

# Shared Socio-Economic Pathways: Implications for Asia

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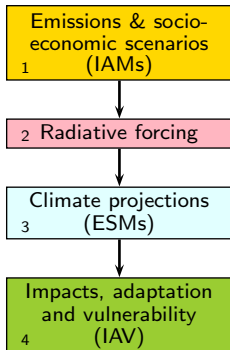
# Prominent Past Examples of Scenarios

- Shell scenarios (since the 1970's—first oil shock)
- Scenarios for the Intergovernmental Panel on Climate Change
  - 1990 IPCC SA90
  - 1992 IPCC IS92
  - 1999 Special Report on Emissions Scenarios (SRES)
- 2005 Millennium Ecosystem Assessment

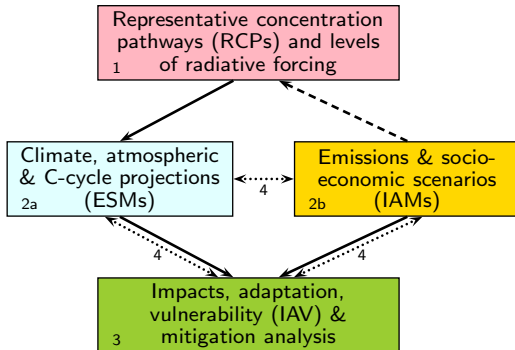
# New Architecture: Parallel Process

- The parallel process designed to allow for more time to develop socio-economic scenarios and better incorporate IAV as well as IAM needs

(a) Sequential approach

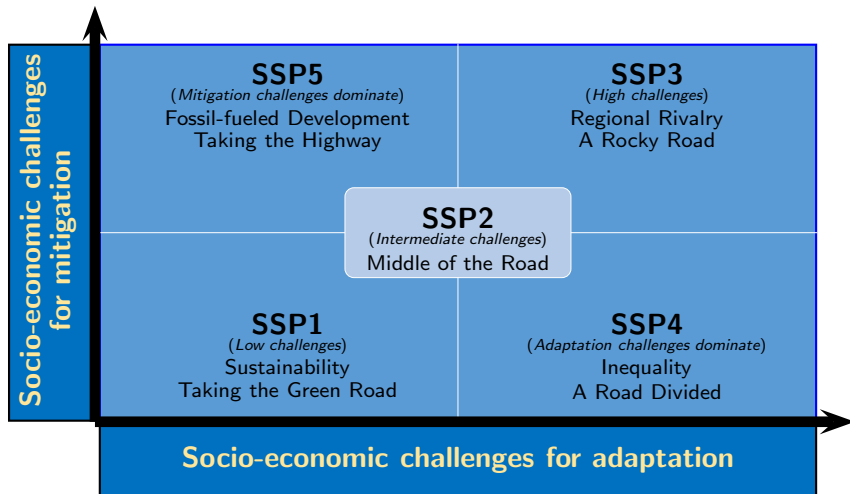


b) Parallel approach

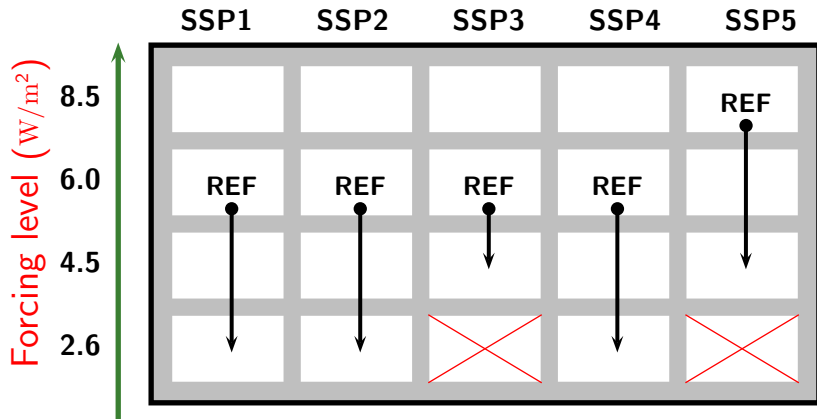


Source: Jae Edmonds (2010), "Workshop on Socioeconomic Scenarios for Climate Change Impact and Response Assessment (WoSES)," November 1-3, 2010 Berlin, Germany

# The SSP Storylines: Adaptation vs. Mitigation



# RCPs, SSPs and Shared Policy Assumptions (SPAs)



# What is Being Quantified?

## 1 Demographics (IIASA)

- Assumptions on fertility (linked to education & income) and mortality rates
- SSP2 designed to align loosely with 2010 UN Medium Variant
- Five-year age cohorts (0–4, 5–9, ..., 95–99, 100+)
- Gender
- Education level (none, primary, secondary, tertiary)

