



Shared Socio-economic Pathways (SSPs): preliminary results of the economic dimension

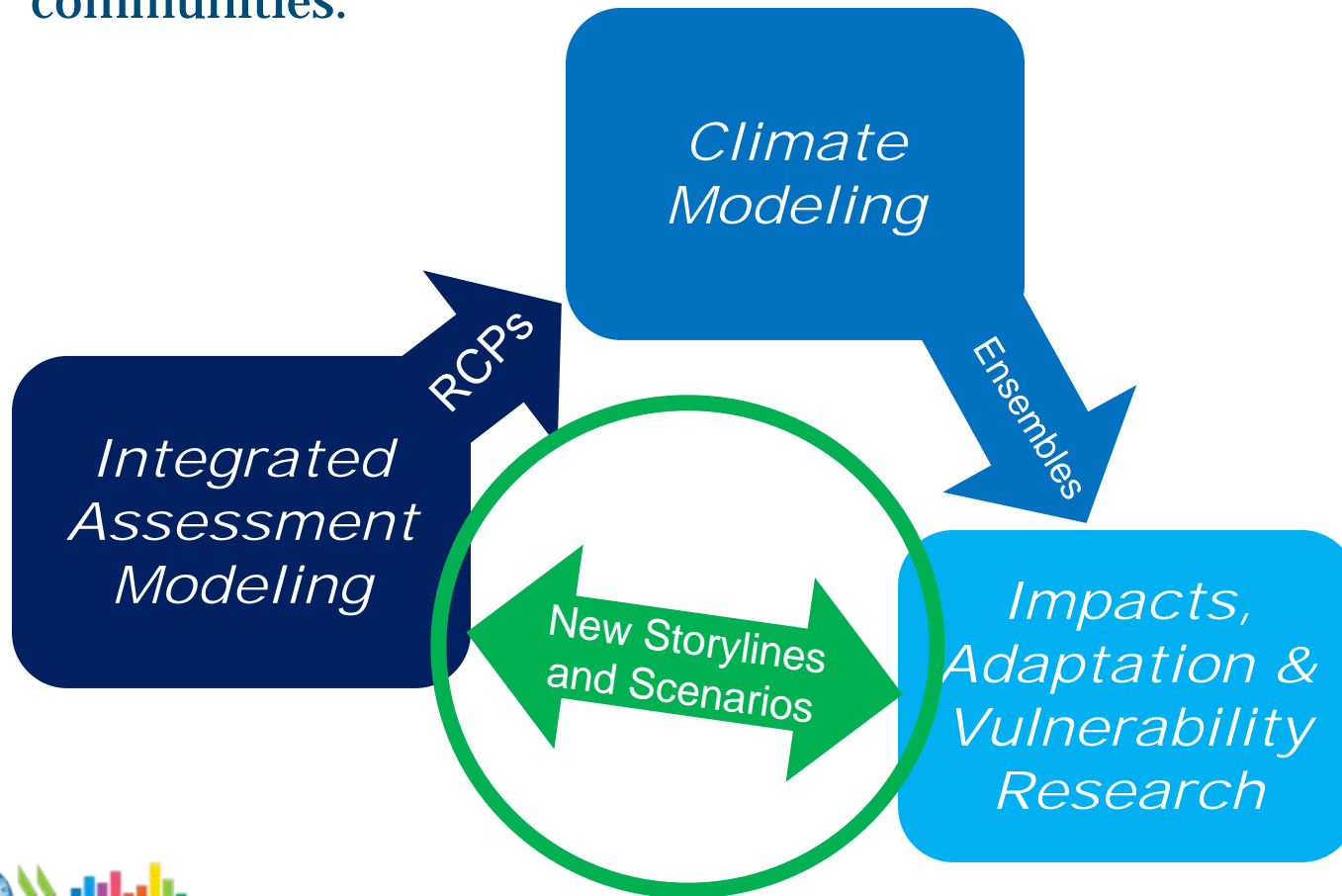
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Representing joint work of IIASA, PIK and OECD

