Climate Change Committee

16 February 2021

Net Zero, how do we get there?

Bianca Letti, Climate Change Committee

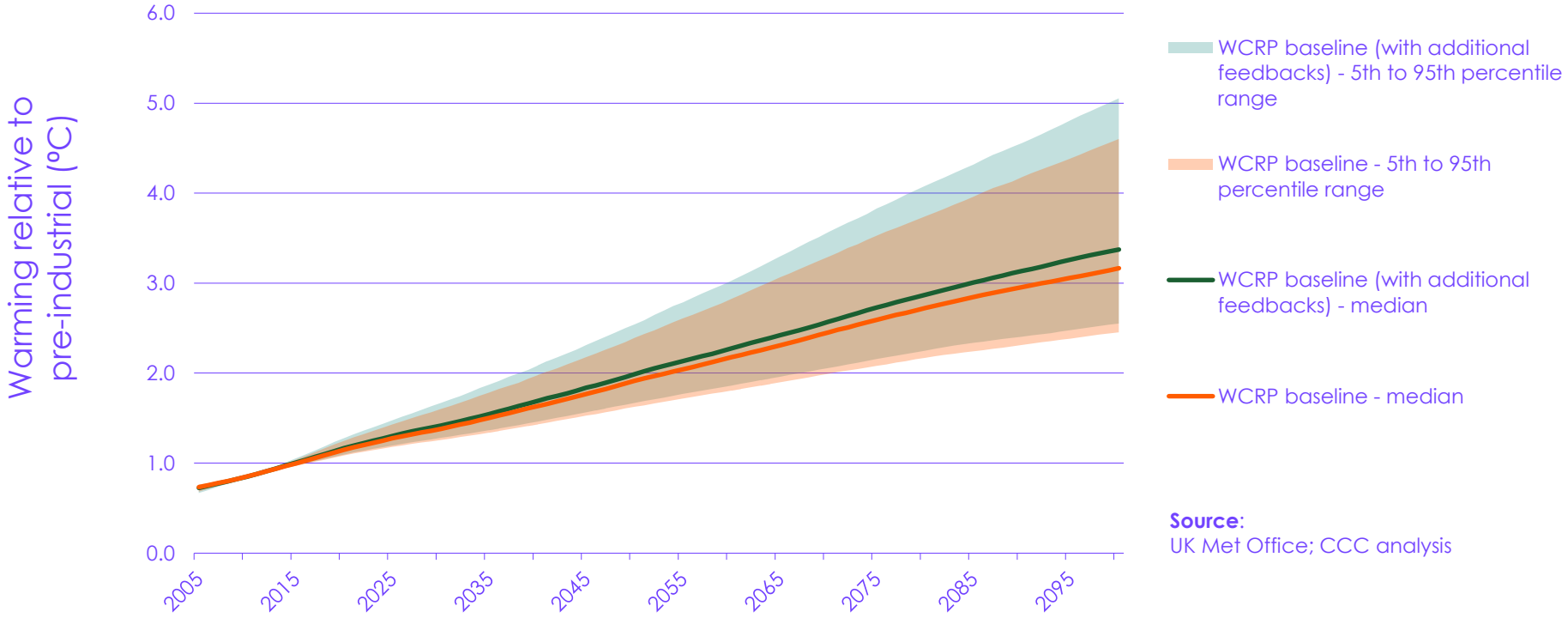
Net Zero, how do we get there?

- The UK's contribution to stopping global warming - Net Zero by 2050
- What changes will we see on the transition to Net Zero?
- Costs and other implications

The UK's contribution to stopping global warming

Climate change

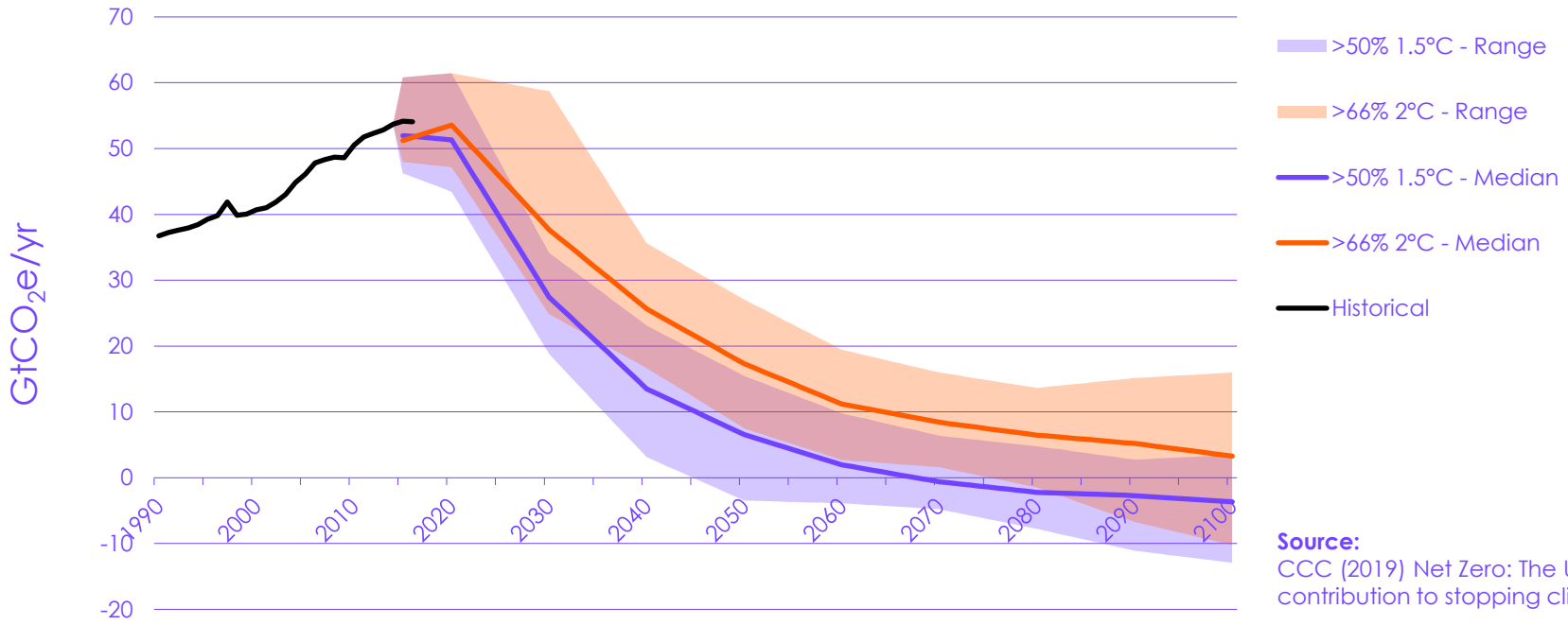
Global temperature projections for current global ambition for 2030 emissions reductions



Source:
UK Met Office; CCC analysis

What do we do about this?

