



Committee on
Climate Change

The Fourth Carbon Budget

Reducing emissions through the 2020s

Committee on Climate Change, December 2010

www.theccc.org.uk

1. The UK's 2050 target
2. An indicative 2030 target
3. Power sector decarbonisation
4. 2030-2050
5. Budget proposals
6. Costs and investment requirements
7. Summary of recommendations

- Global climate change is already happening
- There is a high degree of confidence that this is largely a result of human activity
- Without action, there is a high risk of warming well beyond 2 degrees
- This would have significant consequences for human welfare and ecological systems

Domestic Action and Global Offer budgets



Awaiting global deal for 2020s

- UK needs to plan for:
- Feasible and cost effective emissions reductions through 2020s
 - Path compatible with 2050 target

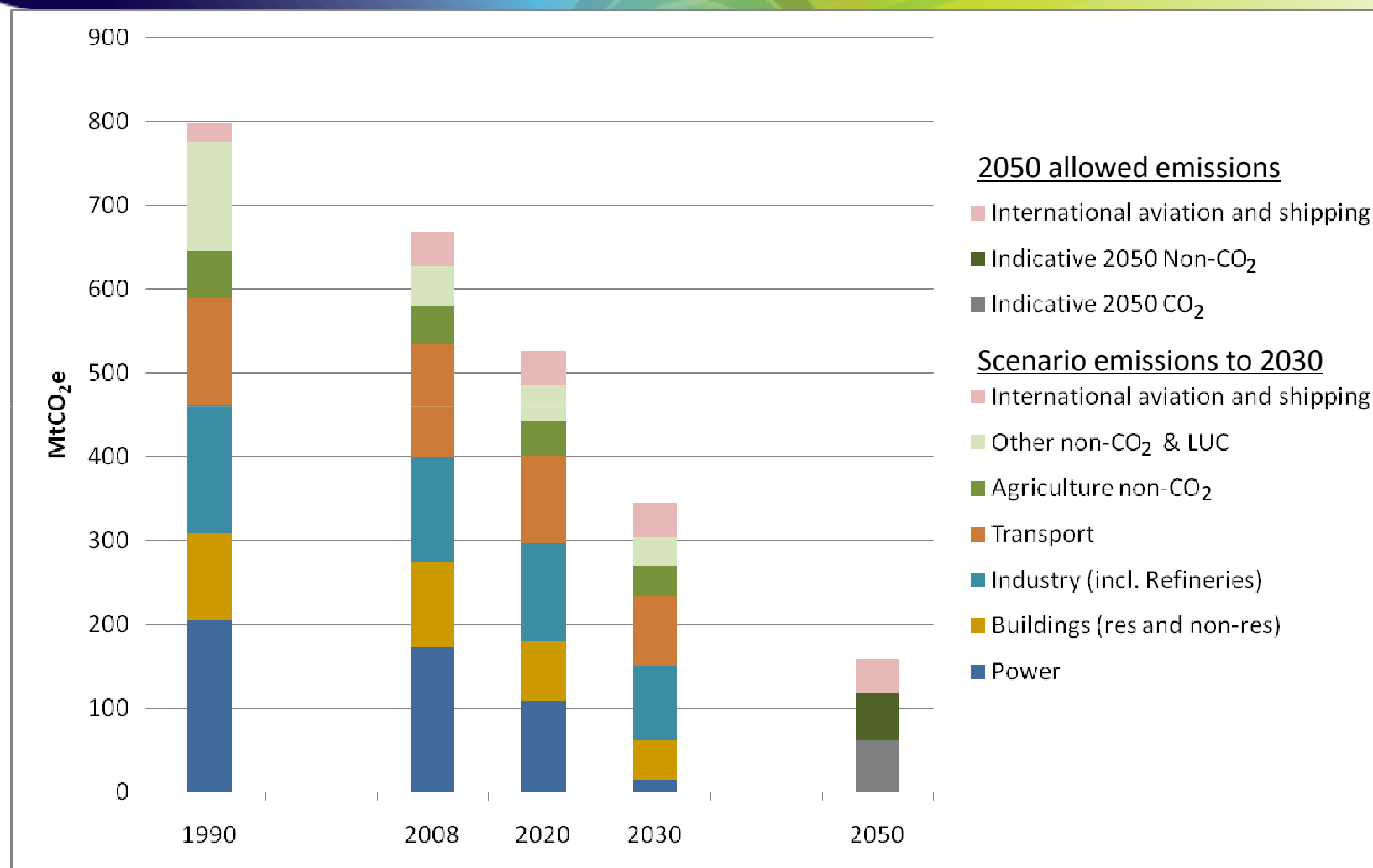
Domestic Action budget now

Global deal for 2020s

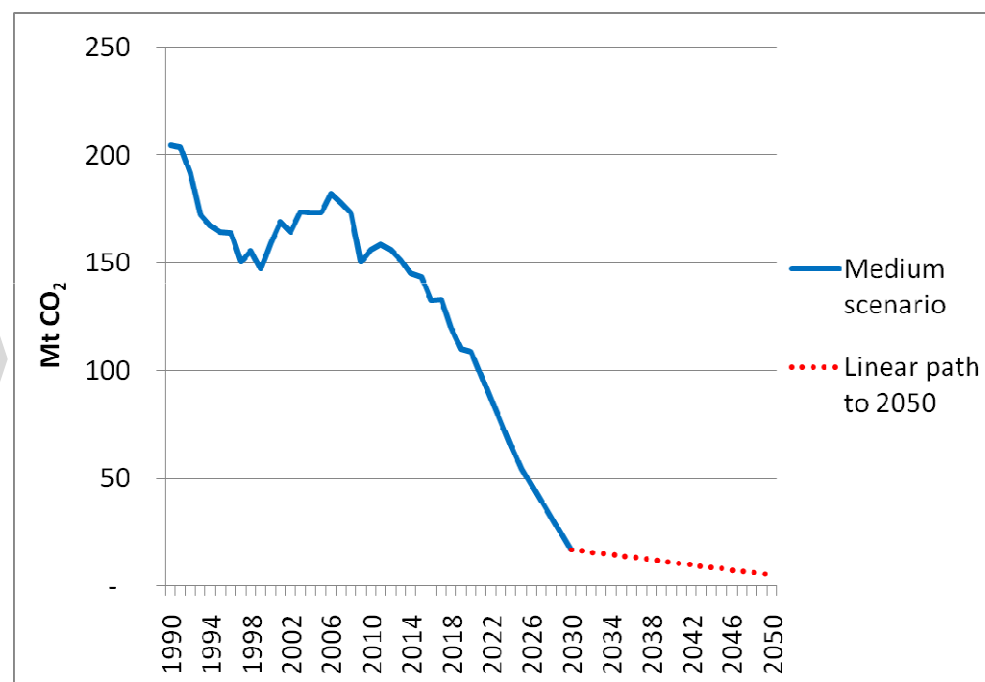
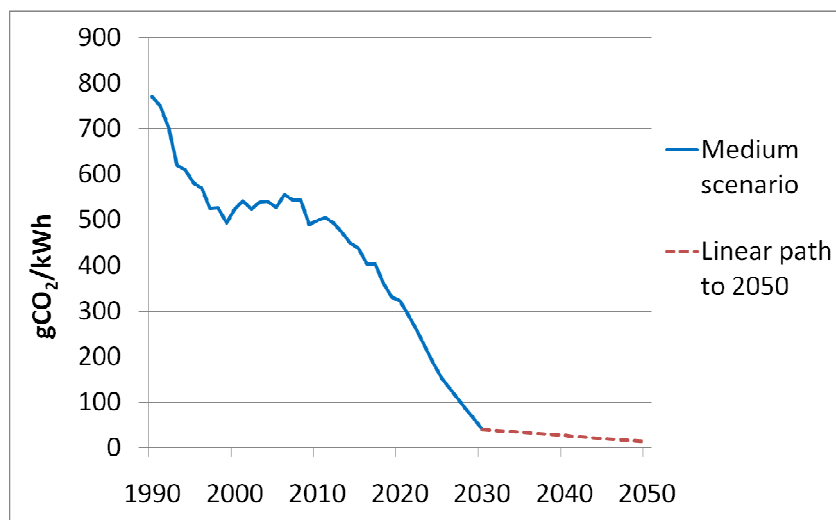
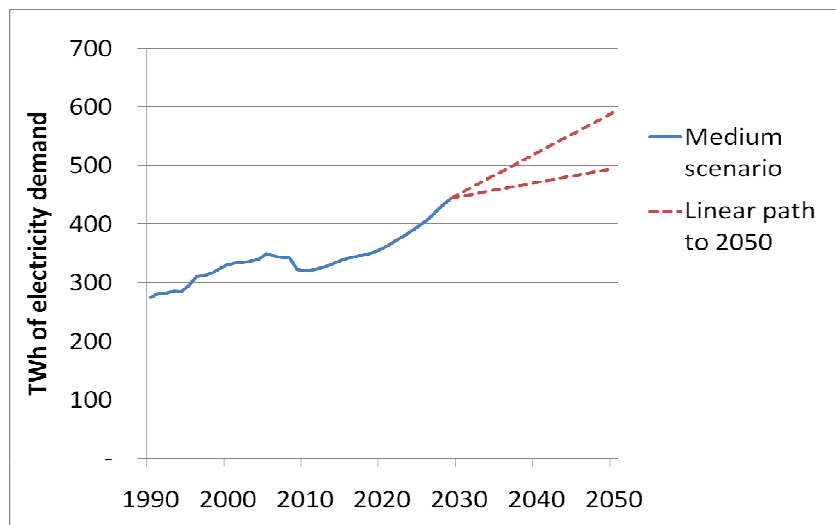
UK needs to make contribution to global emissions reduction

