UK Carbon policy, post-Paris

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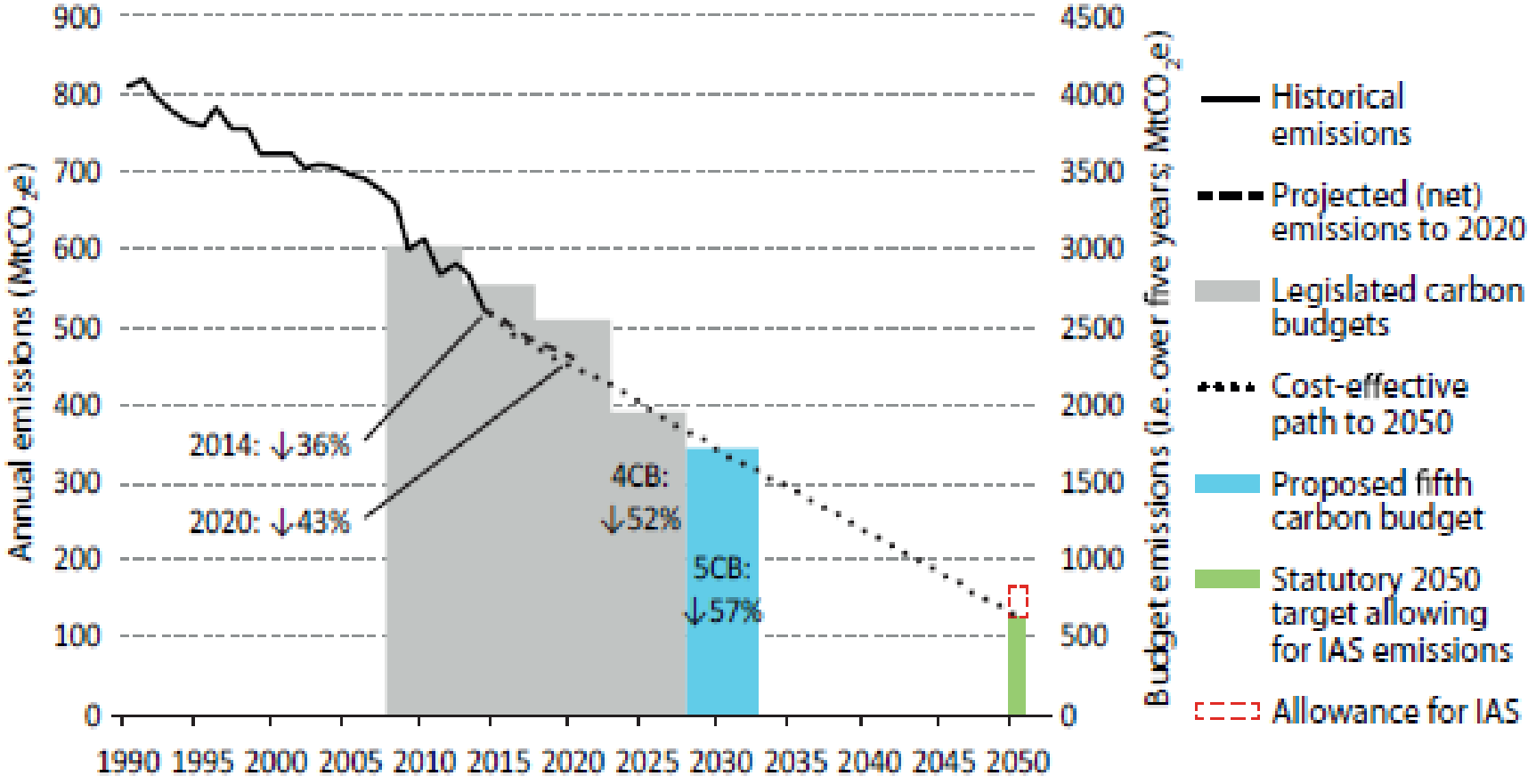
Structure of presentation

1. The 5th carbon budget advice
2. The Paris Agreement
3. The Committee's post-Paris letter
4. How should UK low-carbon policy develop post-Paris?

