WMO

UNEP

Kyoto and beyond

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Wellington

The Kyoto Protocol

Post Marrakesh Developments

Kyoto Protocol yet to enter into force

- **Australia Withdraws**
- **Russia (17.4%) yet to decide**

104 ratifications (43.9%)

including EU, Japan and Canada

Likely outcome

Mt c/yr.

Total Annex I reductions under KP	: 607.9	"Hot air":	92.4
Less: USA	: 423.9	Forestry Management :	70.5
Less: Australia	: 21.7		-----
	--------		162.9
	162.3	.	

Targets can be achieved on basis of "hot air" trade and "forestry management" credits alone.

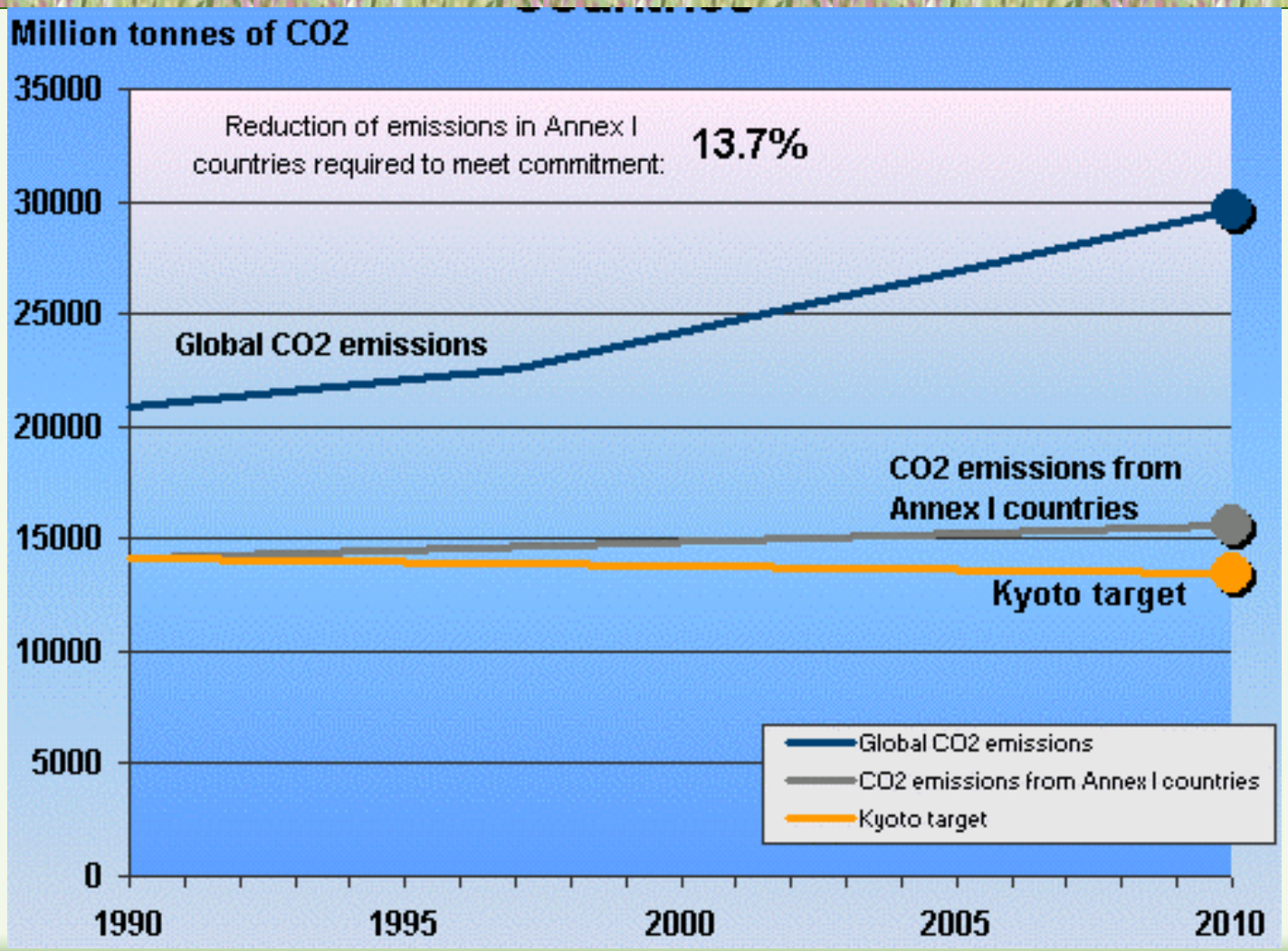
However, in practice:

- EU and some other countries will implement domestic action plans;
- There will be some demand for CDM credits