Global Offer budget in future

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



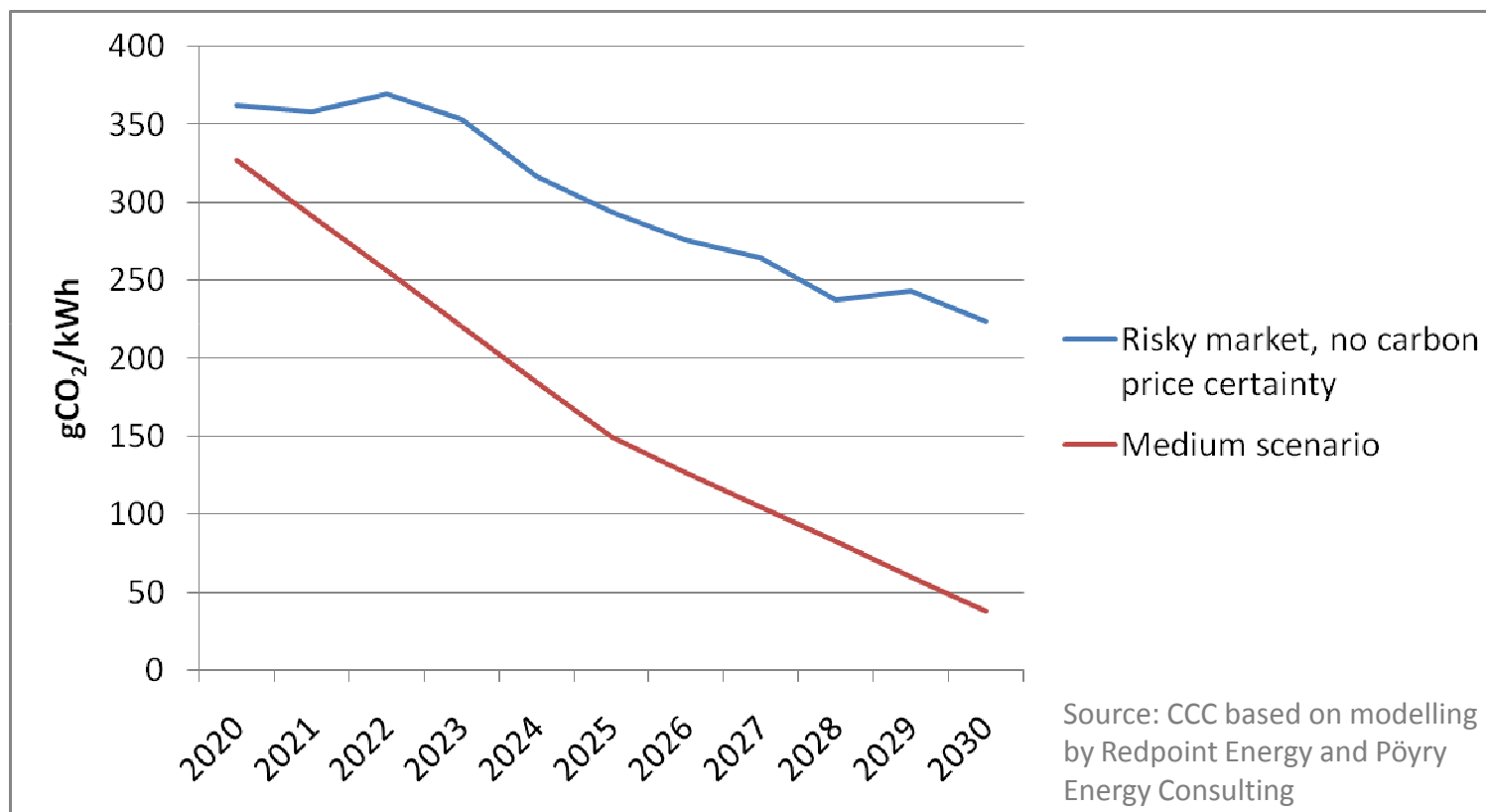
a) Power: Emissions intensity will have to decrease, whilst demand is likely to increase



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

Power: Current market arrangements won't deliver this decarbonisation

Emissions intensity trajectory under current market arrangements compared to required path



Power: Market reform is needed – tendering of long-term contracts the preferred mechanism



- ☉ Carbon price, gas price and demand risks will **limit investment** in low-carbon generation.
- ☉ Lowest cost strategy seeks to **reallocate risk**, not subsidise.
- ☉ Tendering of **long-term contracts** for low-carbon generation would:
 - allocate risks appropriately
 - provide price competition discipline
 - allow new entrants.
- ☉ Options include **Contracts for Differences** or **Power Purchase Agreements**.

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



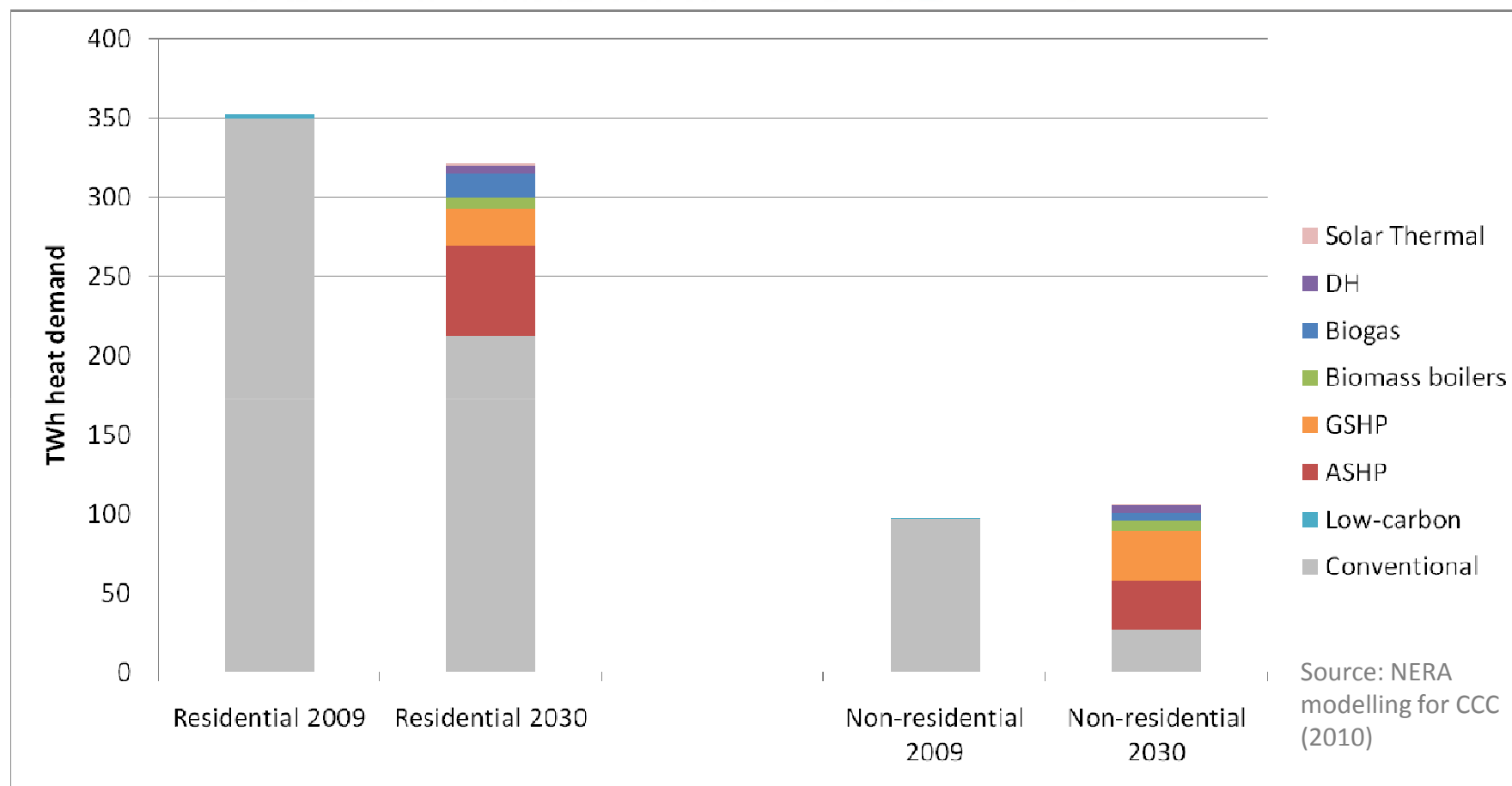
	<u>2030</u>			
	<u>Share of new car sales</u>		<u>Share of miles</u>	<u>Emissions Intensity</u>
Conventional cars	40% →		70% ✗	80-125 g/km
Plug-in hybrids	40% →		20% ✗	50 g/km
Pure electric vehicles	20% →		10% ✗	0 g/km