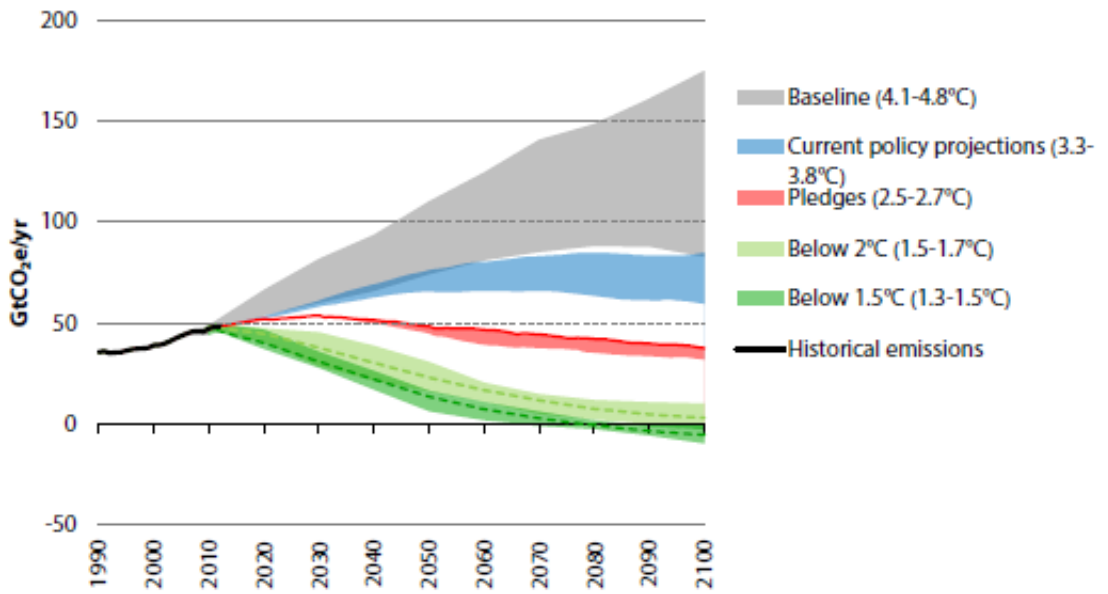
The 5th carbon budget advice

The Committee recommends that emissions fall by 57% (versus 1990 levels) by the fifth carbon budget period of 2028 – 2032.



Where do the pledges, in advance of Paris, take us?

Figure 2.9: Effect of the UN pledges on long-term global emissions pathways



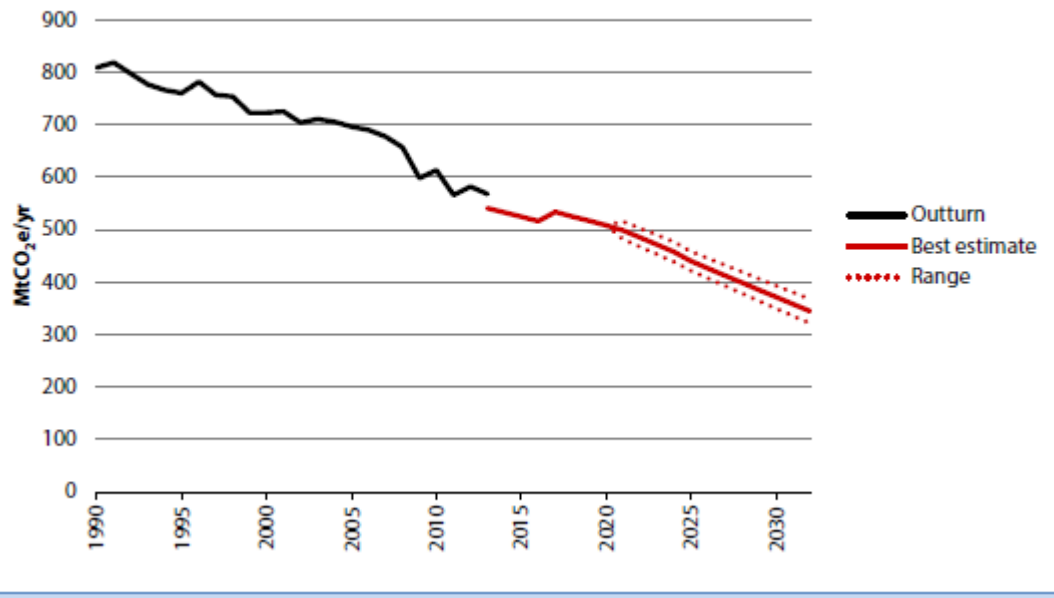
Source: Climate Action Tracker (2015) *INDCs lower projected warming to 2.7°C: significant progress but still above 2°C*

- Successfully implemented, pledges would substantially reduce future global emissions and therefore global temperature increases
- Still leave the level of emissions in 2030 above the level consistent with a cost-effective 2°C pathway

UK share of EU 40% reduction target for 2030

- Our best estimate is that the EU agreement could mean a reduction in UK emissions of 54% below 1990 levels.
- The precise share cannot be known until rules governing Member State shares are finalised.