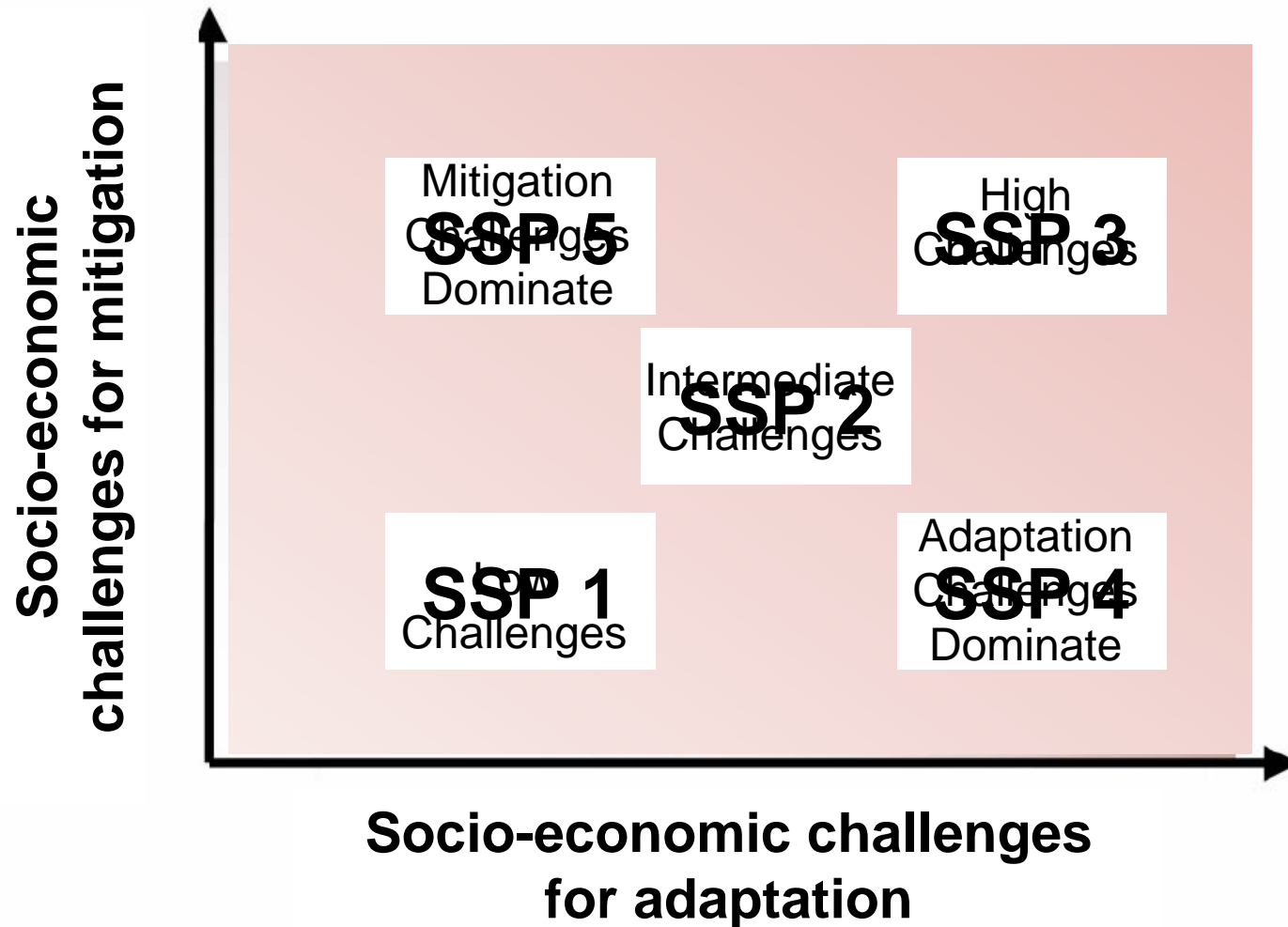
23 May 2012, Venice

Motivation

- Better climate assessment and better assessment in general.
- Avoid the traditional linear relationship between climate research communities.



Domains for climate challenges



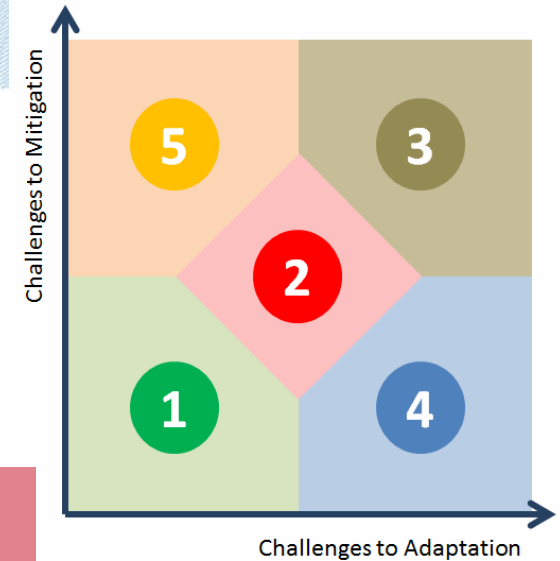
SSPs have 3 elements

The **Storyline** is a verbal description of the state of the world. All non-quantitative aspects of the scenario are included in the storyline.

IAM Quantitative Variables that define IAM reference “no-climate-policy” scenario inputs, e.g. reference scenario population by region by year, GDP, technology availability.

Note: SSPs do NOT include IAM model outputs.

Other Variables that define a reference “no-climate-policy” scenario, but which are not IAM drivers, e.g. governance index or ecosystem productivity and sensitivity.



Projecting GDP and income over a century

Projecting future trends in socio-economic developments

- Not a prediction of what will happen!
- Be humble: we know very little about long-term future developments

Basic ideas:

- Develop a consistent set of scenarios that fit the SSP storylines
- Use SSP projections for demographics (population by age and gender), education levels (by age and gender)
- Focus on GDP and per capita income
- Domestic inequality differences between SSPs not captured in macroeconomic model
- Illustrate uncertainties on speed and timing of economic development
- Range of income levels, income inequality, etc. in scenarios should fit with overall storylines, not necessarily span all plausible trajectories