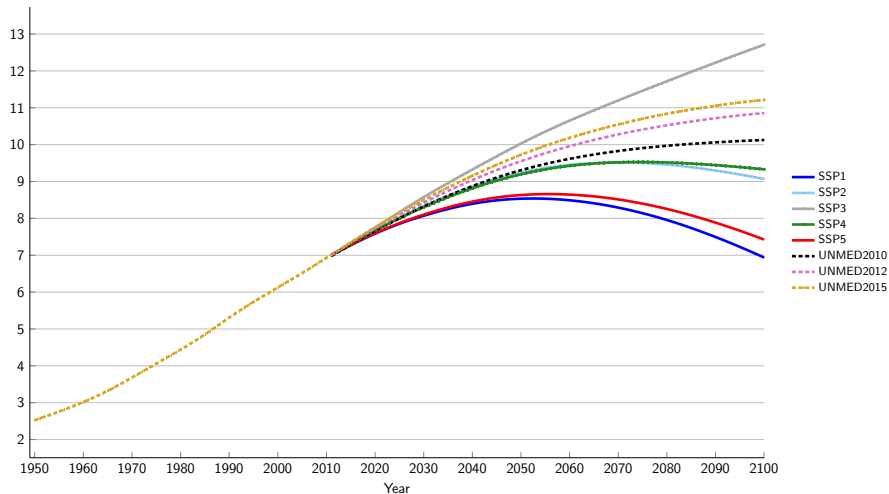
## 2 GDP projections

- Projections from 3 teams (IIASA, OECD, PIK)
- All harmonized to the IIASA demographic projections
- Driving assumption is convergence in per capita income, but different models and outcomes
- IIASA and OECD country based, PIK projections for 32 regions

## 3 Urbanization (NCAR)

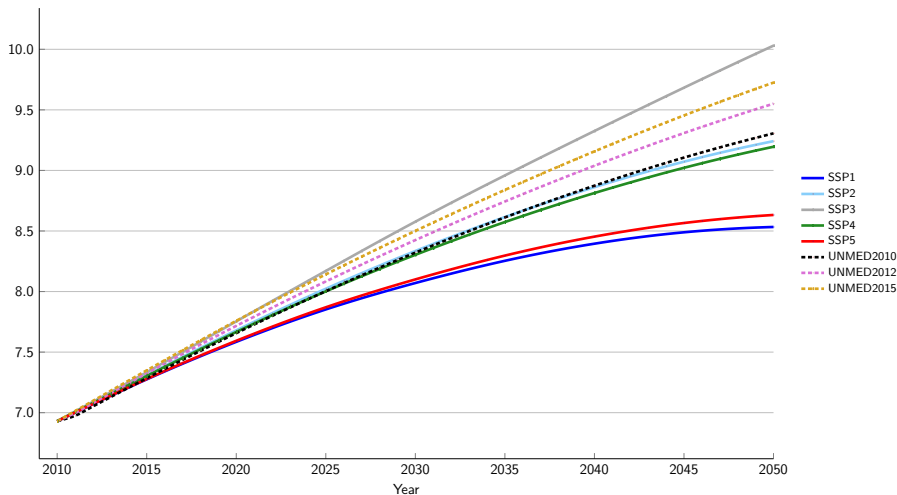
Projections available at <https://tntcat.iiasa.ac.at/SspDb/dsd?Action=htmlpage&page=about>

# World Population (billion): Backward and Forward



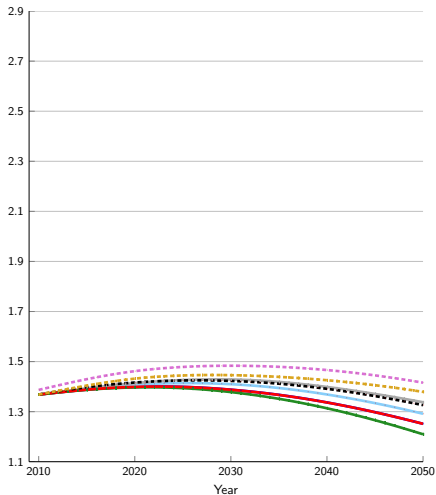


# World Population (billion): Next 40 Years

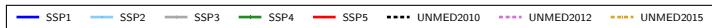
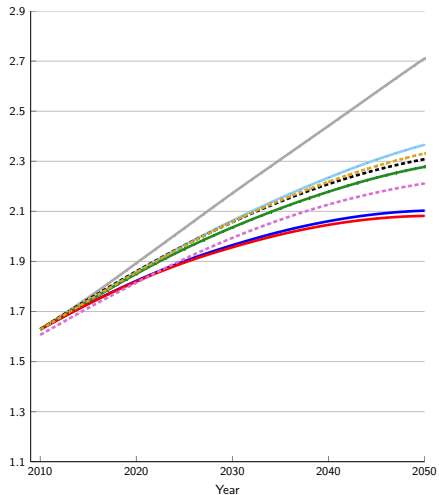


# Population Profiles for Regions of Asia

East Asia (billion)