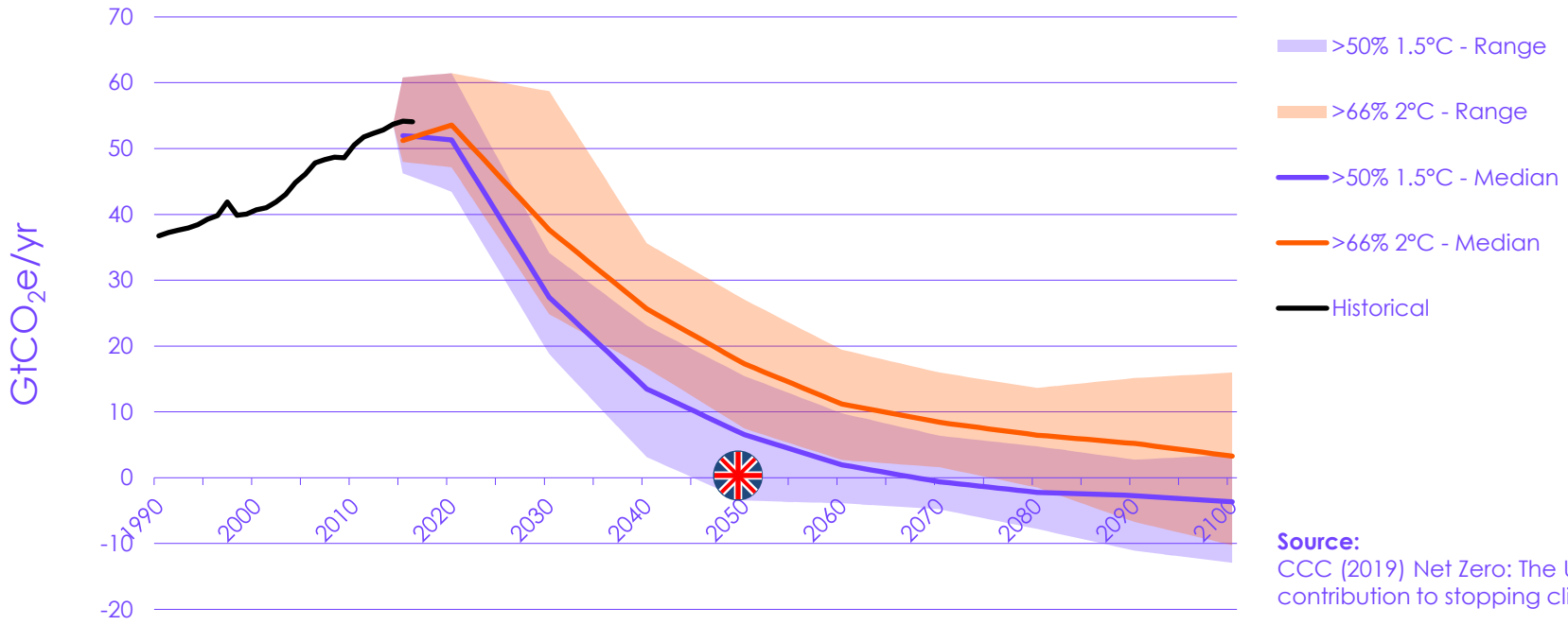
Global emissions (all GHGs) pathways consistent with the Paris Agreement



Source:
CCC (2019) Net Zero: The UK's contribution to stopping climate change.

What do we do about this?

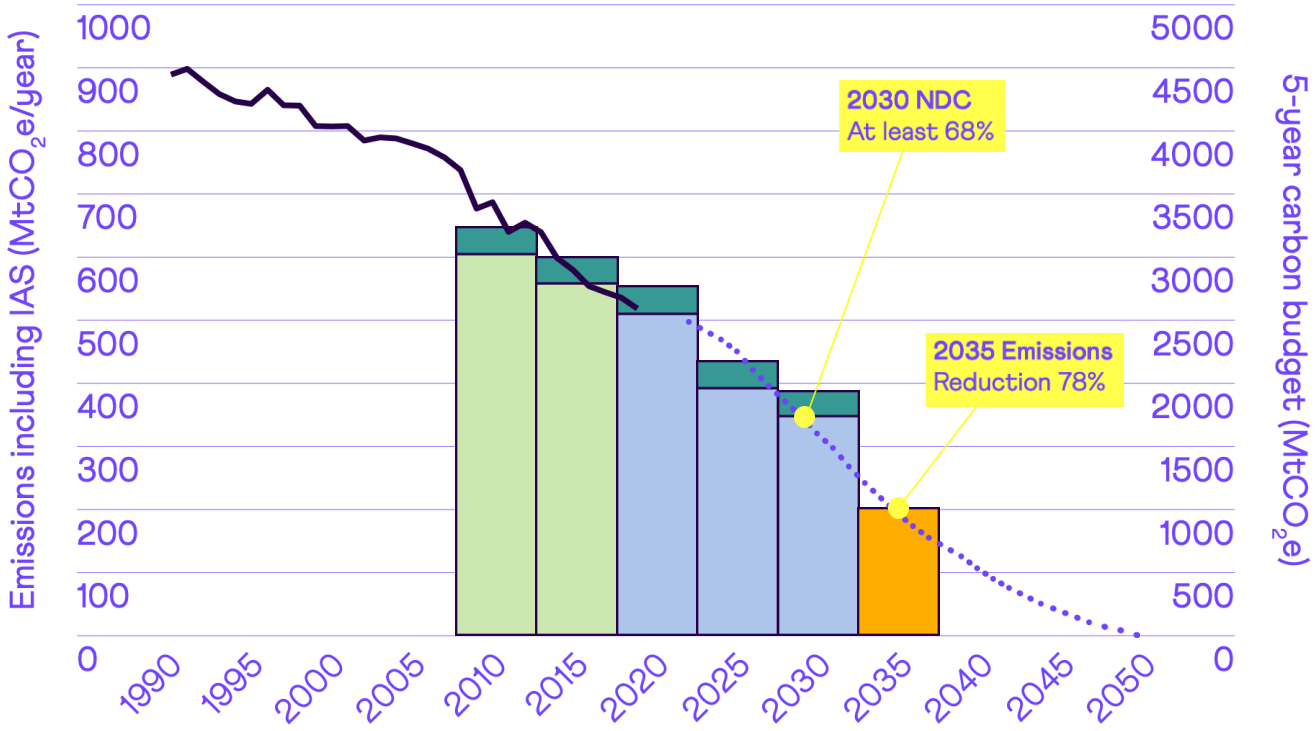
Global emissions (all GHGs) pathways consistent with the Paris Agreement



Source:
CCC (2019) Net Zero: The UK's contribution to stopping climate change.

