Committee on Climate Change

07 May 2019

Net Zero

The UK's contribution to stopping global warming

Committee on Climate Change

Summary recommendations

- **The UK should legislate as soon as possible to reach net-zero greenhouse gas emissions by 2050**. The target can be legislated as a 100% reduction in greenhouse gases (GHGs) from 1990 using the existing Climate Change Act procedures.
- The target should cover **all sectors of the economy, including international aviation and shipping**.
- The aim should be to meet the target **through UK domestic effort**, without relying on international carbon units (or 'credits').
- Now is the right time to set a net zero target. It is **technically possible, based on current consumer behaviours and known technologies**, with prudent assumptions over cost reduction.
- **An earlier date should not be set at this stage**. Some sectors could reach net zero earlier, but for most sectors 2050 appears to be the earliest credible date, to give time to develop speculative options as alternatives for any shortfalls. Avoiding the need for early capital scrappage or punitive policies.
- **The target is an appropriate contribution to the Paris Agreement**. The UK can benefit from the international influence of setting a bolder target, using it as an opportunity for further positive international collaboration.
- **Wales should set a target for a 95% reduction in emissions by 2050 relative to 1990.** Wales has less opportunity for CO_2 storage and relatively high agricultural emissions that are hard to reduce. On current understanding it could not credibly reach net-zero GHGs by 2050.
- **Scotland should aim for net-zero greenhouse gas emissions by 2045.** Scotland has proportionately greater potential for emissions removal than the UK overall and can credibly adopt a more ambitious target. Interim targets should be set for Scottish emissions reductions (relative to 1990) of 70% by 2030 and 90% by 2040.

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Summary recommendations

- **Net zero target is only credible if policy to reduce emissions ramps up significantly**
  - The target can only be delivered with a strengthening of policy to deliver emissions reductions across all levels and departments of government. This will require strong leadership at the heart of Government. Delivery must progress with far greater urgency.
  - Policies must be designed with businesses and consumers in mind. They must be stable, long-term and investable. The public must be engaged, and other key barriers such as low availability of necessary skills must be addressed.
  - Report emphasises previous CCC recommendations for: Heating buildings; CCS; Electric vehicles; Agriculture; Waste; Low Carbon Power.
  - With new recommendations for stronger approaches to: Industry; land use; HGVs; aviation and shipping; and GHG removals.
- **Overall costs are manageable, but must be fairly distributed.** Rapid cost reductions during mass deployment for key technologies mean that net zero can be met an annual resource cost of up to 1-2% of GDP to 2050, the same cost as the previous expectation for an 80% reduction from 1990.
- **HM Treasury should undertake a review of how the transition will be funded and where the costs will fall**. It should develop a strategy to ensure this is, and is perceived to be, fair. A broader strategy will also be needed to ensure a '**just transition**' across society, with vulnerable workers and consumers protected.

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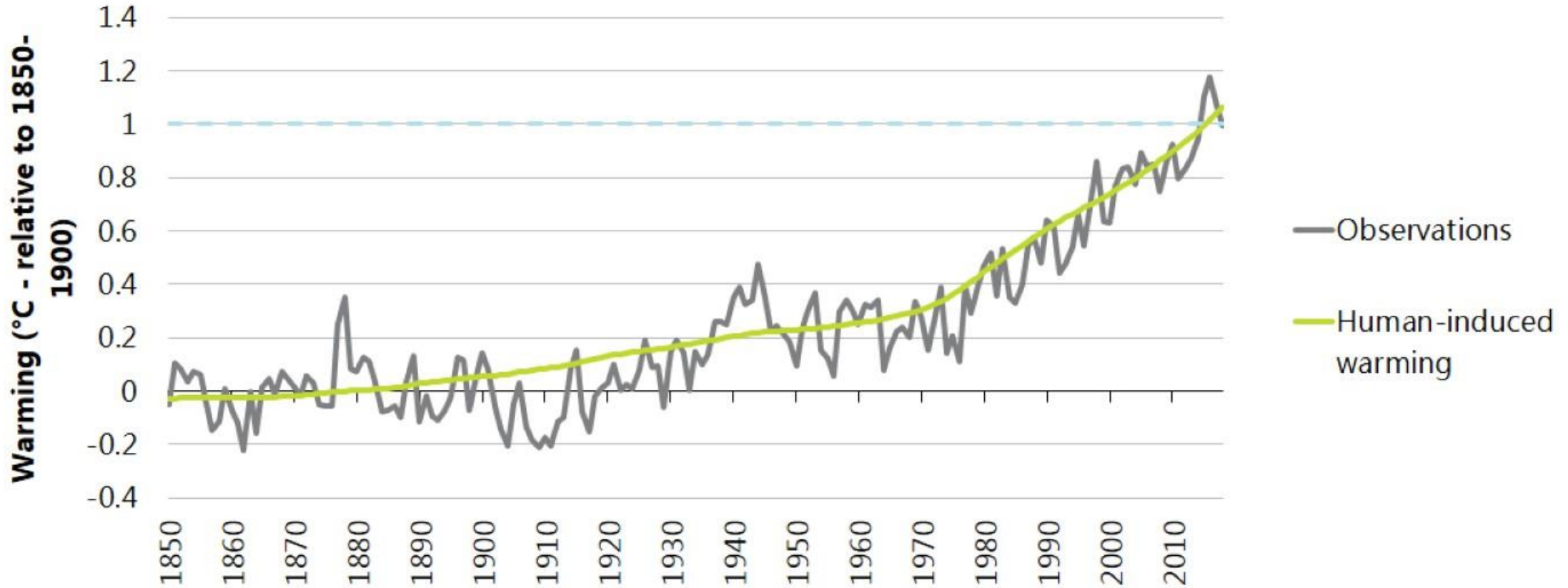
Science and international context
Global emissions pathways consistent with Paris