Three sets of projections

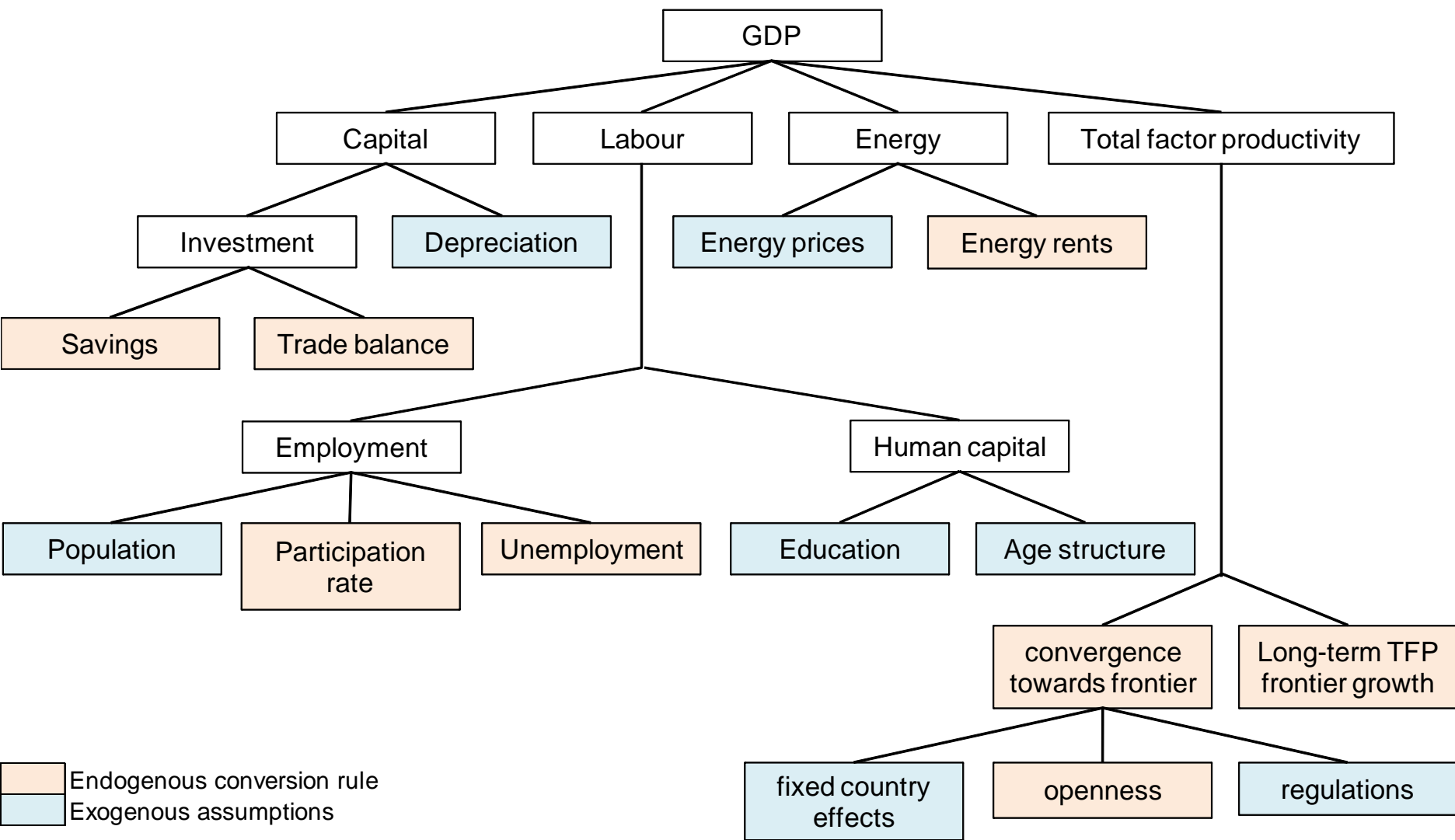
Three modelling teams to make economic projections

1. IIASA (Jesus Crespo et al.) – country level projections
 - Specific focus on role of human capital in economic growth
2. PIK (Elmar Kriegler, Marian Leimbach et al.) – 32 region projections
 - Emphasis on long term technological growth
3. OECD (Rob Dellink, Jean Chateau et al.) – country level projections
 - Mimic short run growth rates; includes natural resource rents