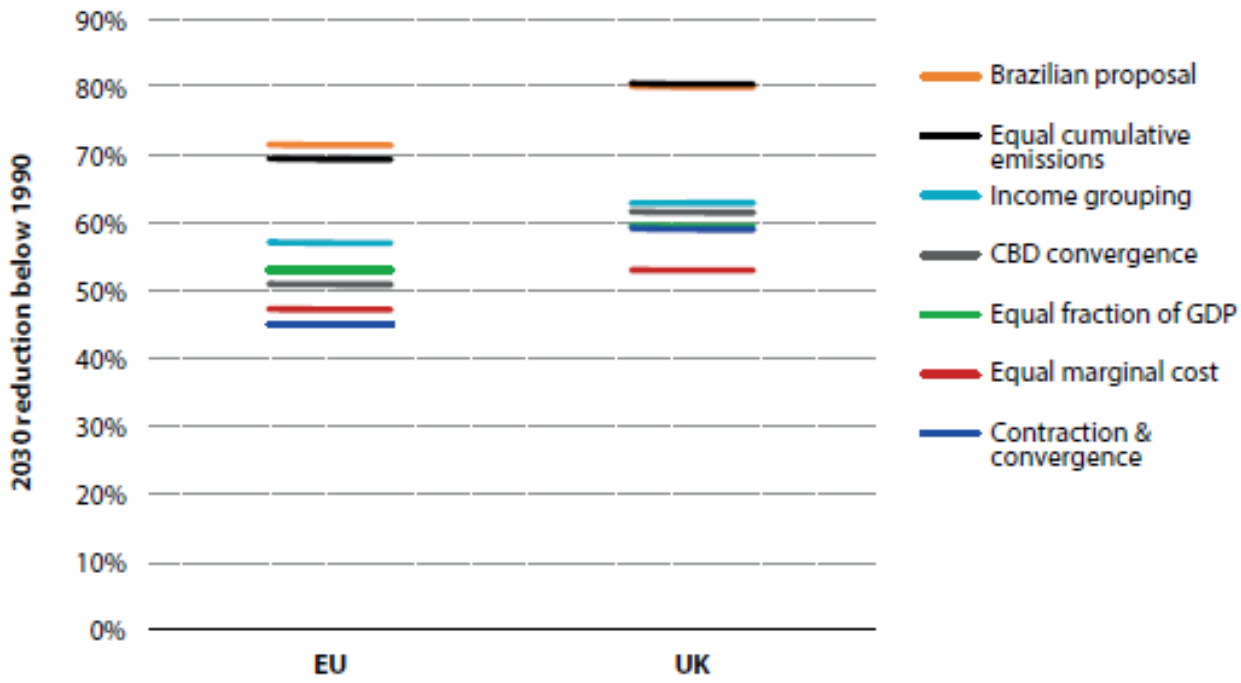
Figure 3.3: Range for UK emissions pathway under the EU's 2030 agreement



The advice on the level of the fifth carbon budget (2028-32) has to take account of the full set of criteria in the Climate Change Act. These criteria include climate science and international circumstances, but also economic circumstances, affordability and competitiveness, energy security and the Government's fiscal position.

Range for a “fair” UK reduction in 2030 under a global 2°C pathway

Figure 2.4: Range for EU and UK ‘fair’ 2030 reductions under a global 2°C pathway



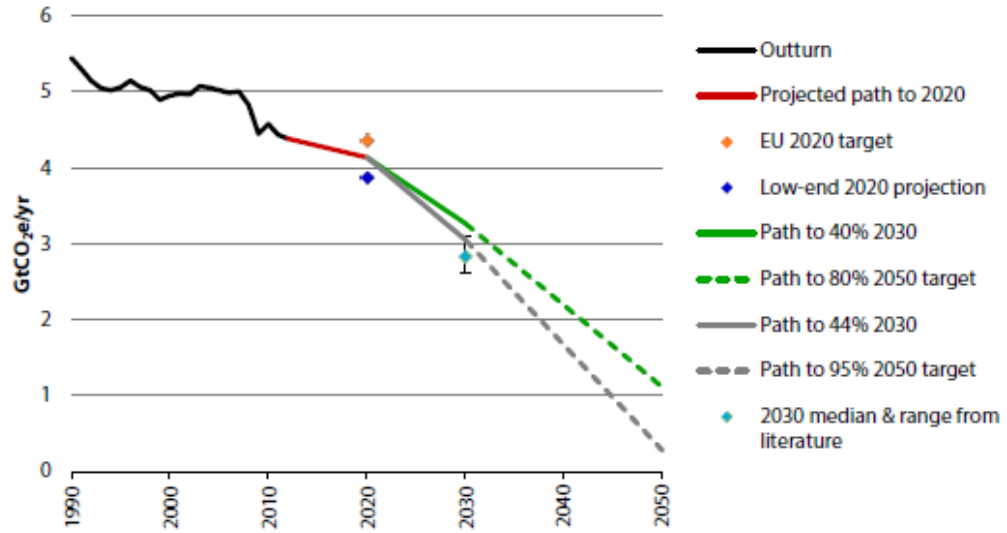
Source: DECC GLOCAF modelling.