Impacts of Kyoto Protocol

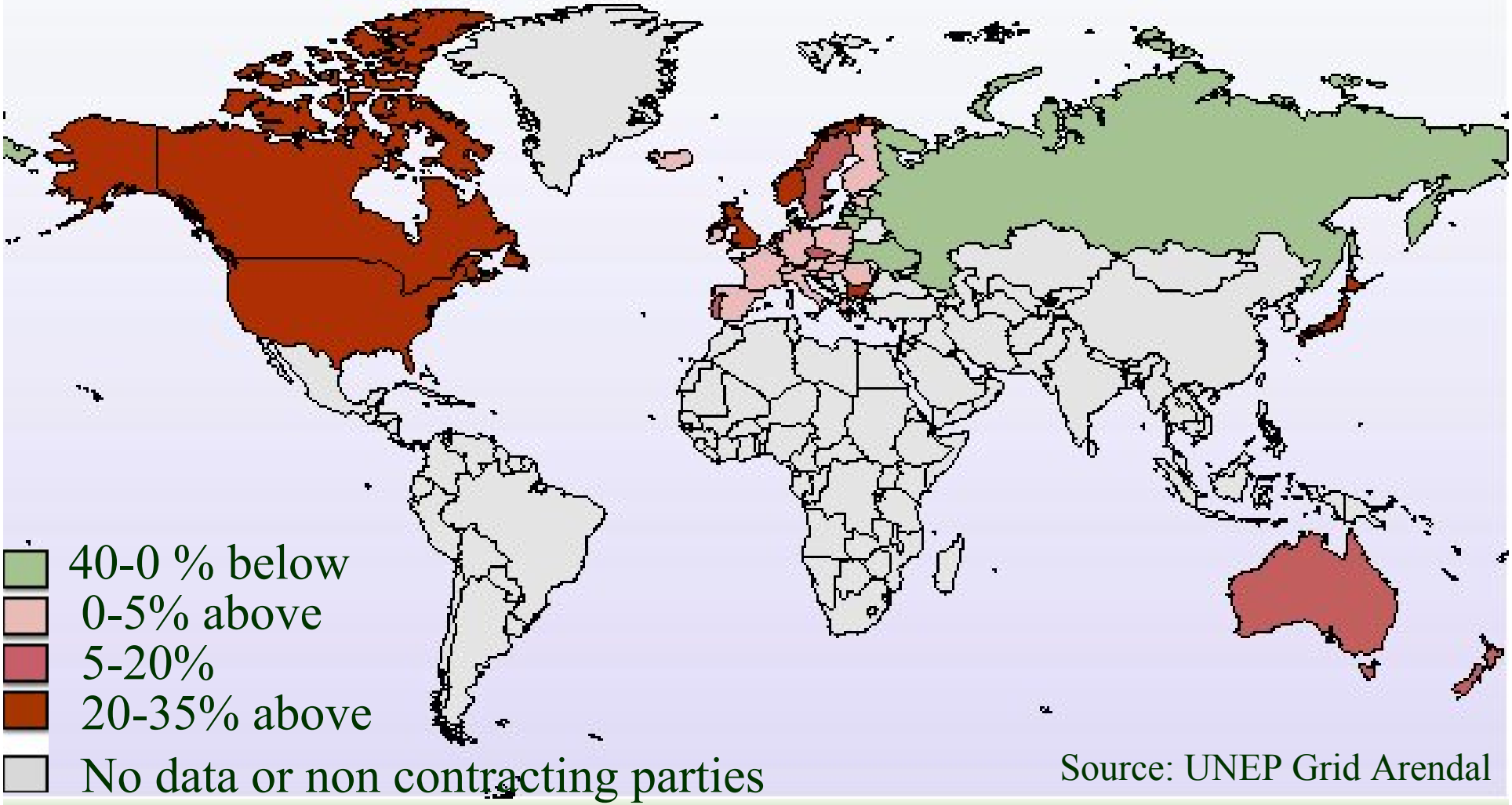
- Modest prospects of emissions reductions from Annex B Parties.
- Overall increase in emissions from developed countries (taking into account US & Australia emissions)
- Modest short-term prospects for CDM. CDM - TYPE Projects may hold out greater hope, depending upon US domestic legislation.
- K.P. may stimulate technology breakthrough for reducing GHG emissions.

Meeting the Kyoto Target



Source: UNEP, GRID Arendal

Difference between the projected and targeted emissions 2010



Is redemption at hand?

'Significant technical Progress relevant to GHG emissions reduction has been made since the SAR and has been faster than anticipated'

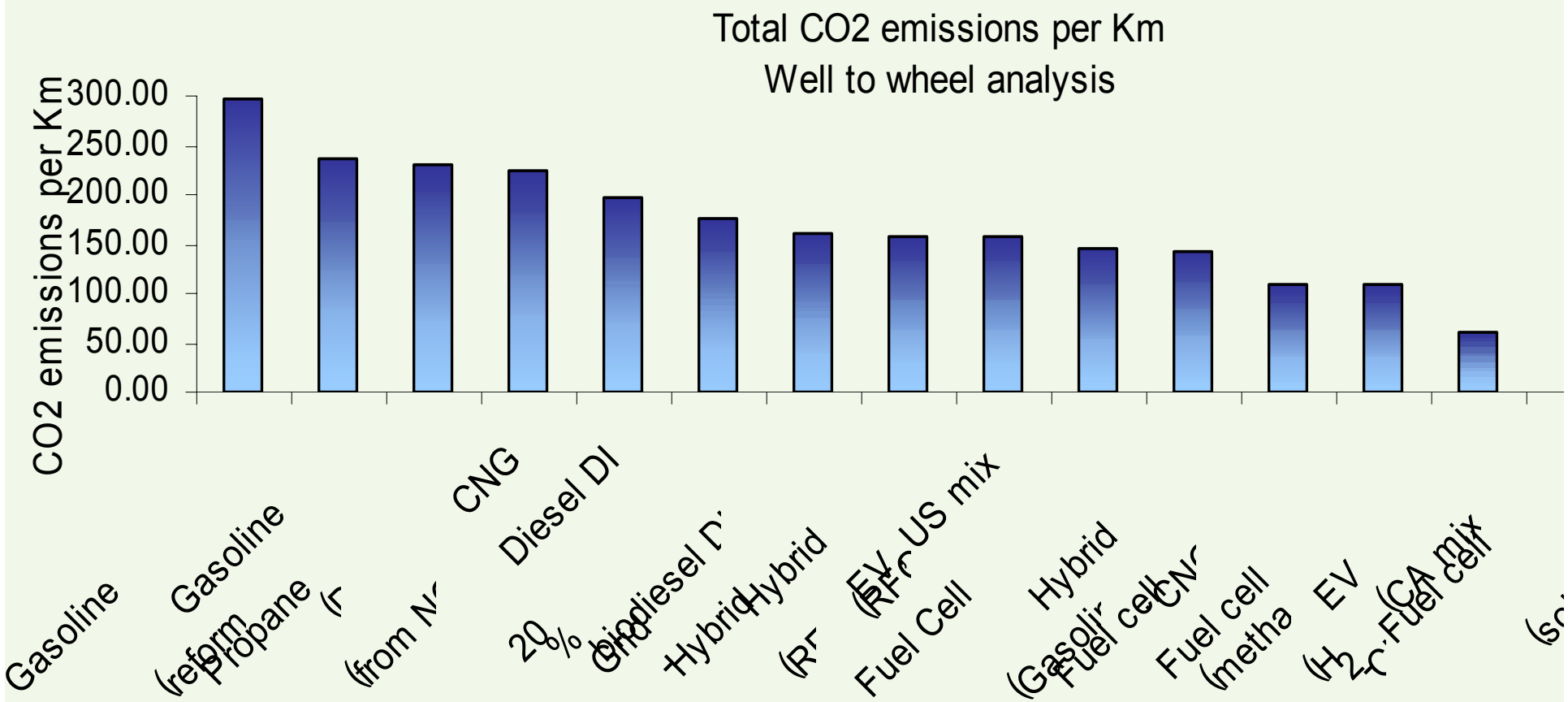
IPCC Third Assessment Report

Promising technologies

The potential areas identified in the TAR for GHG emissions reduction in 2010 to 2020 timeframe are

- Enhancing end use energy efficiency in buildings, transport and manufacturing industries
- Greater use of natural gas along with efficient technologies - Combined cycle and co gen plants
- Development of RETs- energy from biomass, waste, landfill methane, increasing share of hydro
- Reducing emissions of HFCs and PFCs through process changes, improved recycling, recovery and containment