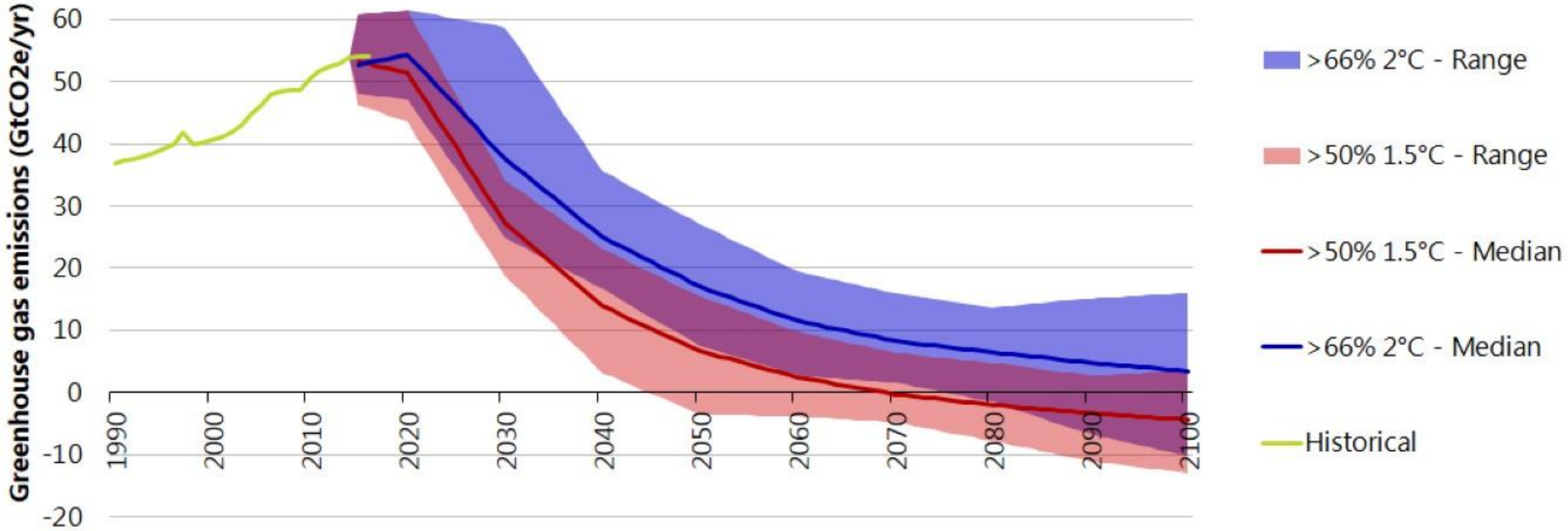
Observed and human-induced warming



Source: HadCRUT4, NOAA, NASA and Cowtan & Way datasets; IPCC (2018) Chapter 1 - Framing and Context.

