Committee on Climate Change

The UK's Climate Change Act: opportunities and challenges in building a low carbon economy

www.theccc.org.uk

1. Committee on Climate Change Duties

Recommend

- 2050 target:
  - 60%, 80%, or other
- First 4 budgets:
  - Where in 2030
  - Trajectory from today
- How much buy-in of credits allowed
- Should international aviation & shipping be included
- CO_2 budgets or all GHGs

Identify implications of proposed budgets for

- Competitiveness
- Security of supply
- Fuel poverty
- Fiscal revenues
- Scotland, Wales and N. Ireland
- Ancillary environmental effects

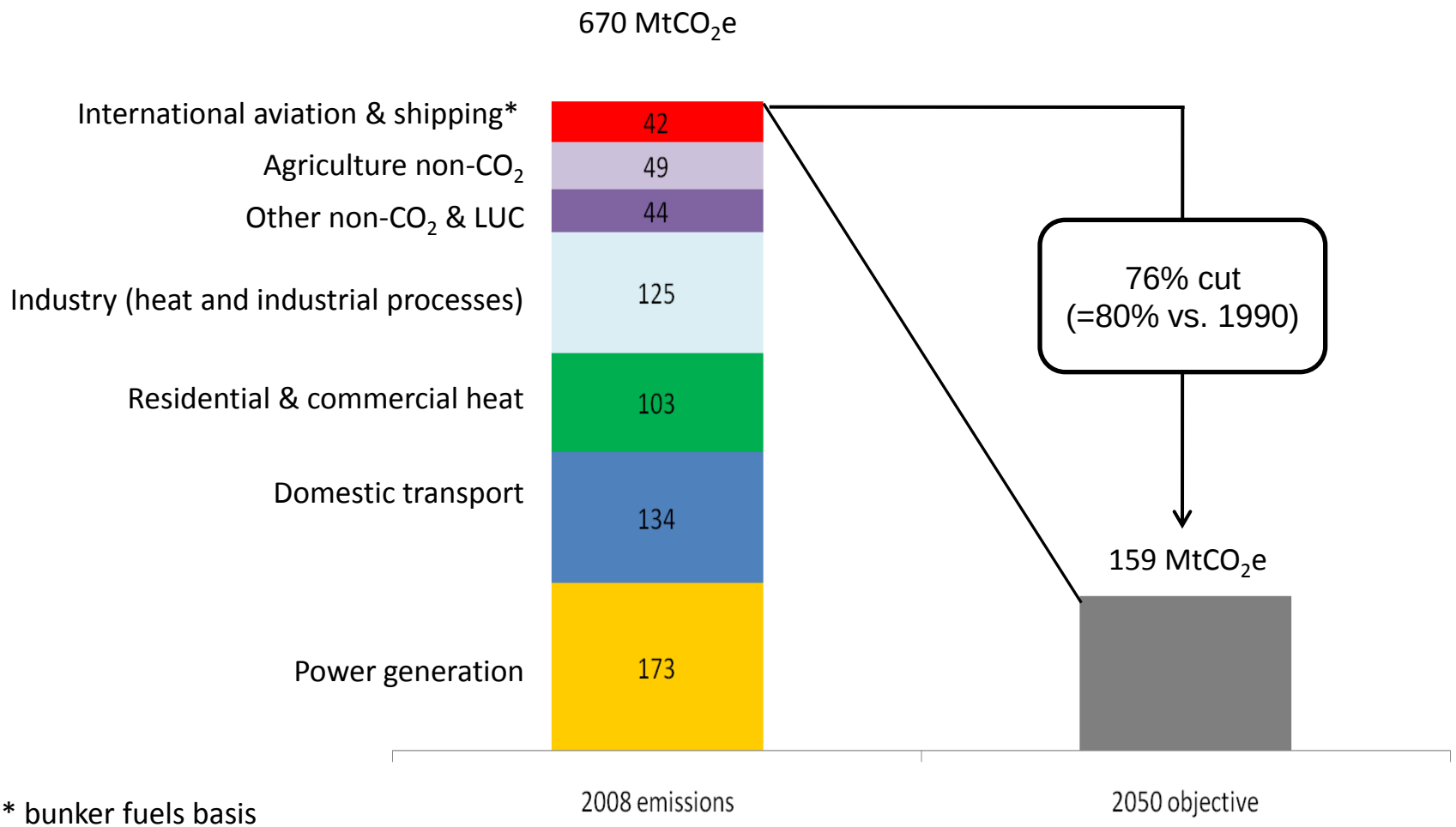
Annual reports on

- Progress against budgets
- On request (e.g. aviation review, energy efficiency review, innovation review, renewable energy review)

Structure

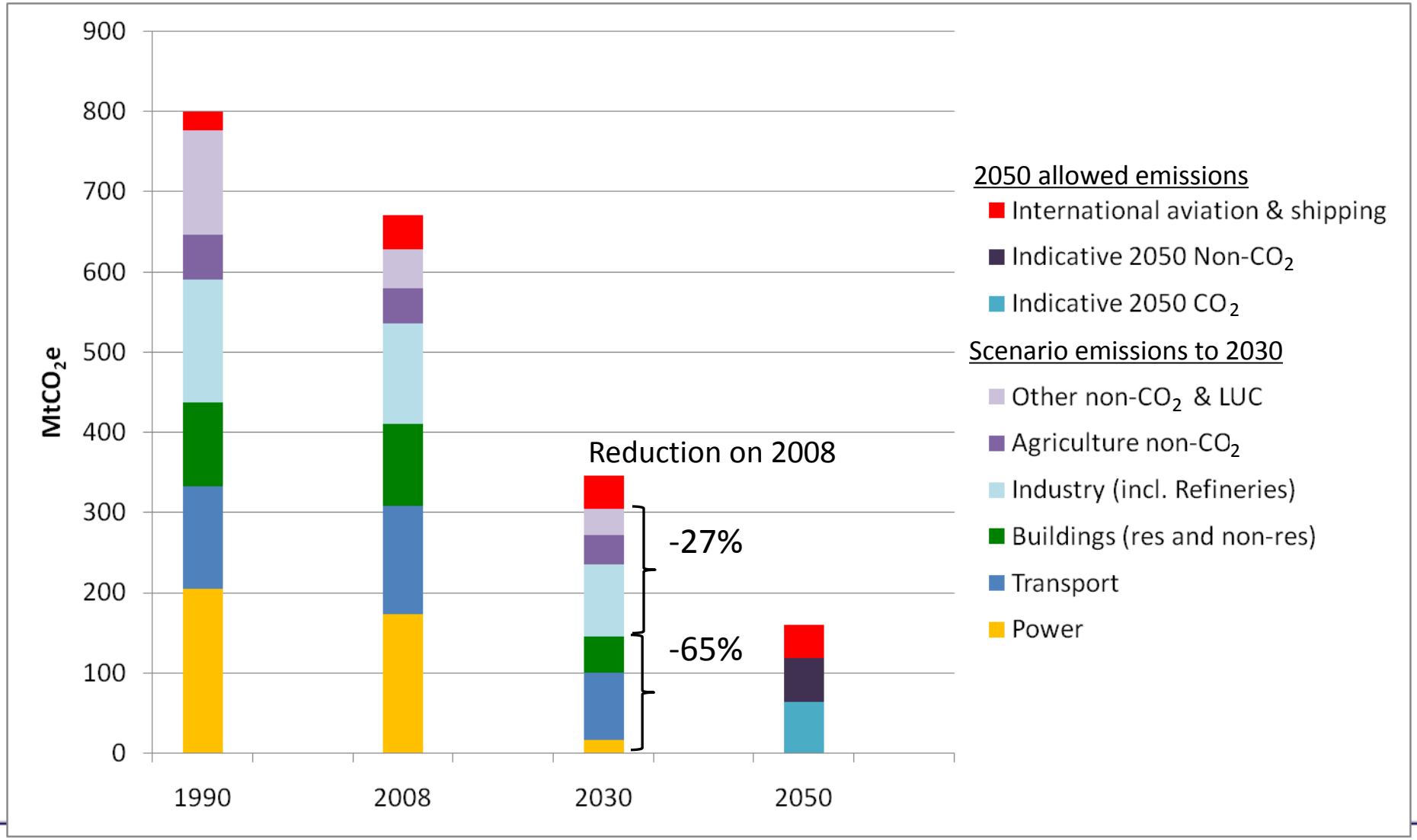
1. The 2050 target
2. Carbon budgets
3. Affordability and competitiveness impacts
4. A shale gas revolution?
5. Progress reducing emissions