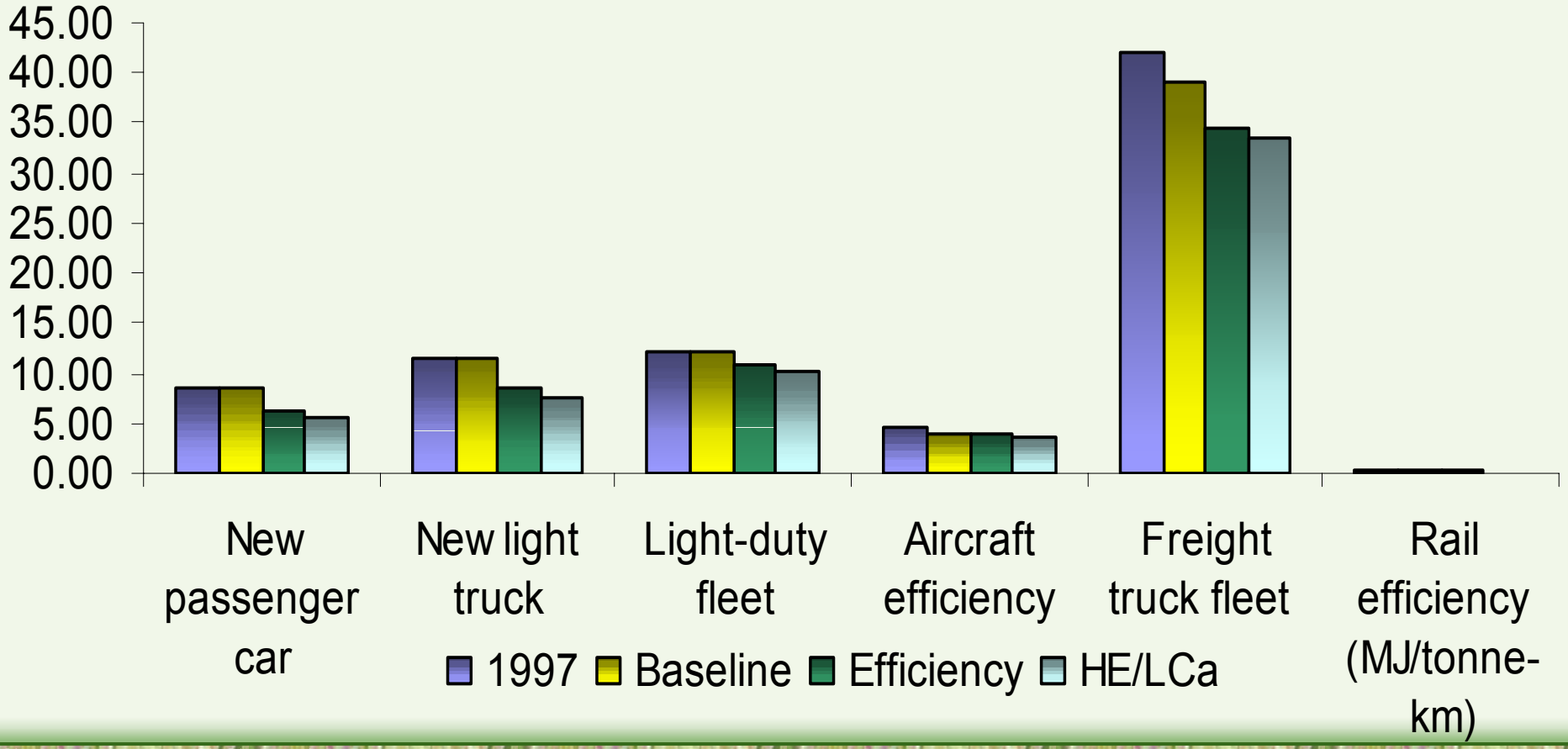
GHG abatement potential of fuel cells



Source: IPCC, TAR

- Recent study reported in the TAR shows significant potential in carbon intensity reduction (by 12% in 2010) in the transport sector
  - The technology potential for carbon emissions reduction in the US transport sector is 40-70 million tons of carbon by 2010