Science and international context
Global emissions pathways consistent with Paris

Global emissions pathways consistent with Paris
CO2 (left) Aggregated GHGs (right)



Source: Huppmann, D. et al. (2018) A new scenario resource for integrated 1.5°C research.

Science and international context
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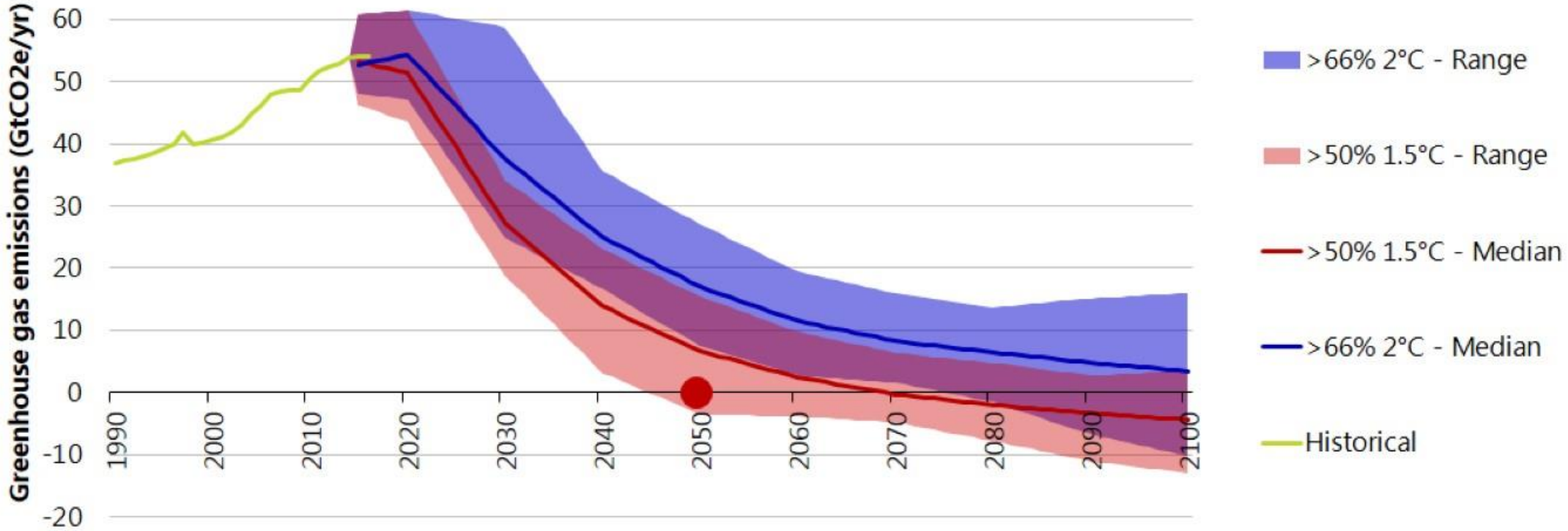

