

Emission reductions for stabilisation and mitigation potentials

Information from the IPCC Working Group III AR4 and new studies

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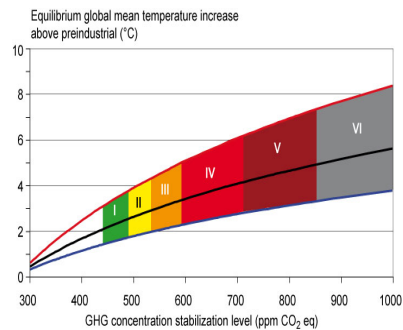
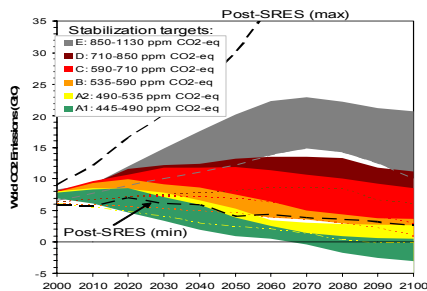
Former co-chair IPCC WG III

AWG-KP Workshop

Poznan, December 3, 2008

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The lower the stabilisation level the earlier global CO₂ emissions have to peak



Multigas and CO₂ only studies combined

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What reductions are needed ?

Stab level (ppm CO ₂ -eq)	Global Mean temp. increase at equilibrium (°C)	Year CO ₂ needs to peak	Year CO ₂ emissions back at 2000 level	2030 CO ₂ emissions compared to 2000 (%)	2050 CO ₂ emissions compared to 2000 (%)
445 – 490	2.0 – 2.4	2000 - 2015	2000- 2030	-45 to 0	-85 to -50
490 – 535	2.4 – 2.8	2000 - 2020	2000- 2040	-20to +15	-60 to -30
535 – 590	2.8 – 3.2	2010 - 2030	2020- 2060	-15 to +30	-30 to +5
590 – 710	3.2 – 4.0	2020 - 2060	2050- 2100	+15 to +55	+10 to +60

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Equity implications (all GHG emissions without LULUCF)

Scenario category	Region	2020	2050
A-450 ppm CO ₂ -eq ²⁾	Annex I	-25% to -40%	-80% to -95%
	Non-Annex I	Substantial deviation from baseline in Latin America, Middle East, East Asia	Substantial deviation from baseline in all regions
B-550 ppm CO ₂ -eq	Annex I	-10% to -30%	-40% to -90%
	Non-Annex I	Deviation from baseline in Latin America and Middle East, East Asia	Deviation from baseline in most regions, especially in Latin America and Middle East
C-650 ppm CO ₂ -eq	Annex I	0% to -25%	-30% to -80%
	Non-Annex I	Baseline	Deviation from baseline in Latin America and Middle East, East Asia

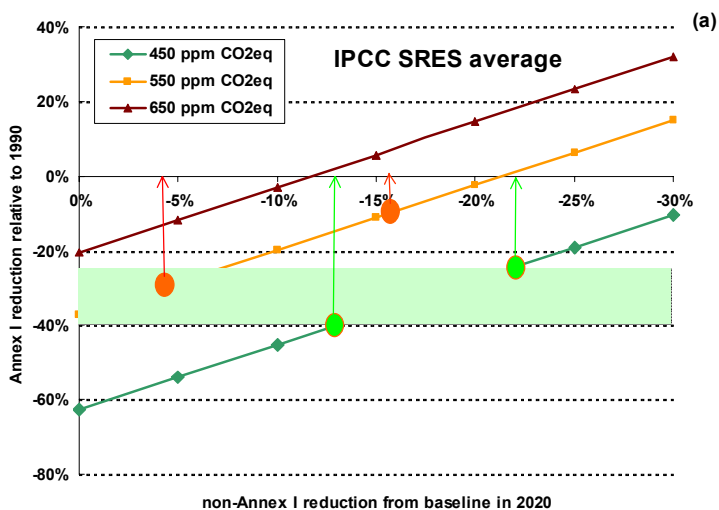
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Main factors affecting outcomes for each stabilisation level

- Regime assumptions
- Baseline assumptions
- Allowed 2020 global emission level
 - 450 ppm CO₂eq: +15 to +30 (vs 1990)
 - 550 ppm CO₂eq: +30 to +45 (vs 1990)
- 2010 emission levels