Projected transport efficiencies

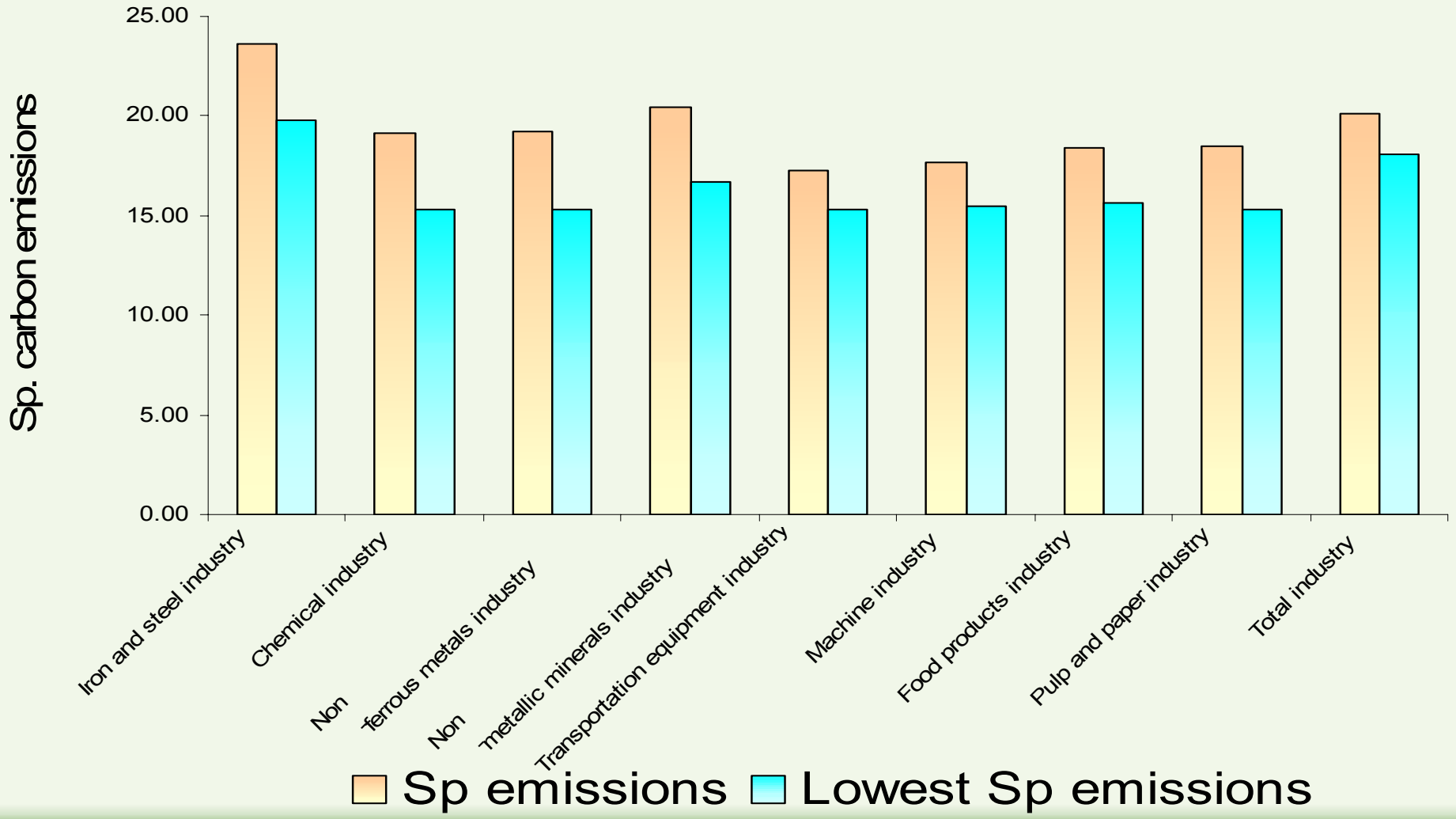


Source: IPCC, TAR

- Investing in the development of renewable technologies such as Solar PVs
  - Improving conversion efficiency particularly for thin film technologies
  - Energy Storage
- Fuel switching in the manufacturing industry

  When compared to the lowest carbon emissions there exists scope for reduction in average specific carbon emissions

Potential reductions in manufacturing industries



Source: IPCC, TAR

Inertia of the climate system

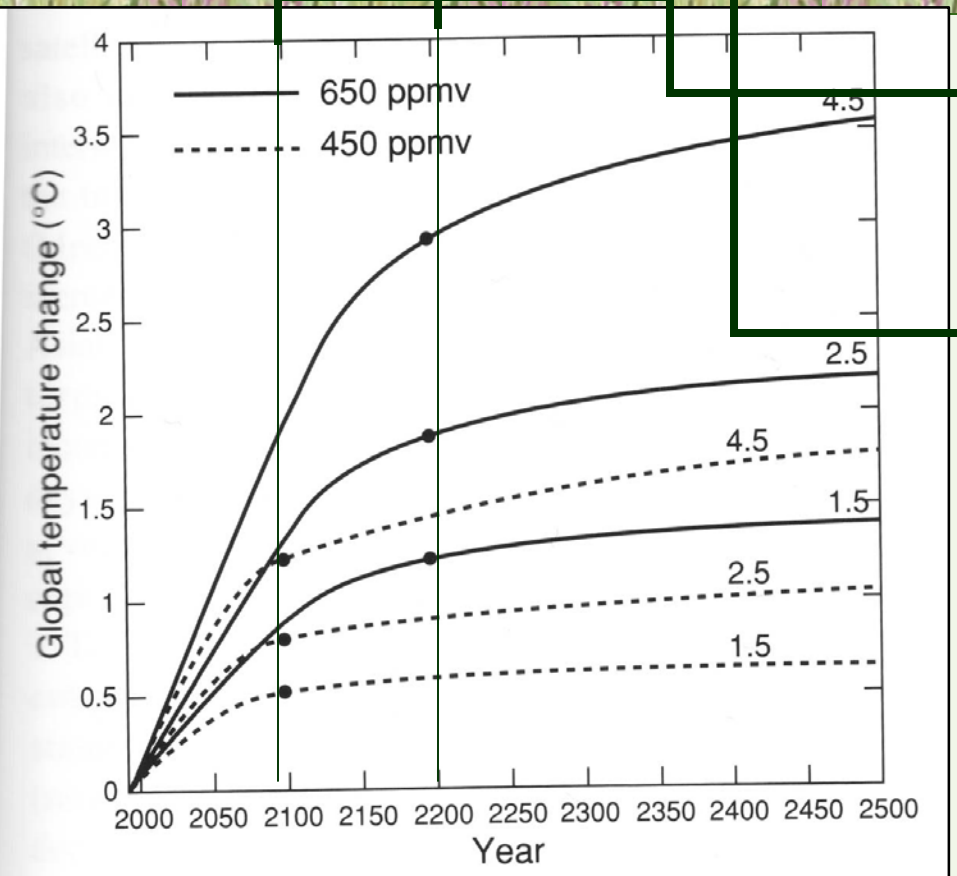


Figure 6.26: Temperature changes for different climate sensitivities ($\Delta T_{2\times}$ = 1.5, 2.5 and 4.5°C) for CO_2 concentration profiles stabilising at 450 ppmv (dashed lines) in 2100 and 650 ppmv (full lines) in 2200. Stabilisation dates are indicated by the