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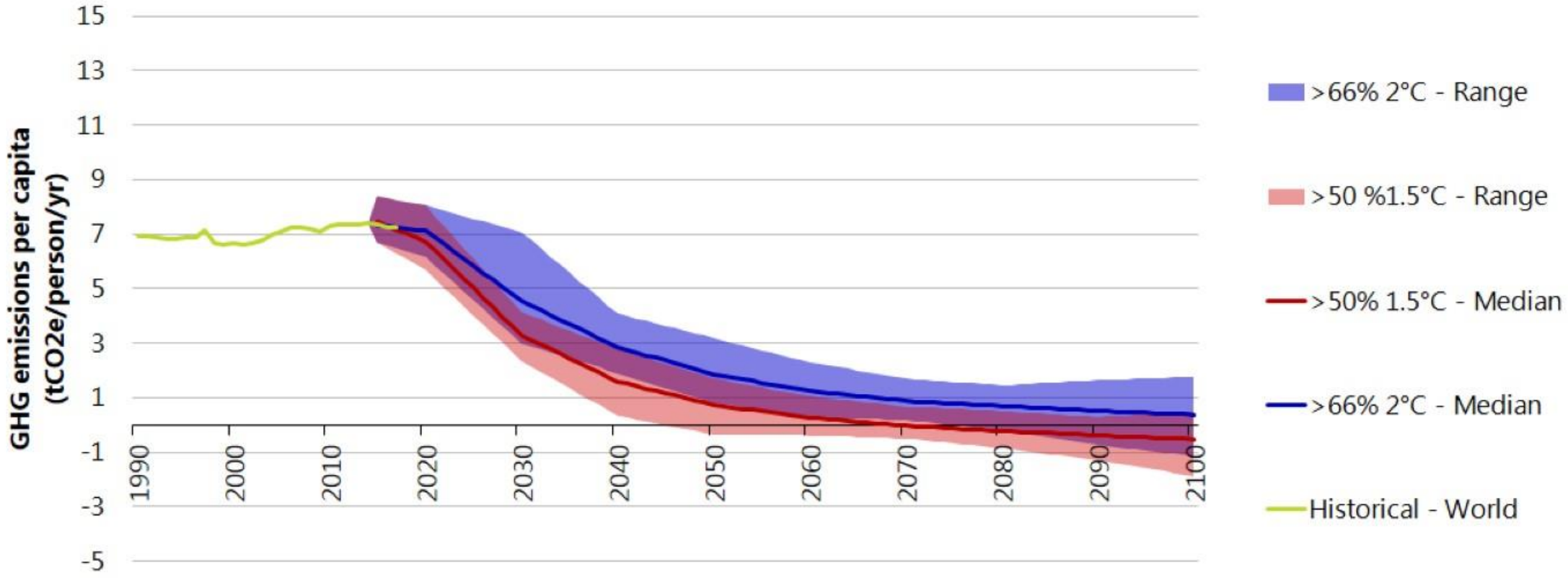
Science and international context
Global emissions pathways consistent with Paris

Evolution of global per capita emissions over time



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Science and international context
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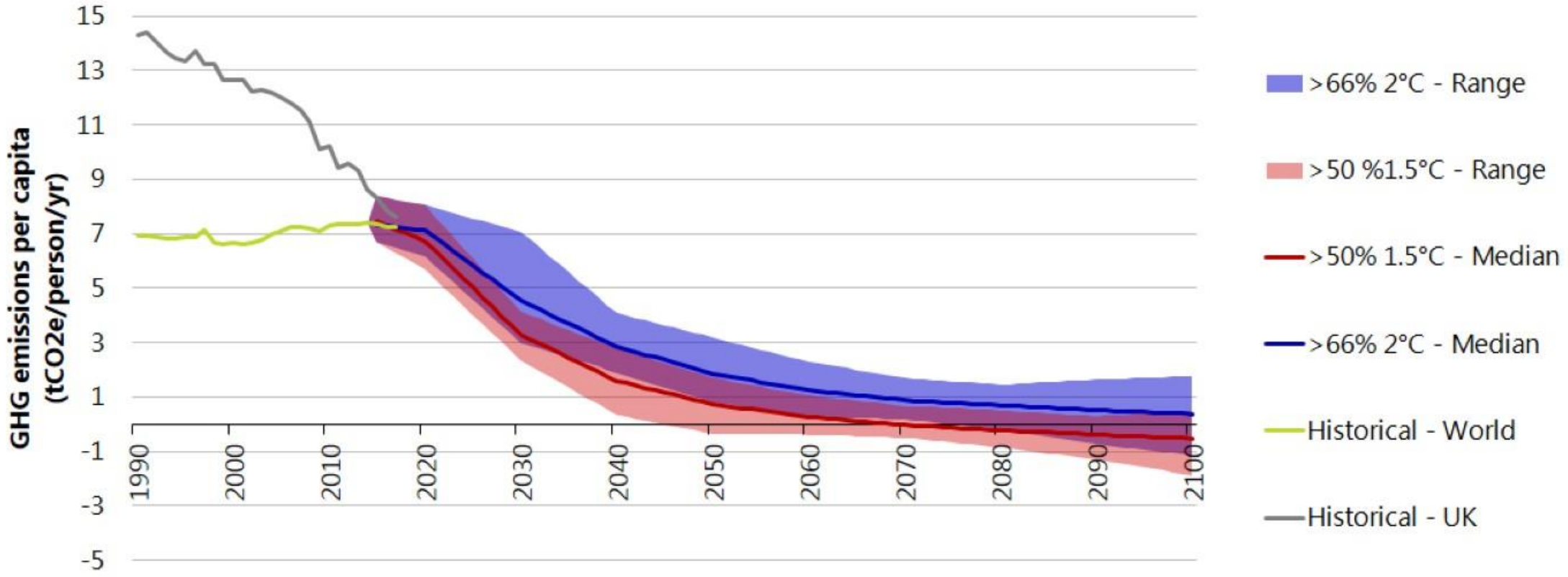

Source: Huppmann, D. et al. (2018) A new scenario resource for integrated 1.5°C research.