Average emissions intensity in 2030

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

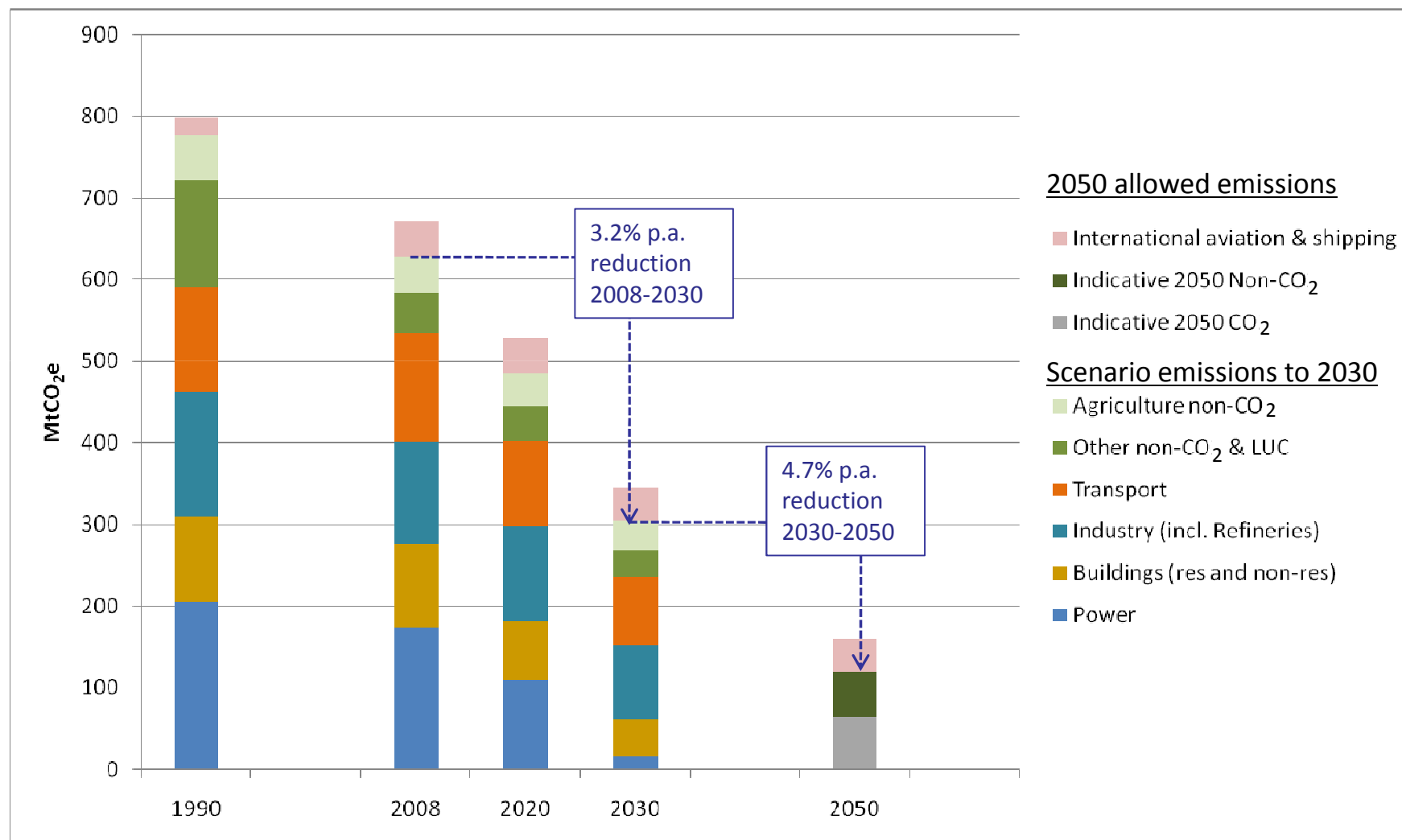
All cars on road: 81 g/km (versus 173 g/km today)

