

**Workshop on GHG Stabilization Scenarios
Tsukuba, Japan on January 22-23, 2004**

Introduction and Objectives

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What IPCC SRES and
Post SRES have done.

IPCC Scenario Development

Long-term Development Scenarios



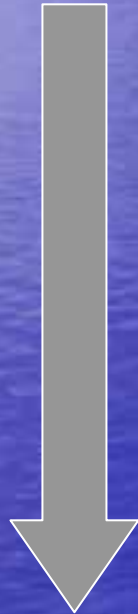
GHG emission scenarios (SRES)



Climate change scenarios



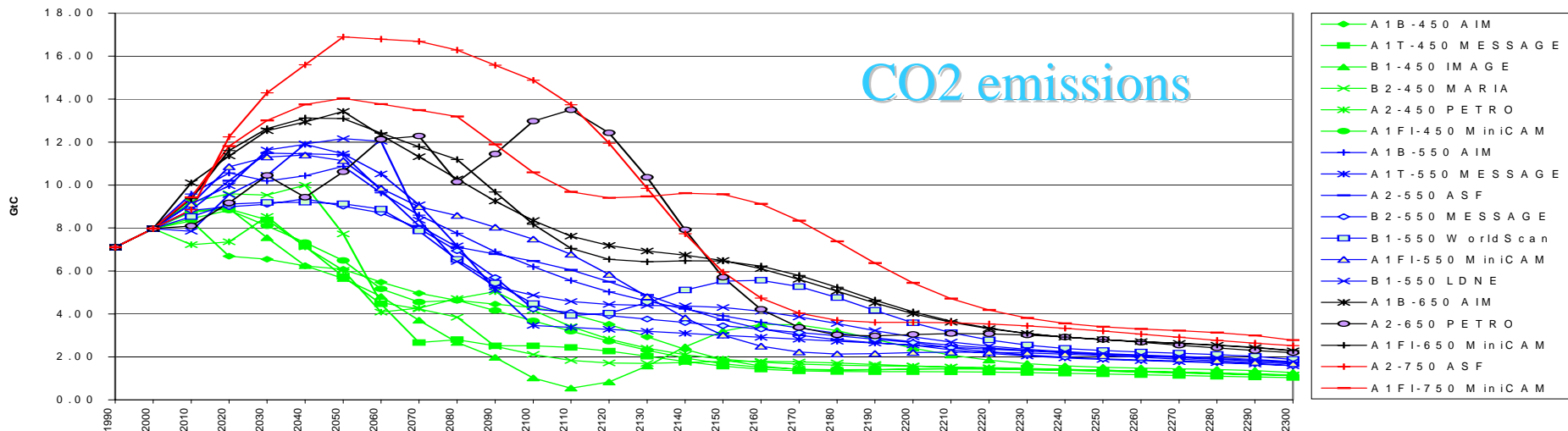
Climate Impacts scenarios