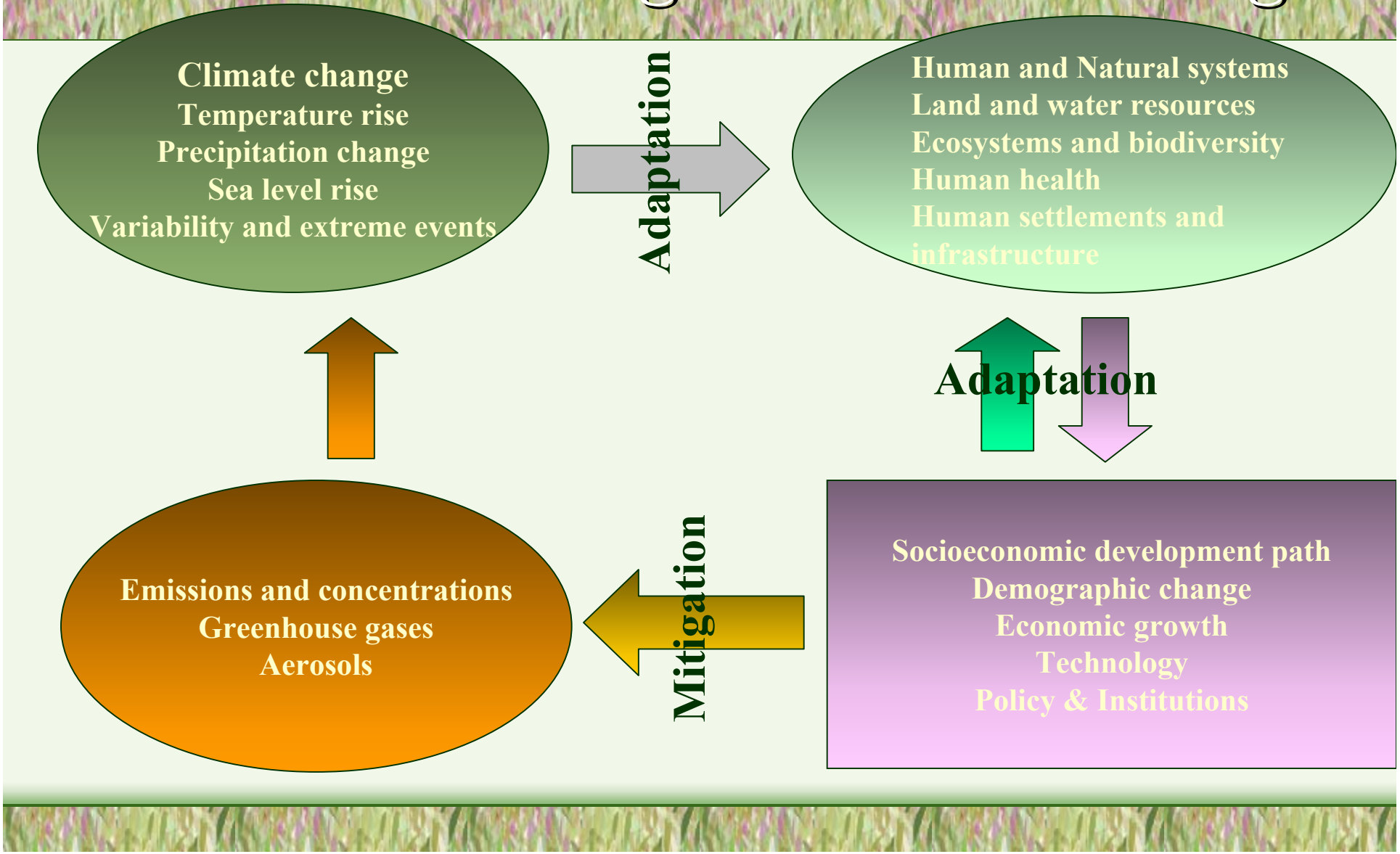
Conc. stabilization at 450ppmv

Conc. stabilization at 650 ppmv

- Reduction of GHG and even stabilization of conc. at a low level will not altogether prevent their impacts
- There are preliminary indications that some human systems have been affected by recent increases in floods and droughts.
- The rising socio-economic costs related to weather damage and to regional variations in climate suggest increasing vulnerability to climate change

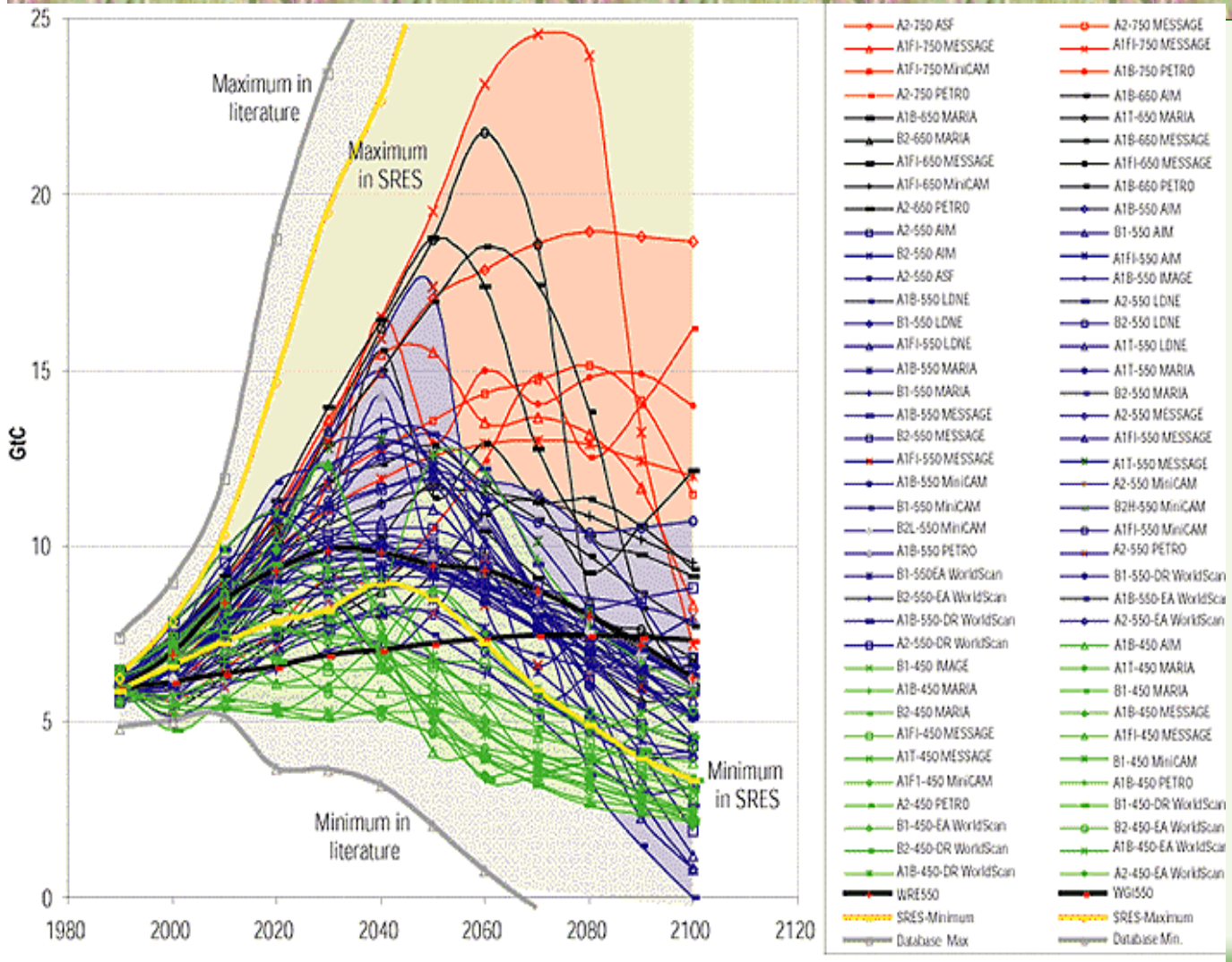
Adaptation is a necessary strategy at all scales to complement climate change mitigation efforts.