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

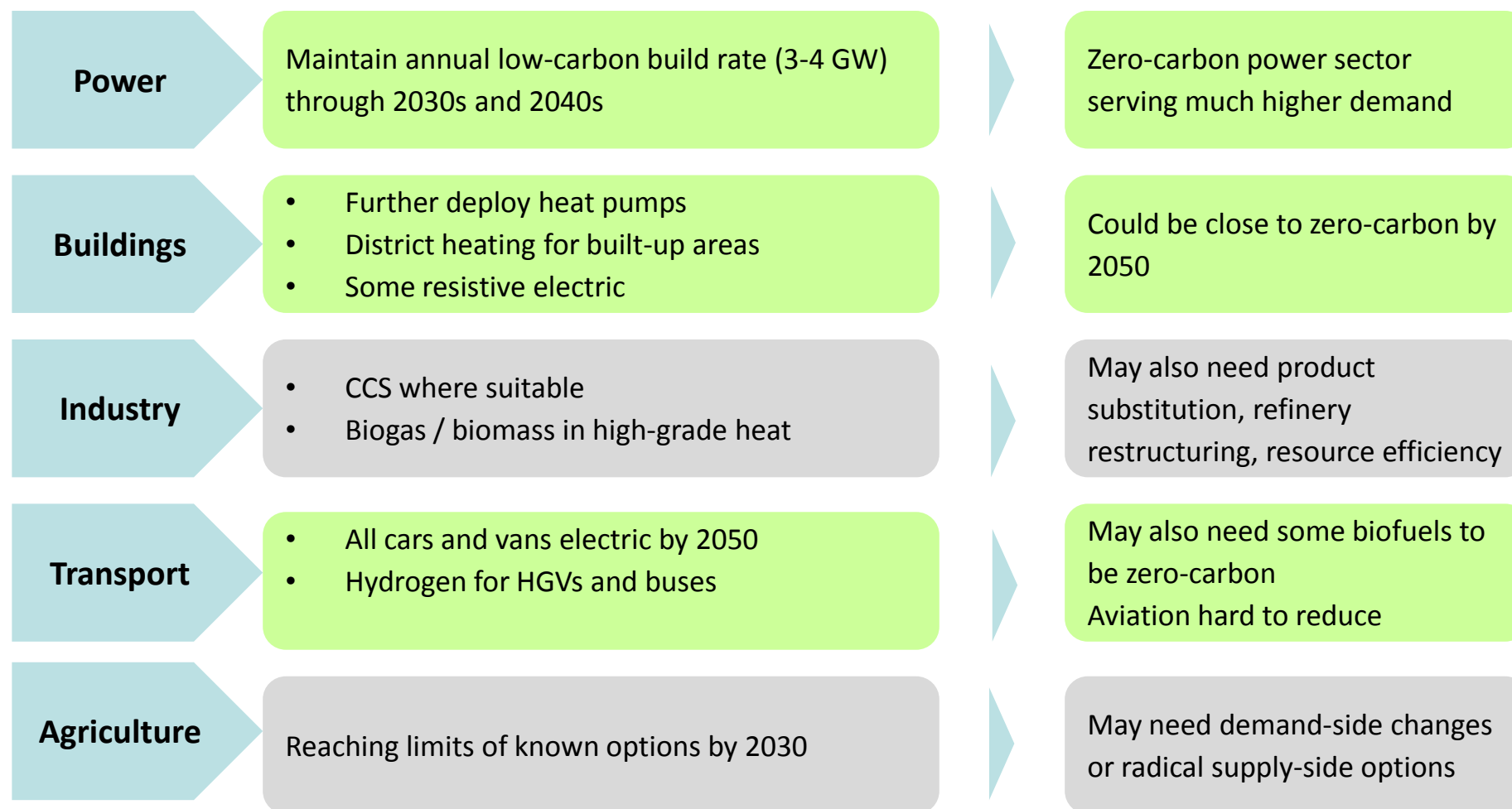


- Demand reductions from efficiency improvements, including 3.5 million solid walls by 2030 in residential buildings
- Low-carbon sources reach 33% of residential heat demand and 74% of non-residential heat demand in 2030