Our recommended path

The recommended sixth carbon budget and 2030 NDC



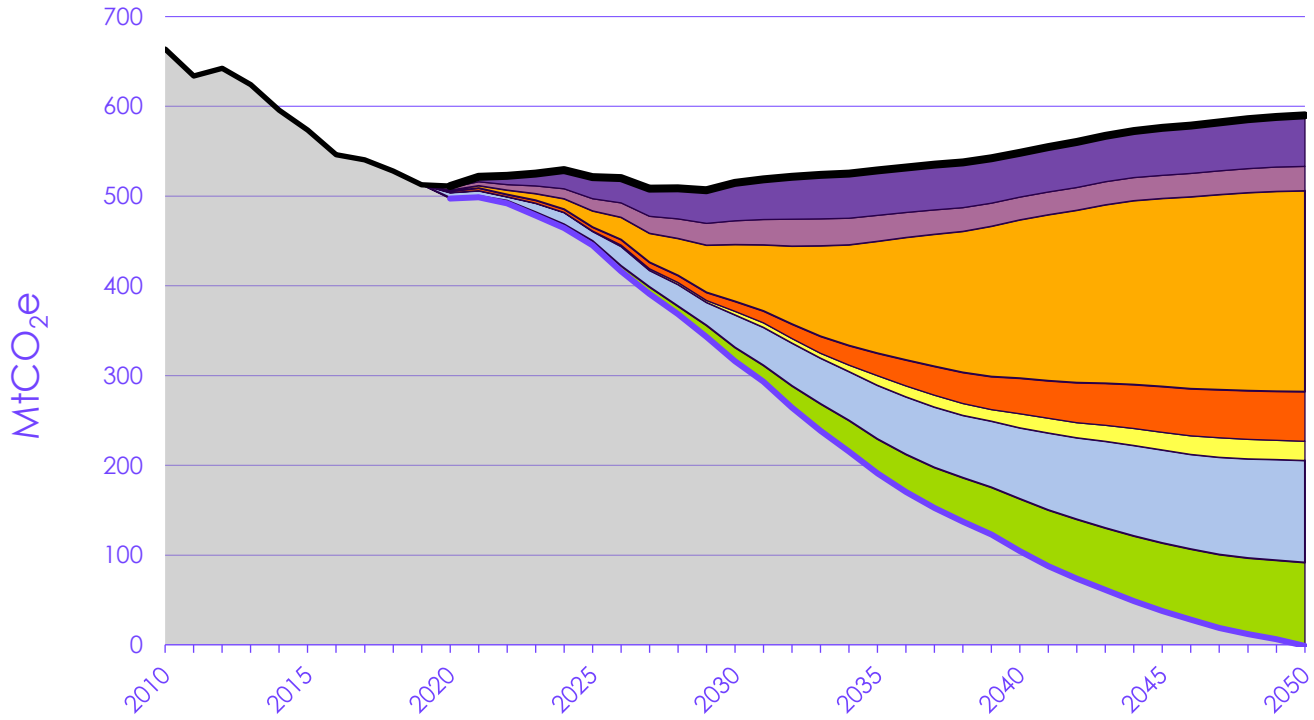
- Historical emissions
- Past carbon budgets
- Headroom for IAS emissions
- The Balanced Net Zero Pathway
- Active legislated carbon budgets
- The Sixth Carbon Budget

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 on the balanced path

Meeting Net Zero requires actions across four key areas



1. Demand reduction and efficiency

- Reduced demand for carbon-intensive activities
- Greater efficiency in use of energy and resources

2. Take-up of low-carbon solutions

- Electrification
- Hydrogen and other low-carbon technologies
- CO2 capture from fossil-fuels and industry

3. Expansion of low-carbon energy

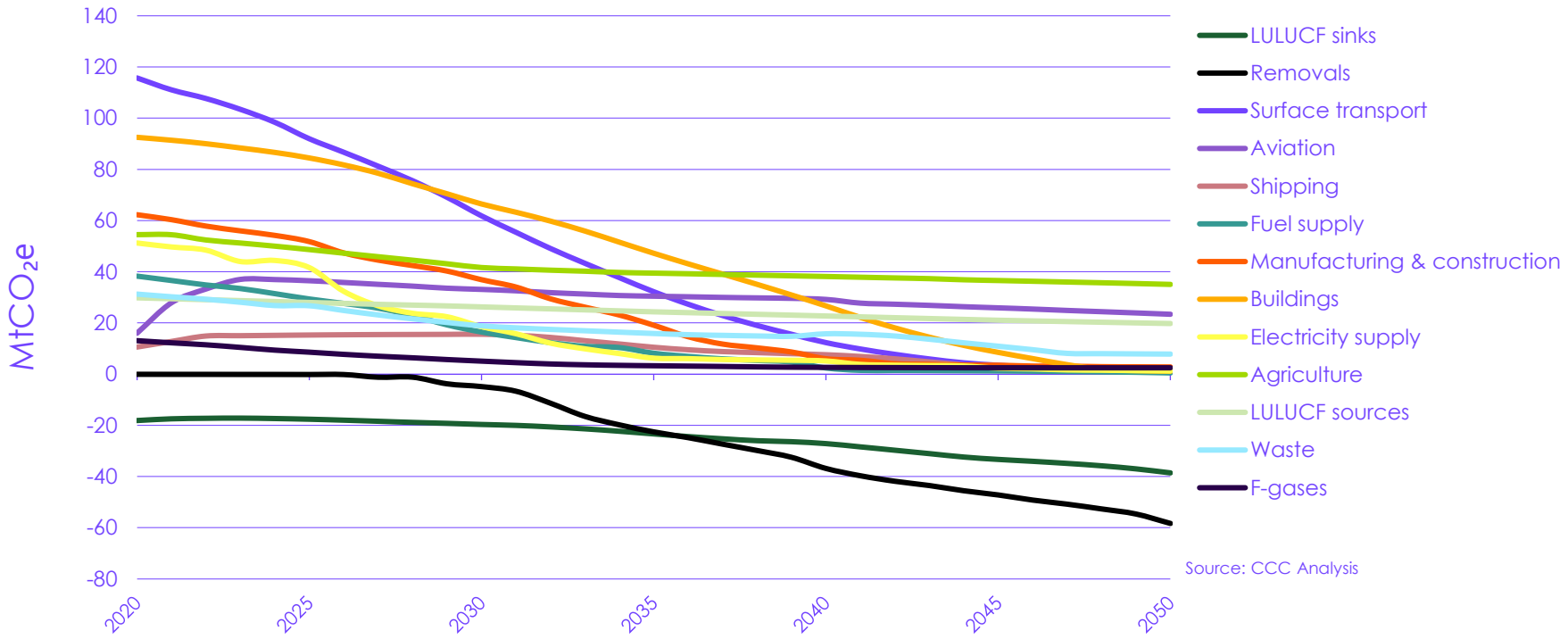
- Low-carbon hydrogen and electricity production