The UK's 2050 target

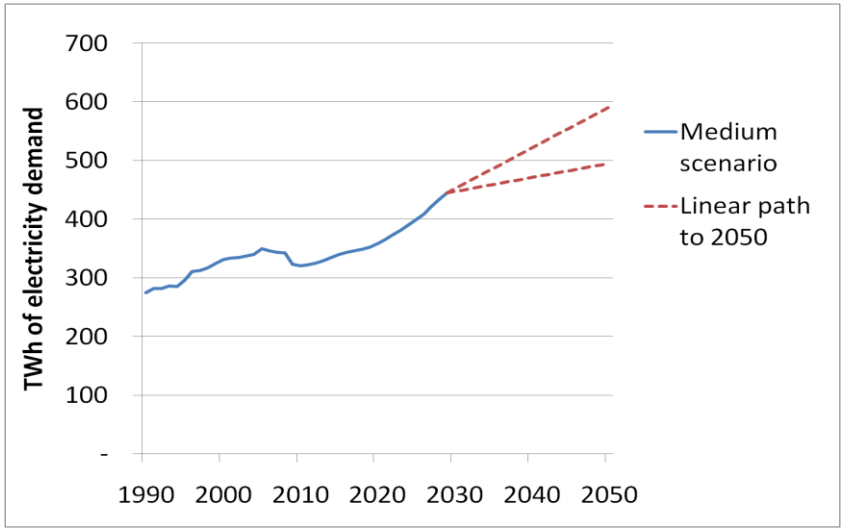


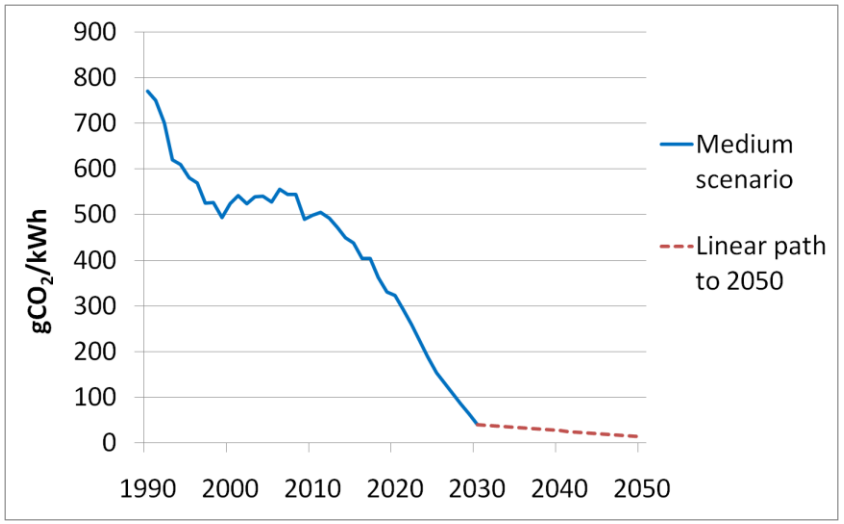
* bunker fuels basis

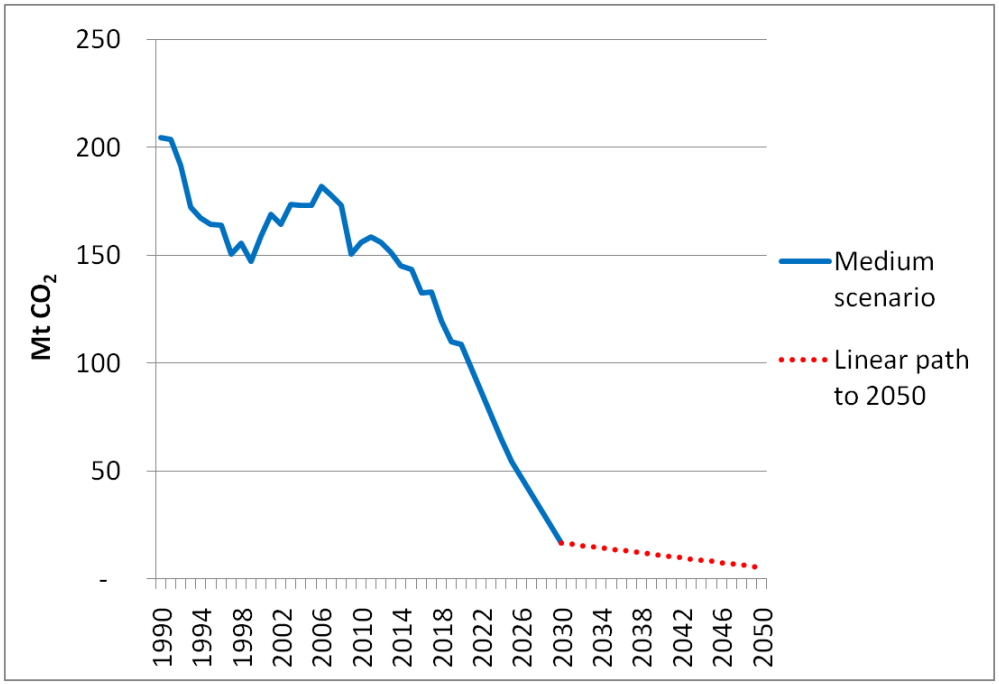
We have developed a feasible and cost-effective planning scenario for 2030 that is compatible with the 2050 target



Power sector: Emissions intensity will have to decrease, whilst demand is likely to increase...







Source for 2050: range of MARKAL model runs for CCC (2010)

Transport: Emissions reduction will come from reducing g/km, while km likely to increase

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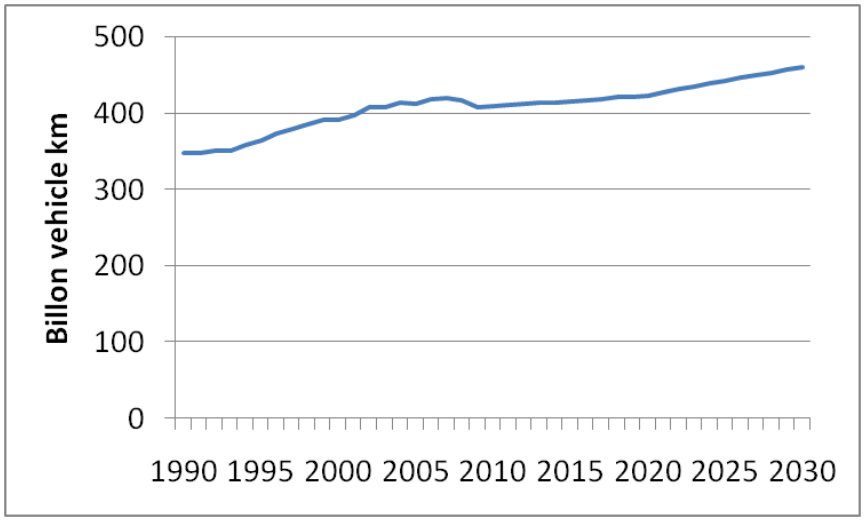
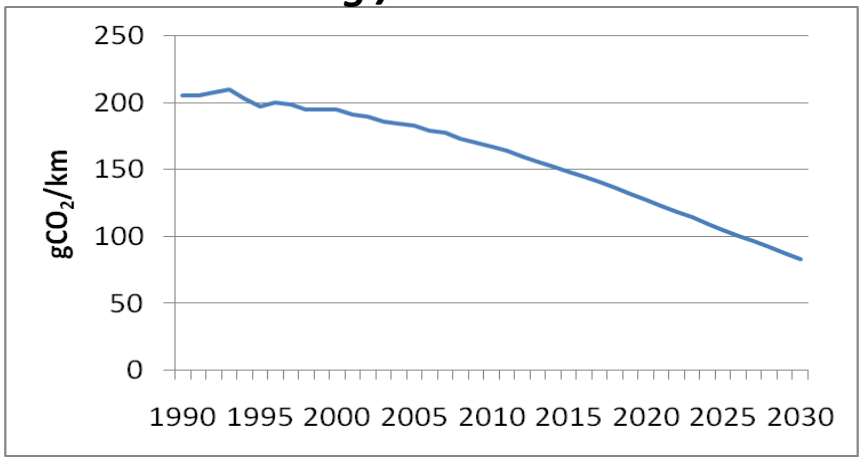
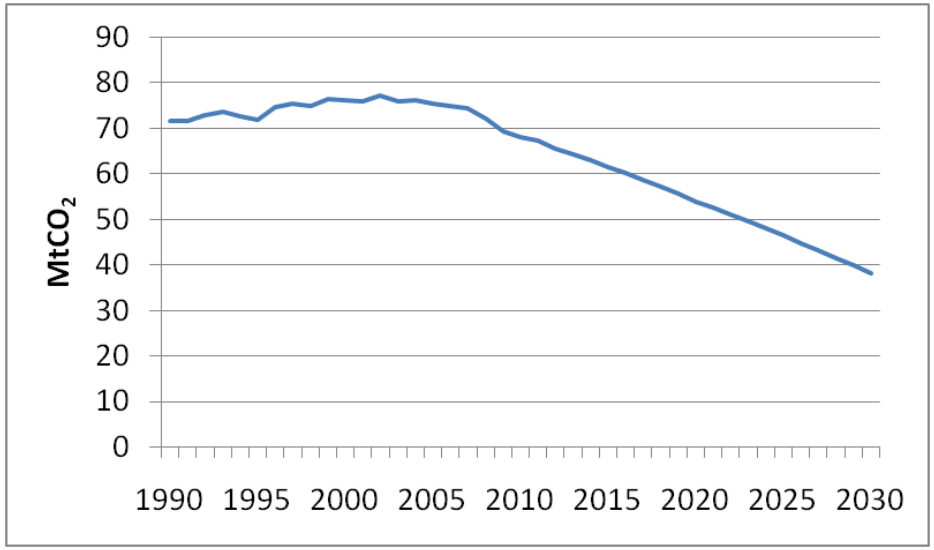
Car km



