

Emission reductions for stabilizing at 450 ppm CO₂-eq

**AWG LCA Technical Briefing
Bonn, Germany, 30.3.2009**

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Box 13.7

Scenario category	Region	2020
<i>A-450 ppm CO₂-eq^b</i>	Annex I	-25% to -40%
	Non-Annex I	Substantial deviation from baseline in Latin America, Middle East, East Asia and Centrally-Planned Asia
<i>B-550 ppm CO₂-eq</i>	Annex I	-10% to -30%
	Non-Annex I	Deviation from baseline in Latin America and Middle East, East Asia
<i>C-650 ppm CO₂-eq</i>	Annex I	0% to -25%
	Non-Annex I	Baseline

Source: IPCC Fourth Assessment Report, Working Group III, Box 13.7

Content

- “Reductions of greenhouse gas emissions in Annex I and non-Annex I countries for meeting concentration stabilisation targets”
den Elzen and Höhne
Climatic Change (2008) 91:249–274
1. Assessment of available studies (as for IPCC AR4)
 2. Sensitivity of the impact of major determinants using one model

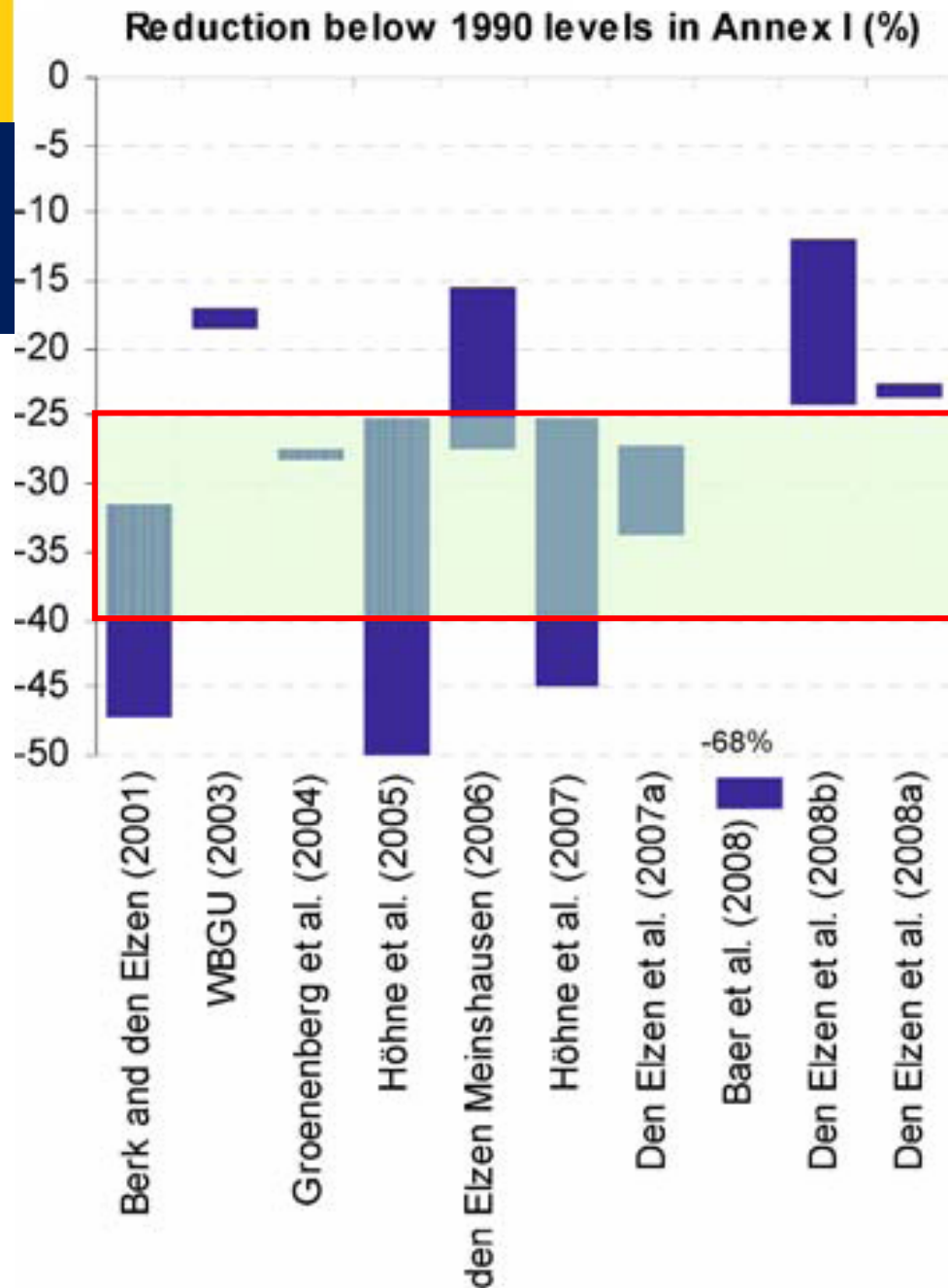
Comparison

- 16 studies used and quoted in the IPCC analysis (box 13.7)
- 2 additional studies from 2003
- 7 new studies available after the IPCC AR4