4. Offsetting emissions

- Natural carbon storage and greenhouse gas removals

Emissions abatement on the balanced path

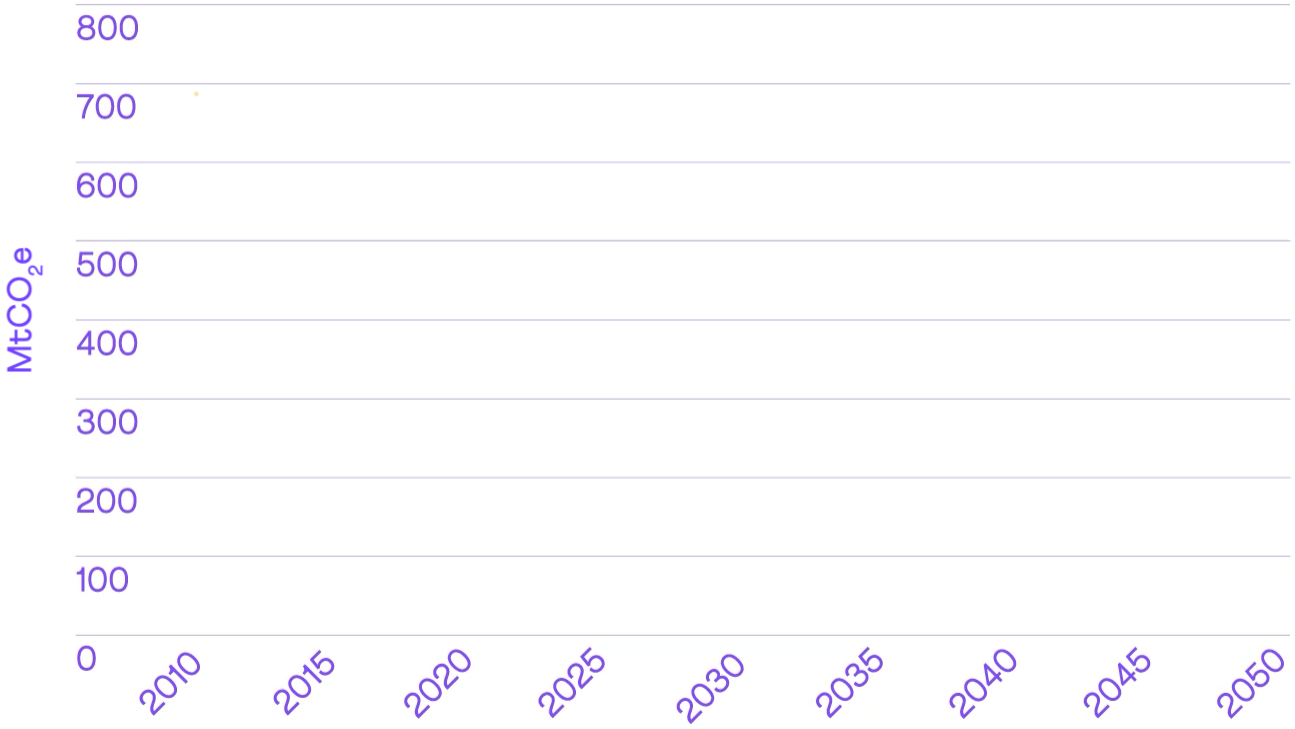
Sectoral contribution to meeting Net Zero



Source: CCC Analysis

What changes will we see on the transition to Net Zero?

What changes will we see on the Balanced Pathway
2019



Key developments

Reduced Demand

- Meat consumption p/ person (% reduction)
- Insulation fitted (millions)