Car g / km



Car emissions



Vans: 17% emissions reduction to 2030

HGVs: 33% emissions reduction to 2030

Transport: Low-carbon vehicles need to be 60% of new sales in 2030

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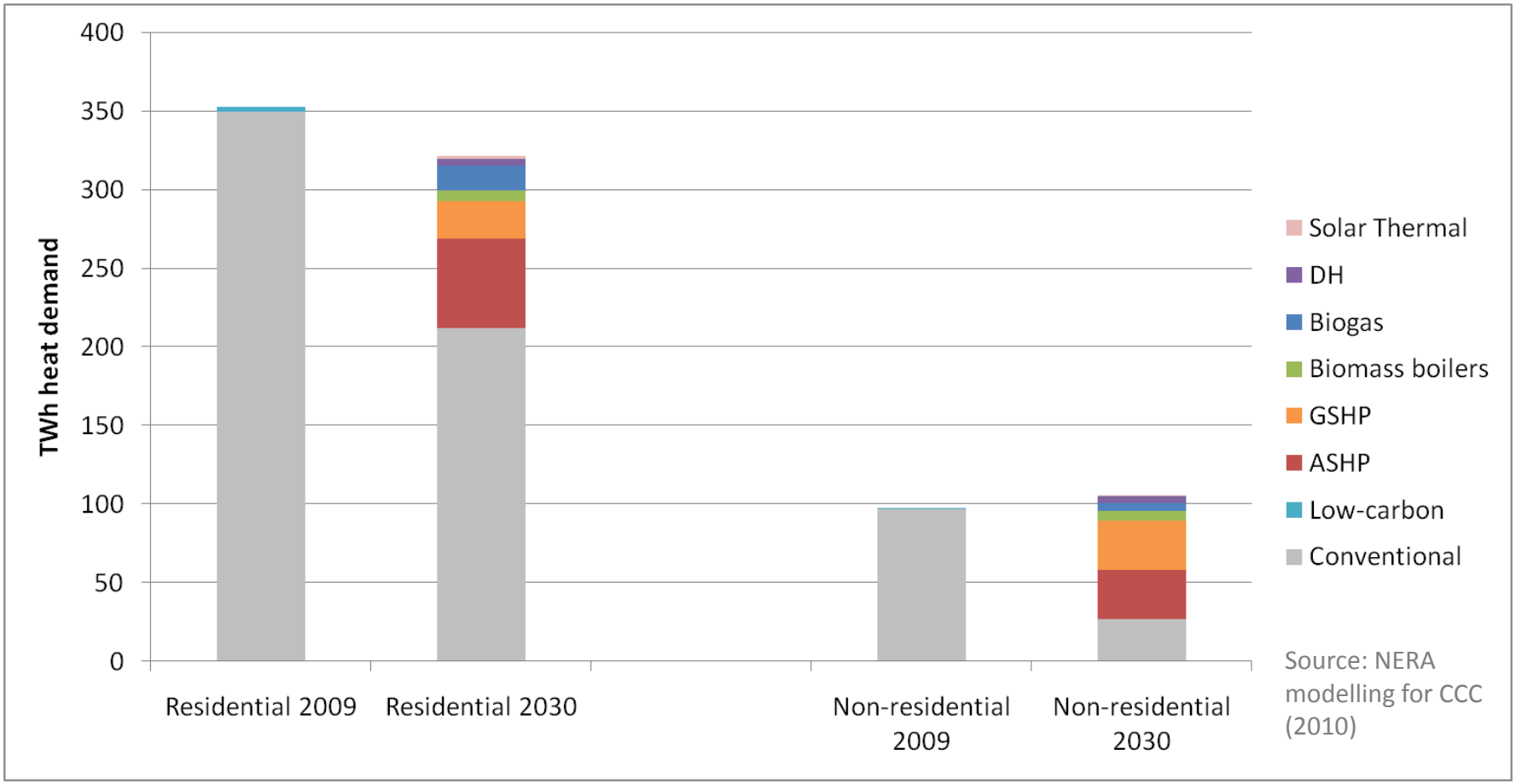
	2030				
	Share of new car sales		Share of miles		Emissions Intensity
Conventional cars	40%	→	70%	×	80-125 g/km
Plug-in hybrids	40%	→	20%	×	50 g/km
Pure electric vehicles	20%	→	10%	×	0 g/km

Average emissions intensity in 2030

New cars purchased: 52g/km (versus 150g/km today)