All studies use different

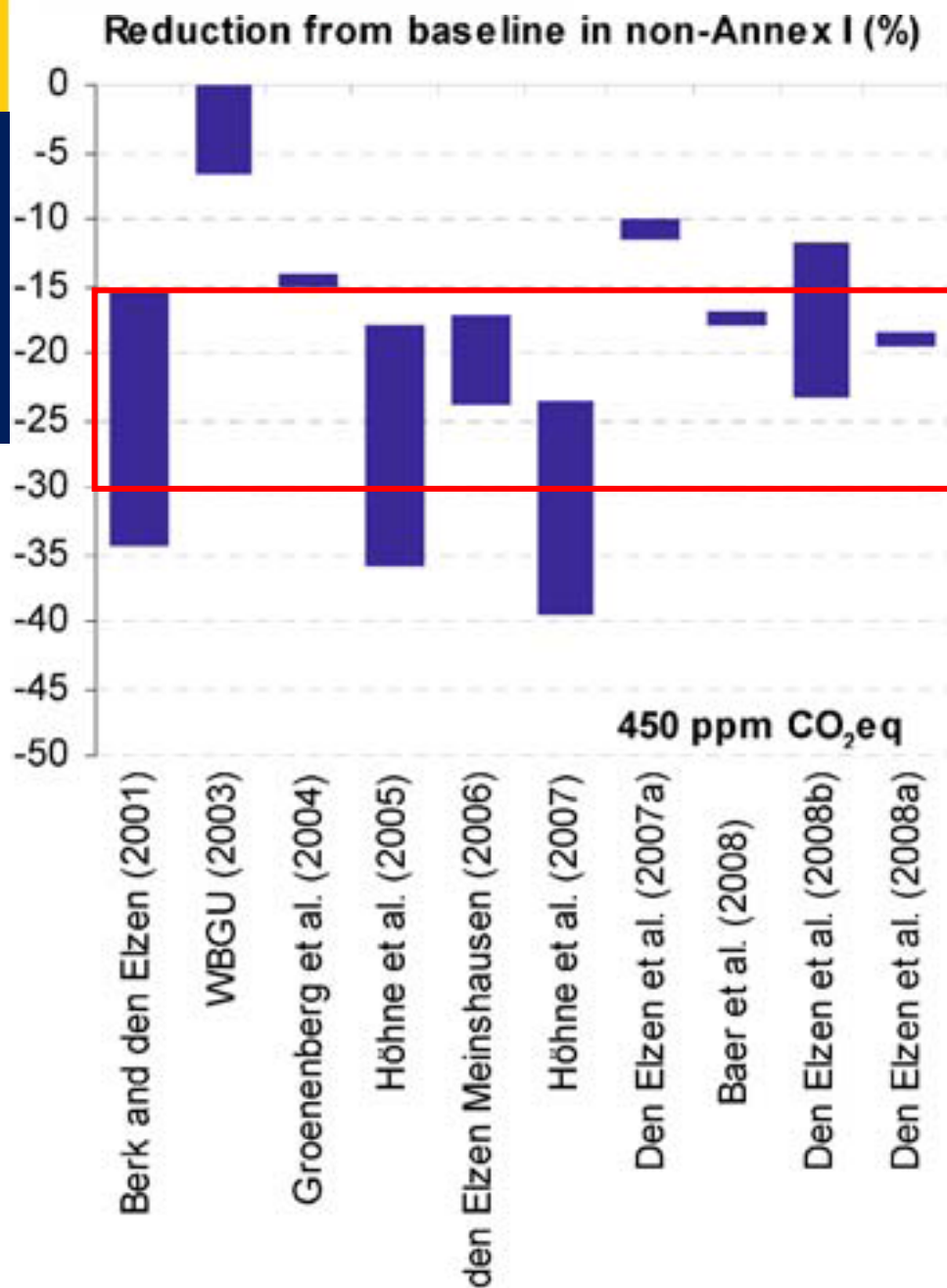
- Baselines
- Effort sharing principles
- Global emission levels in 2020 for the same GHG concentration level
- Treatment of deforestation (usually excluded – assumed to develop similarly)

Annex I 450 ppm CO₂eq.



-25% to -40%
below 1990 level in 2020

Source: den Elzen and Höhne 2008, "Reductions of greenhouse gas emissions in Annex I and non-Annex I countries for meeting concentration stabilisation targets", Climatic Change (2008) 91:249–274