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Non-Annex I deviations from baseline, consistent with stabilisation trajectories

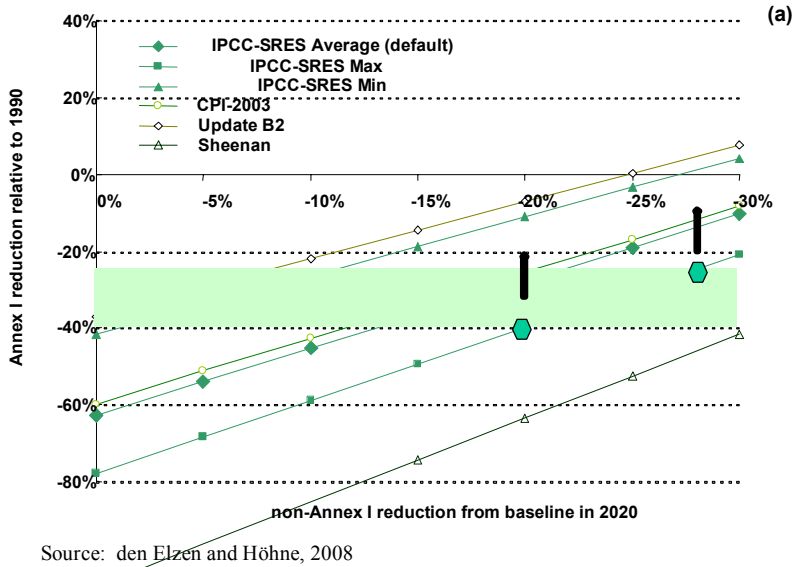


Source: den Elzen and Höhne, 2008

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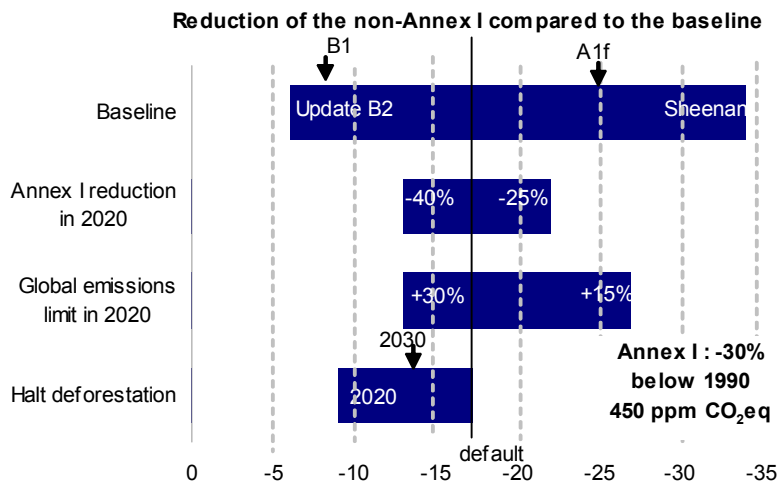
den Elzen, Höhne, Reductions in Annex I & non-Annex I, Climatic Change (2008) 91:249-277

Effect of baseline assumptions (450- ppm CO₂eq case)



den Elzen, Höhne, Reductions in Annex I & non-Annex I, Climatic Change (2008) 91:249-274

Sensitivity analysis



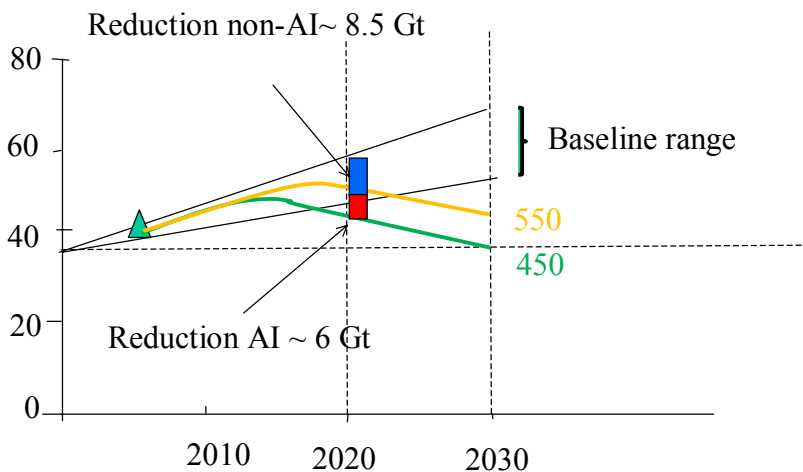
den Elzen, Höhne, Reductions in Annex I & non-Annex I, Climatic Change (2008) 91:249-274