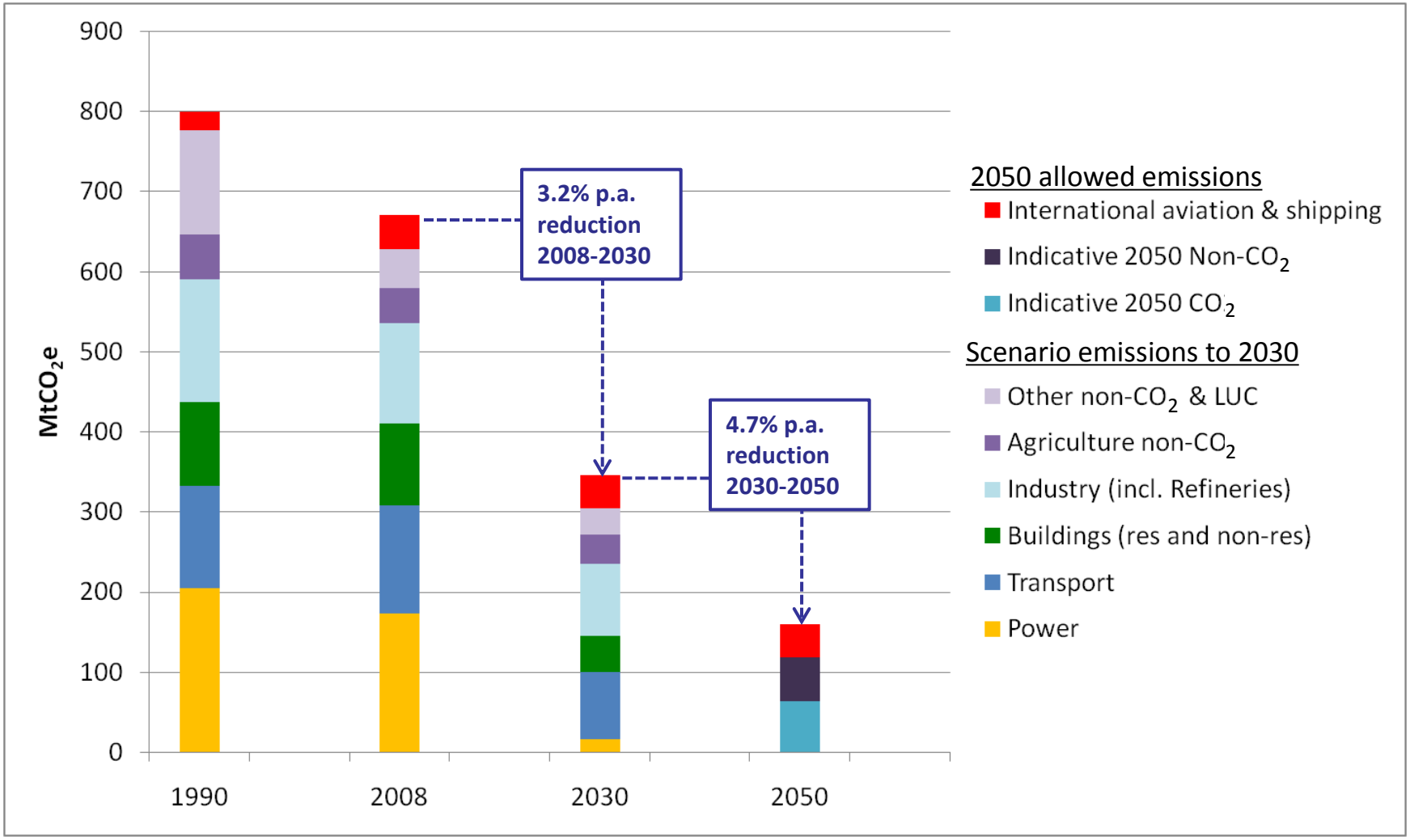
All cars on road: 81 g/km (versus 173 g/km today)

Heat in buildings: Significant opportunity to reduce emissions to 2030 with a major role for heat pumps

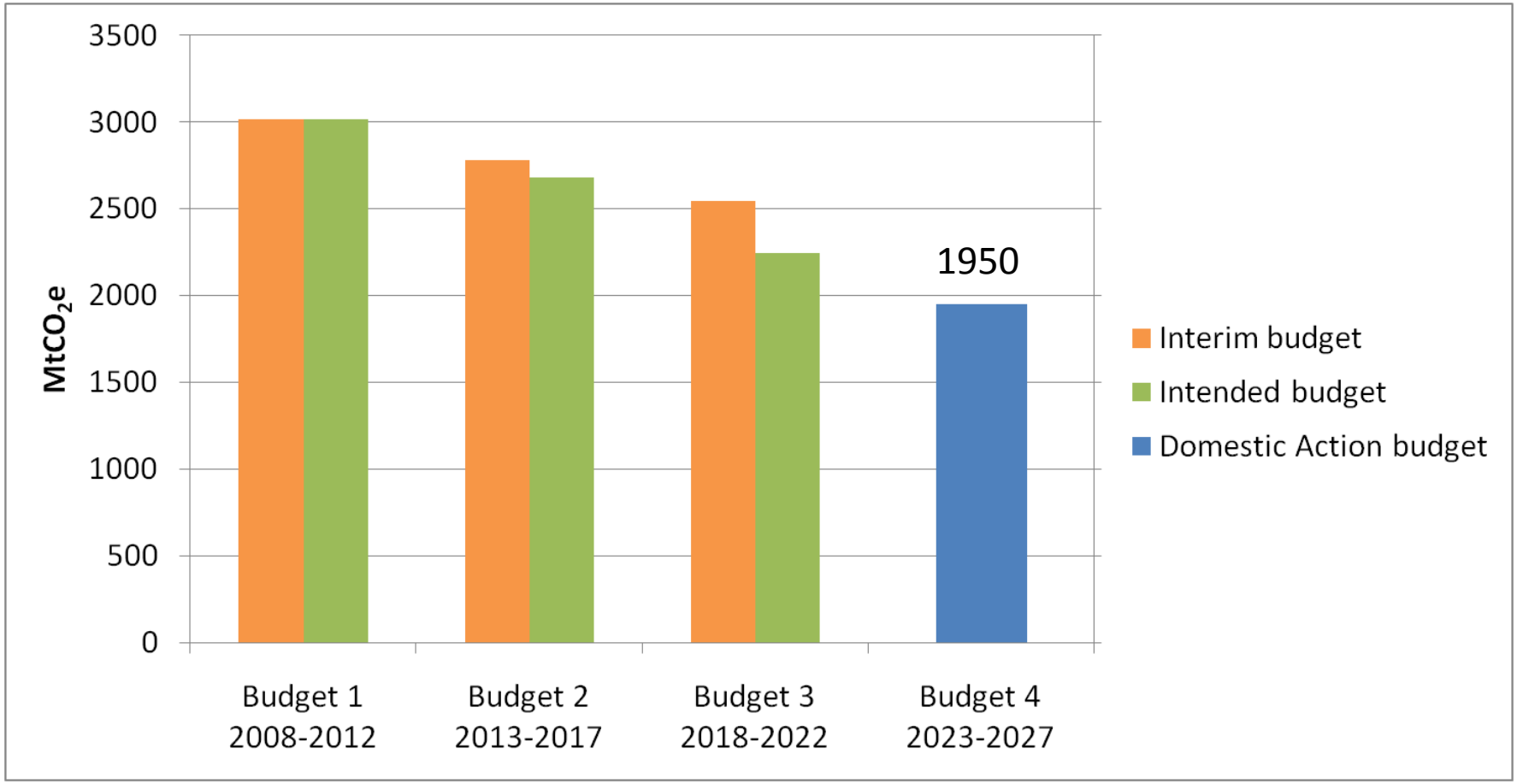


- Demand reductions from efficiency improvements, including 3.5 million solid walls by 2030 in residential buildings
- Low-carbon sources reach 33% of residential heat demand and 74% of non-residential heat demand in 2030