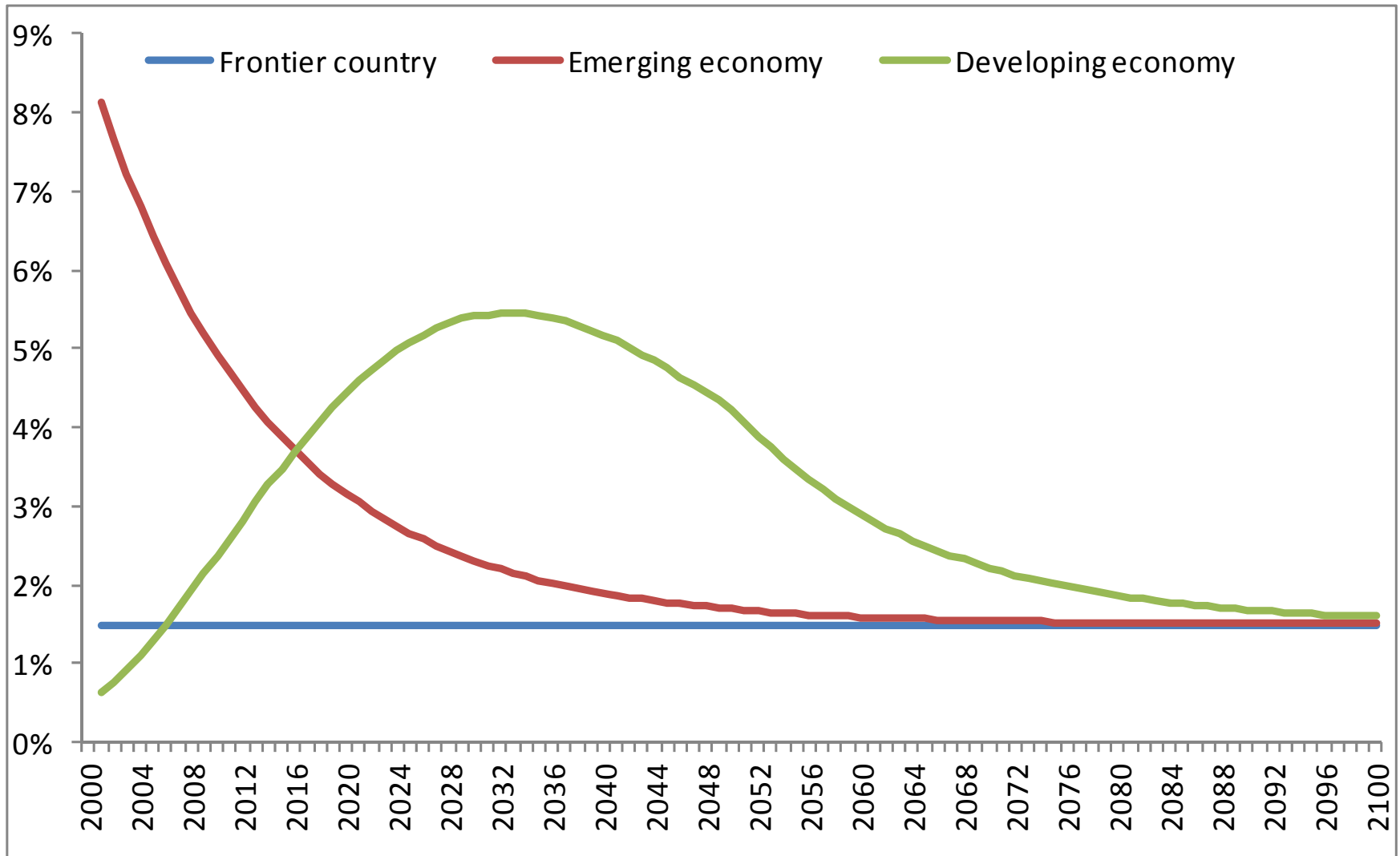
All three modelling teams assume

- The same qualitative interpretation of the SSP storylines
- Economic growth driven by a combination of (i) increases in primary inputs; (ii) human capital improvements; (iii) total factor productivity (tfp) growth
- Conditional convergence of per capita income levels across countries