- The UK likely contribution within EU 40% is at low end of ambition compared to global “fair share
- The EU 2030 target is below estimates for a “fair” EU share of global 2°C pathway

But economic grounds too for EU to go further to 2030

- Both EU and UK have longer-term targets to reduce their emissions in 2050 to at least 80% below 1990 levels. These objectives remain appropriate in light of latest evidence regarding global emissions pathways consistent with 2°C
- The 2030 emission target agreed by the EU Member States is for at least a 40% reduction below 1990 levels
- Our assessment is that the EU should be prepared to go further than that as a contribution to closing a 2030 global emissions gap.
- Long-term costs could be reduced by increasing EU ambition in 2030

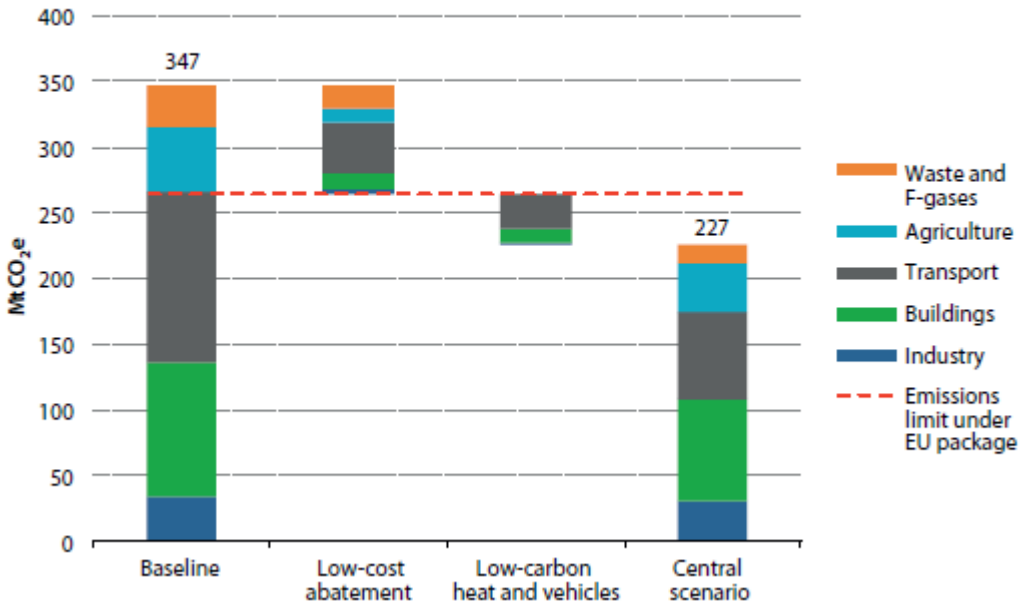
Figure 3.5: Cost-effective pathway for EU emissions to 2050



Source: European Environment Agency data viewer; European Environment Agency (2014) *Trends and projections in Europe 2014*; Sandbag (2014) *Is Europe's new climate target a walk in the park?*; Knopf et al (2013) Beyond 2020 – Strategies and costs for transforming the European energy system, *Climate Change Economics*
Notes: Excludes international shipping emissions.

CB5 recommendation meets international obligations

Figure 6.2: Emissions reductions on the cost-effective path vs. those required by EU commitments (2030)



- The 5th budget recommendation is on the cost-effective path to the UK's 2050 target, which is consistent with global 2°C target
- Meets current obligations under the EU 2030 package
- Sets foundations for effort consistent with a global 2°C target

But even under a pathway of rapid emissions reduction, significant likelihood of crossing 2°C

Table 1.1: Likelihood of exceeding global temperature thresholds for a rapid emissions reduction pathway, using different assumptions for Transient Climate Response (TCR)

Likelihood of exceedance in 2100 (global temperature above pre-industrial)	Transient Climate Response (TCR) assumption		
	Low (Otto et al., 2013)	Medium (Forster et al., 2013)	High (Stott & Forest, 2007)
2°C	11%	57%	81%
3°C	1%	14%	27%
4°C	0%	4%	7%

Source: CCC (2013) *Fourth Carbon Budget Review – part 1: assessment of climate risk and the international response.*
Notes: Low, medium and high assumptions are taken from the range of TCR studies cited in IPCC AR5.

Committee position (pre-Paris):

- Given link peak temperature and cumulative CO_2 emissions, ultimate aim (beyond 205) should be to get to zero net CO_2 emissions globally
- Uncertainties such that must periodically review implications for UK emission targets

The Paris Agreement

Paris Agreement – key aspects

- An aim to peak global greenhouse gas emissions as soon as possible, followed by rapid reductions. A balance between anthropogenic sources and sinks to be reached in the second half of the century
- Introduction of a five-yearly system of reviewing and raising ambition in a nationally-determined manner, recognising that current ambition in aggregate falls short of what would be required to limit global temperature increase to 2°C
- Aim to hold increase in global average temperature to well below 2°C above pre-industrial levels, and pursue efforts to limit it to 1.5°C

This third element goes beyond our assumptions for 5th carbon budget advice

Paris Agreement could come into force faster than expected

Agreement comes into force once 55 countries representing 55% emissions have both signed and ratified it.