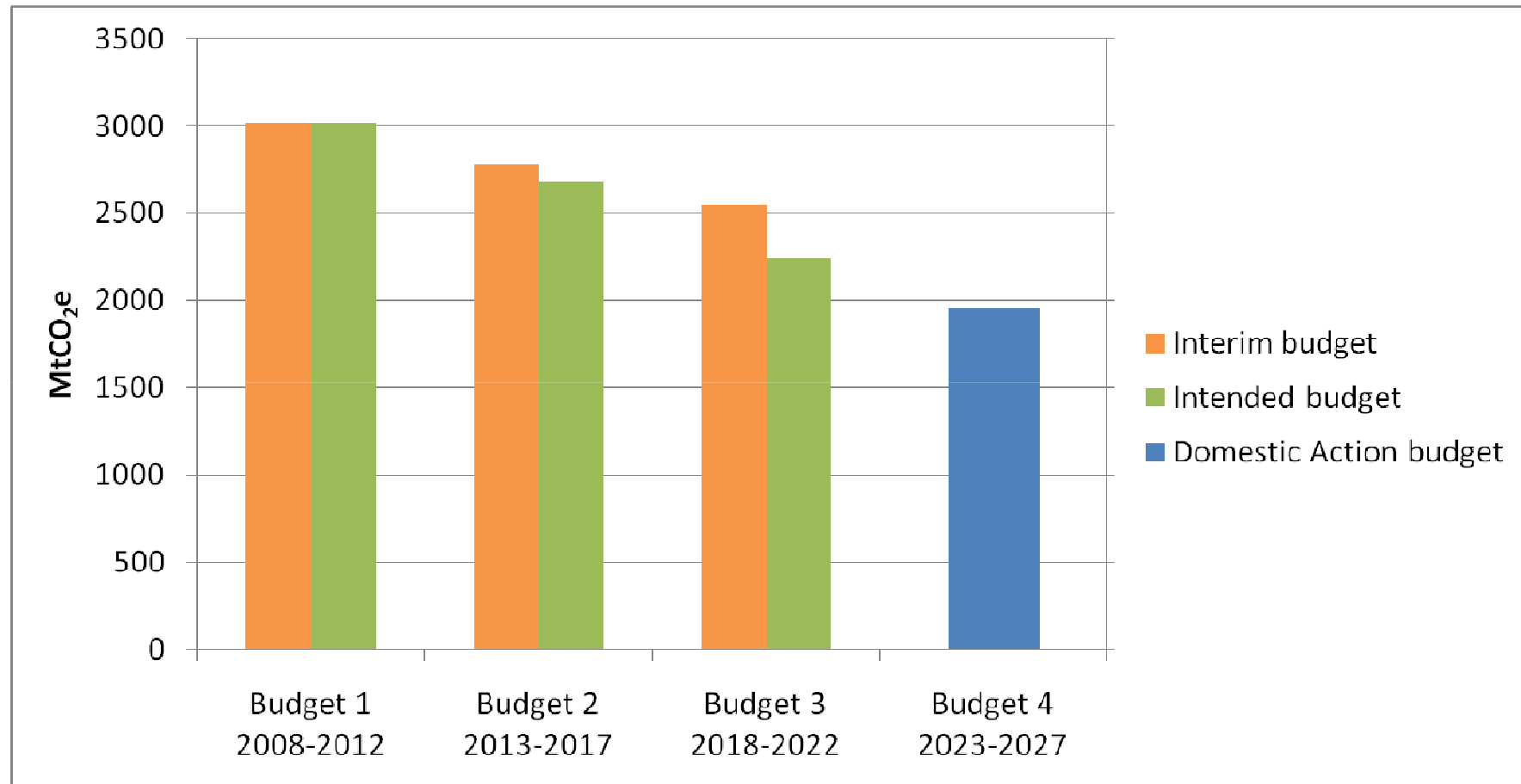
Emissions reductions will have to accelerate again from 2030 to 2050



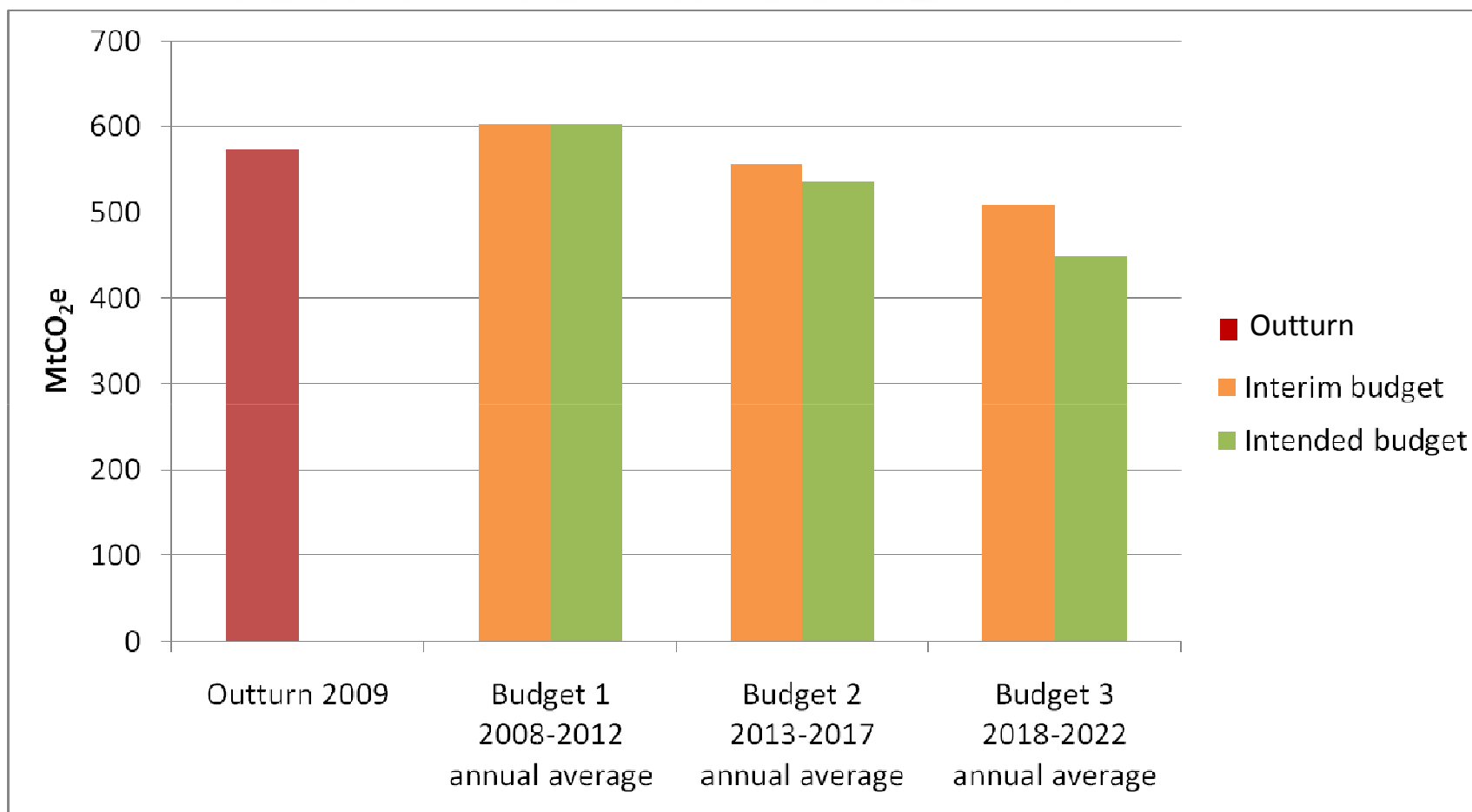
2030 to 2050 – detailed assessment of opportunities suggests ‘back-ending’ is feasible