Low-carbon Choices

- EV share of new sales (%)
- Low-carbon share of boiler replacements

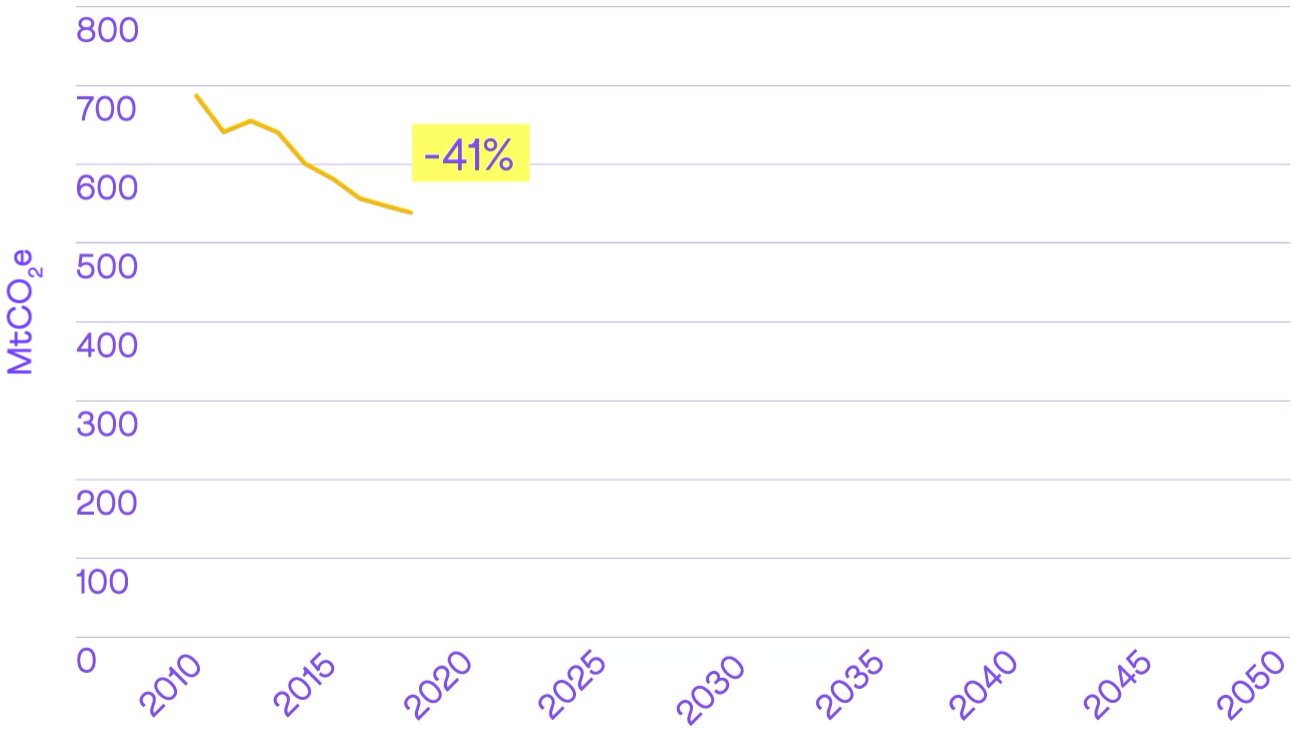
Low-carbon energy

- CCS ($MtCO_2e$)
- Electricity (TWh)
- Hydrogen (TWh)

Land use

- Afforestation (kha pa)
- Perennial energy crops (kha pa)
- Peatland restored (%)

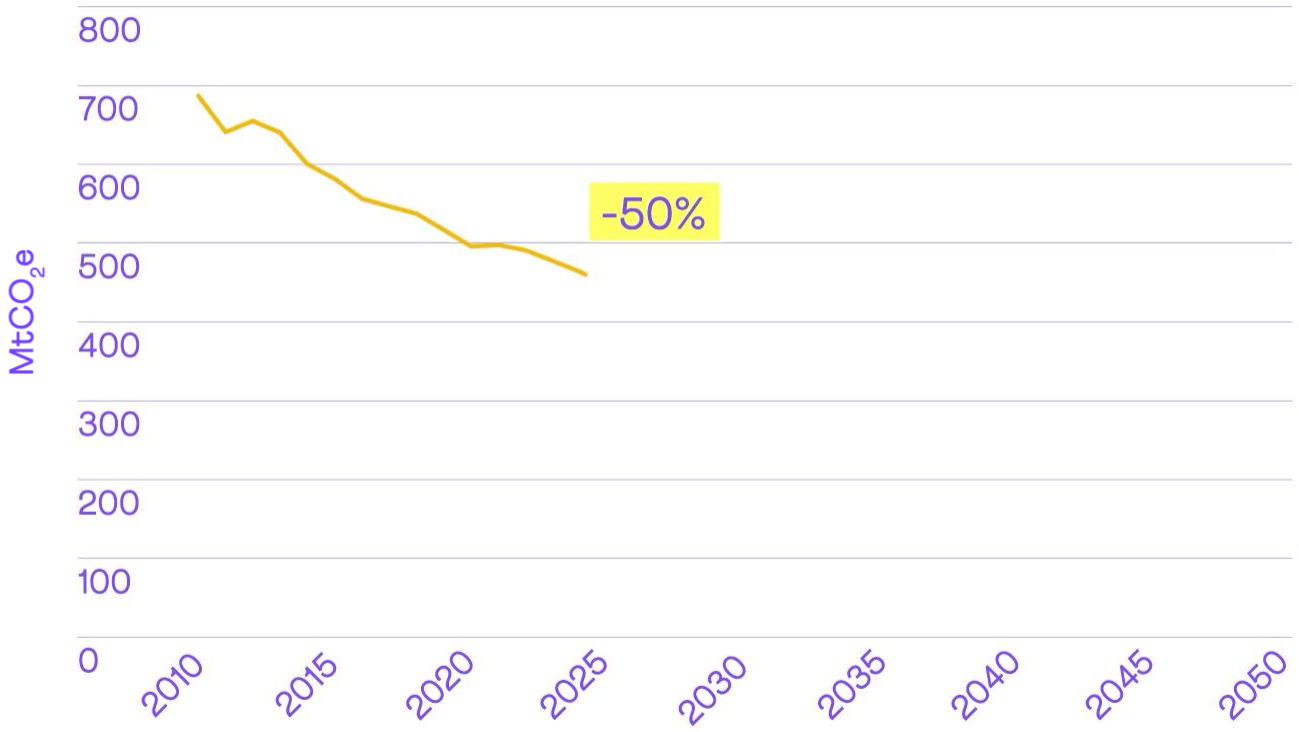
What changes will we see on the Balanced Pathway
2025



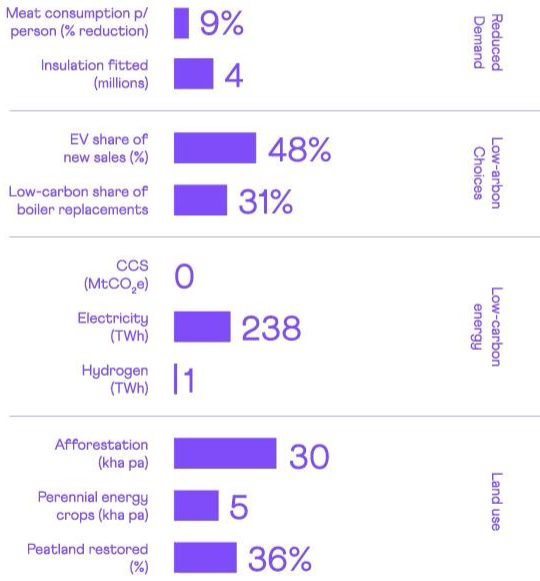
Key developments

Reduced Demand	Meat consumption p/ person (% reduction)	0%
	Insulation fitted (millions)	0
Low-carbon Choices	EV share of new sales (%)	13%
	Low-carbon share of boiler replacements	11%
Low-carbon energy	CCS ($MtCO_2e$)	0
	Electricity (TWh)	205
	Hydrogen (TWh)	0
Land use	Afforestation (kha pa)	19
	Perennial energy crops (kha pa)	0
	Peatland restored (%)	25%