- > 150 governments expected at UK signing ceremony 22 April
- Beyond signing, US, China, Canada and others have indicated they will legally join the agreement this year
- Christiana Figueres has suggested there will be an agreement in 2018, two years earlier than planned date of 2020

- No immediate signs of increased EU ambition for 2030
- But agreement draws into question the ambition of 3 distinct aspects of UK climate regime:
  - 5th carbon budget advice
  - 2050 target
  - Post-2050 ambition

The Committee's post-Paris letter

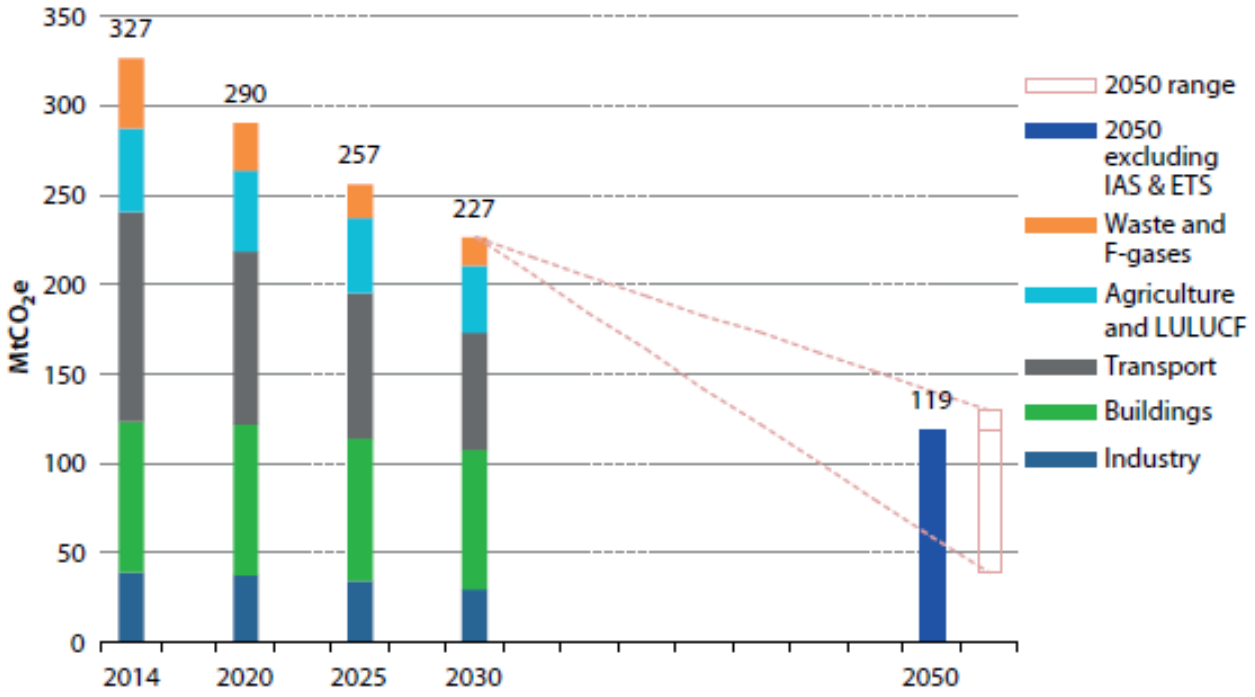
Committee's end-January letter concentrated on 5CB and concluded that the November 2015 recommendation remains appropriate based on current evidence

Three key elements to this:

- Measures on cost-effective path to existing 2050 target keep open the possibility of deeper reductions
- Proposed 5th budget supports and increase in EU ambition
- Measures to go further, identified in 5th carbon budget advice, should be kept in play.

Cost effective path to 2030 keeps open possibility to go further

Figure 3.13: Range of rate of emissions reduction required 2030-50 for non-traded sector cost-effective path compared to 2014-2030