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Science and international context
Supporting increased global ambition

	Net-zero: CO_2 or GHGs	Date to achieve target by	Formality	International offsetting?	International aviation & shipping?
Proposed UK target	GHGs 	2050	To be legislated in Climate Change Act		
Net-zero targets under consideration					
European Union	GHGs 	2050	Proposed by European Commission		
France	GHGs 	2050	Bill - not yet legislated		
New Zealand	To decide 	2050	Bill - currently being drafted		

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Science and international context
Supporting increased global ambition

	Net-zero: CO_2 or GHGs	Date to achieve target by	Formality	International offsetting?	International aviation & shipping?
Net-zero targets that have been adopted					
California	Unclear 	2045	Executive Order		
Sweden	GHGs 	2045	Legislation		
Denmark	Unclear 	2050	Legislation		
Norway	GHGs 	2030	Binding Agreement		

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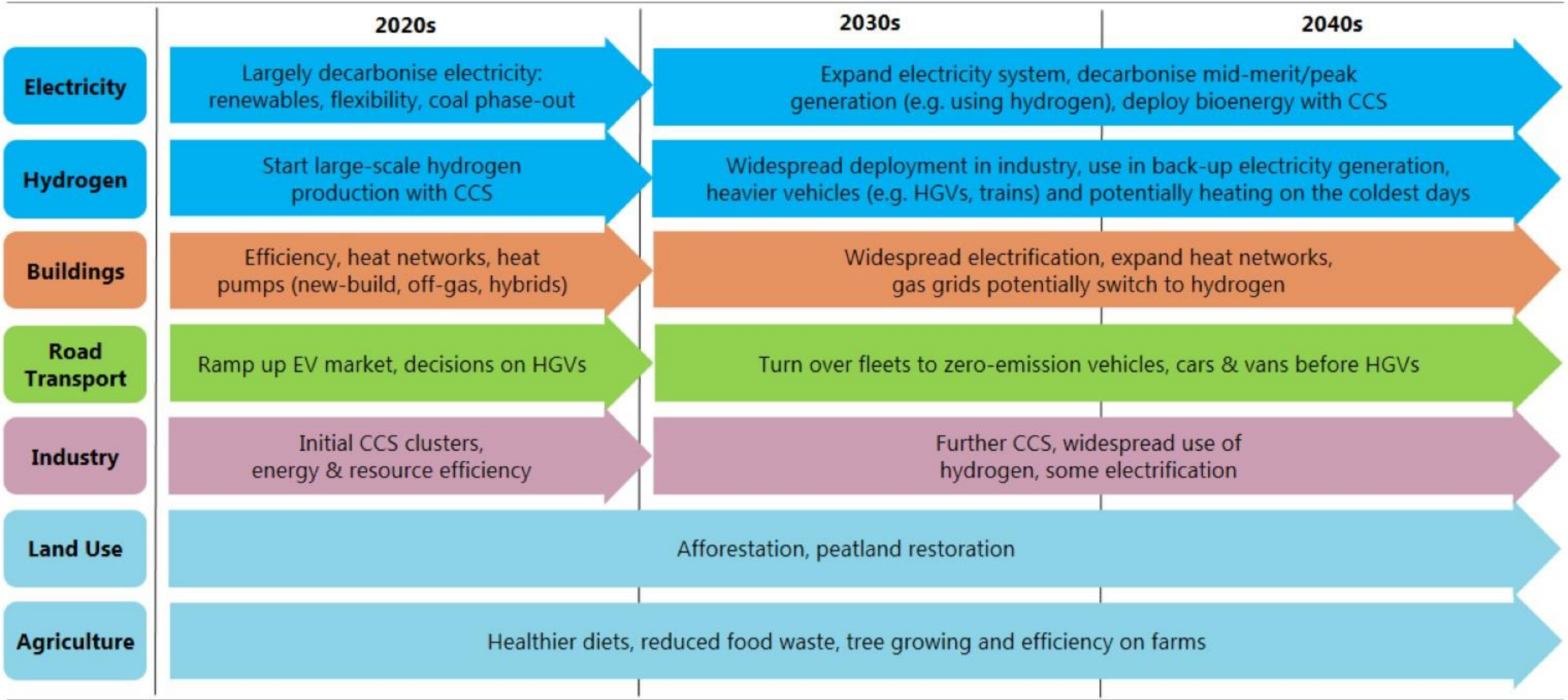
Reaching net-zero emissions in the UK
How UK net-zero scenarios can be delivered