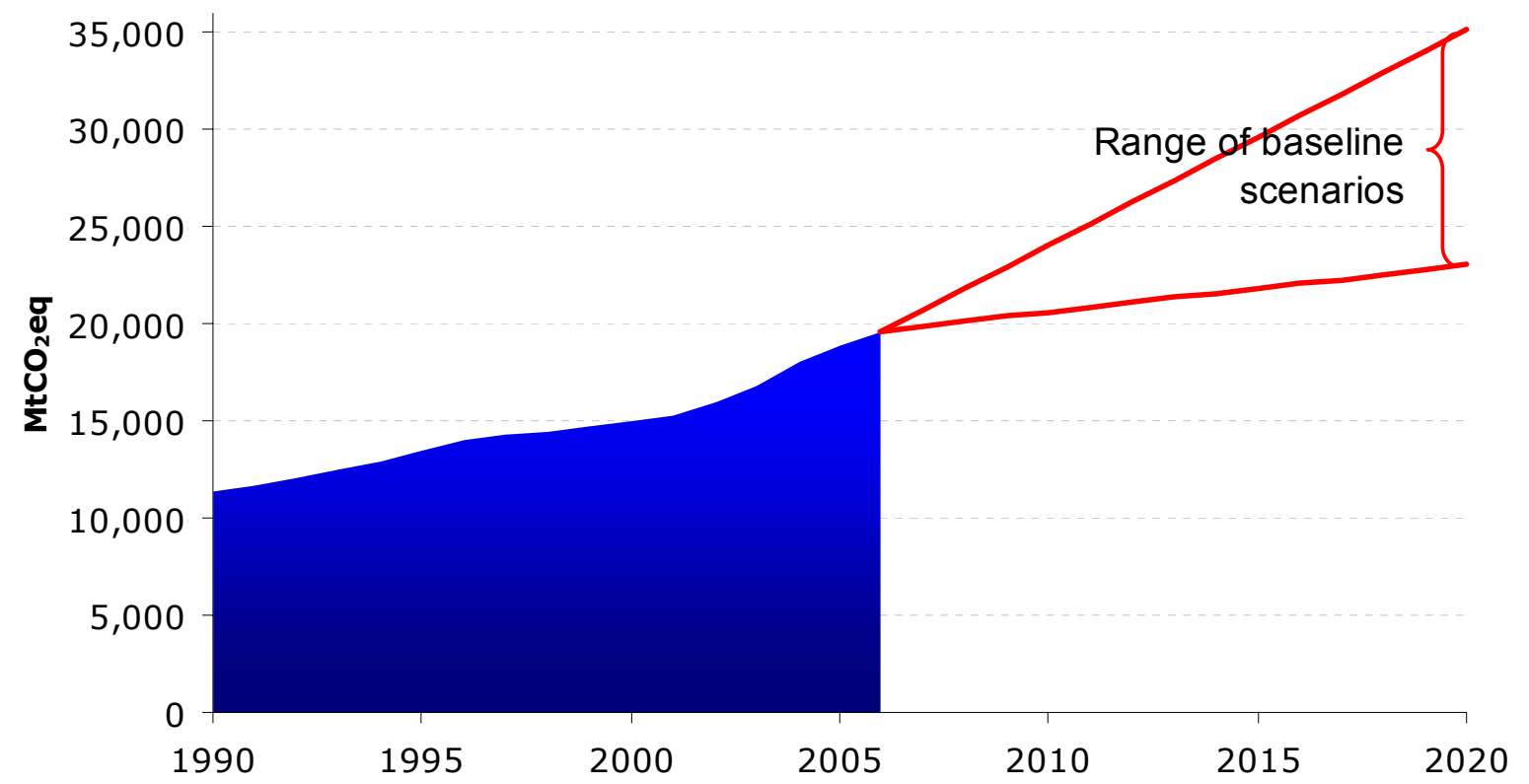


Non-Annex I 450 ppm CO₂e

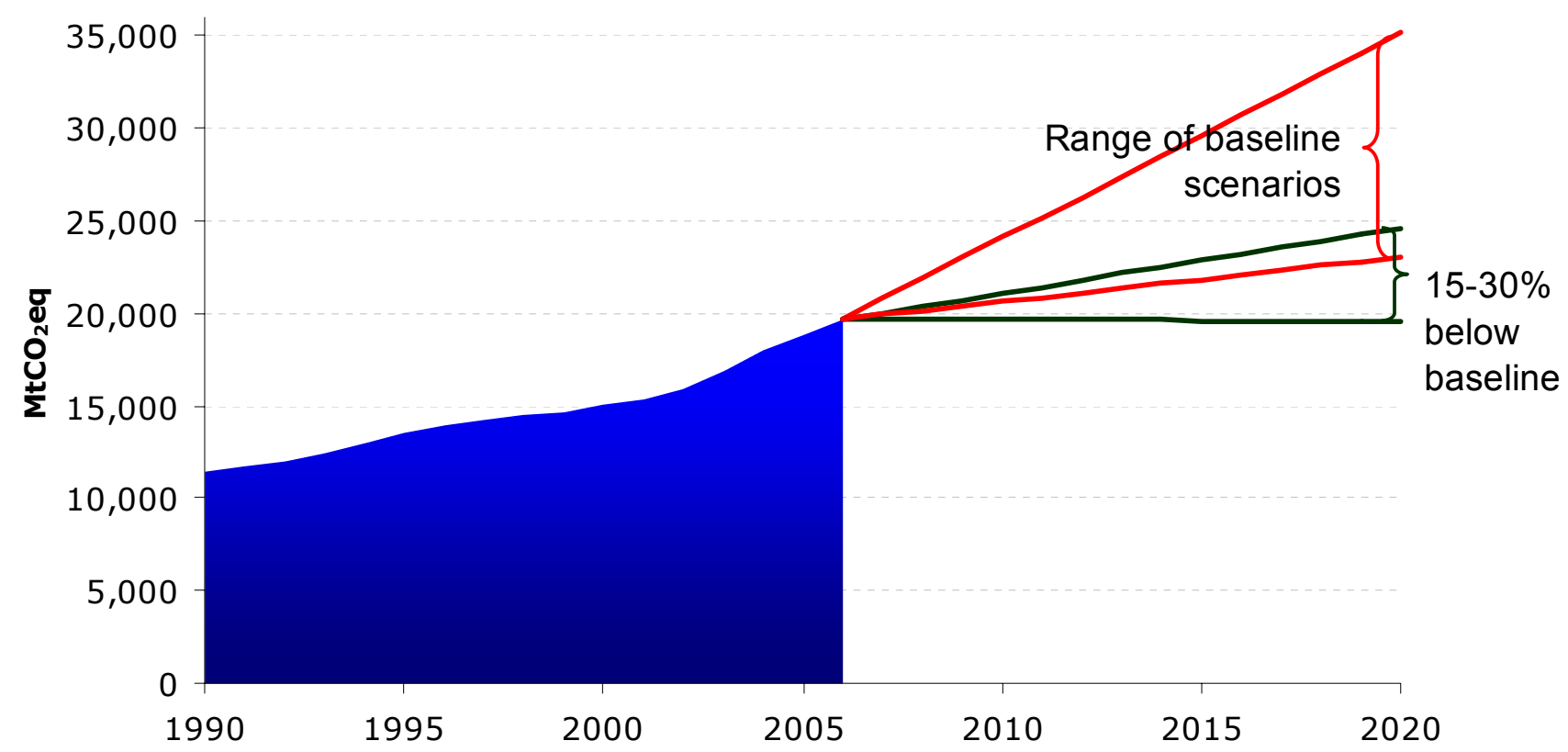
-15% to -30%
below baseline in 2020

Source: den Elzen and Höhne 2008, "Reductions of greenhouse gas emissions in Annex I and non-Annex I countries for meeting concentration stabilisation targets", Climatic Change (2008) 91:249–274

Developing country emissions



Developing country emissions



Necessary change in 2020

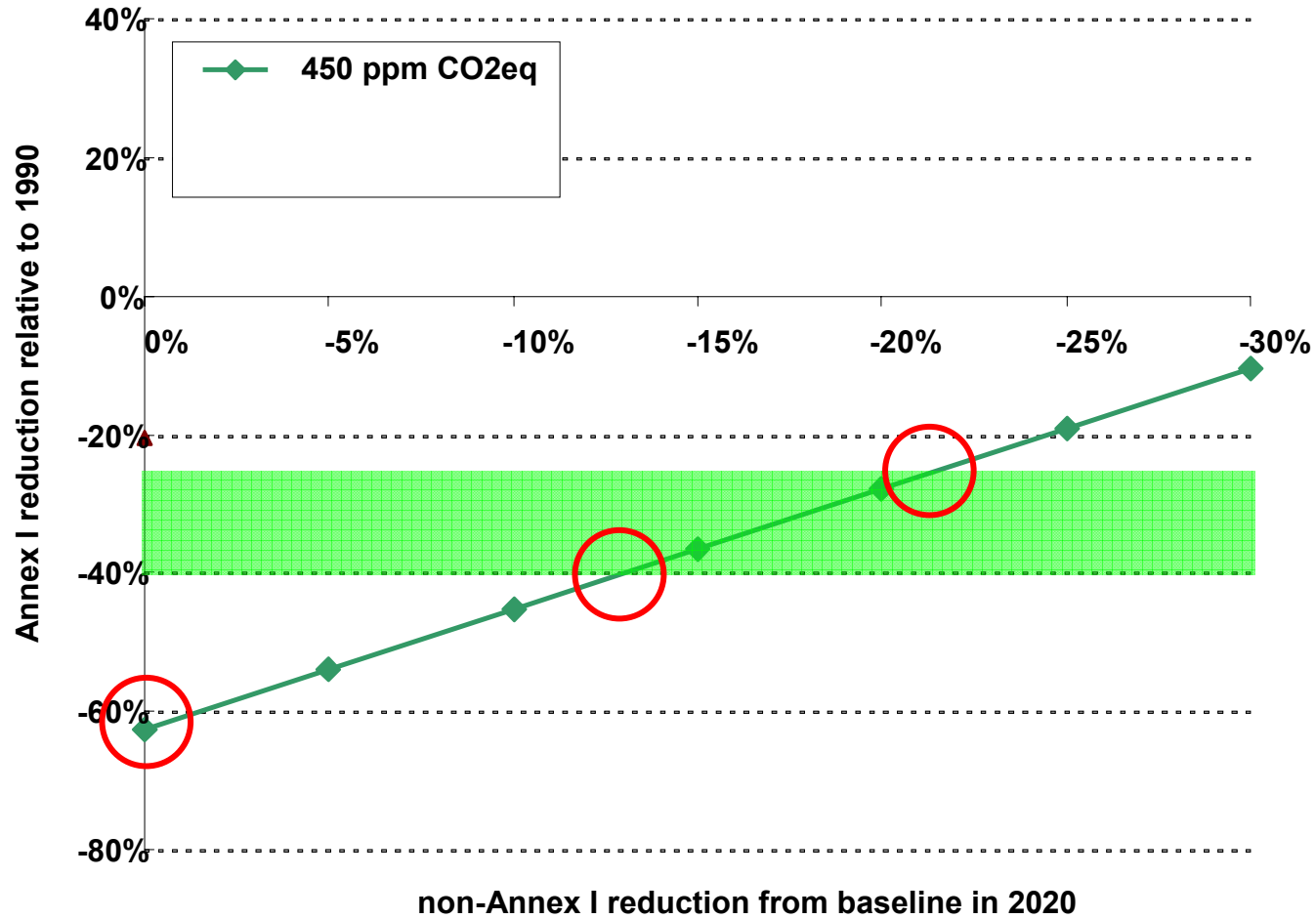
Scenario category	Annex I	Non-Annex I
A-450 ppm CO ₂ -eq	-25% to -40% below 1990	<ul style="list-style-type: none"> Substantial deviation from baseline in Latin America, Middle East, East Asia and Centrally-Planned Asia Non-Annex I: -15% to -30% below baseline
B-550 ppm CO ₂ -eq	-10% to -30% below 1990	<ul style="list-style-type: none"> Deviation from baseline in Latin America and Middle East, East Asia Non-Annex I: 0% to -20% below baseline
C-650 ppm CO ₂ -eq	0% to -25% below 1990	<ul style="list-style-type: none"> Non-Annex I: 10% above to 10% below baseline