Adopting an integrated approach in dealing with climate change



Looking beyond the first commitment period

Alternate stabilization targets



Red -750 ppm

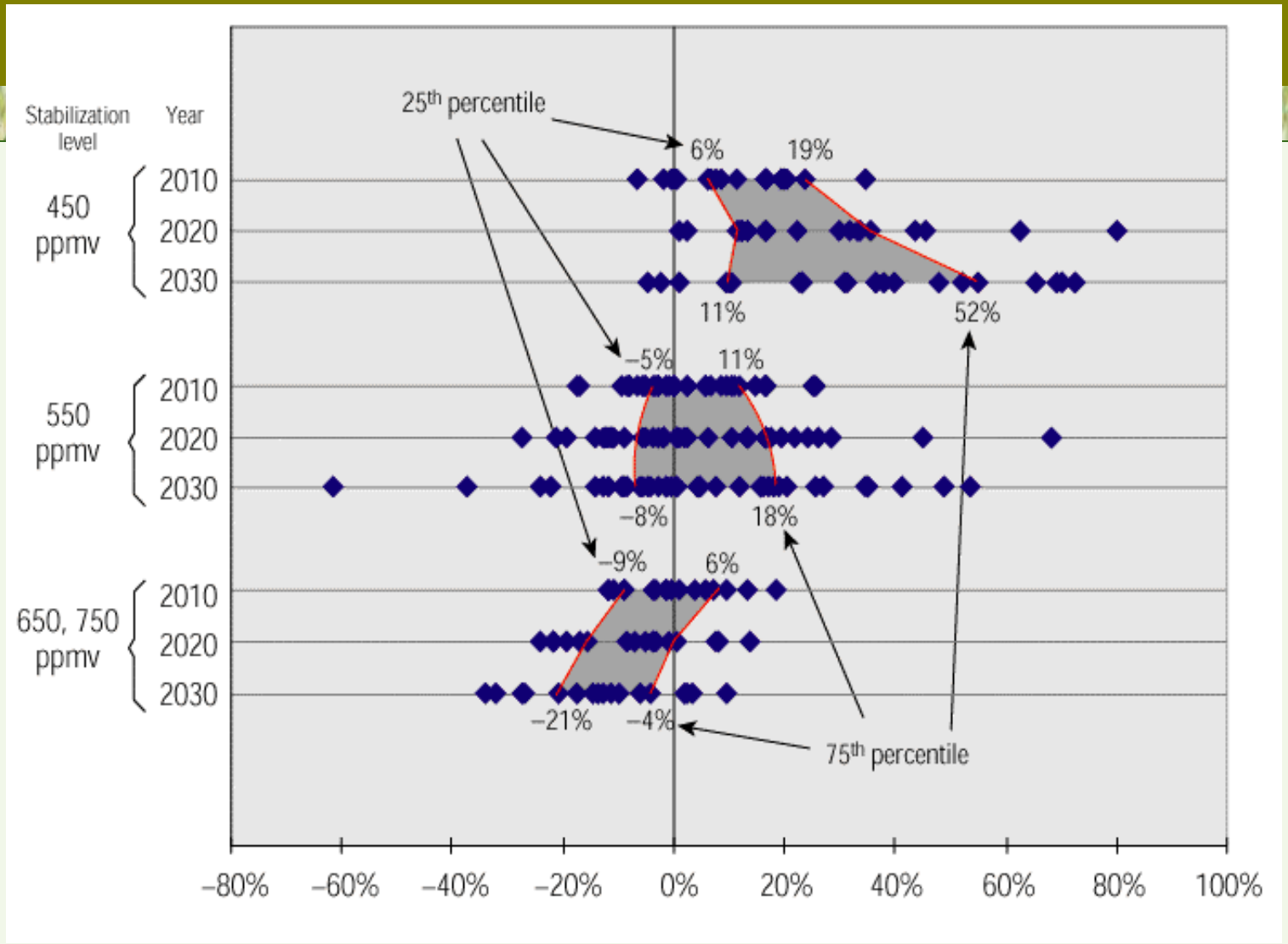
Black - 650 ppm

Blue - 550 ppm

Green- 450 ppm

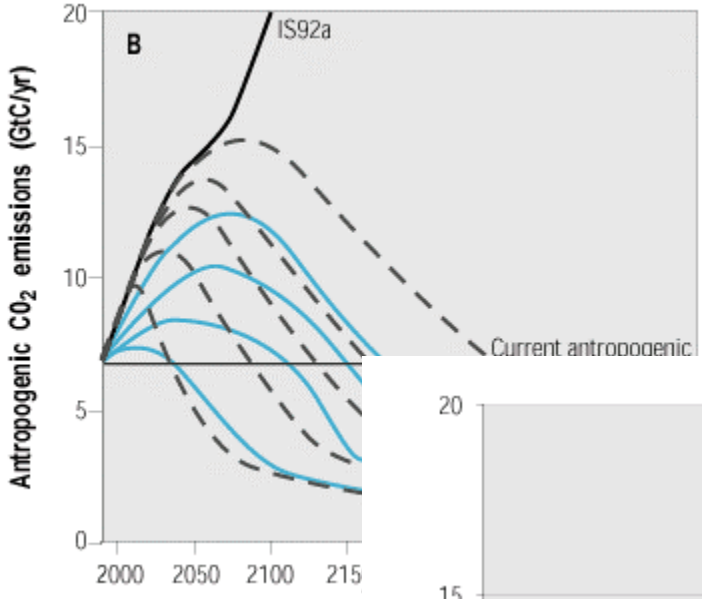
IPCC TAR, WGIII

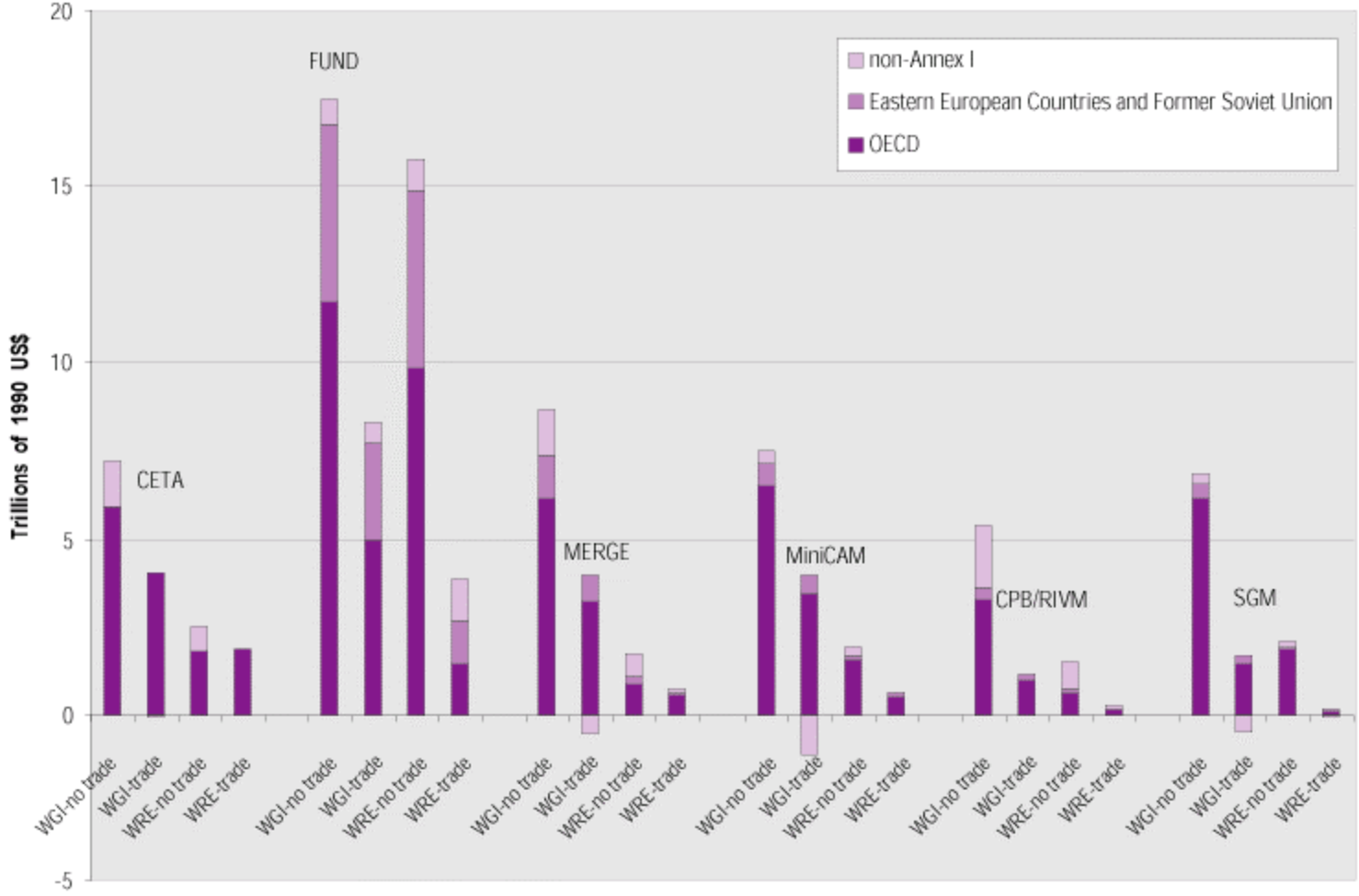
What kinds of emissions reduction would be required in the medium term to achieve the various stabilization targets ?