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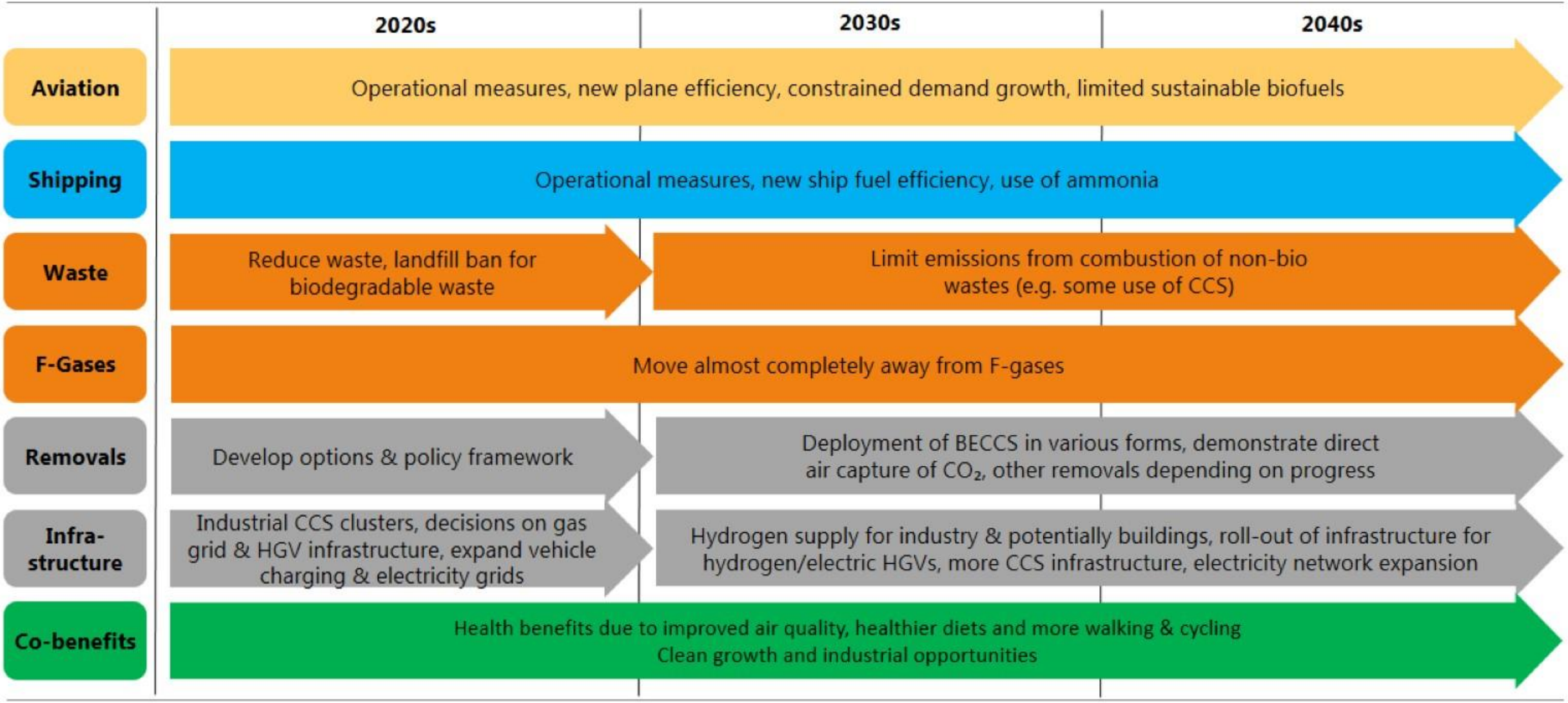