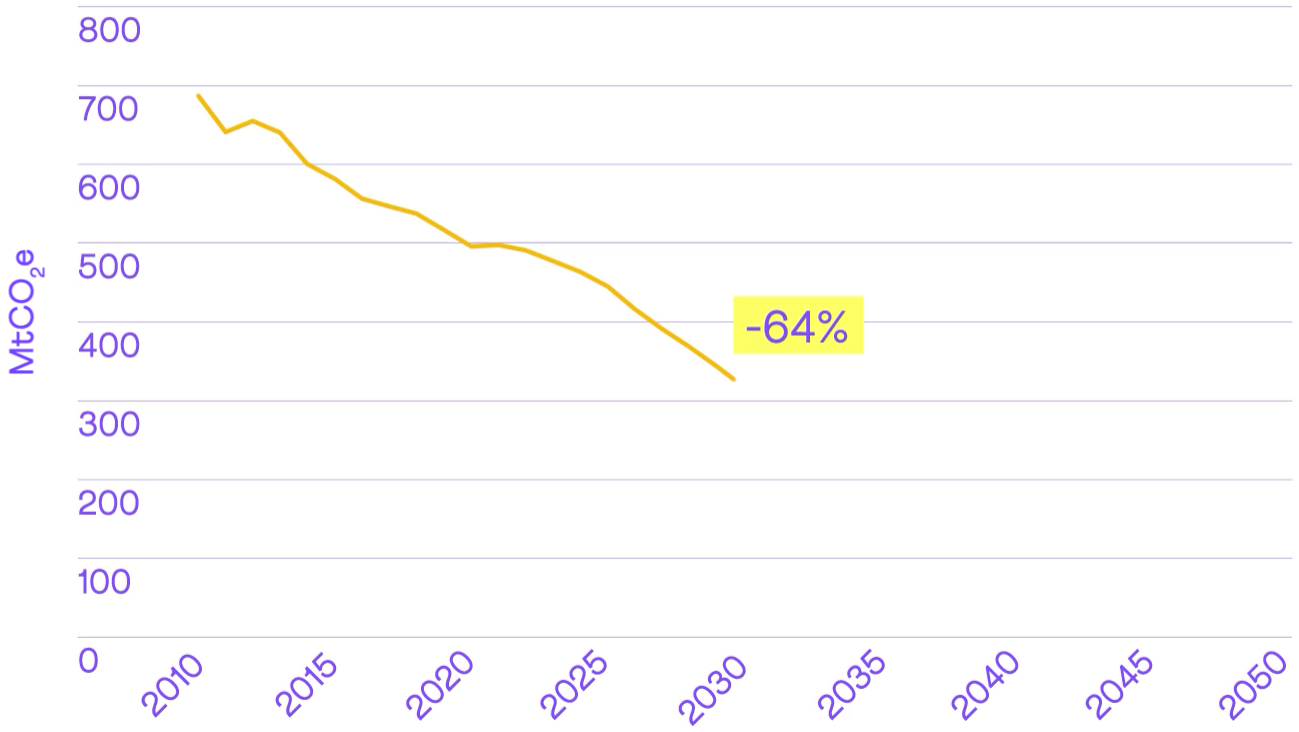
What changes will we see on the Balanced Pathway
2030