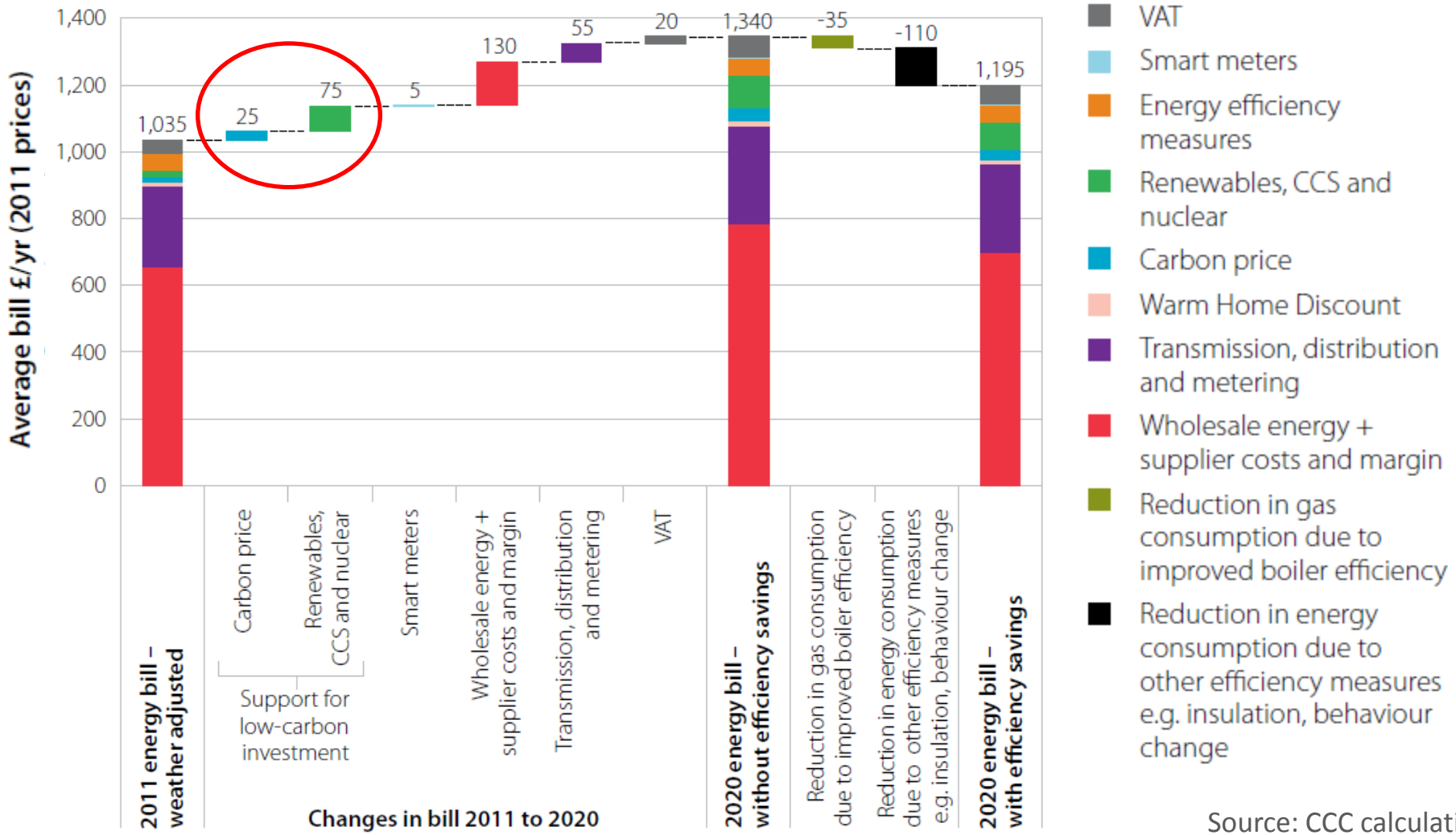
Emissions reductions will have to accelerate again from 2030 to 2050



Interim, Intended and Domestic Action budgets

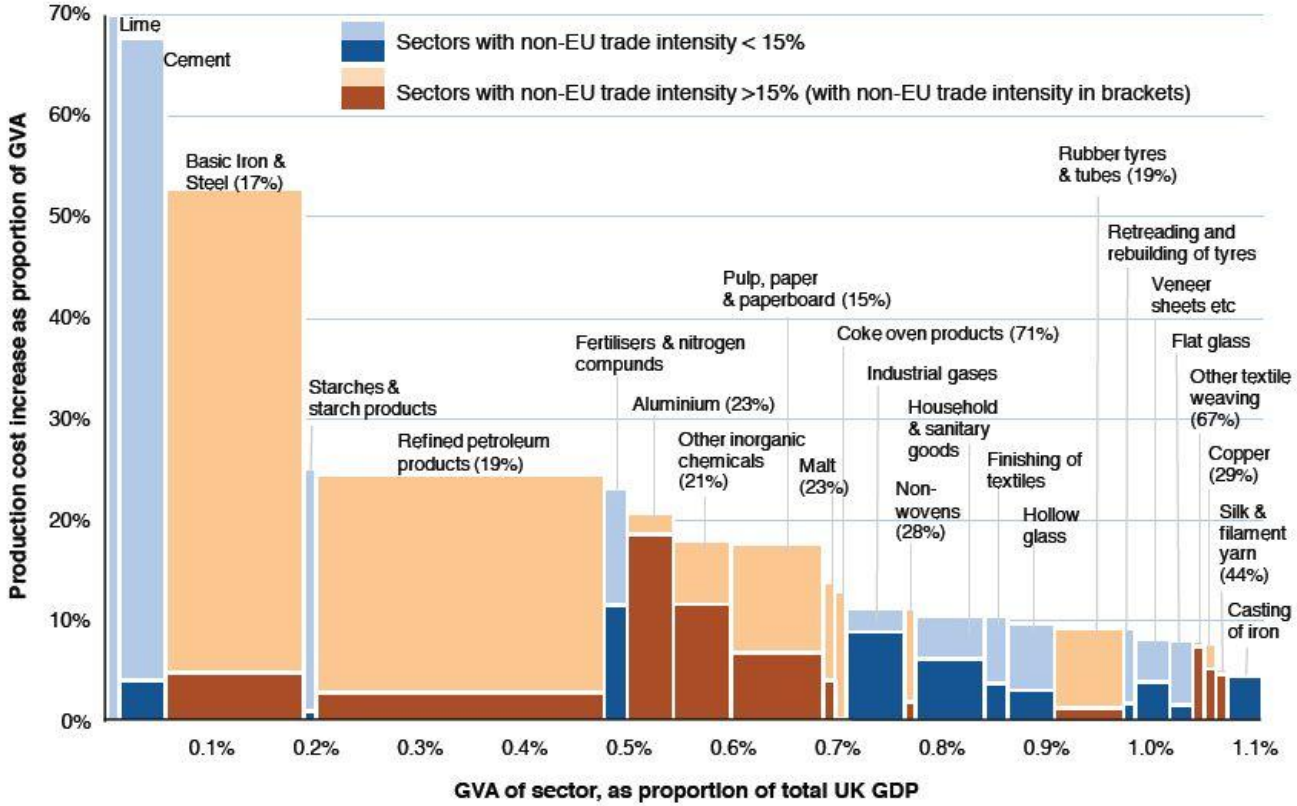


Support for low-carbon investment projected to add around £100 (10%) further to average household's annual bill by 2020

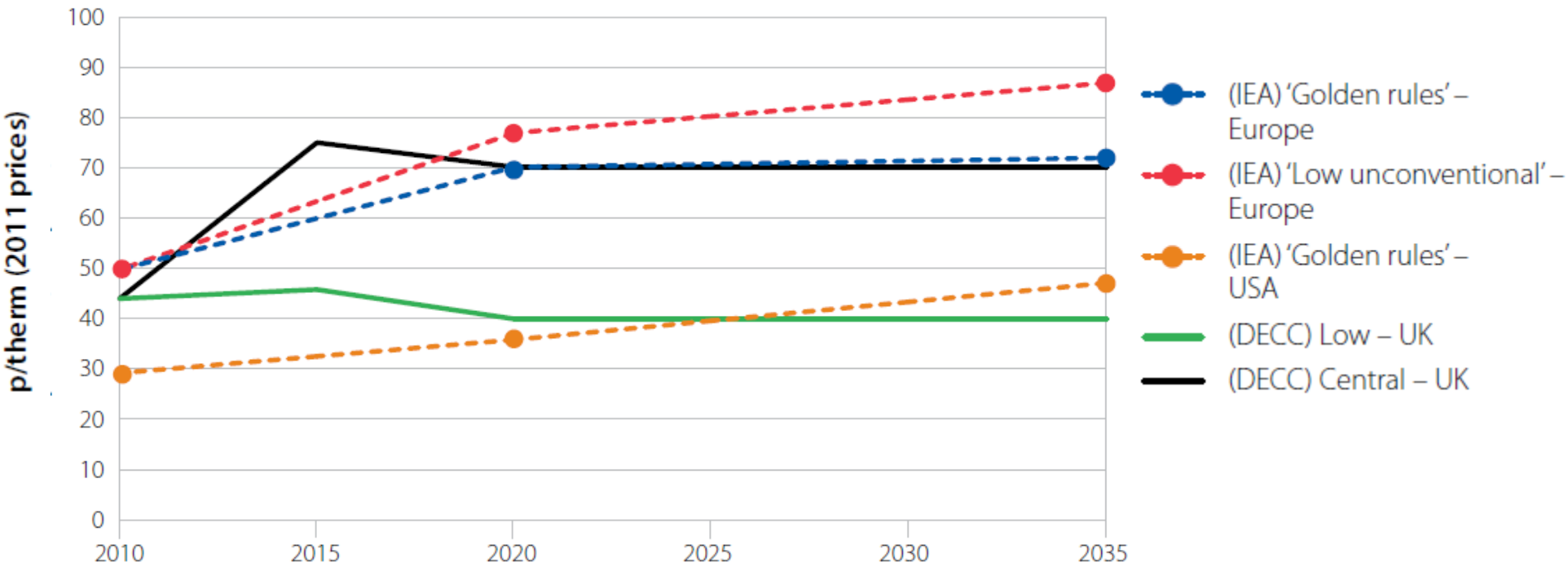


Source: CCC calculations.