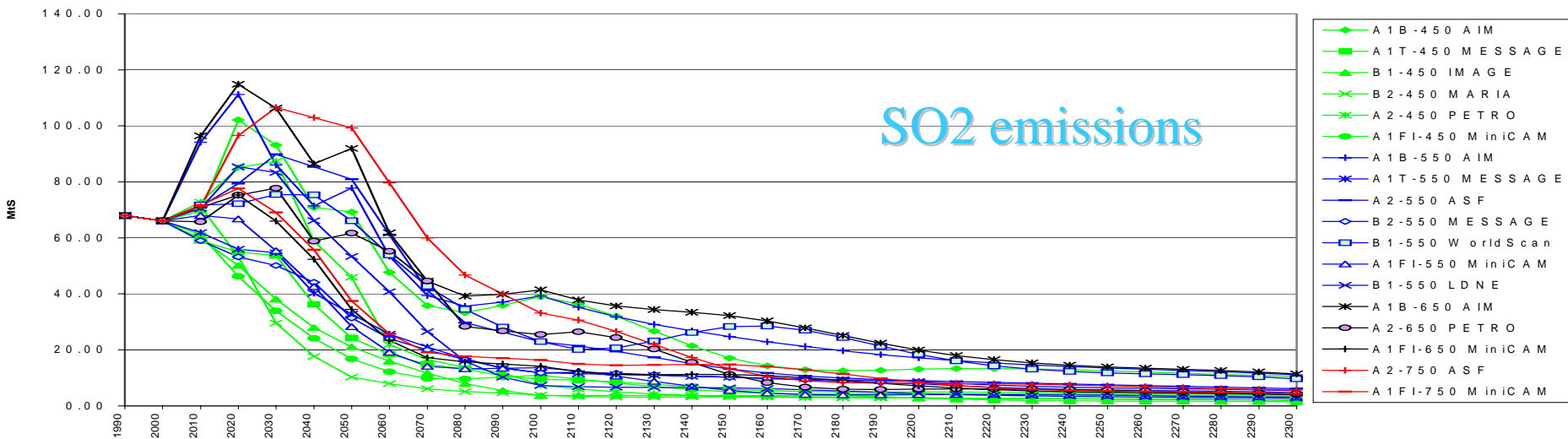
Stabilization scenarios (Post-SRES)

Long-term mitigation scenarios

CO₂ Emissions



SO₂ Emissions



Lesson 1

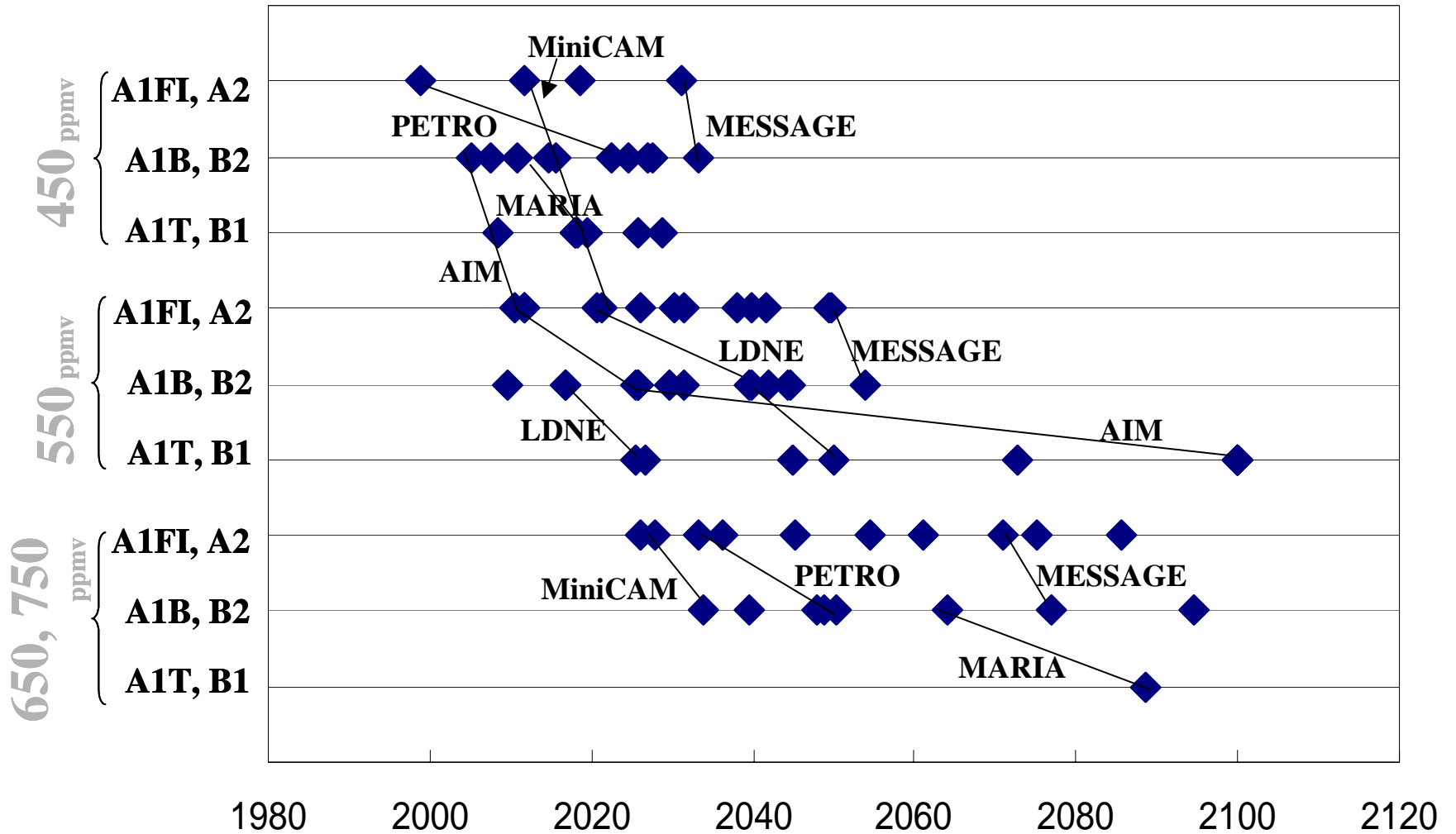
- *Appropriate technology/policy options are different among the development paths and stabilization levels.*
- *However, robust technology/policy options can be found across the different paths as well as stabilization levels.*