The OECD methodology



A stylised example



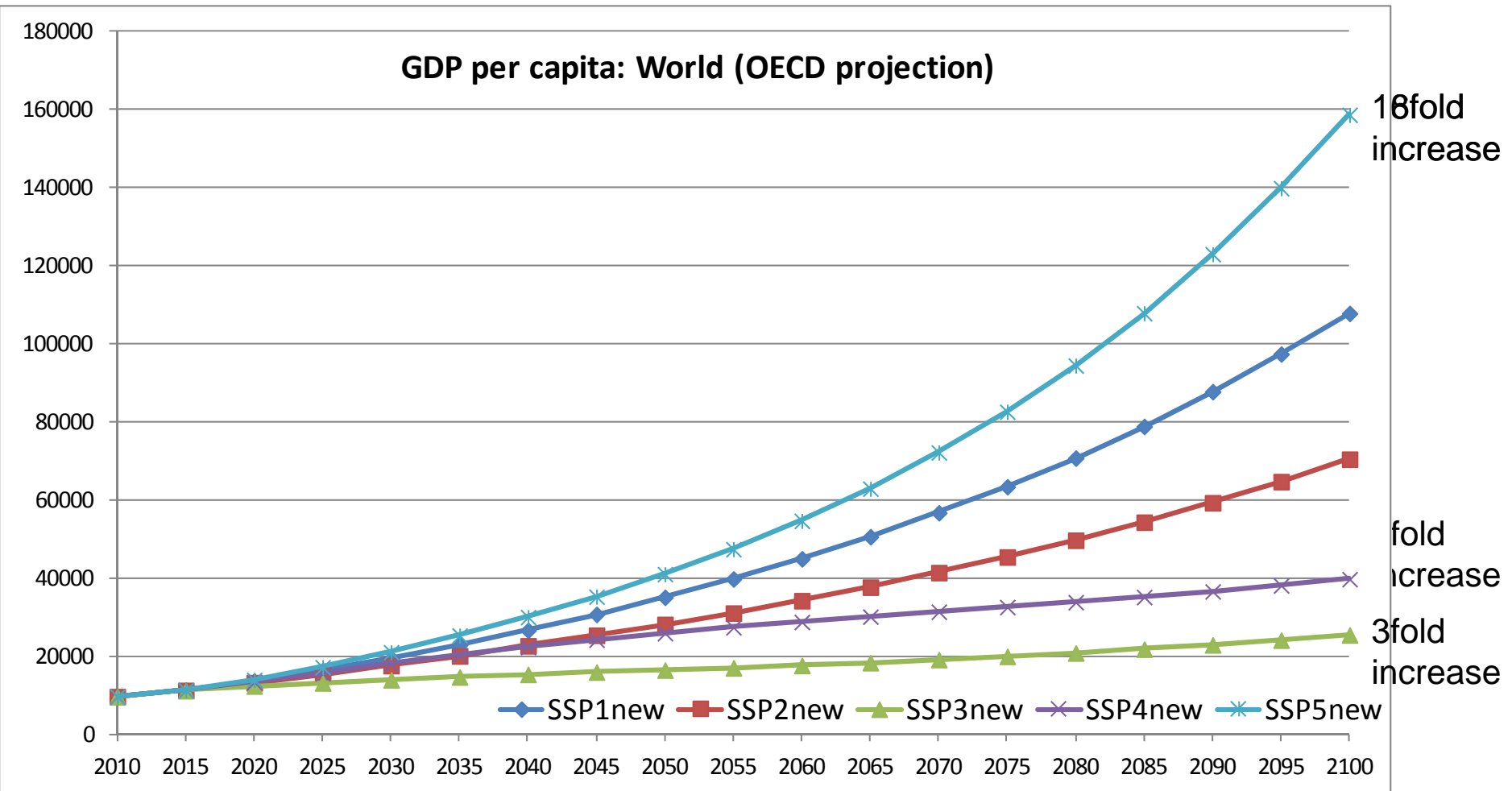
Common interpretation of the SSPs

	Frontier TFP growth	Speed of convergence
SSP1: Sustainability	Medium high	High
SSP2: Middle of the road	Medium	Medium
SSP3: Fragmentation	Low	Low
SSP4: Inequality	Medium	Low Income: Low Middle Income: Medium High Income: Medium
SSP5: Conventional development	High	High

N.B. Quantitative interpretations and methodology differ between models, illustrating the uncertainties in making economic projections

Global GDP levels by scenario

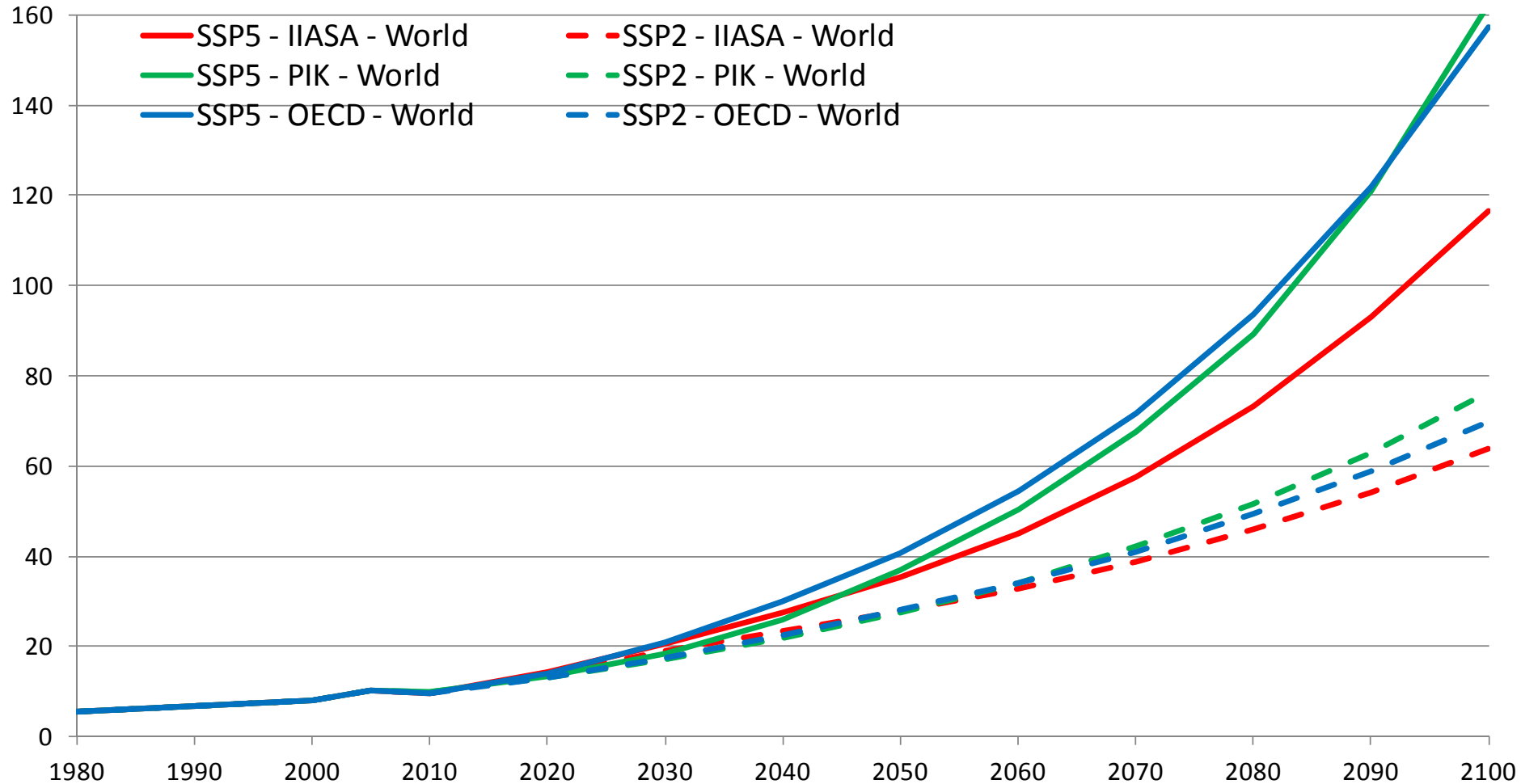
SSP5>SSP1>SSP2>SSP4>SSP3; range wider in per capita terms



Global GDP levels by scenario

Often: IIASA start high, end low; PIK start low, end high; OECD in between. But not always!

