

SPRING BOOKS ROBERT COSTANZA ON NICHOLAS STERN'S 'BLUEPRINT'

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nature

THE COMING CLIMATE CRUNCH

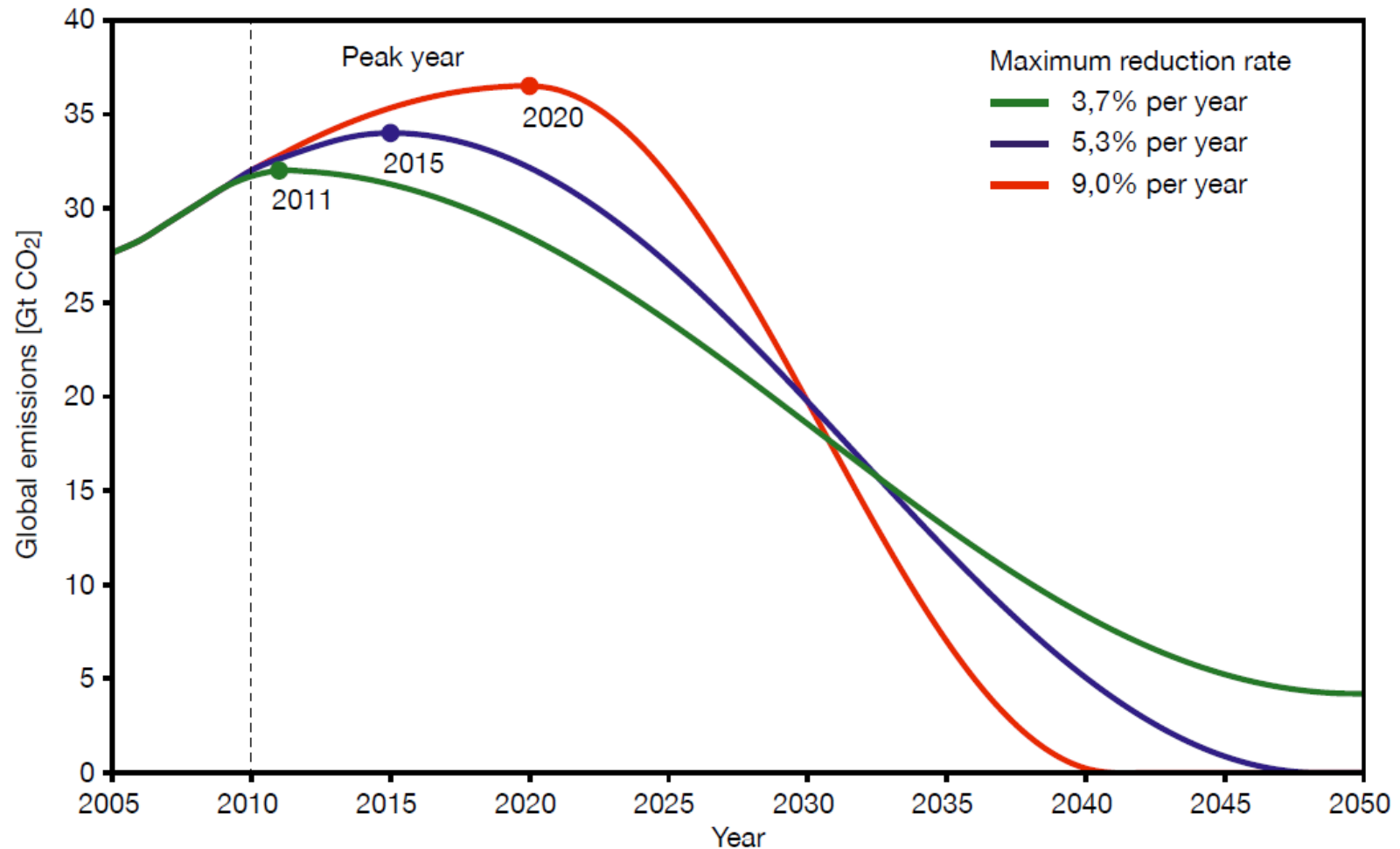
- The trillionth tonne of carbon
- How disastrous can it get?
- Engineering alternatives

NATUREJOBS
Immunology



Meinshausen et al. 2009a
Allen et al. 2009

The world's CO₂ 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.

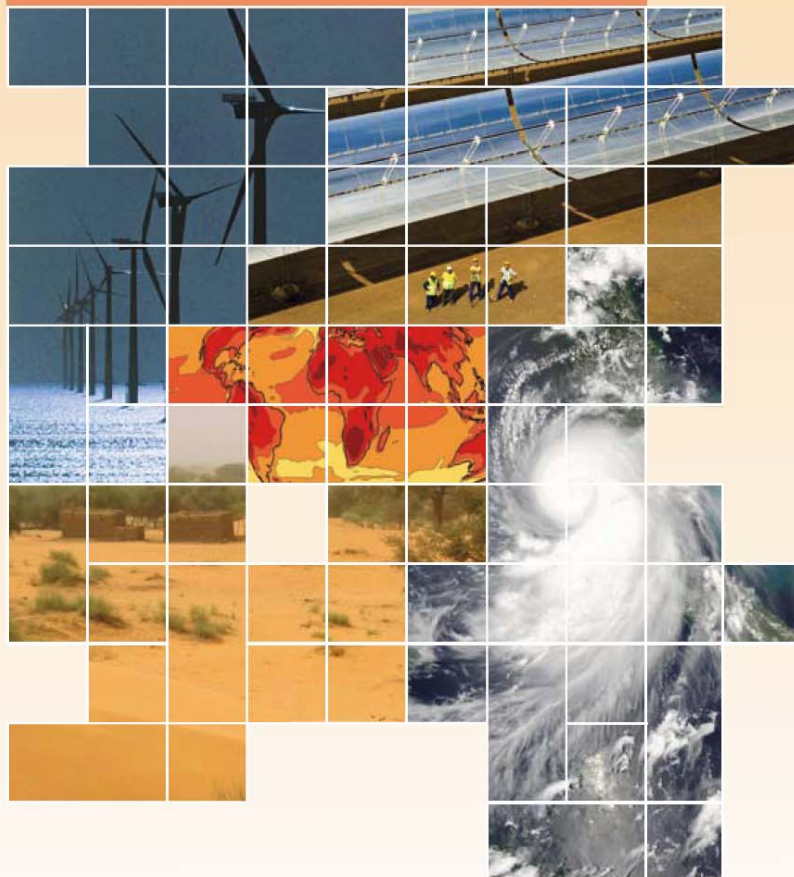
WBGU

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 CO₂ budget in period [T₁, T₂] that keeps global warming below 2°C with probability *p*

Integral over global profile of CO₂ 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 CO₂ budget in [T₁, T₂]

Integral over national emission profile

Fraction of global CO₂ budget as defined by ratio of national population *M_{nat}* to world population *M_{glob}* at time *T_M*