Competitiveness impacts – relevant for some energy intensive industries

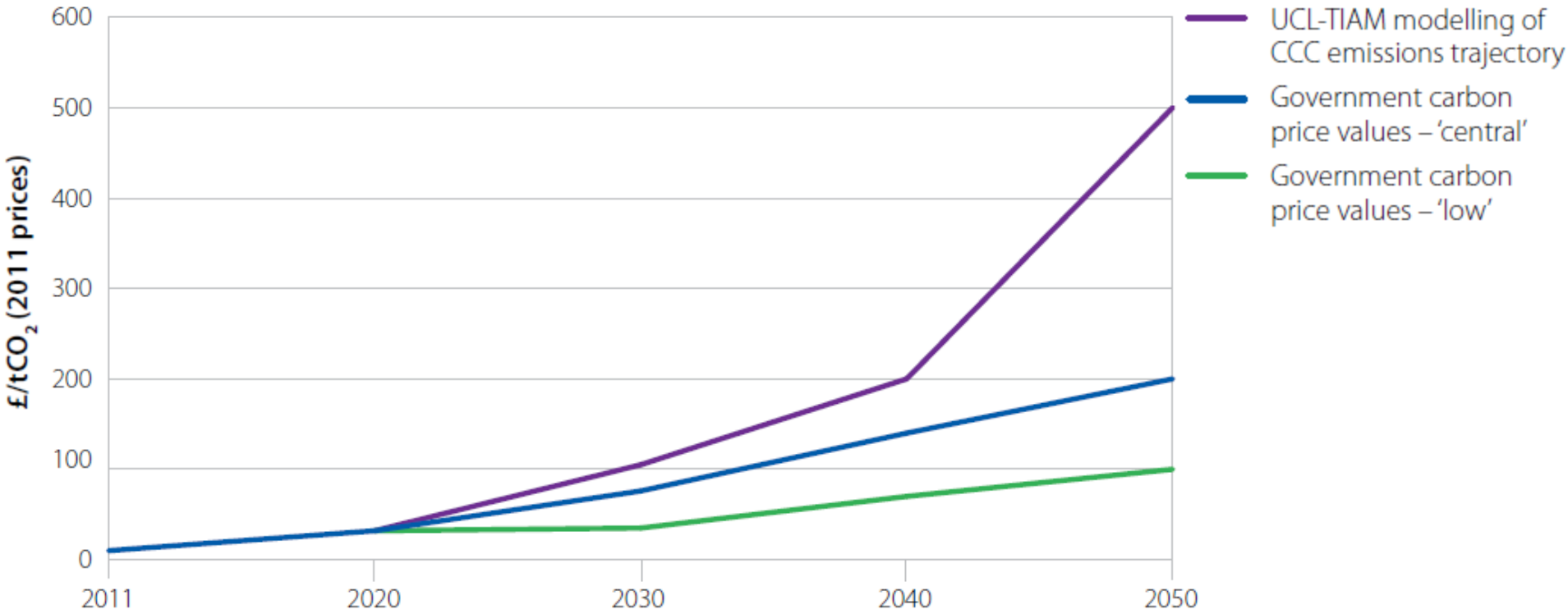


IEA projections for a 'shale gas' world do not anticipate falls in European gas prices (in contrast to US experience)



Source: IEA (May 2012) Golden Rules for a Golden Age of Gas. DECC (October 2012) Fossil Fuel Price Projections.
Notes: IEA projections adjusted to £2011. £:$ = 0.65. 'Golden Rules' scenario assumes a 'continued global expansion of gas supply from unconventional (i.e. shale)
resources, with far reaching consequences for global energy markets'. The 'Low unconventional' case assumes 'only a small share of the unconventional resource base
is accessible for development'. For 2035, DECC projections have been held flat at 2030 levels.

Carbon prices will have to increase in a carbon-constrained world, potentially to very high levels in the long term



Source: UCL Energy Institute (2012) Modelling for the CCC, DECC (2011) IAG Guidance for Policy Appraisal.

Economic benefits of early action

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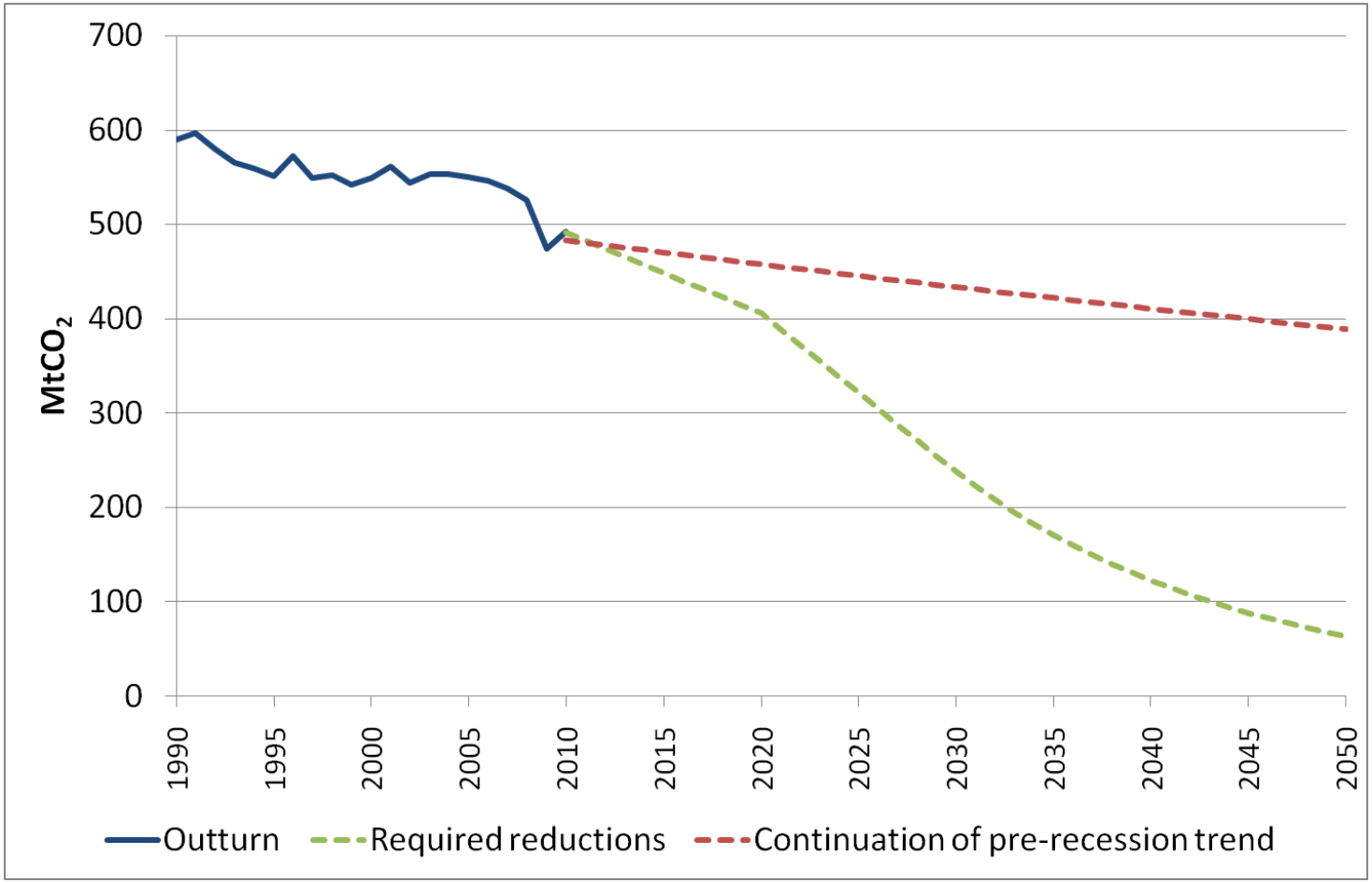
Benefits of action