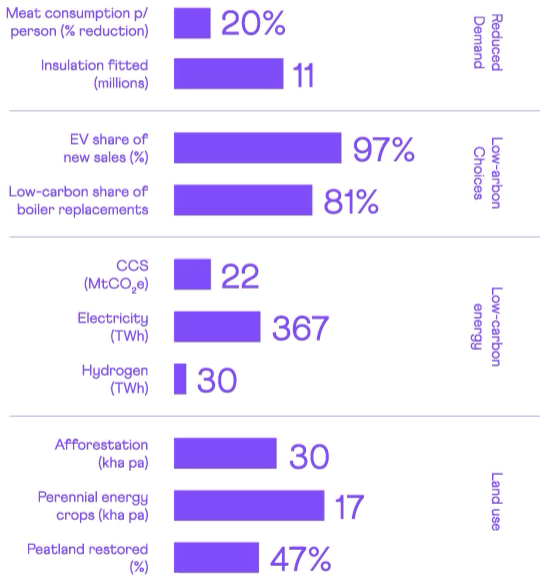
Key developments



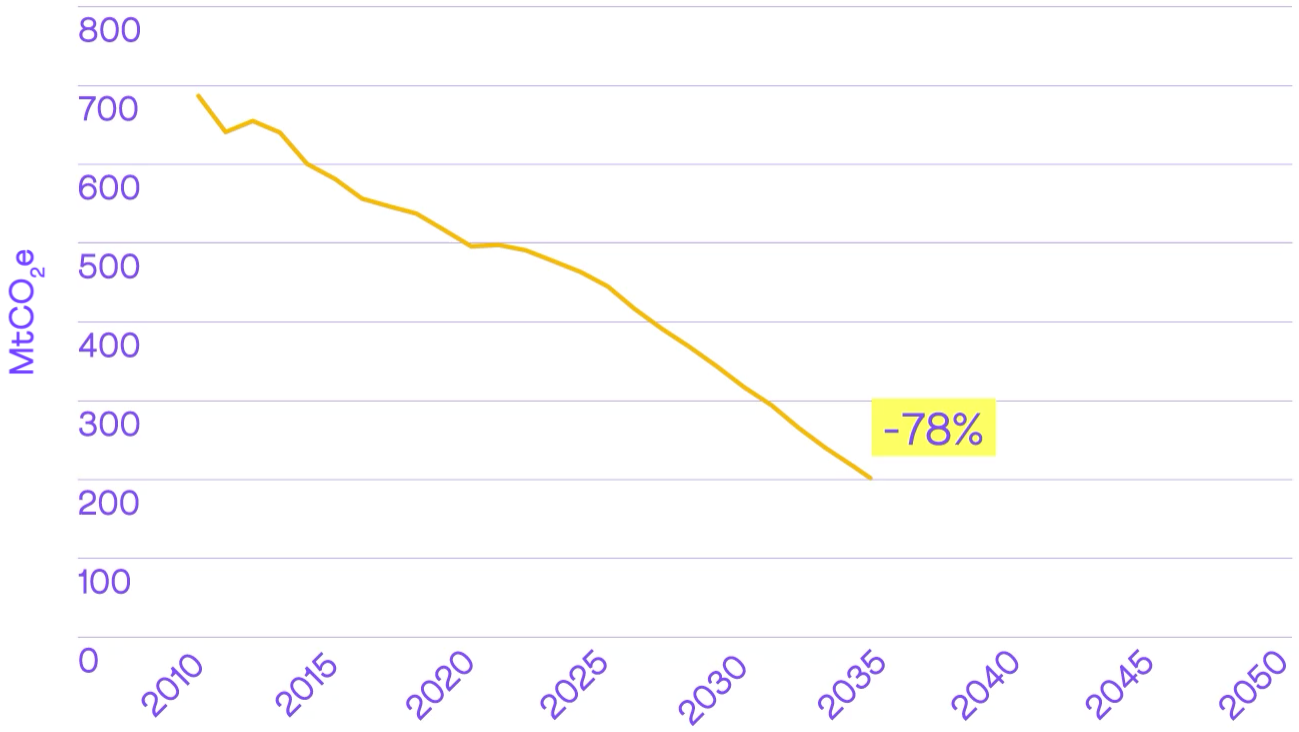
What changes will we see on the Balanced Pathway
2035