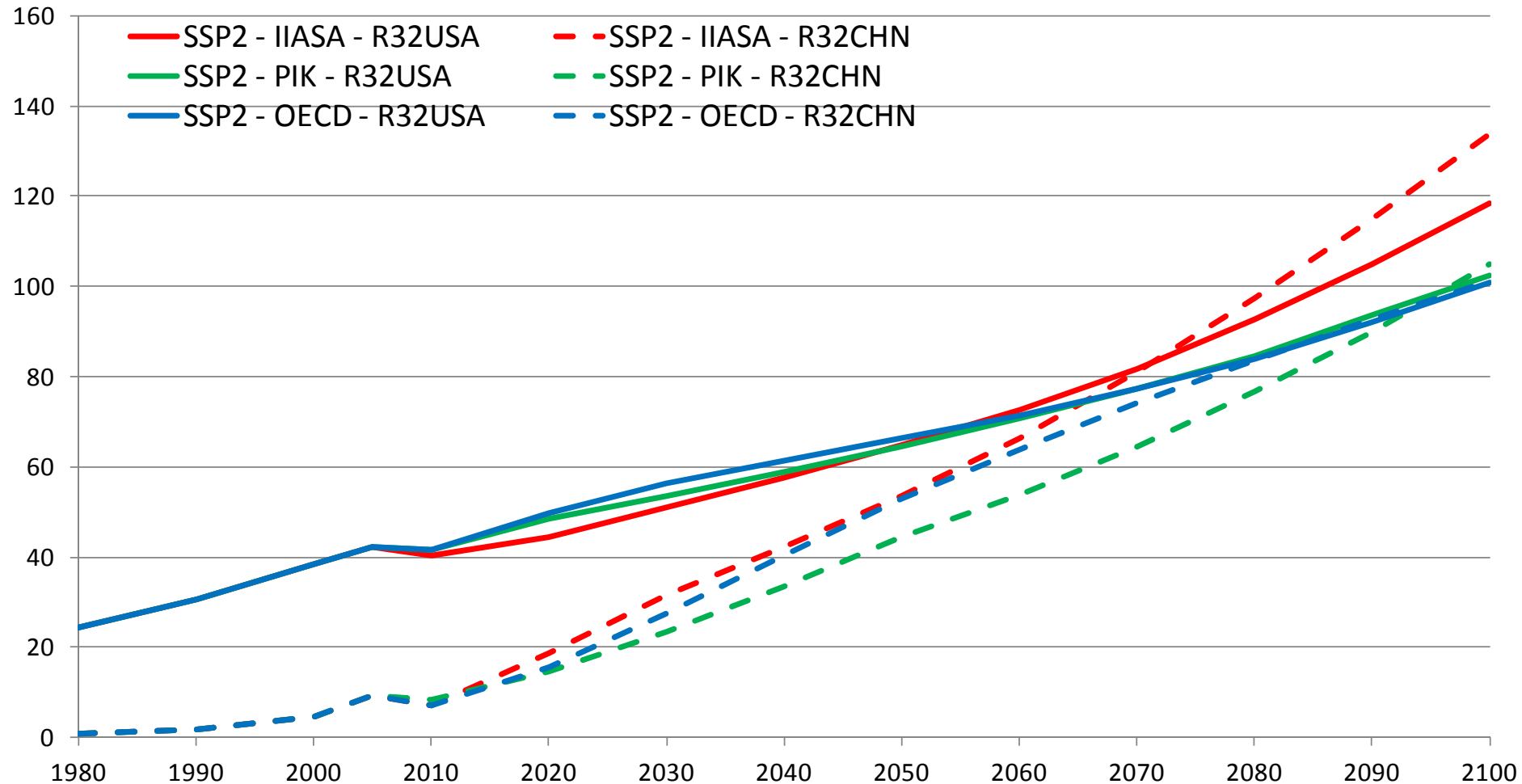
SSP - Per Capita GDP (billion US\$2005PPP / million people)



Regional GDP levels by scenario

China fully converges to USA (and for IIASA overtakes)