Source: IPCC Fourth Assessment Report, Working Group III, Box 13.7 and Den Elzen, Höhne: "Reductions of greenhouse gas emissions in Annex I and non-Annex I countries for meeting concentration stabilisation targets", *Climatic Change*

Content

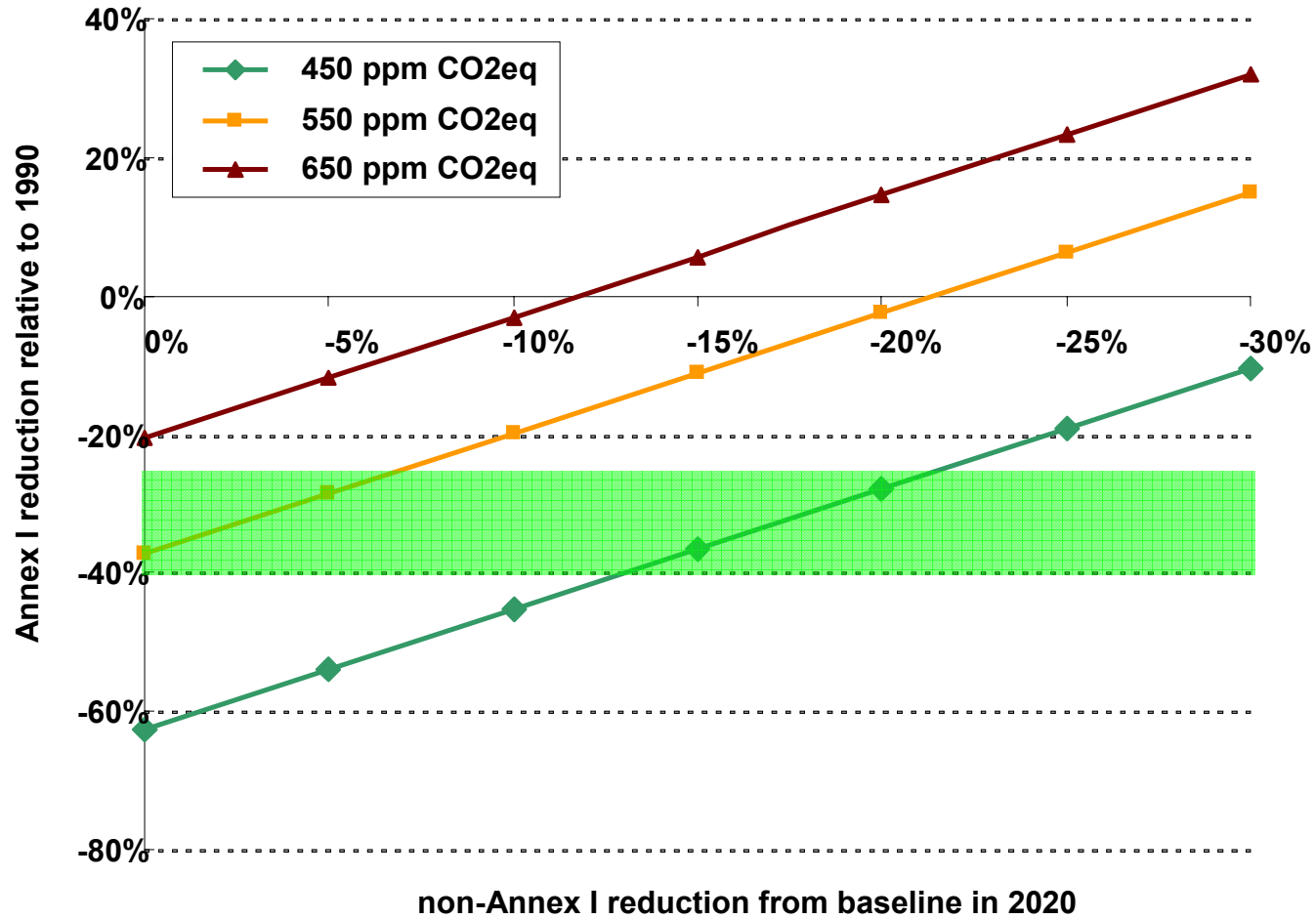
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1. Assessment of available studies (as for IPCC AR4)
 - 2. Sensitivity of the impact of major determinants using one model**

Annex I and Non-Annex I reductions



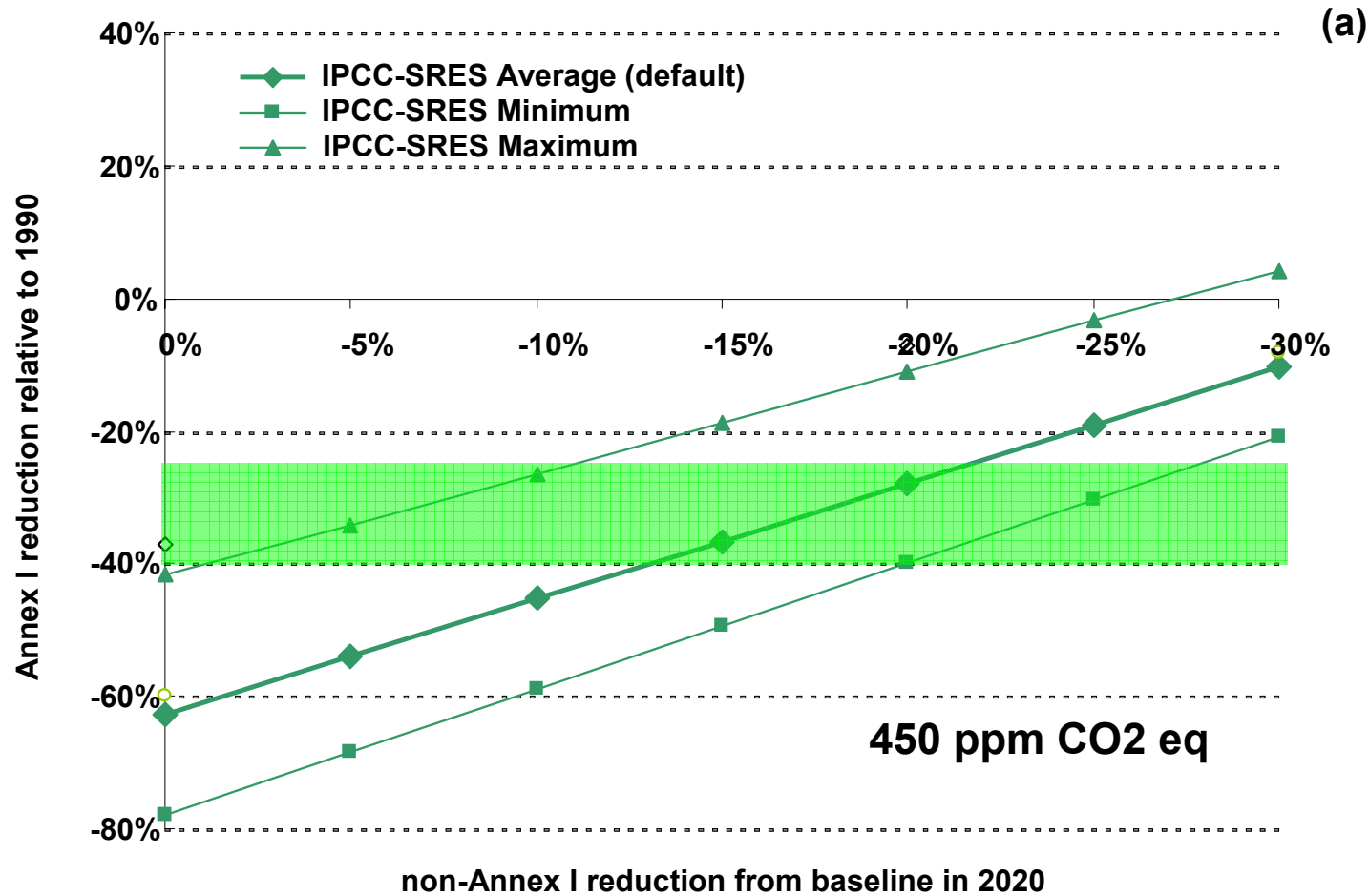
Source: den Elzen and Höhne 2008, "Reductions of greenhouse gas emissions in Annex I and non-Annex I countries for meeting concentration stabilisation targets", Climatic Change (2008) 91:249–274