Appropriate Policy/Technology Options are different among the Development Paths and Stabilization levels. However, Robust Technology Options can be found across them

- Large and continuous **energy efficiency improvements** and **afforestation** are common features.
- Introduction of **low-carbon energy** is also common, especially **biomass energy introduction** over the next one hundred years as well as **natural gas introduction** in the first half of the 21st century.
- Several robust technologies have to be considered for future innovations: including **gas combined-cycle technology**, **hydrogen fuel cells**, **solar photovoltaics**, **biomass integrated gasification power plants**, **high temperature fuel cells** (mainly using gas) in combination with carbon removal and storage, **steam reforming of energy gases** into hydrogen and carbon dioxide

Lesson 2

- *The timing of reductions is dependent on future development paths and stabilization levels.*
- *High emission path as well as low stabilization level require early reduction.*
- *Most scenarios for a stabilization level of 550ppmv or lower need a 20% reduction from the global baseline by 2030.*

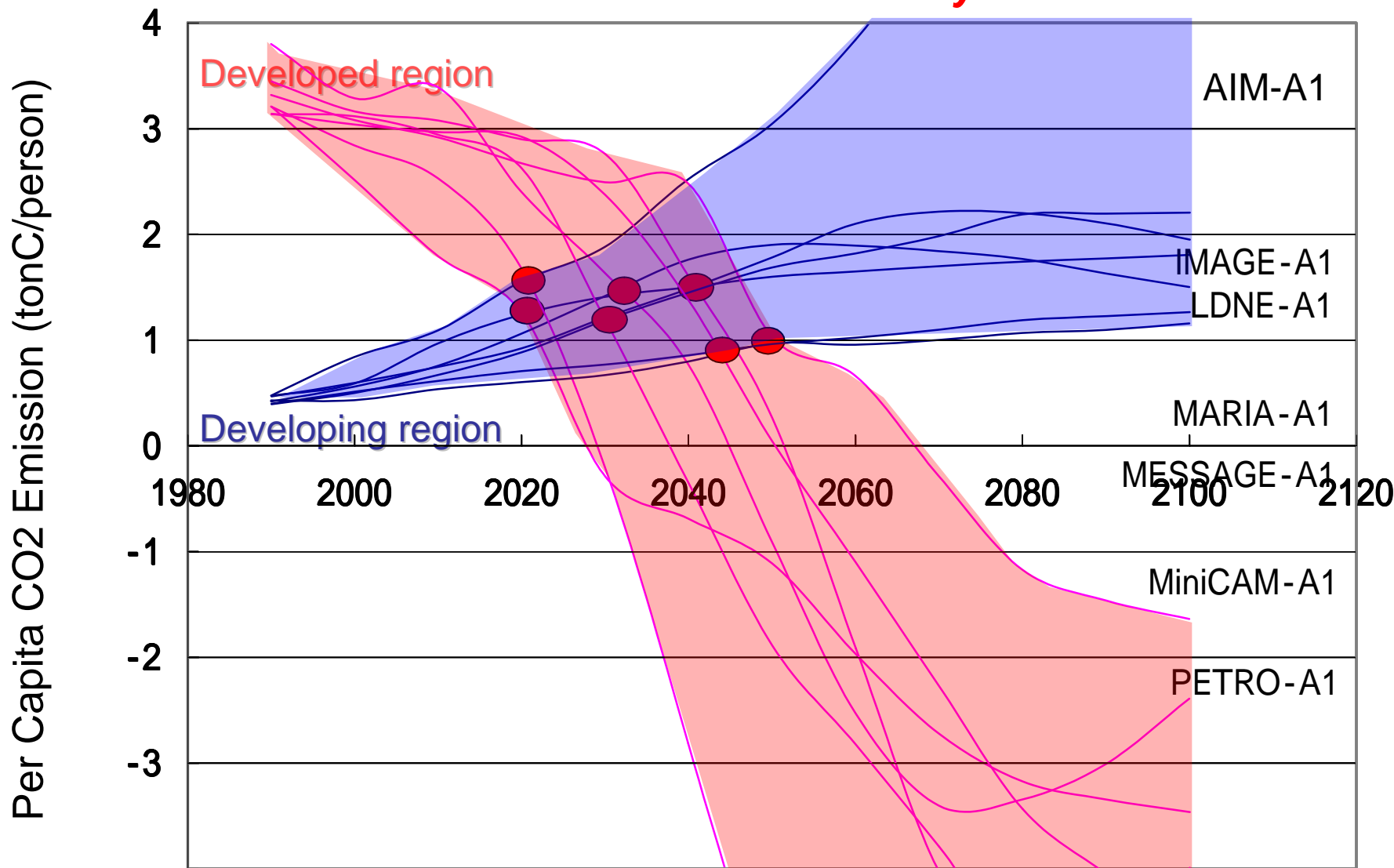


Timing when the stabilization scenarios achieve a reduction of 20% of global energy-related CO₂ baseline emissions, compared across stabilization targets as well as baselines. Slanted lines join scenarios quantified by the same model.

Lesson 3

- *Most mitigation scenarios show the necessity for developing regions to start GHG reductions before 2040 in order to reach 550ppmv or lower stabilization levels.*