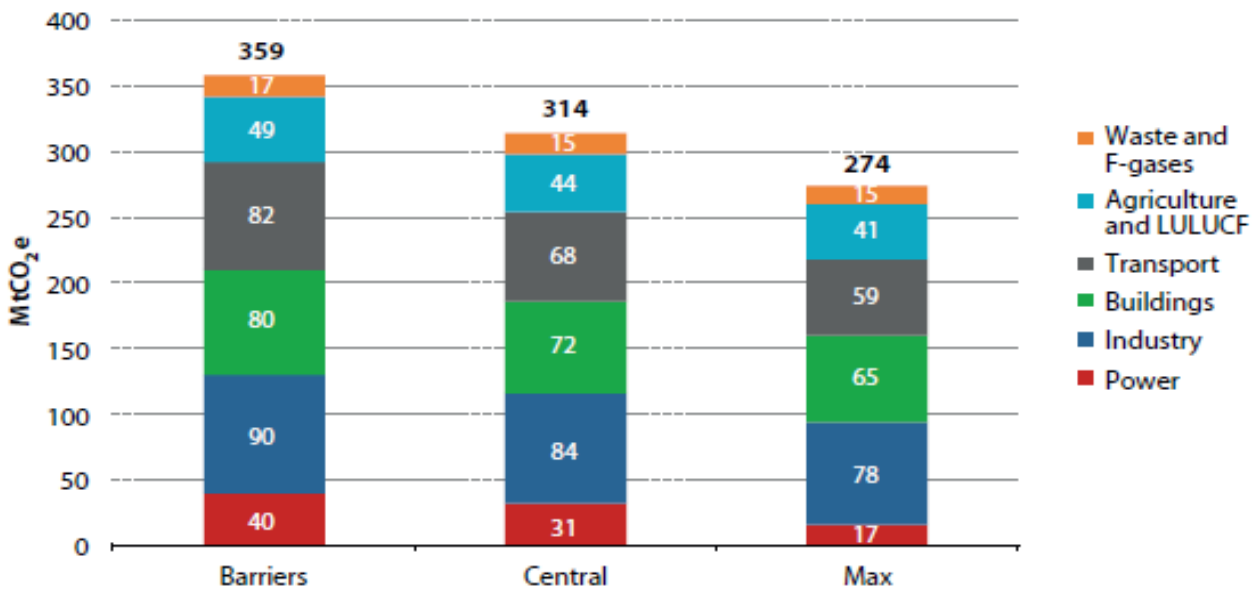
Source: CCC analysis.
Notes: Non-traded sector (NTS) emissions in 2050 based on the CCC's best estimate of their share of emissions in meeting the 2050 target allowing for emissions from international aviation and shipping (IAS) and sectors covered by the EU ETS.. The high end of the range for NTS emissions in 2050 allows for extra emissions due to lower IAS emissions (as in the Max scenarios); the low end of the range allows less emissions due to higher IAS emissions (as in the Barriers scenarios) and the absence of CCS, which lowers abatement in industry and from bioenergy.

Proposed 5th budget supports and increase in EU ambition

- Emissions pledges did not change in Paris, and are not on cost-effective path to 2°C or below. The Agreement creates a system to review and raise pledges, and UK should continue to push for a revised EU pledge more consistent with agreed global ambition
- Cost-effective path to existing 2050 target, on which proposed CB5 based, exceeds UK's likely obligation under the current EU 2030 package. The proposed budget therefore supports and prepares for greater 2030 EU ambition
- Greater EU ambition is likely to lead to a tightening of the EU Emissions Trading System cap. If this occurs, the UK budget should be tightened to align to the new cap.

Measures to go further, identified in 5th carbon budget advice, should be kept in play

Figure 3.11: Total emissions under Barriers, Central and Max scenarios in 2030



Source: CCC analysis.

We identified further measures ("Max" scenario) that could enable lower emissions (by about 200MTCO$_2$e) over the 5th carbon budget period.

How should UK low-carbon policy develop post-Paris?

How should UK low-carbon policy develop post-Paris?

- We (CCC) have said we will assess further the implications of the Paris Agreement for UK climate policy:
  - Our intention is that this assessment, later this year, should feed into the Government plan being developed this year to meet carbon budgets
  - We will draw on new evidence as it becomes available, such as the invited special report on the 1.5°C goal by the IPCC
- Subsequently the UK Government has committed to net-zero emissions (not whether, but when)
- Negative emission technologies likely to be required for global trajectories going below 2°C – e.g. afforestation and other land-use measures (AFOLU), bioenergy with carbon capture and storage (BECCS), direct air capture.