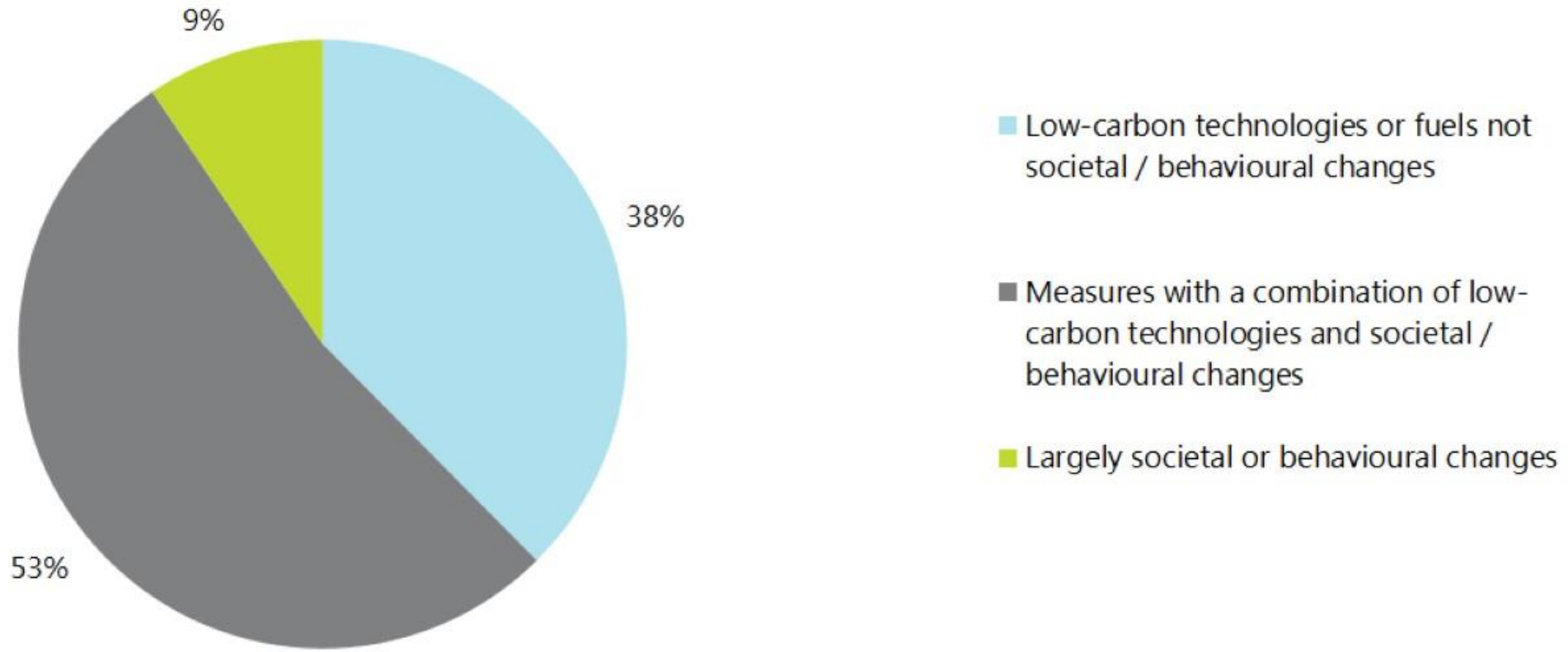
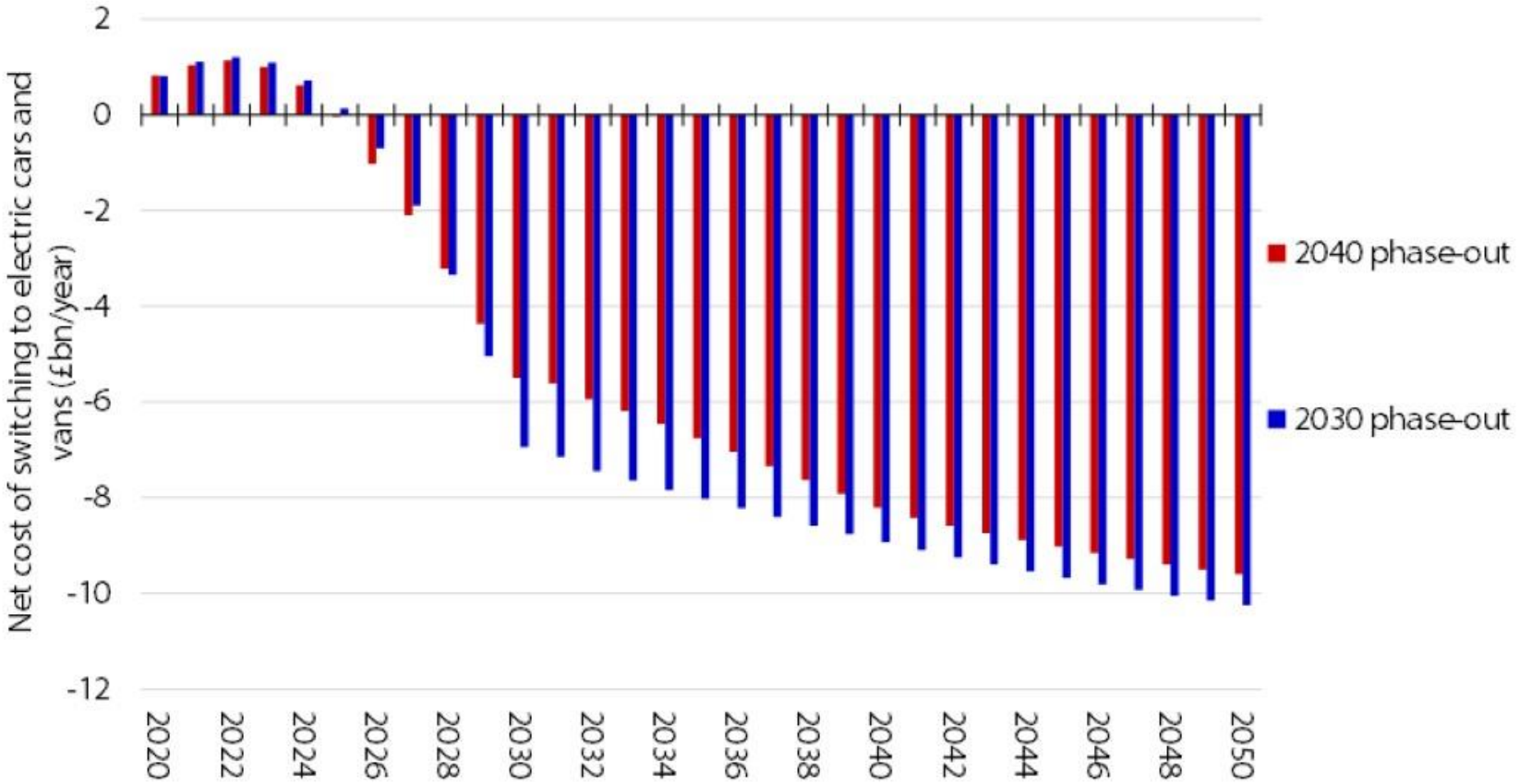