Annex I and Non-Annex I reductions



Source: den Elzen and Höhne 2008, "Reductions of greenhouse gas emissions in Annex I and non-Annex I countries for meeting concentration stabilisation targets", Climatic Change (2008) 91:249–274

Impact of different baselines



Source: den Elzen and Höhne 2008, "Reductions of greenhouse gas emissions in Annex I and non-Annex I countries for meeting concentration stabilisation targets", Climatic Change (2008) 91:249–274

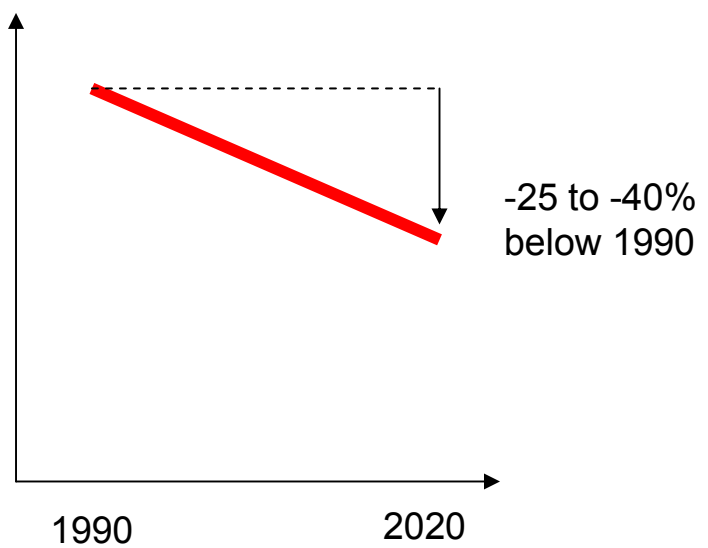
Conclusions

- IPCC:
 - -25% to -40% and “substantial deviation from baseline”
- Den Elzen & Höhne (same authors, same and additional data):
 - “substantial deviation from baseline” would be -15% to -30% below baseline for the group of Non-Annex I countries
 - still an absolute increase above today’s level
- Major determinants covered in these ranges for 2020
 - Baseline
 - Effort sharing principles
 - Global emission level in 2020 leading stabilization of concentrations
 - Treatment of deforestation