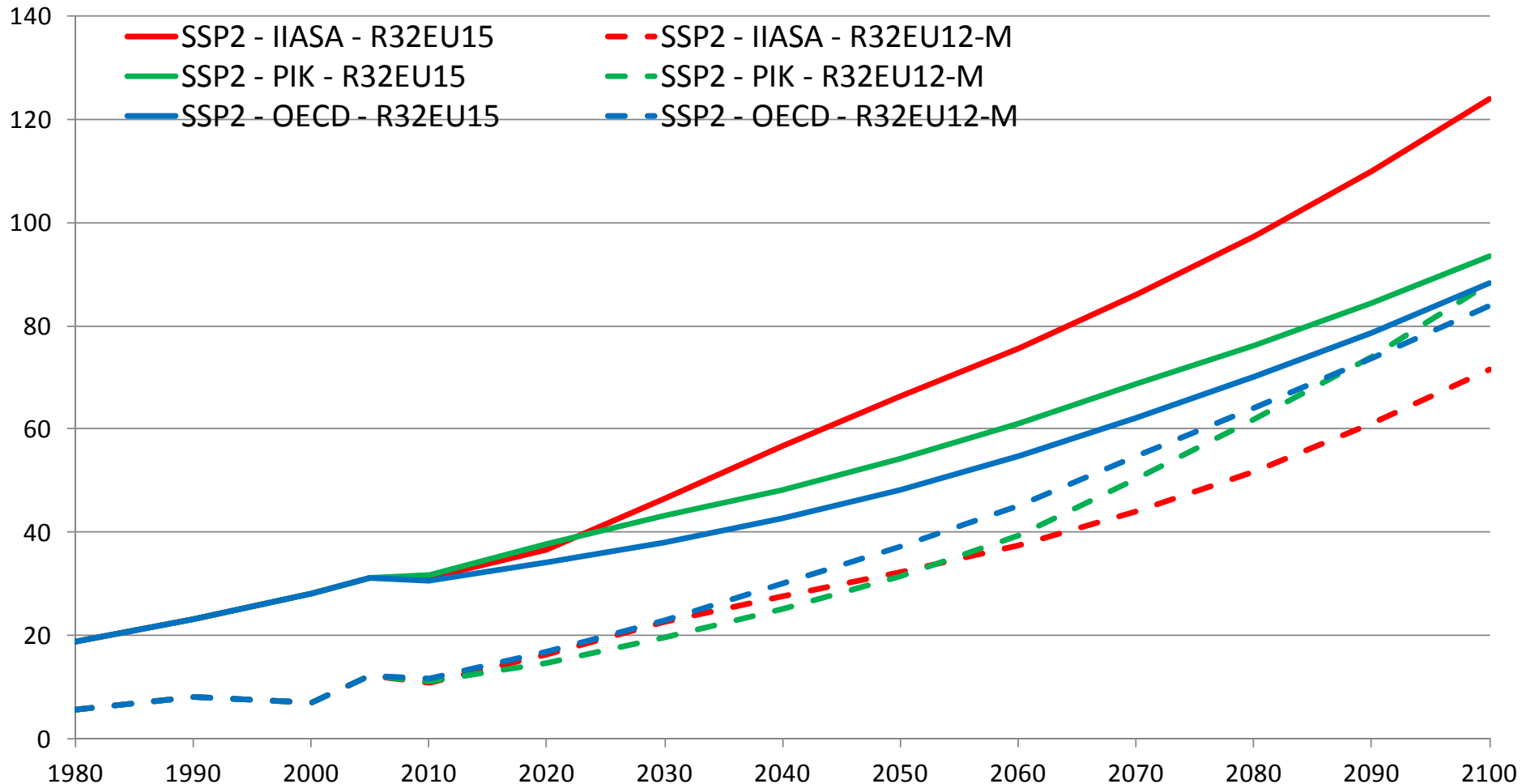
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Regional GDP levels by scenario

Models foresee no full convergence for EU countries within this century

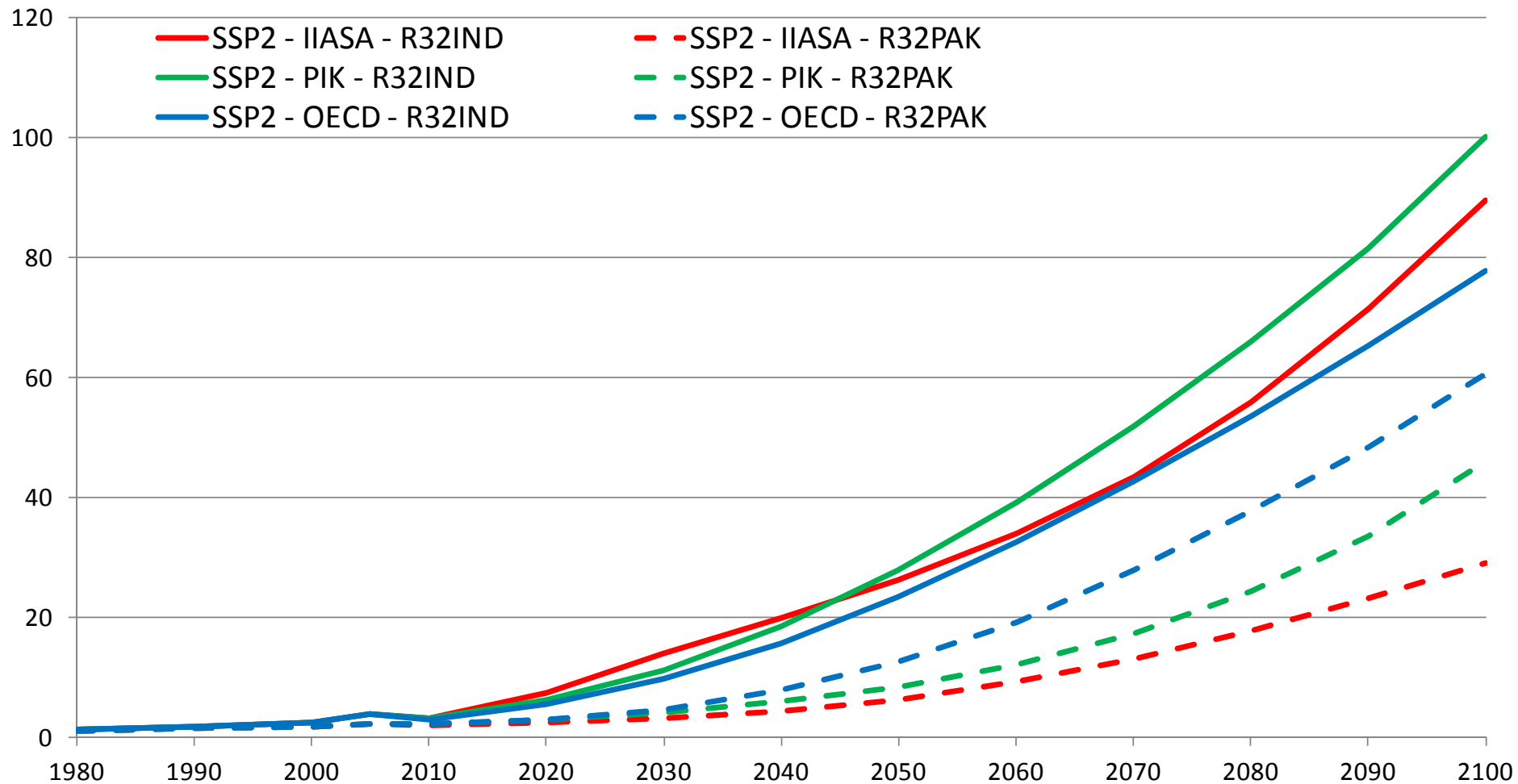
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Regional GDP levels by scenario