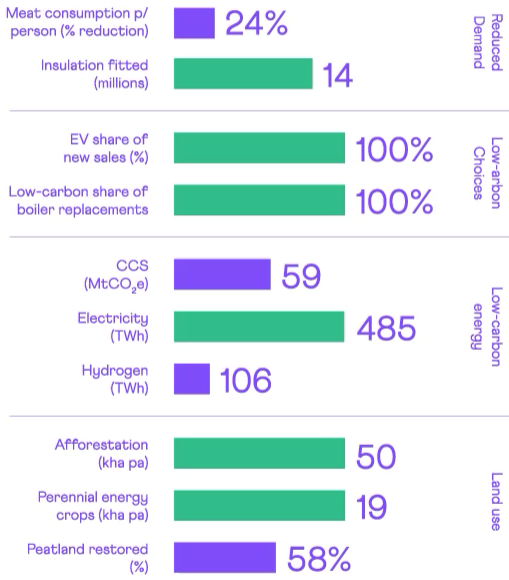
Key developments



What changes will we see on the Balanced Pathway
2050



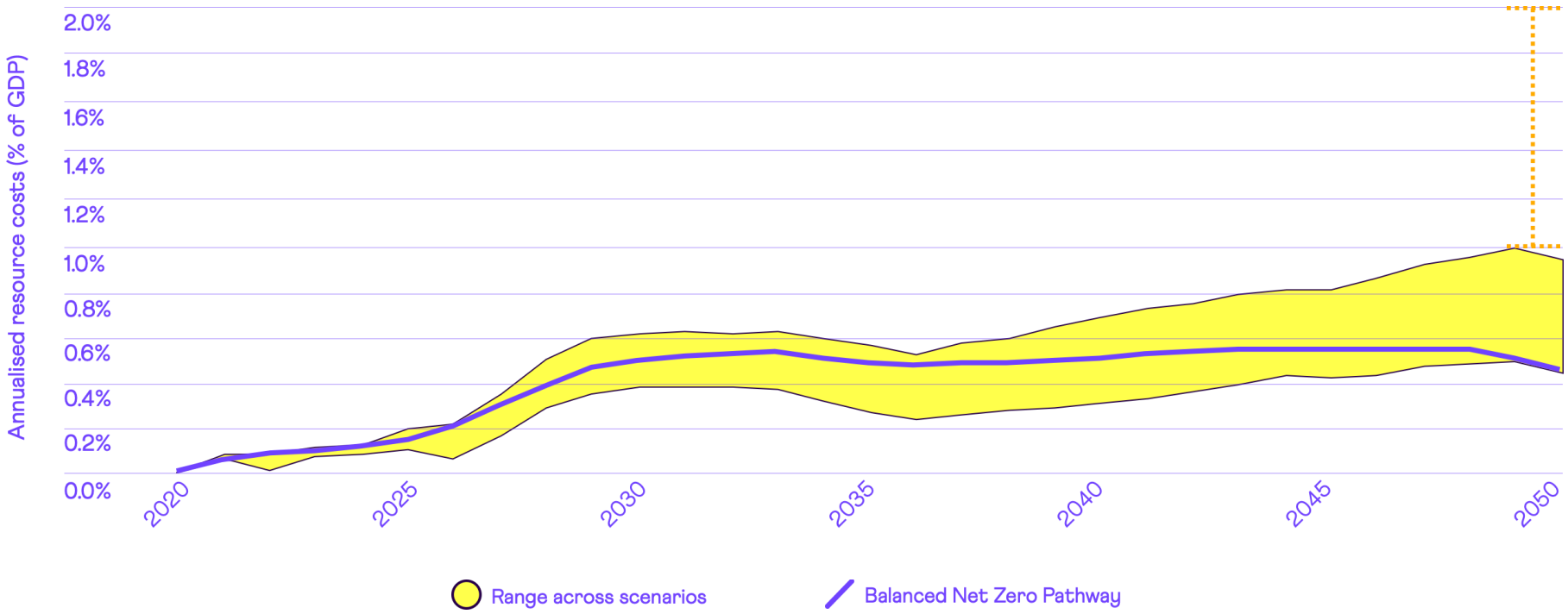
Key developments



Costs and other implications

Resource costs

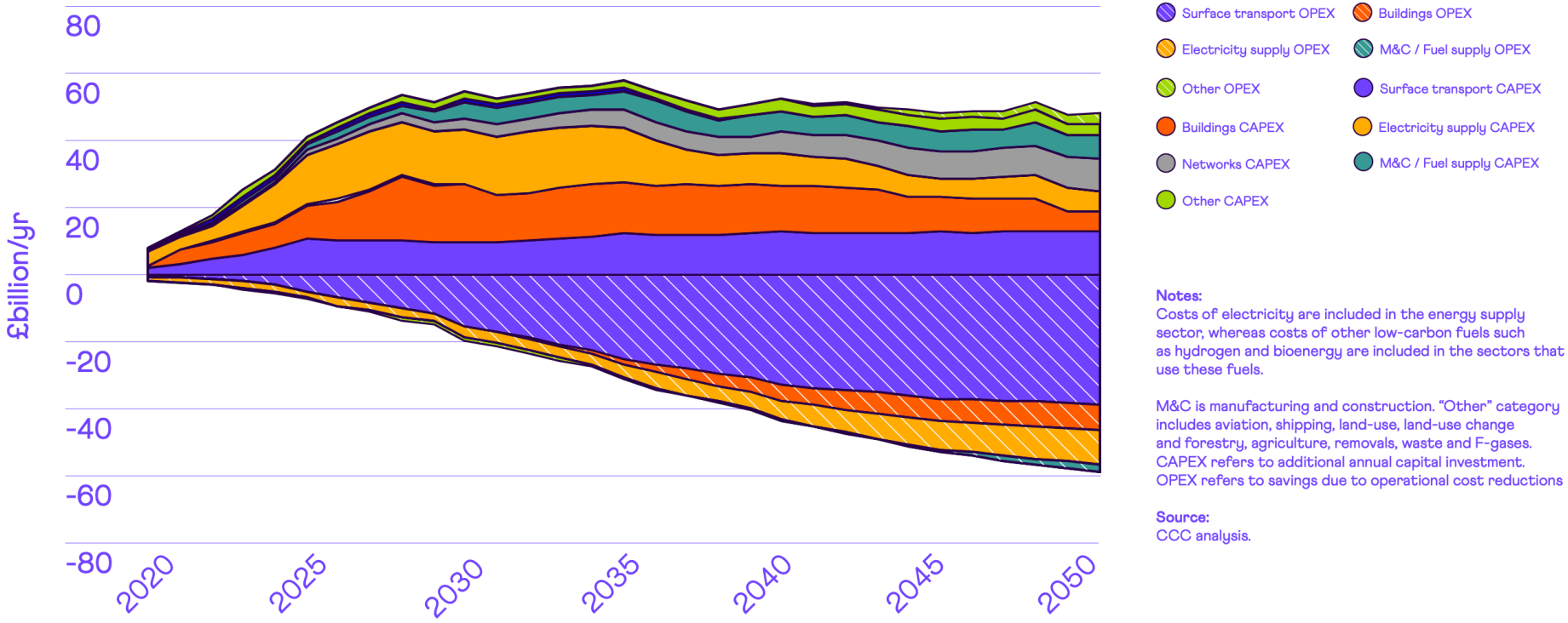
Change in resource costs over time as a percentage of GDP



Source: CCC analysis.

Investing for Net Zero

Major investment programme, delivering offsetting operating cost savings



Notes:
Costs of electricity are included in the energy supply sector, whereas costs of other low-carbon fuels such as hydrogen and bioenergy are included in the sectors that use these fuels.

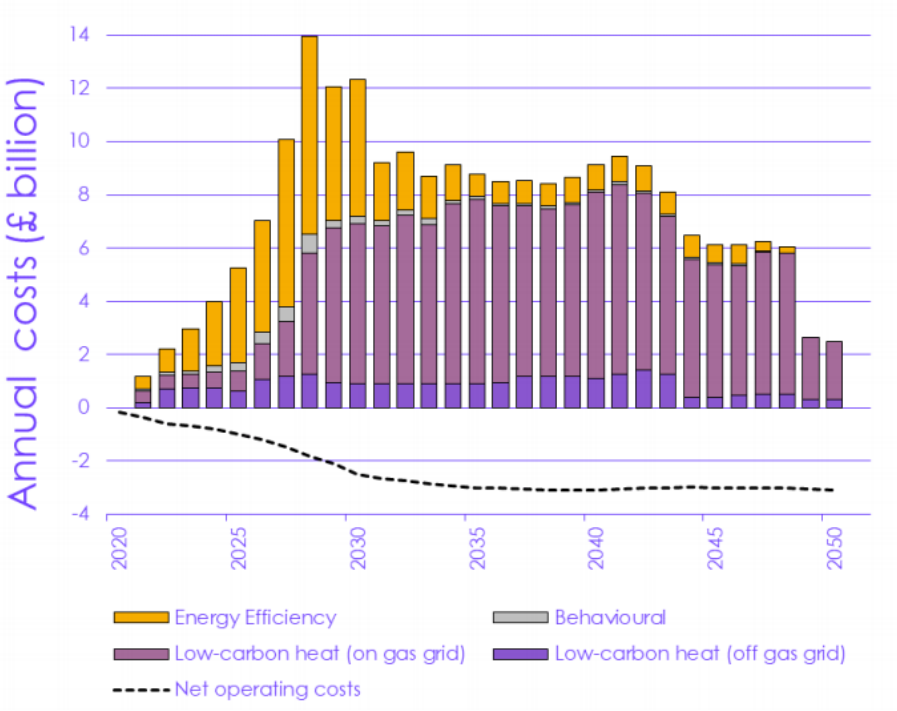
M&C is manufacturing and construction. "Other" category includes aviation, shipping, land-use, land-use change and forestry, agriculture, removals, waste and F-gases. CAPEX refers to additional annual capital investment. OPEX refers to savings due to operational cost reductions

Source:
CCC analysis.

Sharing the costs and benefits

Key challenge in decarbonising homes

Investment costs for decarbonising existing homes



Vulnerable customers

- Investment of ~£2 billion/year can be covered by existing schemes *if extended*
- Bills expected to fall as a result

Other households

- £3 billion/year funding gap by 2030

Fairness in other spending areas

- Consumer goods
- Energy networks
- Electric cars

Benefits of the Net Zero transition

- **Climate**
- **Economic**
- **Environment and biodiversity**
- **Health and well-being**
  - Air quality
  - Walking and cycling
  - Healthier diets
  - More liveable homes
  - Mental health improvements

www.theccc.org.uk

@theCCCuk