The importance of CCS

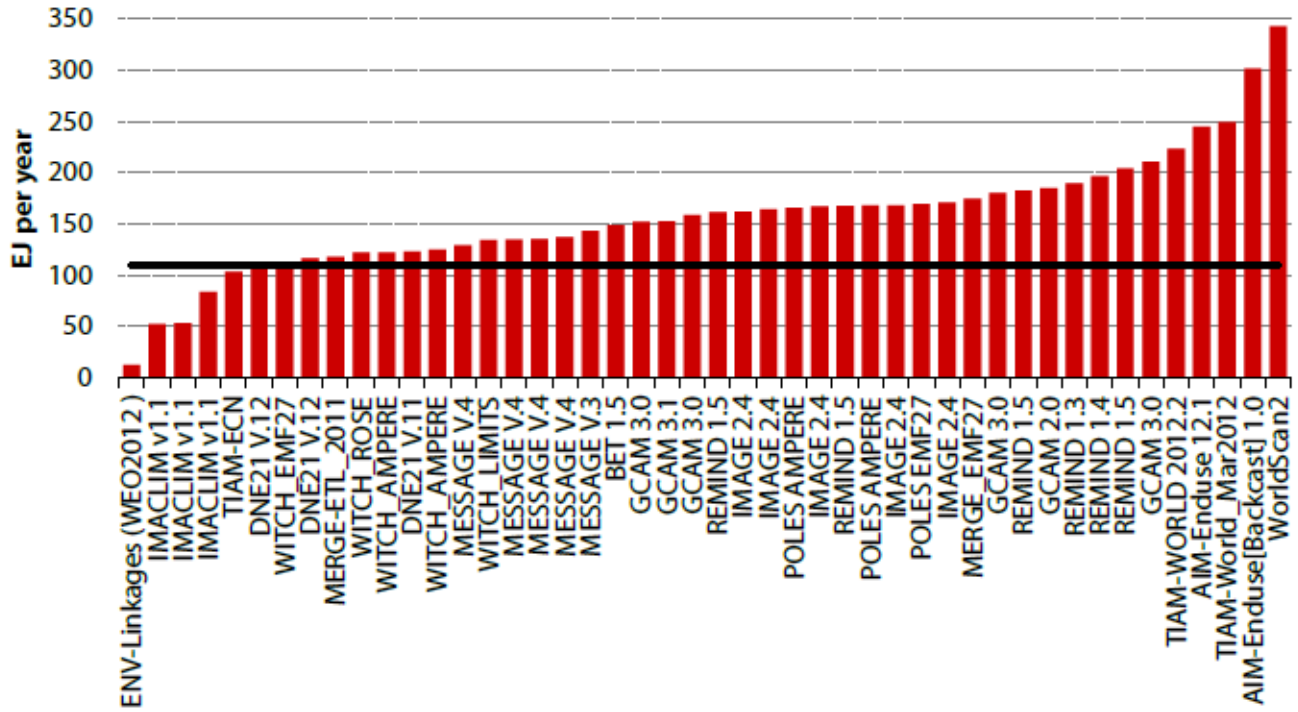
- CCS makes a substantial contribution in CCC scenarios to meet the 2050 target
- The absence of CCS in 2050 would require extra emissions savings of at least 35 $MtCO_2e$ per year in order to meet the 2050 target (e.g. full decarbonisation of buildings and surface transport); likely to be more costly than deployment of CCS
- CCS supports options for decarbonisation beyond its direct application:
  - Use of hydrogen in transport, buildings and industry
  - Roll-out of heat networks (where a significant proportion of potential derives from using recoverable heat from thermal power stations)
  - Use of bioenergy in CCS plant
- CCC and ETI estimates suggest cost of meeting existing 2050 target would double without CCS

Route for developing/deploying CCS urgently required

There are issues with BECCS – costs uncertain; risks over environmental sustainability; untested at scale

Many model scenarios for 2°C considered by IPCC exceed limit on global sustainable resource we suggested in 2011 Bioenergy Review

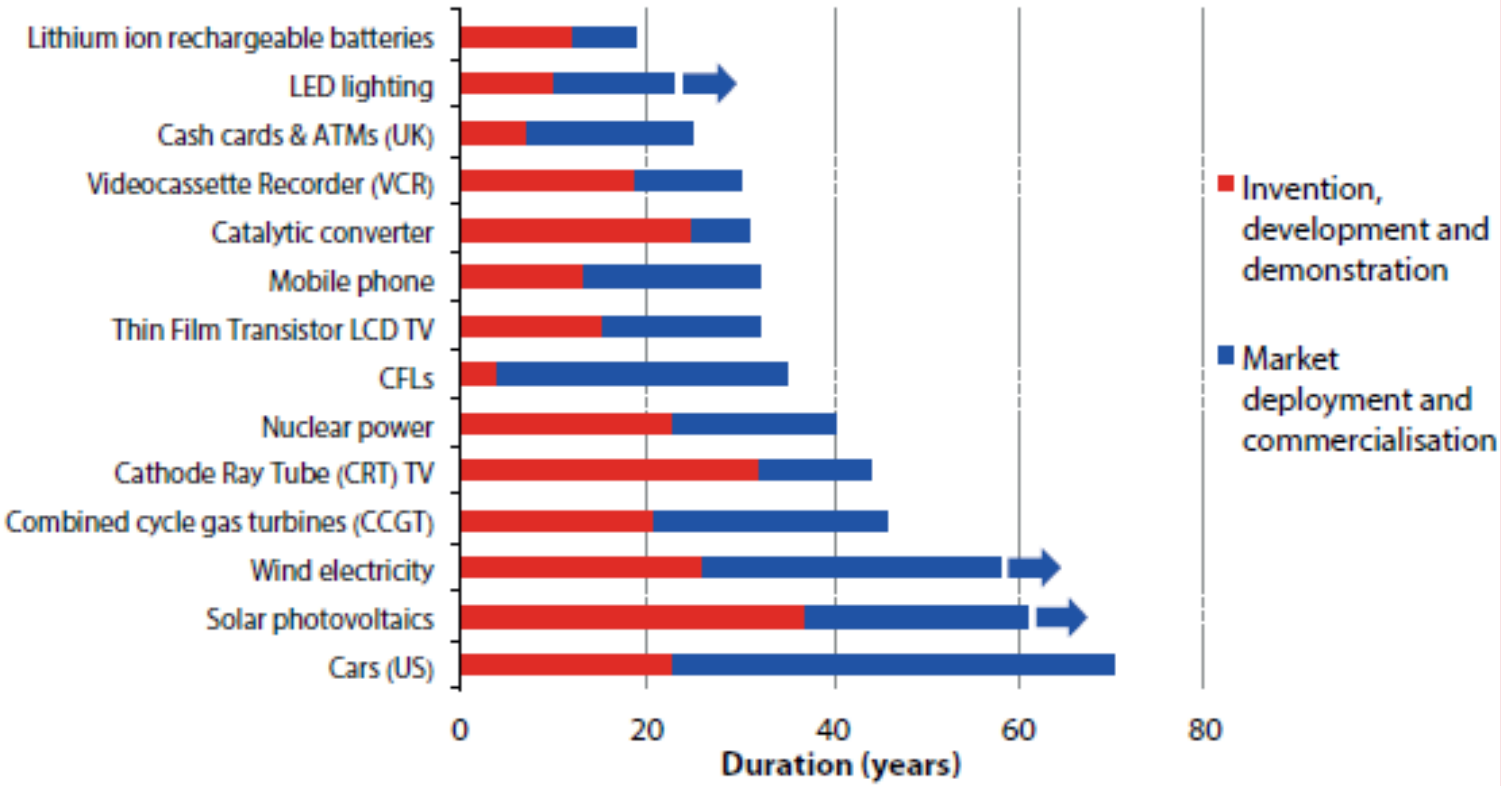
Figure B2.7: Global 2050 bioenergy use assumed by models in 2°C pathways