Role of societal and behavioural changes



Source: CCC analysis

A 2030 switchover to electric vehicles would save more money than a 2040 switchover



Source: CCC analysis

The impact of innovation on the costs of achieving carbon targets

- Overall, innovation and falling technology costs mean that we now estimate that the UK's 80% emissions target could be met at a lower cost than we estimated in 2008 – under 1% of GDP in 2050, rather than 1-2% of GDP.

Changes in cost estimates for long-term emissions goals		
GHG emissions reduction target (relative to 1990)	**Year and report**	**Cost range estimated for 2050**
60% reduction in CO_2 (~55% reduction in GHG)	2003 - *Energy White Paper*	0.5-2.0% of GDP
80% reduction in GHG	2008 - *Building a low-carbon economy – the UK's contribution to tackling climate change*	1-2% of GDP
100% reduction in GHG	**2019 - this report**	**1-2% of GDP**

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Summary recommendation

Science and International context

- Global 2050 emissions aligned to the Paris Agreement: ~1 tCO2e for 1.5C; ~2 tCO2e for well below 2C
- The UK can and should go further than the world's average
- Other climate leaders are aiming for net-zero GHG emissions by 2050 or before

Reaching net-zero emissions in the UK

- Credible scenarios can reduce UK GHG emissions to net-zero by 2050
- The foundations for the change are in place, but a major ramp-up and acceleration in policy effort is required
- Expected cost of a net-zero target is the same as the cost accepted by Parliament when the existing 80% target was set

UK should target net-zero GHG emissions by 2050

Backed by significant policy strengthening

HM Treasury should review where the costs of the transition fall

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