- *Otherwise, developed regions would be required to stop all the GHG emissions, and in turn, the world economy would collapse.*

When would per capita CO2 emissions in *Annex I* countries fall *below* per capita CO2 emissions in *non-Annex I* countries, assuming that all CO2 emission reductions necessary for *550 ppmv stabilization* would occur in Annex I countries and that *non-Annex I* countries would emit CO2 without any controls?



Discussions of this workshop

- IPCC Post-SRES: CO₂ only stabilization cases by 2150
 - - multigas stabilization
 - additional gases and particles (e.g. carbon black)
- What should be the stabilization levels?
 - Regional impacts across different time periods for alternate stabilization paths.
 - Cost of mitigation/adaptation for different time horizons for alternate paths to be considered.
 - Uncertainties and risks
- Downscaling of scenarios
 - Building region specific scenarios
 - Essential for better comprehension of future local/regional emission patterns
 - Important inputs for building regional/local climate models
 - inputs for regional/local impact analysis
- Fully integrated scenarios
 - Feedback/collaboration among different groups essential for achieving integrated scenarios

Special Remarks

- Update of IPCC scenario database
- Call for papers of the special issue of Environmental Economics and Policy Studies
 - Morita's memorial issue
 'Stabilization scenarios'
 - deadline of submission:
 January 2005