Interim, Intended and Domestic Action budgets



2009 emissions are already below required levels for the first budget



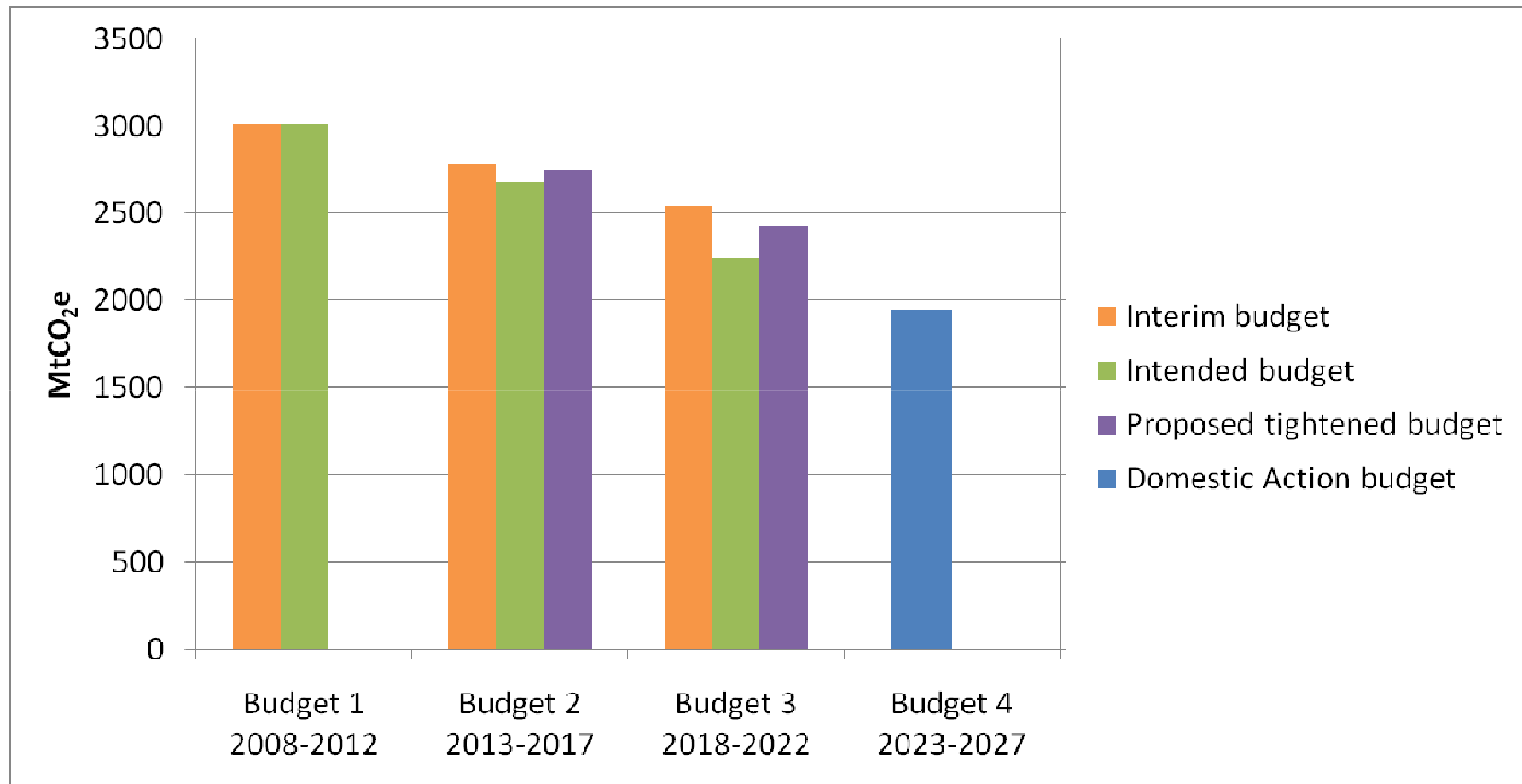
Emissions fell by 8.6% in 2009 during the recession