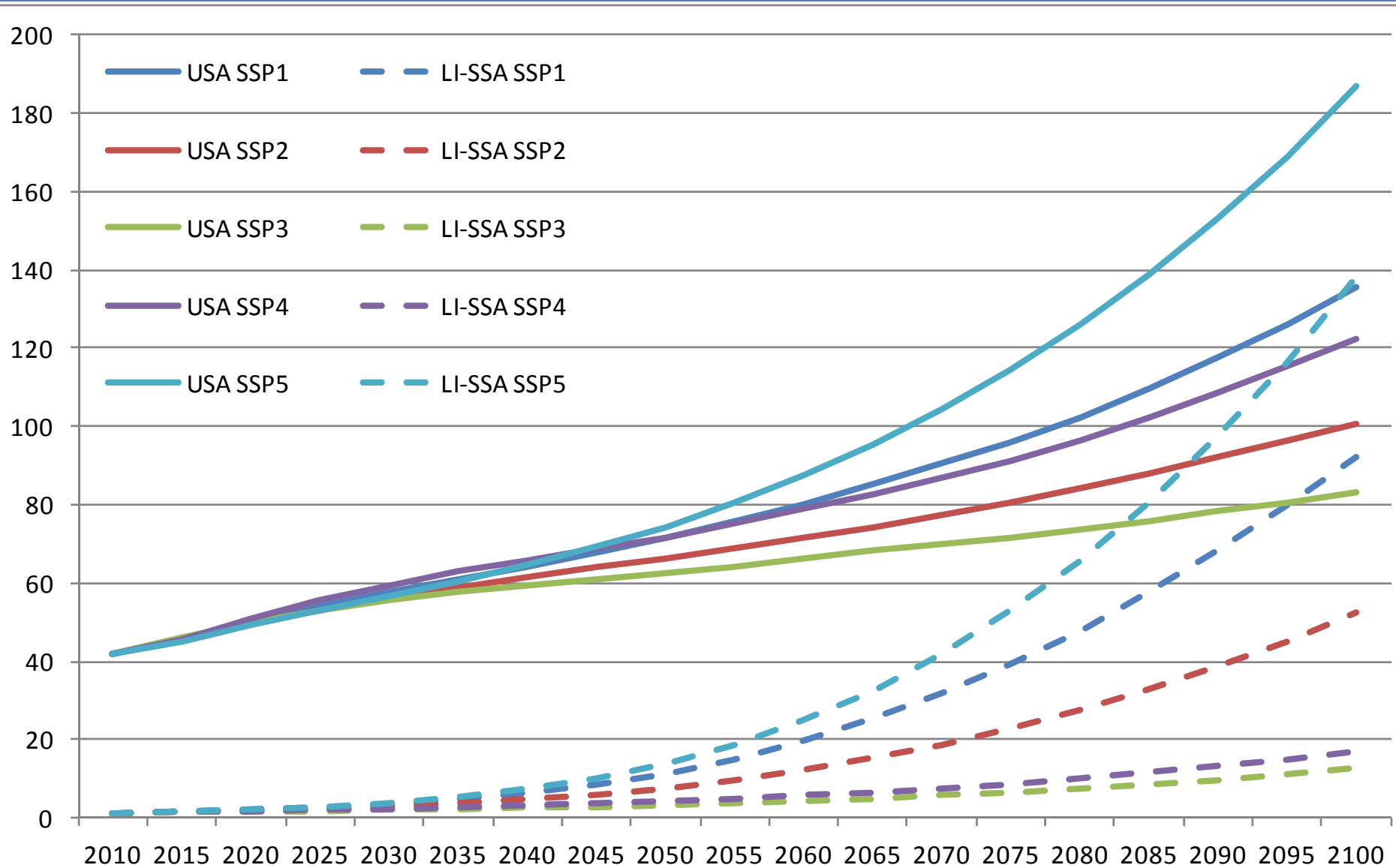
Divergence between models can be large at the regional level

SSP - Per Capita GDP (billion US\$2005PPP / million people)



Income differences diminish but remain

Africa projected by all models to remain the poorest continent, despite high growth rates





Thank you for your attention!