- Build a sustainable economy
- Build a resilient economy

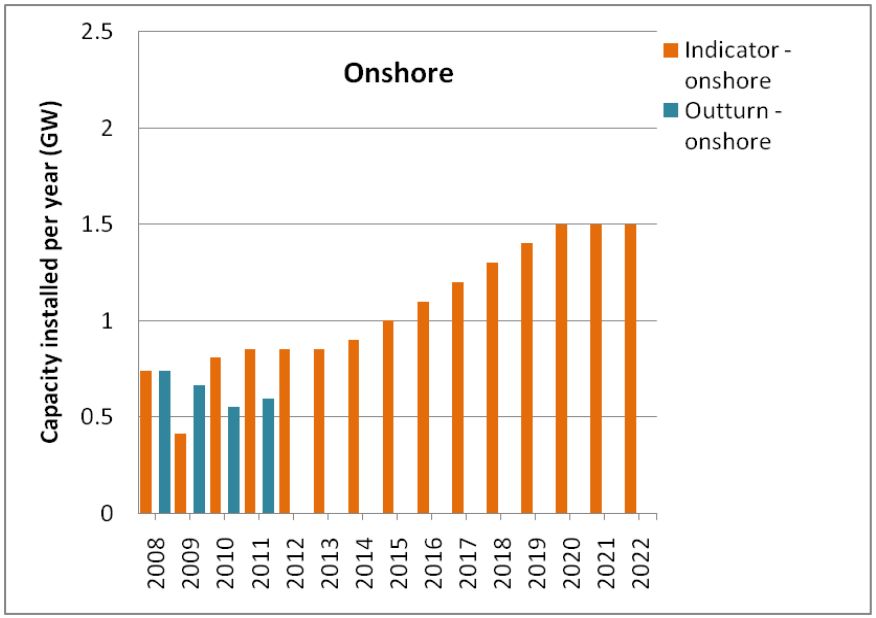
Benefits of *early* action

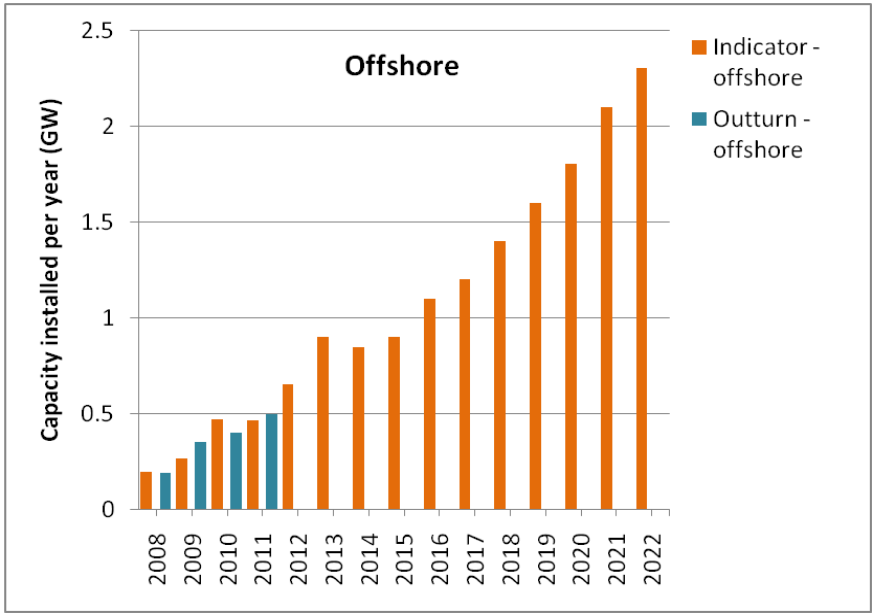
- Free up resources during recession
- Create near and longer term jobs
- Minimise costs of economy decarbonisation

CO_2 emissions – historic and future required



Additions of wind capacity broadly on track, but acceleration required in mid-2010s





Forward Indicators

✓ **Healthy project pipeline**

- enough to cover build to 2020 for onshore, 2017 for offshore BUT

✗ Current **bottleneck**

- planning **approval rates** down 50% (onshore)
- **determination periods** still long
- projects moving **slowly** from approval to construction

Need to address

- **uncertainties** over support mechanisms (RO, EMR)
- other **barriers** (decision framework for onshore, finance, radar interference, T&D)

Progress on CCS and nuclear

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CCS

✗ First competition failed to award funding

✓ New process launched, to select 4 projects by end of 2012

➔ **Demonstration required urgently**

➔ Ideally include a gas CCS project

➔ Provide clarity on support beyond initial projects

➔ Set out strategic approach to CO_2 infrastructure

Nuclear

✓ Approval of National Policy Statement

✓ Submission of planning application for first new plant

✓ New investor found for Horizon venture (5 GW)

➔ **EMR is key, first contract ideally to be agreed next year**

Need to accelerate implementation of insulation and renewable heat measures

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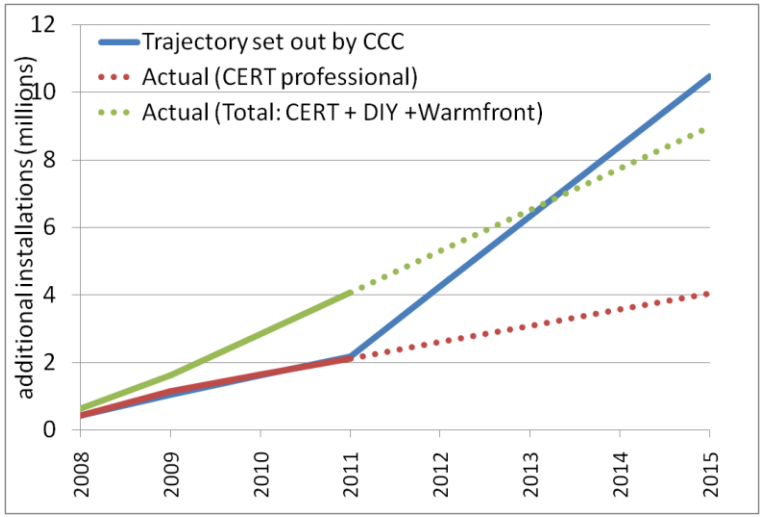
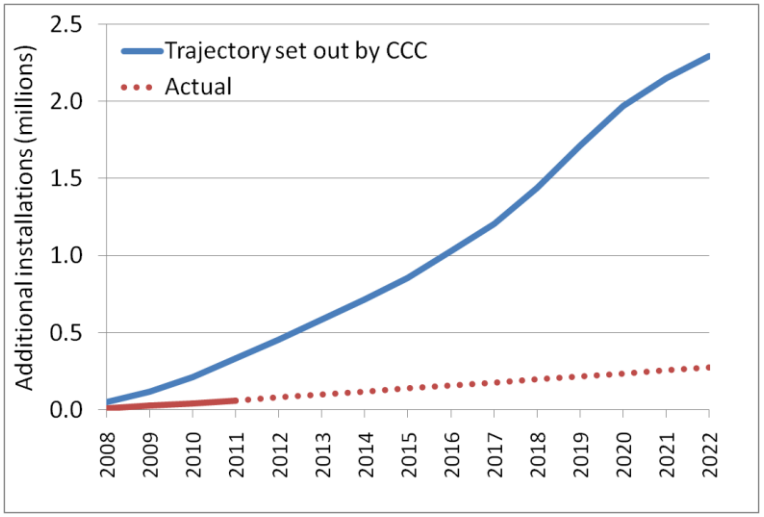
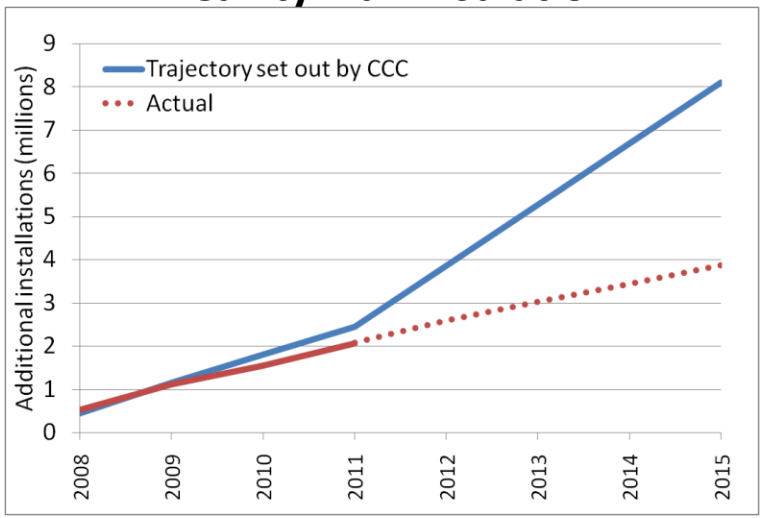
Loft insulation