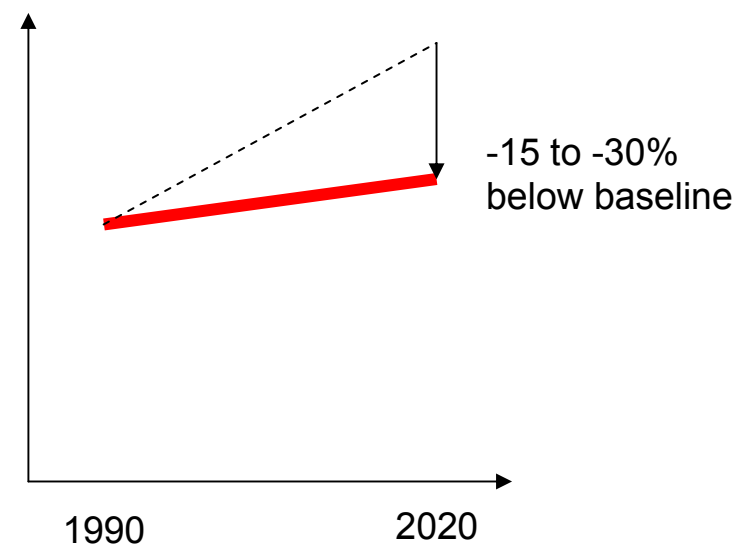
Backup slides

Changing emissions

Annex I



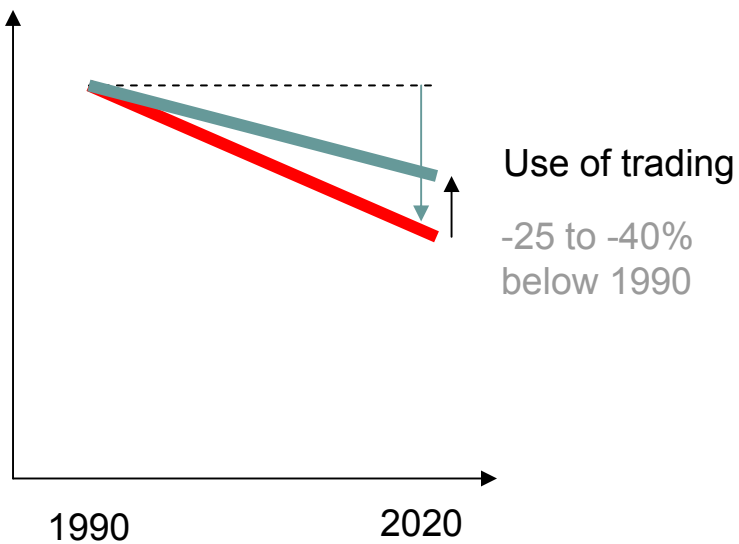
Non-Annex I



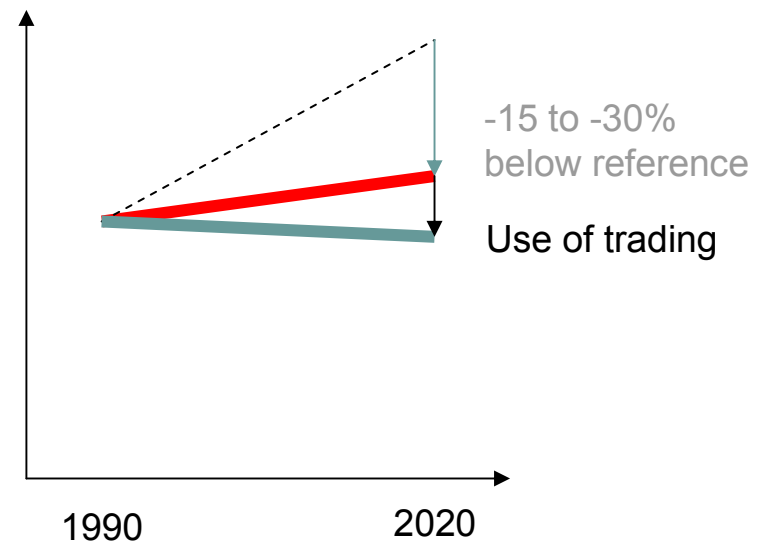
Data source: IPCC AR4 WG3, box 13.7 and den Elzen and Höhne 2008, "Reductions of greenhouse gas emissions in Annex I and non-Annex I countries for meeting concentration stabilisation targets", Climatic Change (2008) 91:249–274

