gas emissions national statistics 2019; CCC analysis.

## Emissions abatement

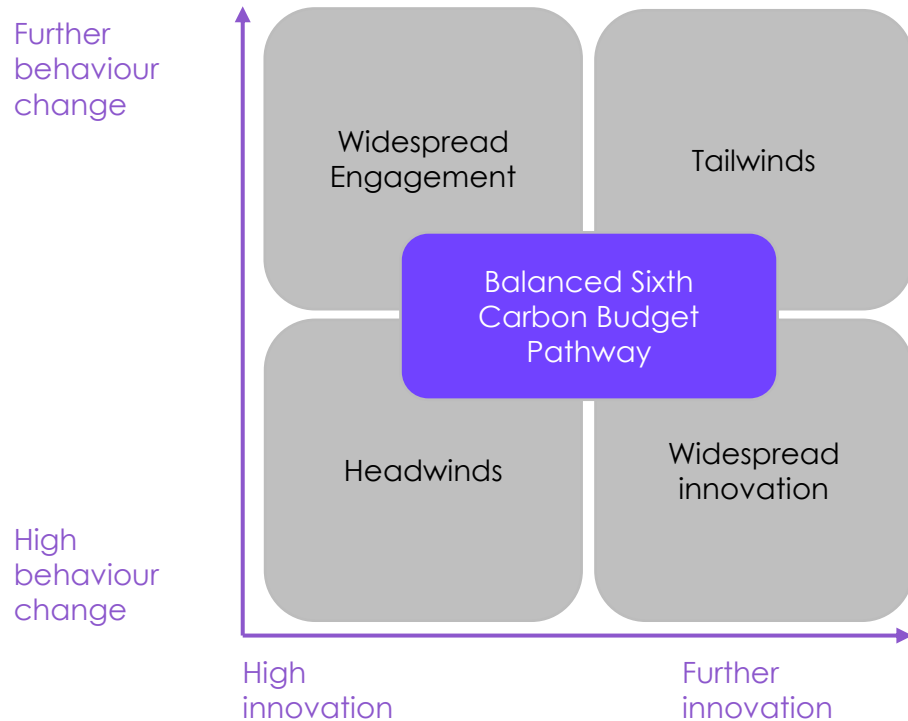
Meeting the Sixth Carbon Budget requires actions across four key areas:  
demand; decarbonize supply; electrify and use hydrogen; greenhouse gas removals



1. Reducing demand and improving efficiency
  - Reduced demand for carbon-intensive activities
  - Improved efficiency in use of energy and resources
2. Expansion of low-carbon energy
  - Low-carbon hydrogen and electricity production
3. Take-up of low carbon solutions
  - Electrification
  - Hydrogen and other low-carbon technologies
  - CO<sub>2</sub> capture from fossil fuels and industry
4. Offsetting emissions
  - Natural carbon storage
  - Engineered greenhouse gas removals

## Our approach

A balanced pathway, consistent with the Paris Agreement

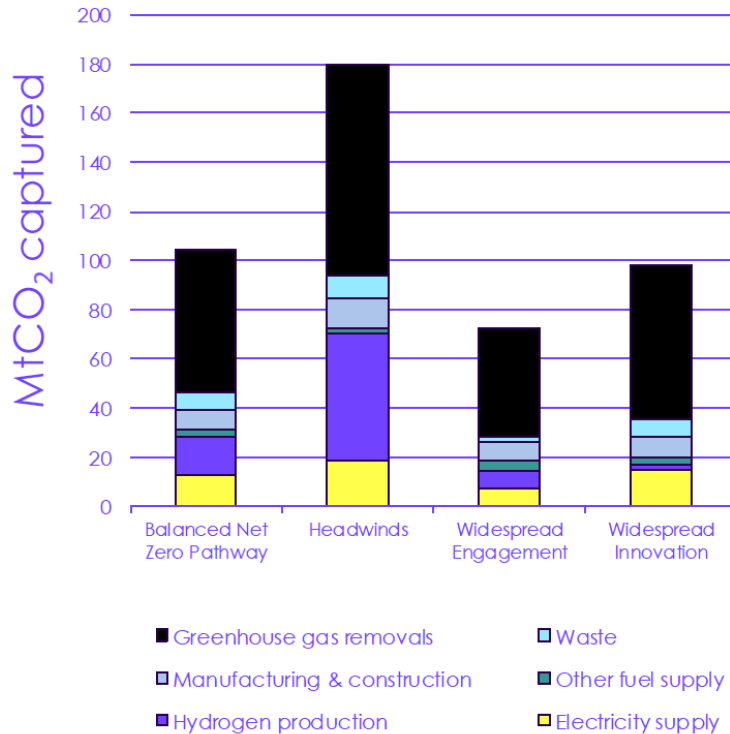


### Climate science and international circumstances

- Need deep reductions globally to 2030 to keep 1.5°C in play
- Paris demands 'highest possible ambition'
- UK leadership matters as President of COP26
- Equity arguments reinforce need for strong UK action

