Meinshausen et al. 2009a
Allen et al. 2009

The world's CO_2 budget
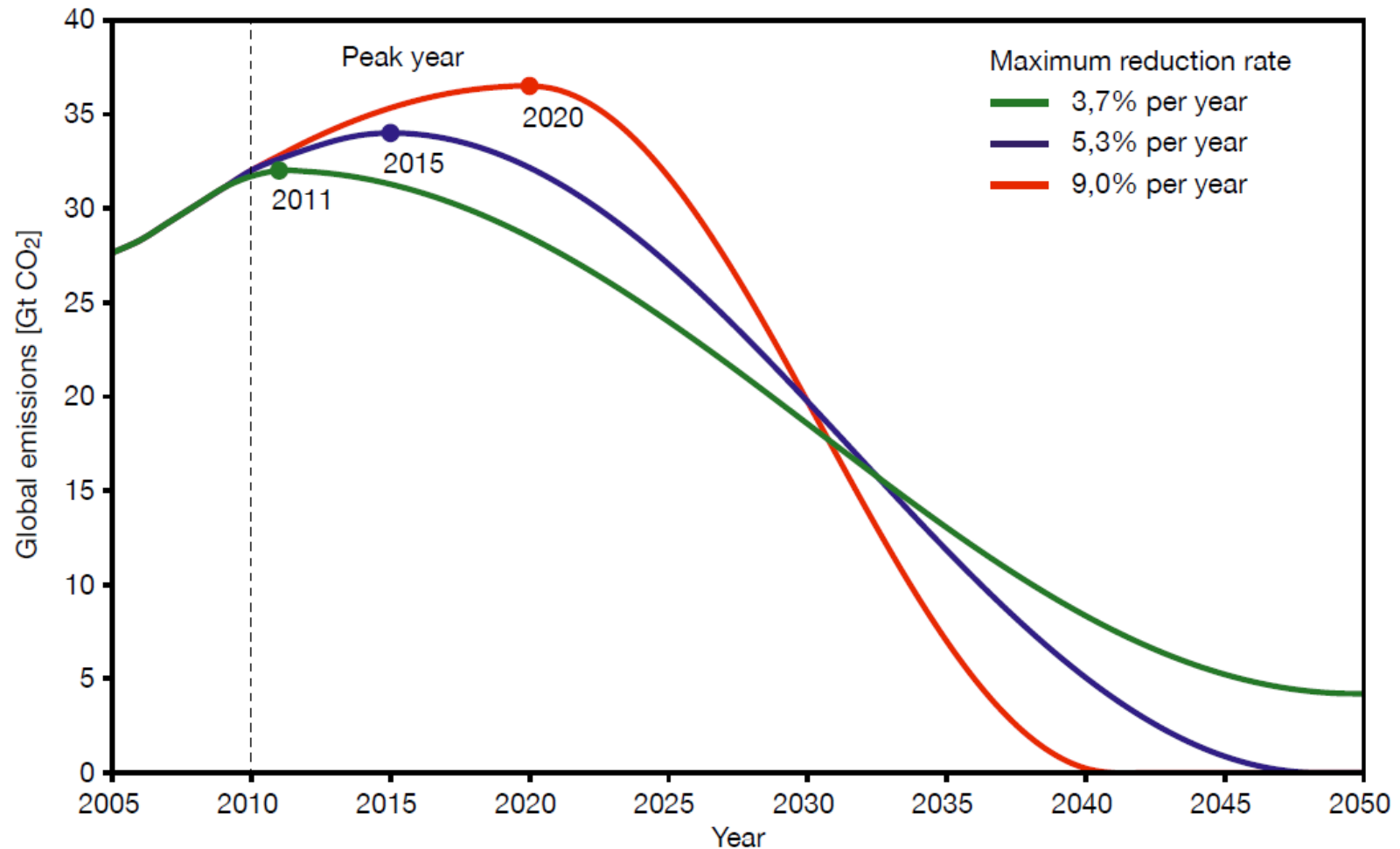
Exemplary emission pathways in order to remain within a budget of 750 Gt between 2010 and 2050. At this level, there is a 67% probability of staying below a warming of 2 °C.
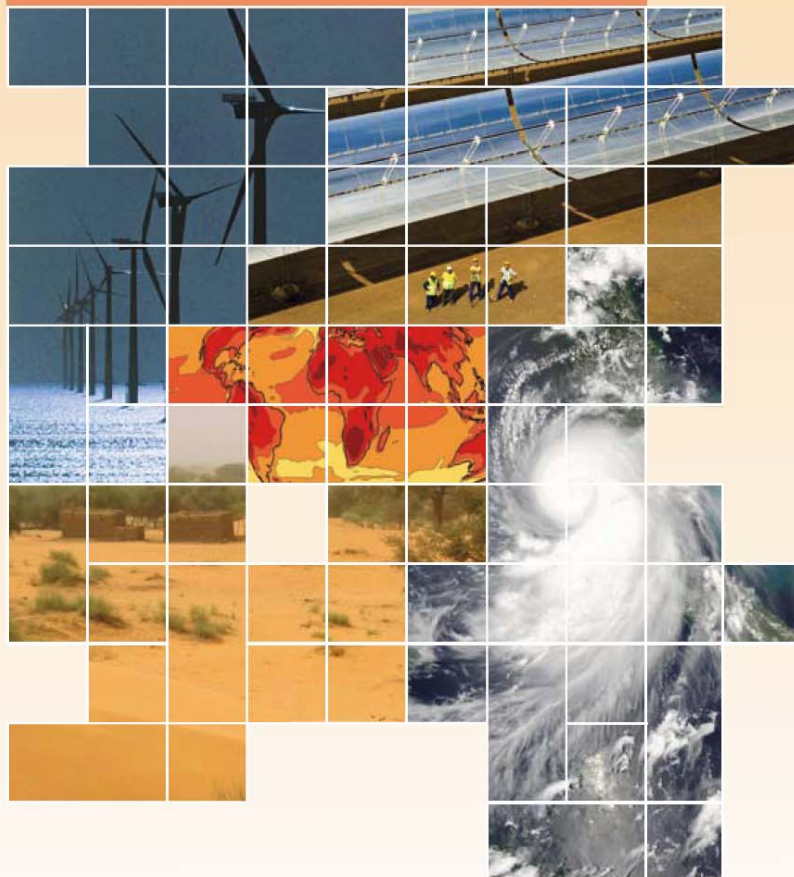
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German Advisory Council on Global Change
(WBGU)

Solving the
climate dilemma:
The budget approach

Special Report

"World Formula" for Climate Policy

$$C_{glob}(p) = \int_{T_1}^{T_2} E_{glob}(t)\,dt$$

Total global CO_2 budget in period $[T_1,T_2]$ that keeps global warming below 2°C with probability p

Integral over global profile of CO_2 emissions

$$C_{nat} = \int_{T_1}^{T_2} E_{nat}(t)\,dt = C_{glob}(p)\frac{M_{nat}(T_M)}{M_{glob}(T_M)}$$

National CO_2 budget in $[T_1,T_2]$

Integral over national emission profile

Fraction of global CO_2 budget as defined by ratio of national population M_{nat} to world population M_{glob} at time T_M