

How, and at what costs, can low-level stabilisation be achieved? –An overview

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The challenge of stabilisation of GHG concentrations at low levels (i.e. around 550 ppm CO₂equivalent or below) is discussed, including the role of socio-economic development and behavioural change. An overview is given of the current knowledge about technology options to achieve these stabilisation levels, showing that no new technologies are needed, but that cost reduction and development and transfer of clean technologies are crucial. The point is made that shortage of fossil fuels is not going to play a role in stabilisation. There are many different options available, ranging from energy efficiency improvement to renewable energy, decarbonisation of fossil fuels through CO₂ capture and storage, biological CO₂ sequestration and reduction of non-CO₂ gases in industry, waste management and agriculture. Effective and efficient stabilisation strategies always use a portfolio of options (changing over time) to achieve a least cost approach. For low level stabilisation marginal costs will increase steadily as more and more expensive measures are required. Costs in terms of welfare loss, compared to a situation without climate policy, depend strongly on the underlying socio-economic development. If the most efficient implementation (including multi-gas strategies, maximum participation of countries in a global emission trading regime, optimal timing of reduction actions) is chosen, costs on average can be limited to a few percentage points lower GNI or GDP by 2050 compared to a baseline of strongly increasing welfare. However, costs for individual countries depend strongly on the assumptions about sharing the reduction efforts and can vary over time. Finally, the point is made that mitigation strategies have to be integrated with adaptation efforts in order to deal with the remaining climate impacts and to assist countries that would predominantly experience negative climate change impacts.