## CCC scenarios for CCS use in 2050

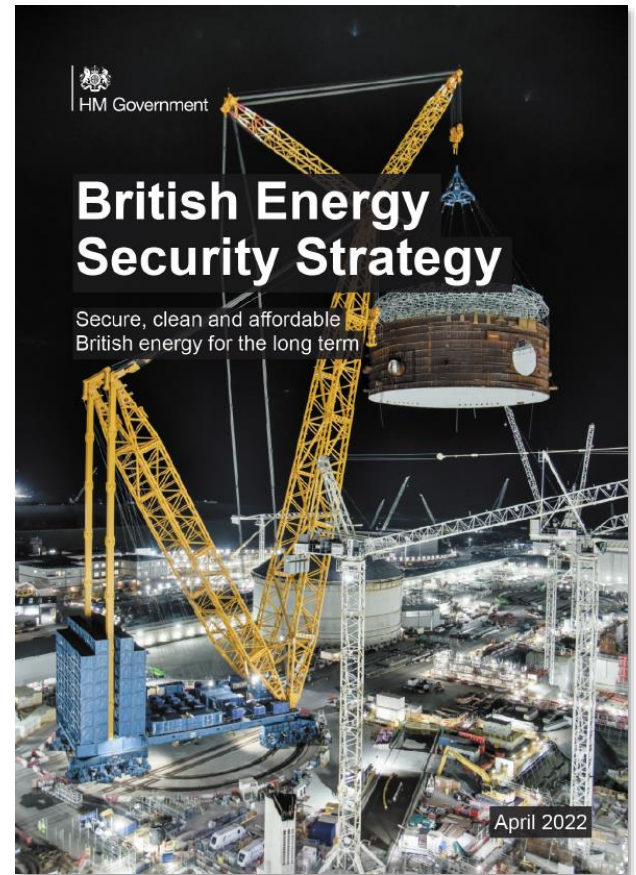
### Most variation seen in removals and energy supply



- The CCC range for engineered removals (e.g. BECCS, DACCS) in our 2050 Net Zero scenarios is 45-85 MtCO<sub>2</sub>/year with the Balanced Pathway using 60 Mt/year.
- The Government's Net Zero Strategy scenarios for 2050 all included at least 80 Mt/year of engineered removals.
- While this may be achievable, it is not guaranteed given the challenges that exist for deploying greenhouse gas removals in a sustainable way.
- Furthermore, it is essential that where there are failures to reduce existing emissions, other ways to reduce emissions are found (e.g. on demand) rather than simply increasing reliance on ever-increasing amounts of removals.

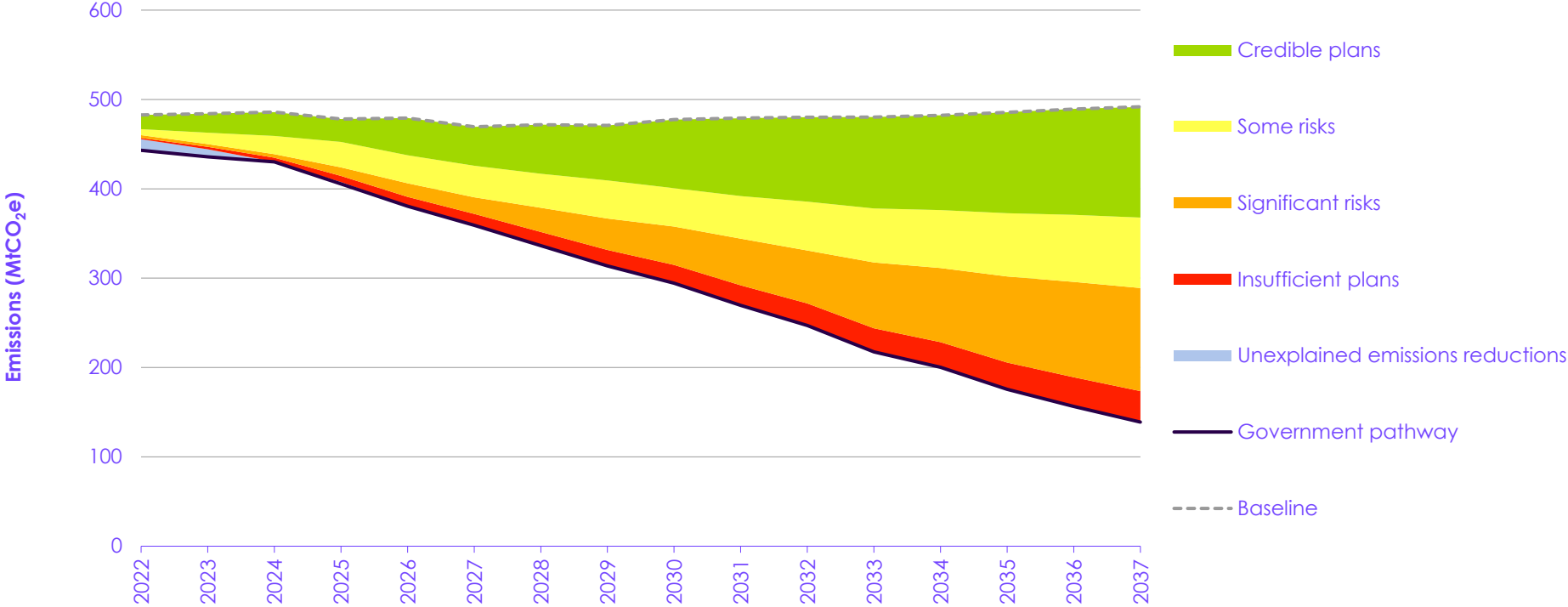
## April 2022 - Energy Security Strategy