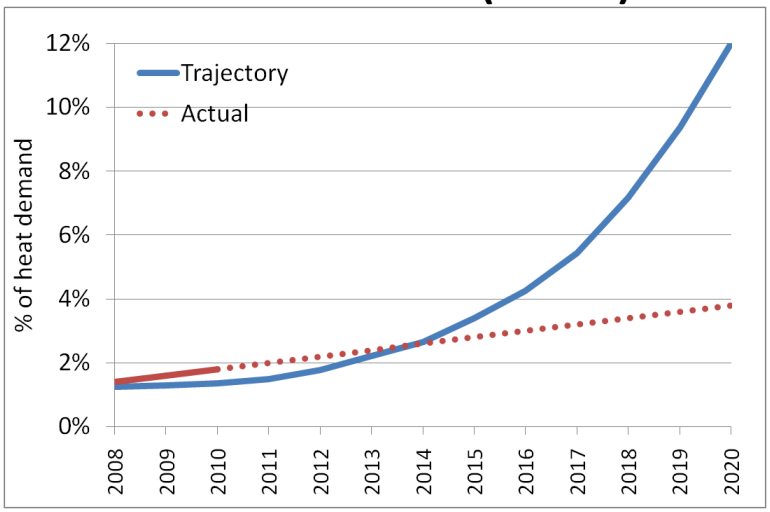
Solid wall insulation



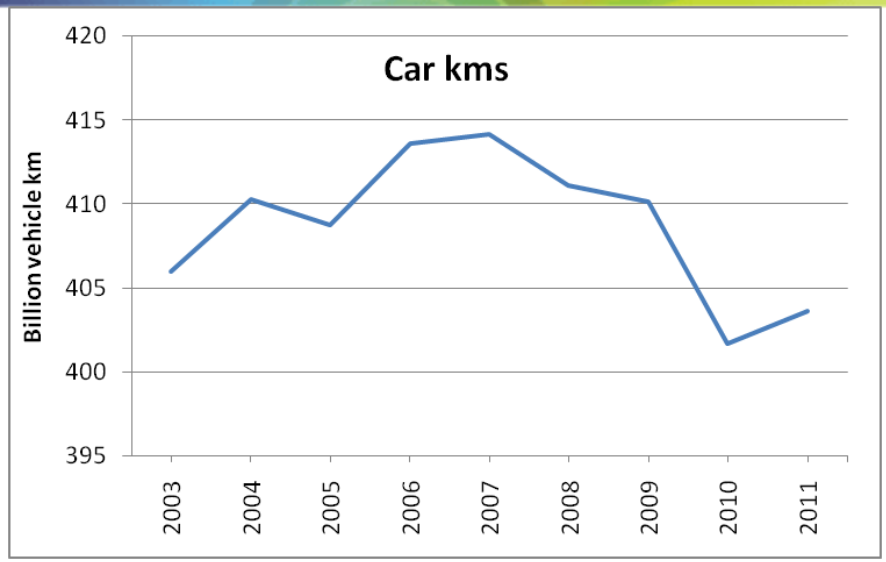
Cavity wall insulation

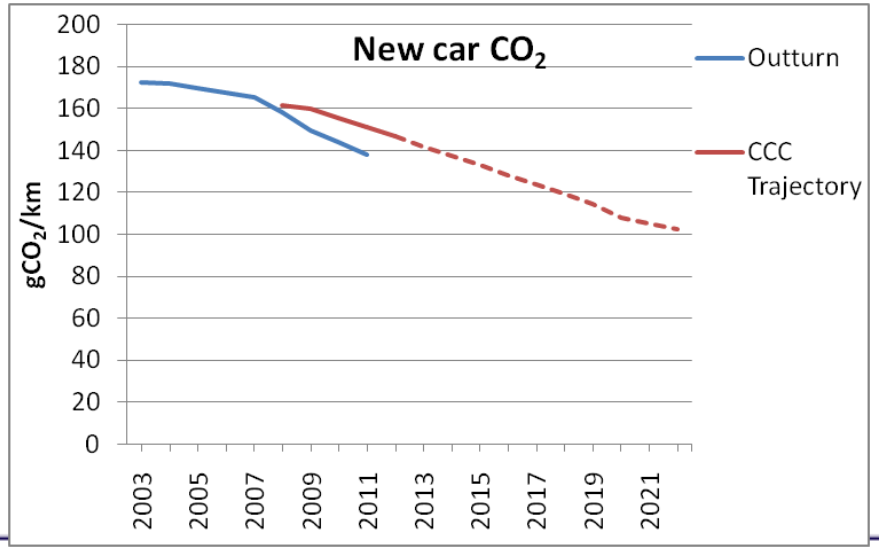


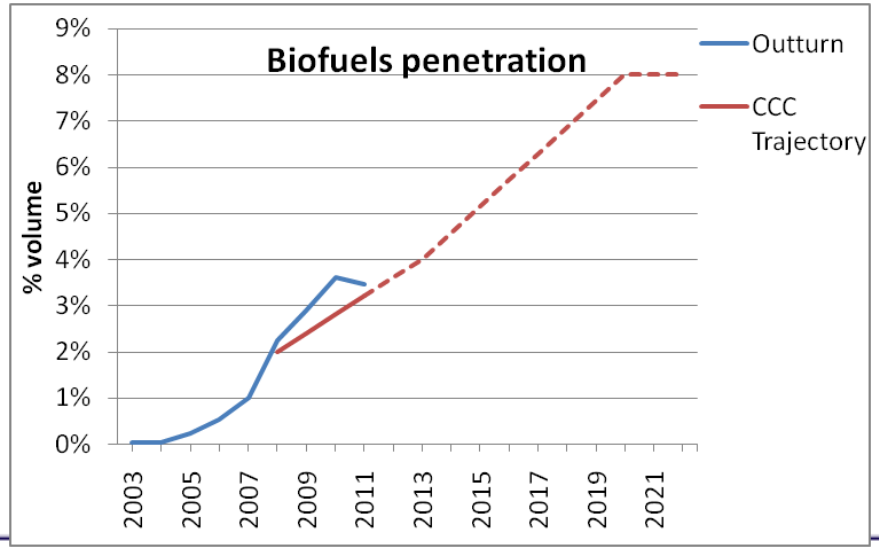
Renewable Heat (TOTAL)



Indicators for 2011 suggest car emissions may have decreased







Summary of recommendations

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- The UK's **2050 target** of an 80% emissions reduction remains appropriate.
- By **2030** the UK should aim for a 60% reduction on 1990, and a 37% reduction by 2020; this is a back ended path to 2050.
- **Power sector decarbonisation** remains an appropriate strategy given potential for shale gas.
- Near term **electricity price increases** to avoid higher increases in future; scope for managing **affordability** and **competitiveness** impacts.
- **Policy implications**: need new policies across key areas to drive step change in pace of underlying emissions reduction.

Conclusion – low-carbon living in 2020

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Small cost but quality of life unchanged

- Significant clean power generation - nuclear, CCS & renewables.
- Energy efficient homes and offices, building fabric and appliances
- More carbon friendly practice e.g. turning down air conditioning
- Change in balance of public / private transport and diet
- More efficient cars, plug in hybrids / full electric vehicles
- New jobs in green economy e.g. wind generation, electric cars.
- Cost is a price worth paying to secure brighter future