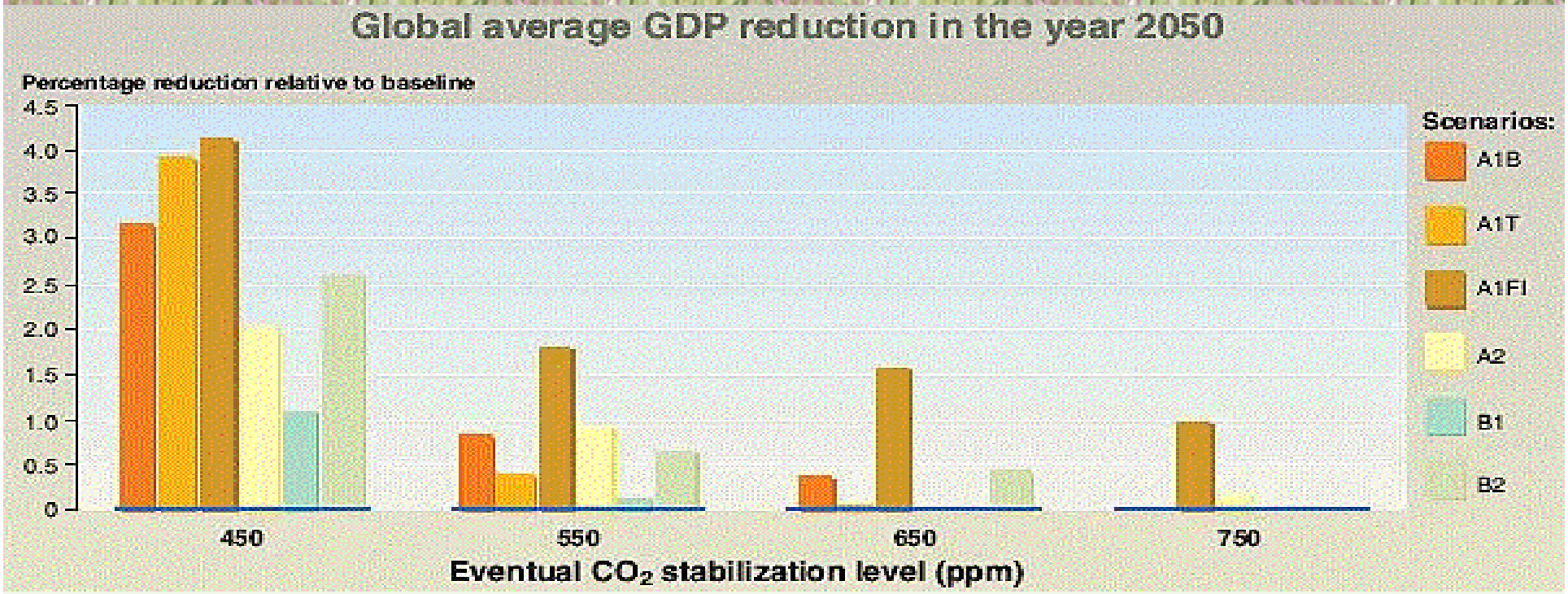
IPCC TAR, WGIII

Cost of stabilization routes





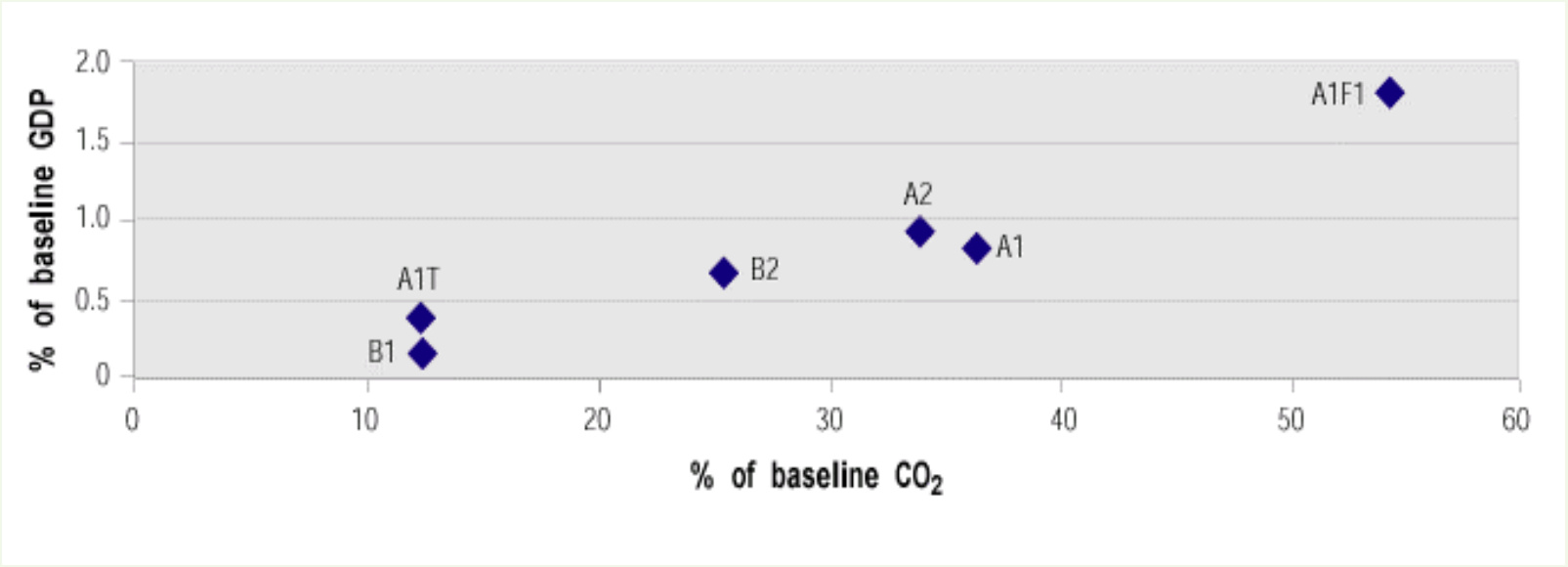
IPCC TAR, WGIII



- Rapid rise in costs of mitigation when moving from 550 ppm regime to 450 ppm

IPCC TAR, Syn R

Cost of stabilizing



The costs are sensitive to the choice of the baseline scenarios

IPCC TAR, WGIII

What constitutes dangerous interference with climate system ?

Responses to climate change

- Climate thresholds are complicated and levels of confidence to establish them vary with systems
- On exceeding climate thresholds, potentially damaging things may occur - these responses may be nonlinear, complex or discontinuous

But it may be said

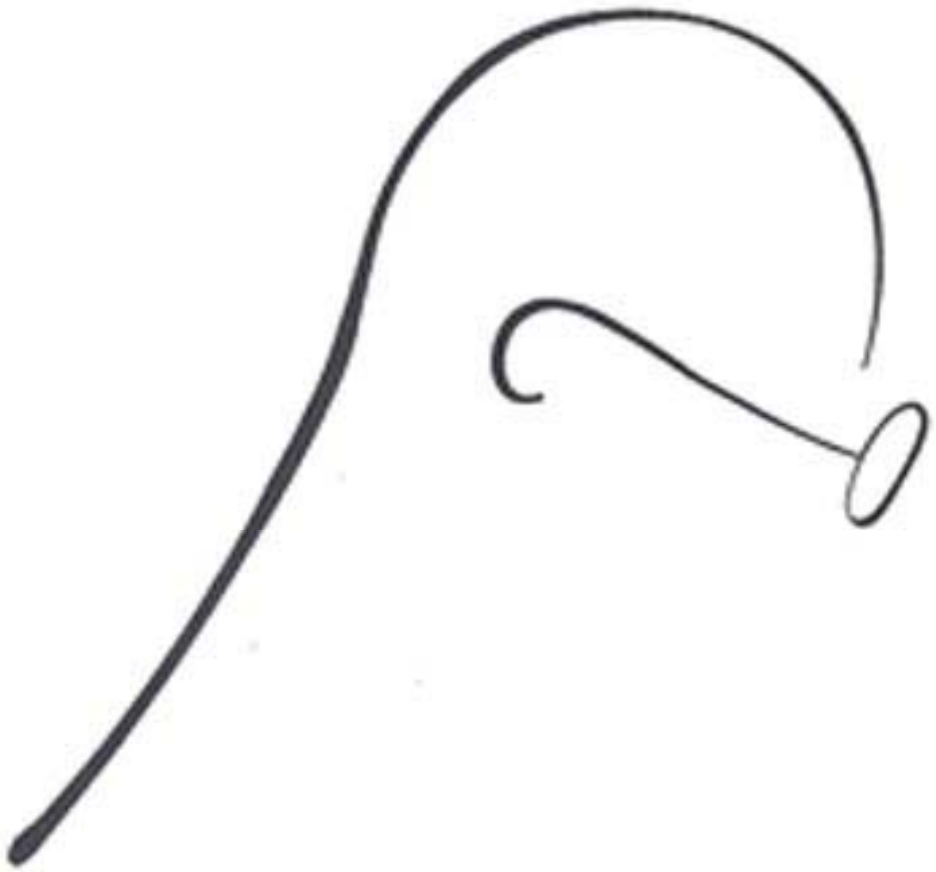
- Reducing emissions of GHGs to stabilize their atmospheric concentration would delay and reduce damages caused by climate change
  - GHG emissions reduction (mitigation) actions would lessen the pressures on natural and human systems from climate change
  - Mitigation actions to stabilize concentrations at lower levels generate greater benefits in terms of less damage

The role of IPCC- AR4

- Provide an integrated assessment of the status of scientific knowledge -addressing cross cutting issues by adopting specific themes for AR4

- Effort would be made to make it more 'policy relevant' by attempting to provide the public with
  - better regional scale assessment -focussing on regional concerns
  - quantification of uncertainties and
  - assessment of the link between climate change and development
  - risk management -options for hedging risks?

- This round of assessment would also focus on integrated approaches to adaptation and mitigation in minimising climate related damages
- Focus on developing countries
  - —Inspire further research
  - —involve experts as lead authors
- Provide adequate coverage on socio-economic analysis of actions (adaptation and /or mitigation) Vs inaction and co benefits at a regional level



Man did not weave the web of life; he is merely a strand in it.
Whatever he does to the web of life, he does to himself