- Mainly a supply strategy, with little on demand
- Commitments to even faster deployment of offshore wind, a large (long-term) nuclear programme and major solar roll-out (though not much on onshore wind)
- If it's all delivered, bulk zero-carbon generation is likely to comfortably exceed what's needed for its 85% share
  - To some extent this squeezes down the need for flexible supply solutions with some more demand met directly from renewables/nuclear
  - It also increases the availability of 'surplus' generation to produce green hydrogen, which take a greater share of the flexible generation
- In turn this is likely to push out fossil gas with CCS, both for power generation and for hydrogen production
- However, these implications are not spelled out – we don't have a system strategy



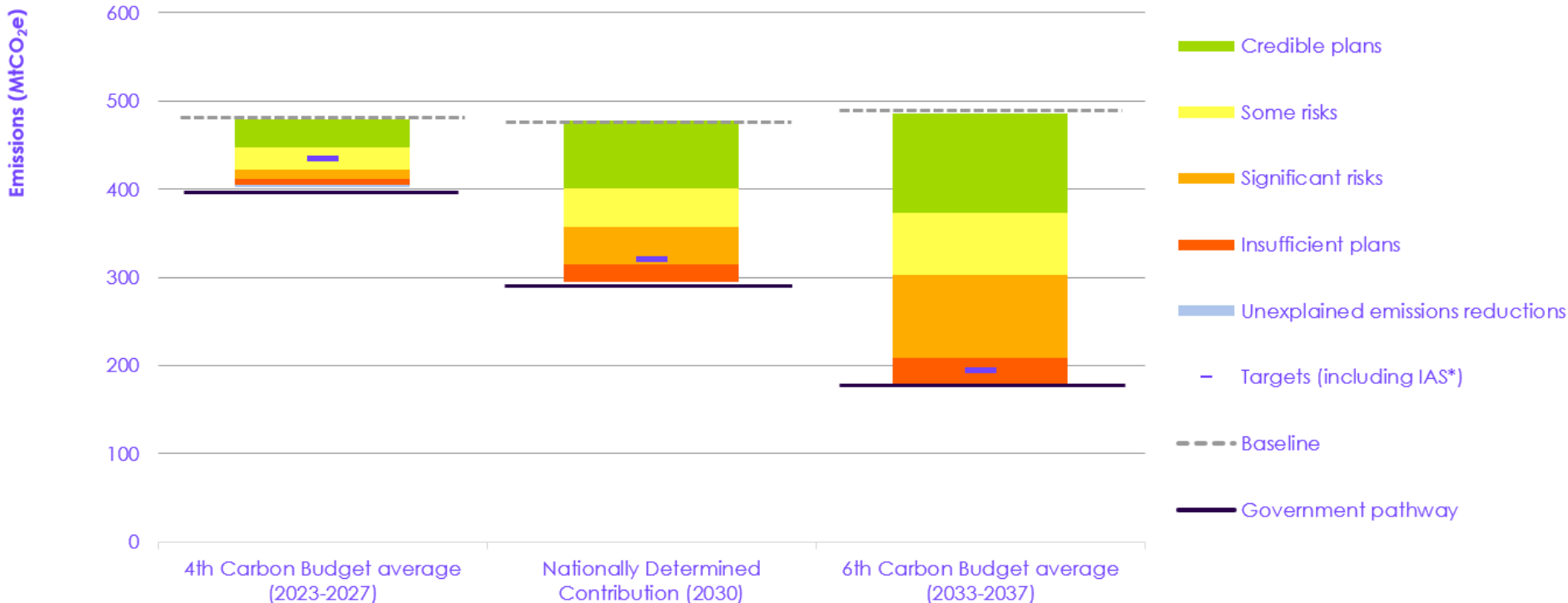
# CCC's 2022 assessment of Government policies and plans