With/without trading – no double counting

Annex I

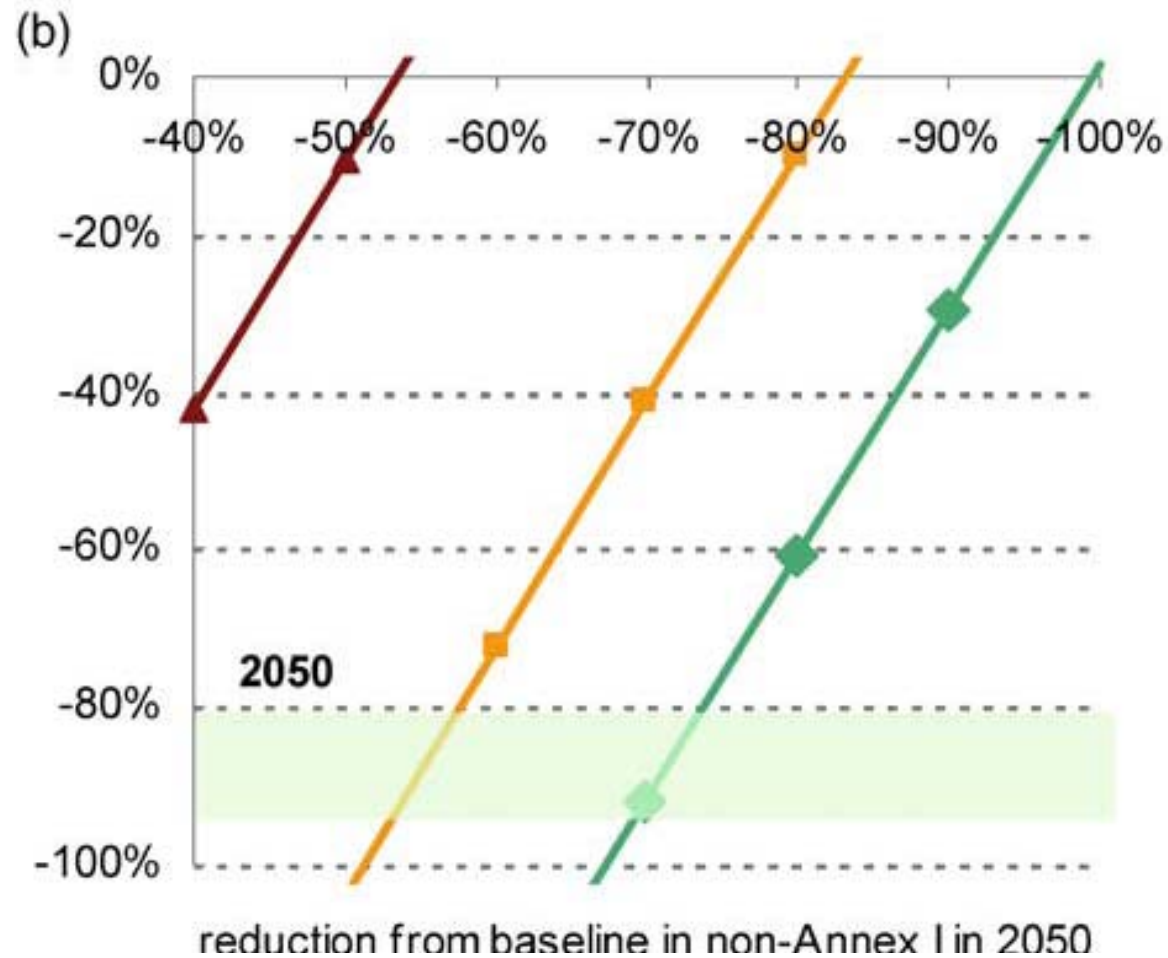


Non-Annex I



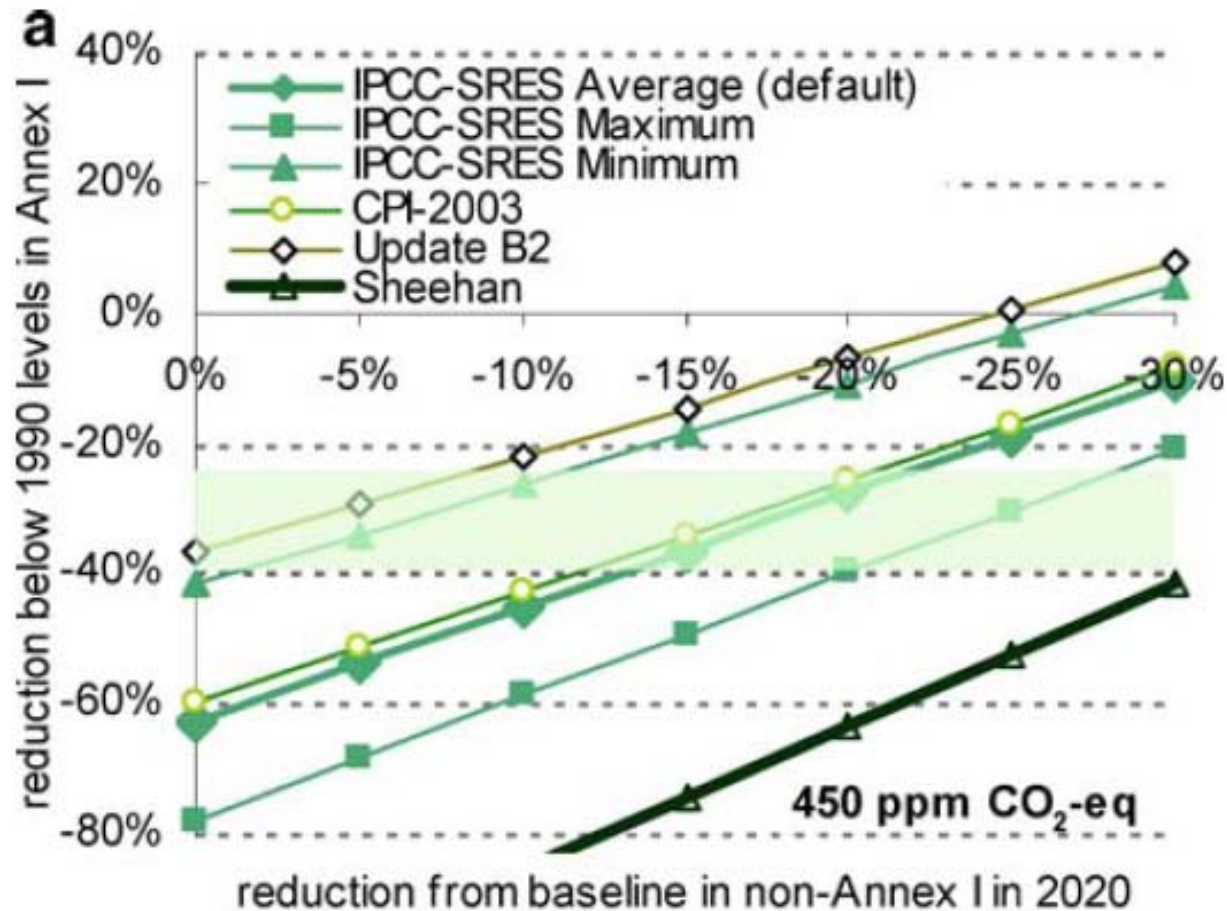
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Annex I and Non-Annex I reductions



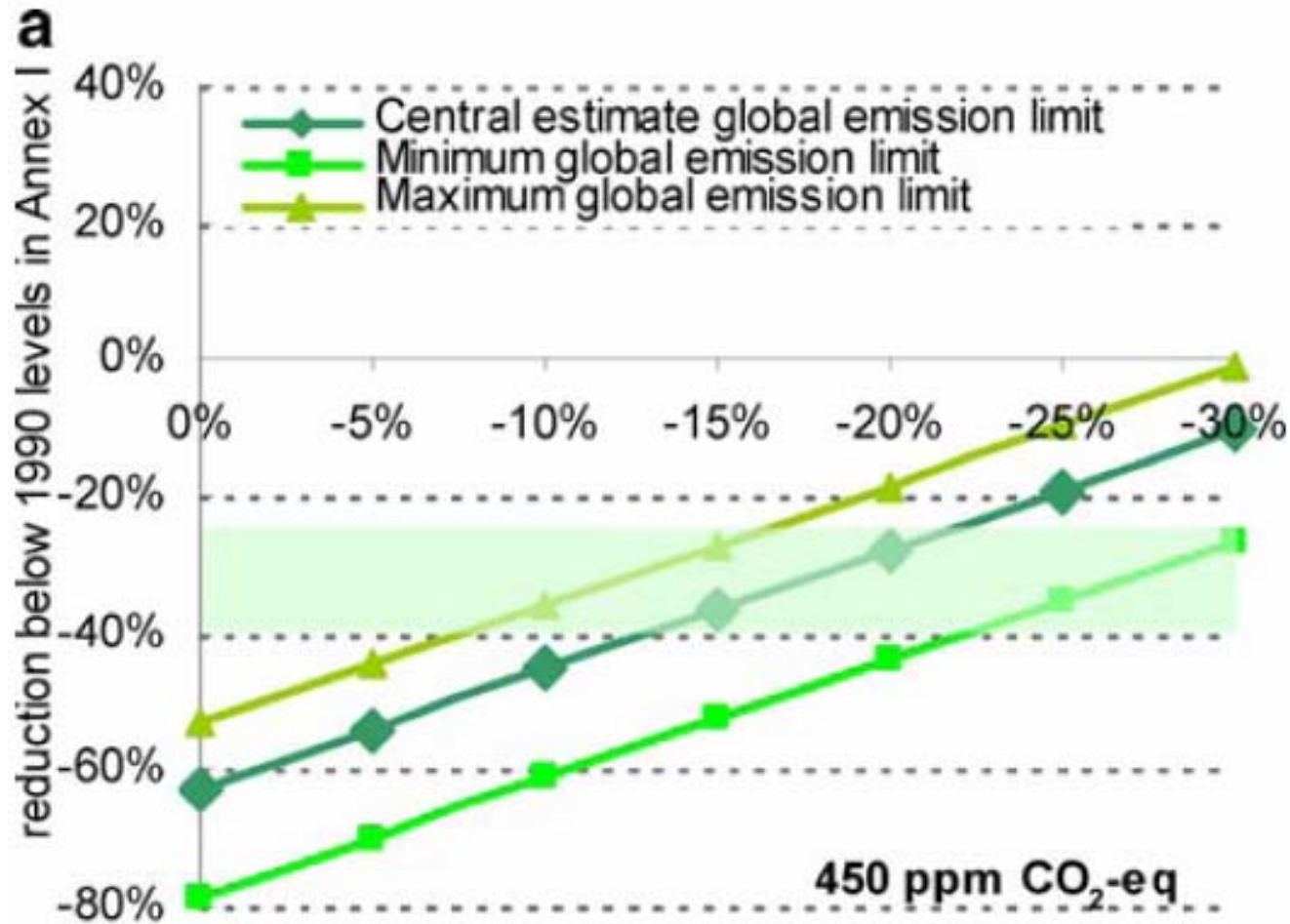
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Impact of different baselines