We therefore recommend that the second and third budgets are tightened

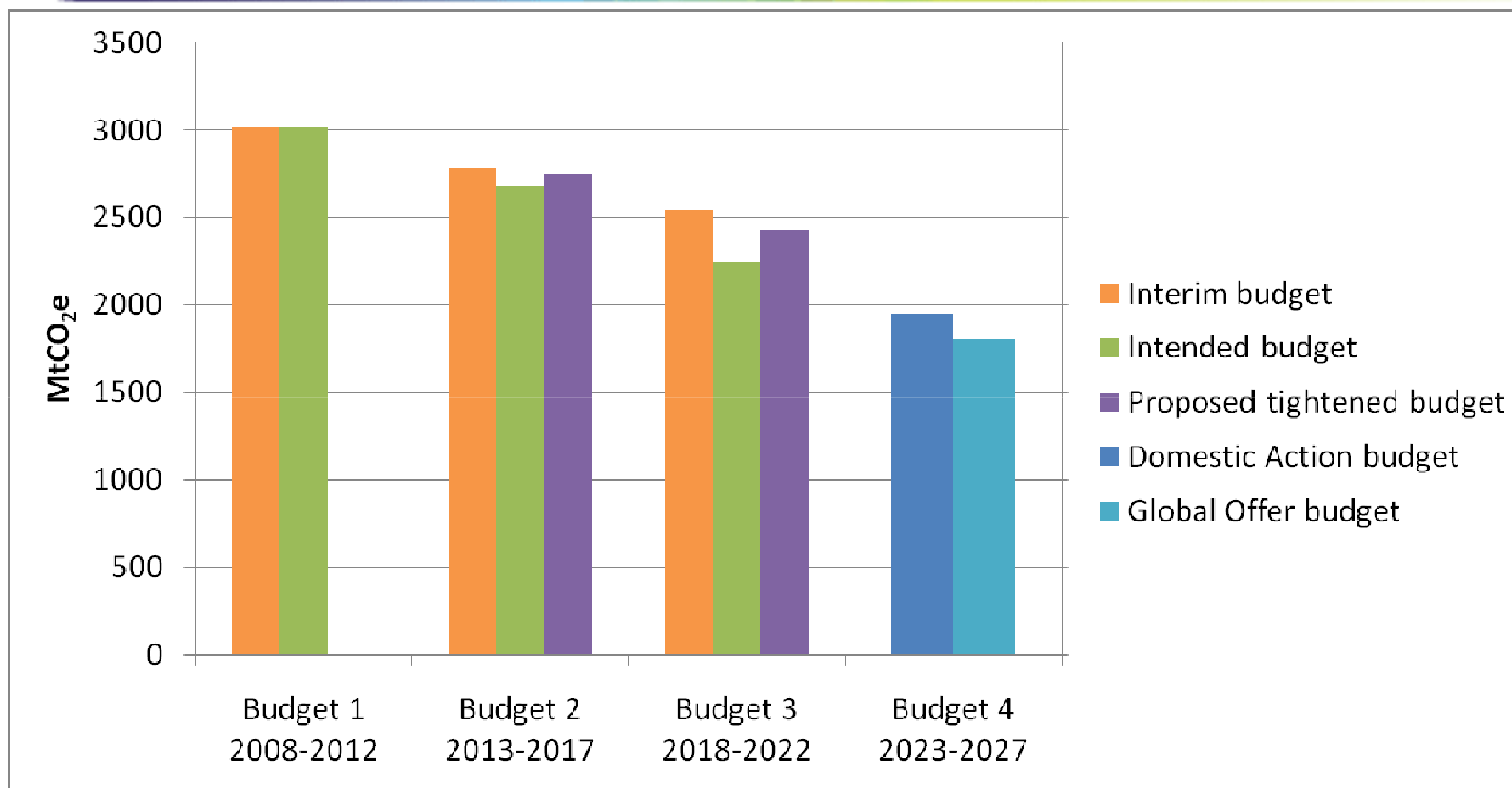


- Commit **not to bank** outperformance of first carbon budget.
- **Tighten second and third carbon budgets** to reflect allowed non-traded sector emissions under Intended budget.
- Requires a **37%** emissions reduction in 2020 relative to 1990 (versus 42% under the pure Intended budget and 34% under the pure Interim budget).
- A full move to the **Intended budget** should be legislated as EU ETS cap tightens.

Proposed tightened budgets



We also propose a Global Offer budget, that the UK should be willing to move to as part of a global deal to reduce emissions



Costs and investment requirements



- ⌚ Fourth budget and indicative 2030 target can be met at **under 1%** of GDP.
- ⌚ Main **investments** are low-carbon capacity in power
 - Investment in generation £10 billion per annum
 - Compared to £2 billion in power / £200 billion economy-wide in recent years.
- ⌚ Potential implications for the fiscal balance, fuel poverty, and competitiveness are **foreseeable** and **manageable** given appropriate policy response.
- ⌚ Potential benefits for security of supply, from reduced reliance on volatile energy commodities.

Summary of recommendations



- The UK's **2050 target** of an 80% emissions reduction on 1990 remains appropriate.
- By **2030** the UK should aim for a 60% reduction on 1990
= a 46% reduction from today, leaving a 63% reduction to 2050.
- Legislate the **Domestic Action** budget (1950 MtCO₂e) now
 - Aim to deliver this through domestic abatement (without credits)
 - Be willing to go further (possibly with credits) – indicative minimum **Global Offer** (1800 MtCO₂e).
- Move to the **Intended budget** for the non-traded sector for second and third budgets.
- **Policy implications:**
 - Electricity market reform & carbon price underpin
 - Support development of new technologies & markets
 - Make the step change to deliver the first three budgets.