Deviation from baseline

- 450 ppm CO₂eq: -15 to -30%
- 550 ppm CO₂eq: 0 to -20%
- Additional reductions from avoided deforestation could take 5 percentage points off
- All numbers without offsets

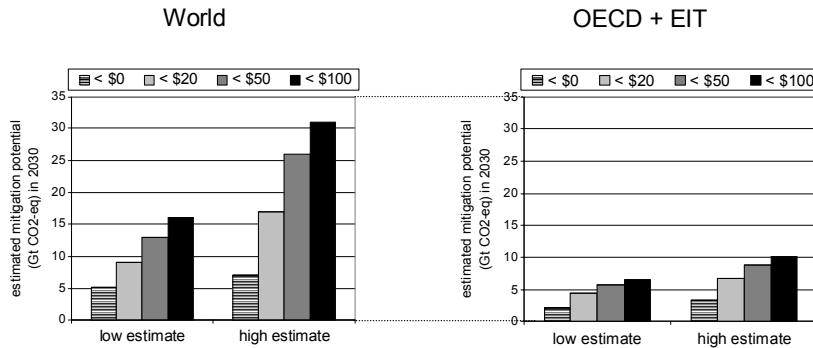
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What reductions are needed from developed and developing countries?



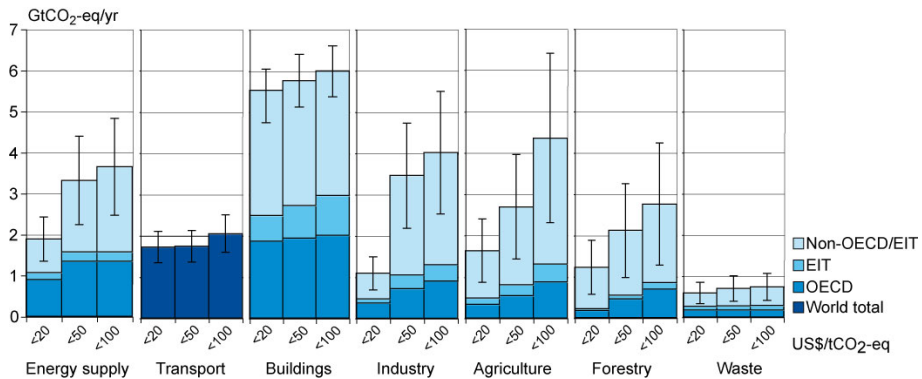
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Economic mitigation potential in 2030 (bottom-up)



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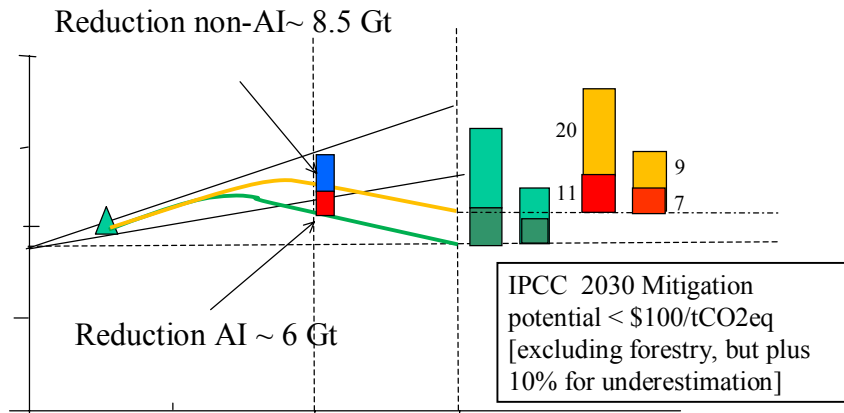
All sectors and regions have the potential to contribute (2030World)



Note: estimates do not include non-technical options, such as lifestyle changes.

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Reductions needed and mitigation potential



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Co-benefits of mitigation

- Near-term *health benefits* from reduced air pollution may offset a substantial fraction of mitigation costs
- Mitigation can also be positive for: *energy security, balance of trade improvement, provision of modern energy services to rural areas, sustainable agriculture and employment*
- Land-use measures positive for improving resilience to climate change and carbon storage

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