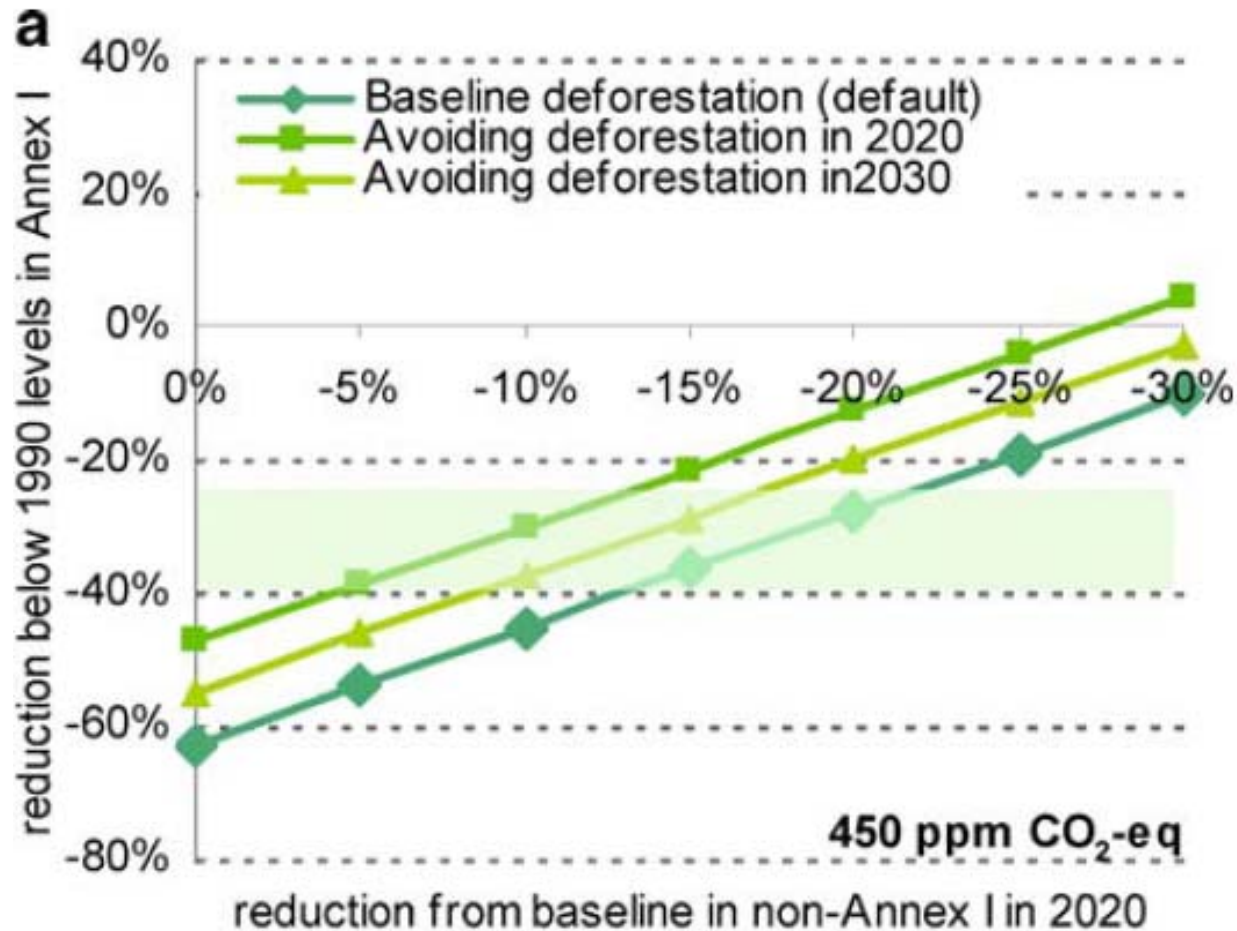
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Impact of different global emission levels



Source: den Elzen and Höhne 2008, "Reductions of greenhouse gas emissions in Annex I and non-Annex I countries for meeting concentration stabilisation targets", Climatic Change (2008) 91:249–274

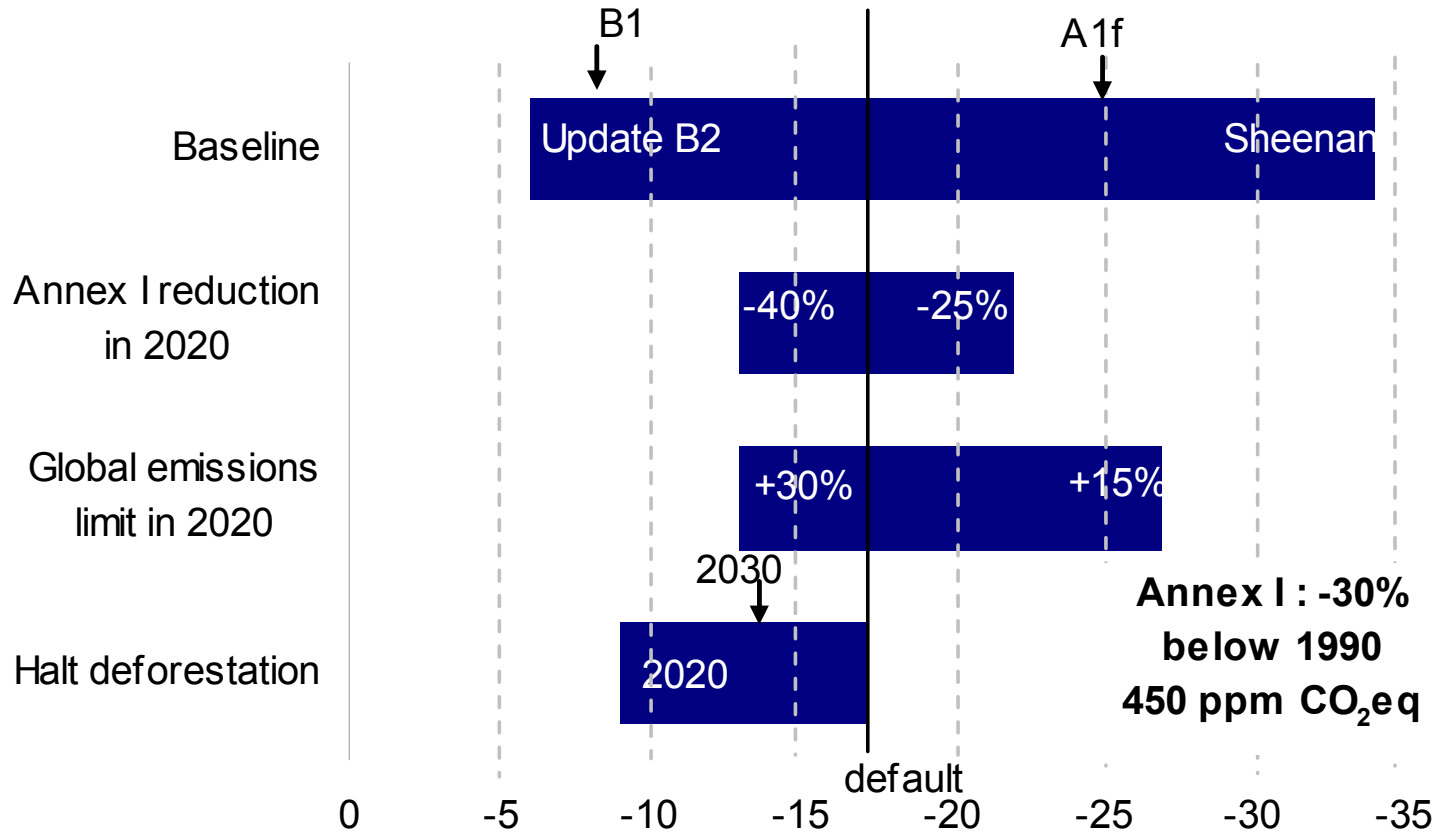
Impact of deforestation assumptions



Source: den Elzen and Höhne 2008, "Reductions of greenhouse gas emissions in Annex I and non-Annex I countries for meeting concentration stabilisation targets", Climatic Change (2008) 91:249–274

Factors influencing the -15% to -30% below BAU

Reduction of the non-Annex I compared to the baseline



Source: den Elzen and Höhne 2008, "Reductions of greenhouse gas emissions in Annex I and non-Annex I countries for meeting concentration stabilisation targets", Climatic Change (2008) 91:249–274