Source: IPCC AR5 WG3 database; CCC (2011) *Bioenergy review*.
Notes: Scenarios included are those designed to stabilise at 450ppm concentration and with full technology deployment.

Technology to the rescue ? Reasons for caution

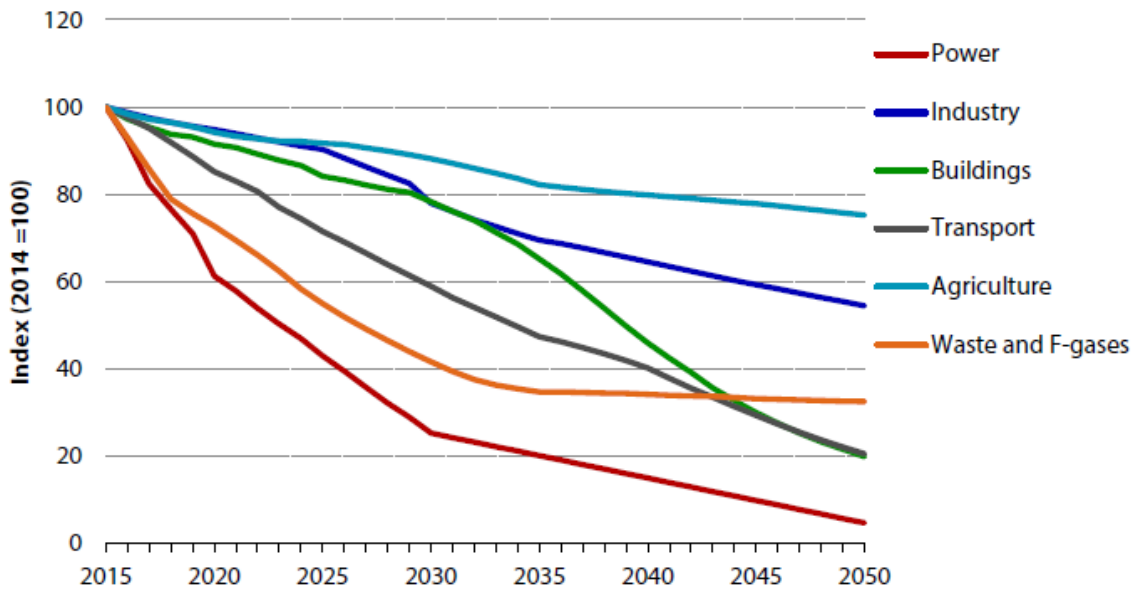
Figure B3.6: Time taken for development and commercialisation of a range of innovations



Source: UKERC (2015) *Innovation timelines from invention to maturity: A review of the evidence on the time taken for new technologies to reach widespread commercialisation.*

Look further and remaining 2050 emissions. What options to reduce them further?

Figure 1.14: Central scenario emissions paths to 2050



Do we need to regulate more strongly?

Thank you

For more information, see our website

https://www.theccc.org.uk/