

Executive summary



Reduction in UK greenhouse gas emissions by 2050 (relative to 1990 levels) required to limit the risks of dangerous climate change.

80%
by 2050

Emissions reduction in 2020 (relative to 1990) under our proposed tightening of second and third carbon budgets.

37%

Our proposed fourth budget for 2023-2027 – to be delivered through Domestic Action.

1950
MtCO₂e

Required reduction in emissions from today to 2030.

46%

Further required reduction in emissions from 2030-2050.

62%

The cost of meeting the fourth carbon budget and the 2030 target.

Under
1%
GDP

Revisiting the science of climate change



Global average temperatures from 2000-2009 were around 0.75°C above pre-industrial levels.

0.75°C

Limiting central estimates of global warming by 2100 close to 2°C will reduce (but not avoid) the risks from climate change.

2°C

Many societies and ecosystems will not be able to adapt to 4°C of warming. The risk of reaching this should be kept to very low levels.

4°C

The number of climate research papers reviewed by the Committee this year, providing us with the latest understanding of climate science.

500

Global CO₂ emissions increased 6-fold over the 20th Century.

6x

CO₂ concentration has not been as high as today for at least the last million years, possibly much longer.

1
million
years

2000 to
2010

The last decade has been the hottest since records began.

The international context – implications for the fourth carbon budget



IEA estimate of the additional cost of failing to reach an ambitious global deal at Copenhagen.

\$1,000
billion

Countries made pledges under the Copenhagen Accord.

85

When global emissions could peak, if high-end ambition pledges made under the Copenhagen Accord are met.

2020

By 2030 world should cut current emissions by around 25%.

25%

By 2030 EU should cut emissions by around 55% (relative to 1990 levels).

55%

The carbon price we use in 2030.

£70/
tCO₂e

The Fourth Carbon Budget



The proposed carbon budget for 2023-27, to be delivered through Domestic Action.

1,950
MtCO₂e

Reduction in emissions by 2030 (relative to 1990) consistent with the Domestic Action budget.

60%

Proposed credit use to plan for in meeting the Domestic Action target.

0
MtCO₂e

Indicative tighter carbon budget for 2023-27, as a potential global offer.

1,800
MtCO₂e

Reduction in emissions in 2030 (relative to 1990) consistent with the Global Offer budget.

63%

Required CO₂ reduction by 2050 (relative to 1990), assuming less progress in international aviation and shipping and non-CO₂.

Around
90%

Estimated cost of meeting the fourth carbon budget.

Under
1%
GDP

Decarbonising surface transport



44% emissions reduction in surface transport can be achieved by 2030.

44%

60% of new cars and vans in 2030 could be electric.

60%

Potential volume of biofuels consumed each year during 2020s.

2.7m
tonnes oil
equivalent

Potential carbon efficiency of new conventional cars in 2030.

80
gCO₂e/km

50% of new buses in 2030 could be powered by hydrogen.

50%

Potential reduction in car trips from smarter travel choices.

5%

Potential cost of reducing surface transport emissions by 44%.

0.1%
GDP

Reducing emissions from buildings and industry through the 2020s



The UK's total emissions coming from buildings and industry.

70%

Energy consumed in homes for space and water heating.

80%

Leaky solid walled houses should be properly insulated by 2030, that's about half of the total.

3.5 million

Number of homes which could be heated by low carbon heat by 2030.

9 million

Heat pumps can be up to 4 times more efficient in generating heat from electricity when compared to conventional electric heating systems.

4x

By 2050, we expect the buildings sector to be zero carbon in order to meet the 80% target.

Zero Carbon by 2050

There is scope for reducing industry emissions by almost half between now and 2030.

50%

Power sector decarbonisation to 2030



Share of total UK emissions from power generation.

28%

The carbon intensity of power will need to fall from around 500 g/kWh today to 50 g/kWh by 2030.

50
gCO₂e/kWh

97% of electricity should be generated by low-carbon sources in 2030, compared to 26% now.

97%

Low-carbon capacity needs to be added to the system in 2020s – a mixture of nuclear, renewables and CCS.

30-40
GW

DECC will consult on options for market reform.

December
2010

The power sector will need to almost completely decarbonise by 2050.

Zero
Carbon
by 2050

Reducing emissions from agriculture and land use, land-use change and forestry



Agricultural emissions currently 8% of the UK total.

8%

If left unabated beyond 2020, agriculture will account for 28% of permitted 2050 emissions.

28%

Possible to reduce 2030 emissions by 18% from current levels.

18%

Agricultural abatement potential in 2020s.

5.0
MtCO₂e

Share of abatement potential that also increases farmers profits.

70%

Potential agricultural GHG emissions in 2030.

40
MtCO₂e

Abatement potential in 2030 from forestry, if planting starts today.

1
MtCO₂e

Wider economic and social considerations and differences in national circumstances



Competitiveness risks: proportion of UK GDP from energy and trade-intensive sectors in 2020.

<1%

Possible EU ETS fiscal revenues generated in 2030.

Up to
£8.5bn

Neutral

Impact on fuel poverty of meeting carbon budgets to 2020.

2020 target for emissions reduction in Scotland from 1990 levels.

42%

2020 target for emissions reduction in Wales from 1990 levels.

40%

2025 target for emissions reduction in Northern Ireland from 1990 levels.

25%