## An improvement, but risks remain



# CCC's 2022 assessment of Government policies and plans

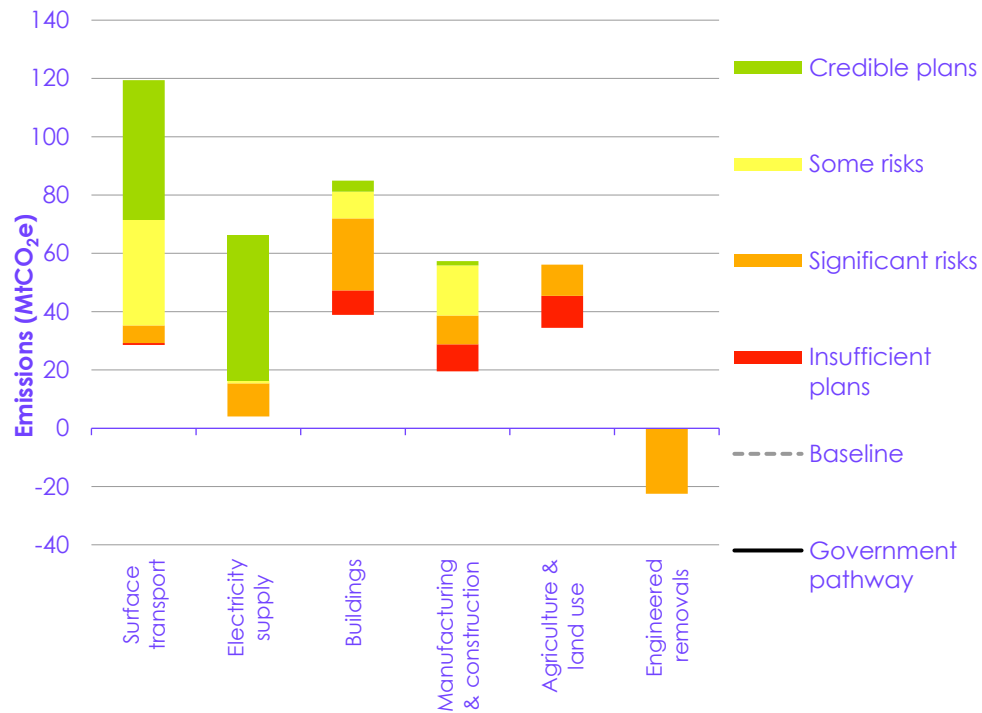
## Current plans need to be strengthened to meet the Sixth Carbon Budget





# CCC's 2022 assessment of Government policies and plans

Largely credible plans for electricity supply and surface transport, but significant risks elsewhere



**Table 2**  
Summary policy scorecard for sectors up to the Sixth Carbon Budget

Sector	Change in emissions: 2019-2035	Delivery mechanism and responsibilities	Funding and other incentives	Enablers in place / barriers overcome	Timeline for future policies	Overall sector assessment
Surface transport	-84 MtCO <sub>2</sub> e	G	Y	O	G	Y
Electricity supply	-48 MtCO <sub>2</sub> e	G	G	Y	Y	G
Manufacturing & construction	-45 MtCO <sub>2</sub> e	O	O	O	O	O
Buildings	-45 MtCO <sub>2</sub> e	O	O	O	O	O
Fuel supply	-23 MtCO <sub>2</sub> e	Y	Y	O	Y	Y
Engineered removals	-23 MtCO <sub>2</sub> e	N/A	Y	O	O	O
Agriculture & land: sources	-18 MtCO <sub>2</sub> e	R	O	R	O	R
Agriculture & land: sinks	-18 MtCO <sub>2</sub> e	O	O	O	O	O
Waste	-11 MtCO <sub>2</sub> e	O	O	O	O	O
F-gases	-11 MtCO <sub>2</sub> e	G	G	G	G	G
Aviation	-7 MtCO <sub>2</sub> e	O	Y	Y	O	O
Aviation (in 2050)	-23 MtCO <sub>2</sub> e (2019-2050)	R	O	R	O	R
Shipping	-4 MtCO <sub>2</sub> e	O	Y	O	Y	O

Legend: G Credible plans, Y Some risks, O Significant risks, R Insufficient plans, N/A Not applicable

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