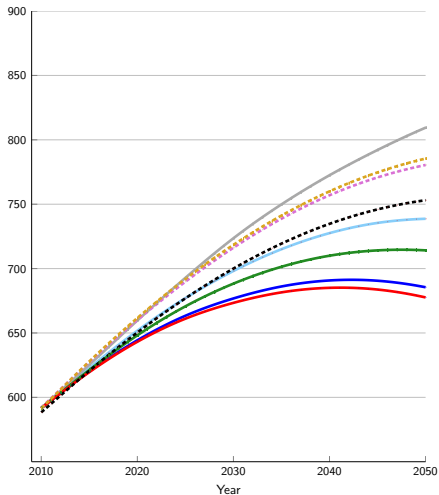


South Asia (billion)

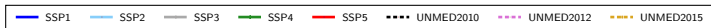
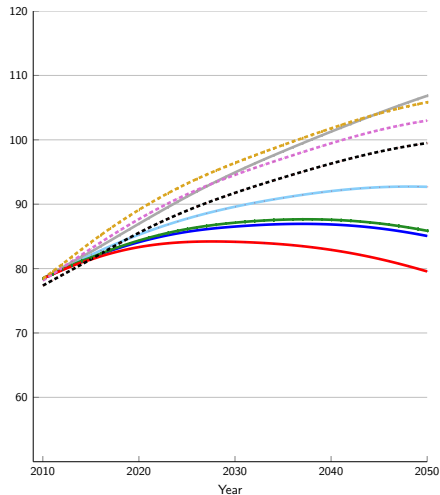


# Population Profiles for Regions of Asia

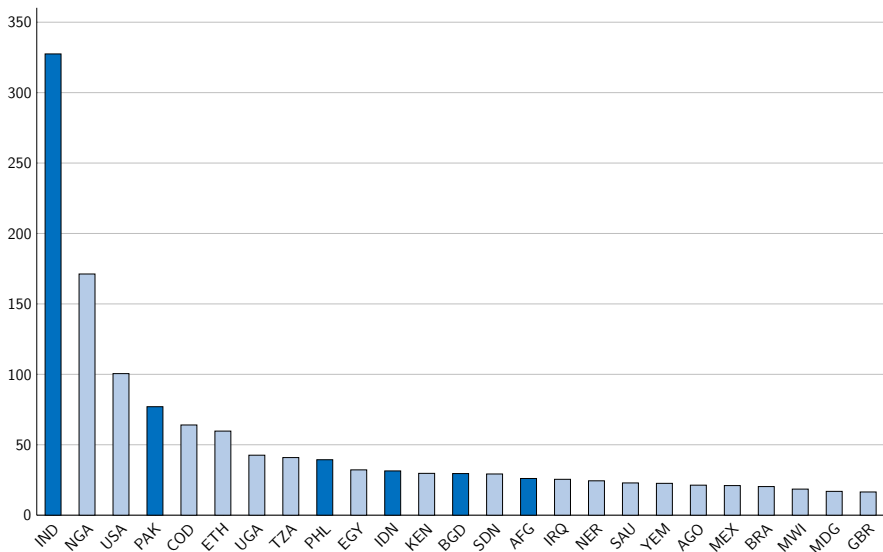
South-East Asia (million)



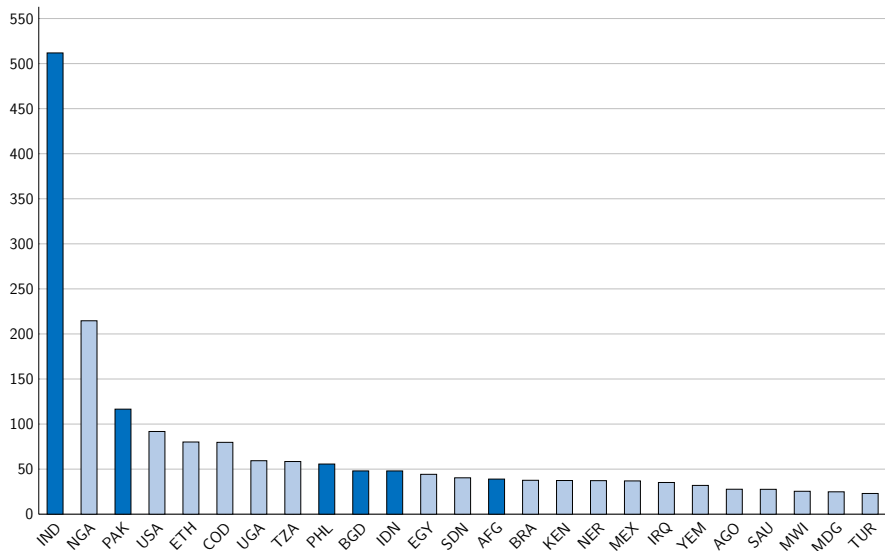
Central Asia (million)



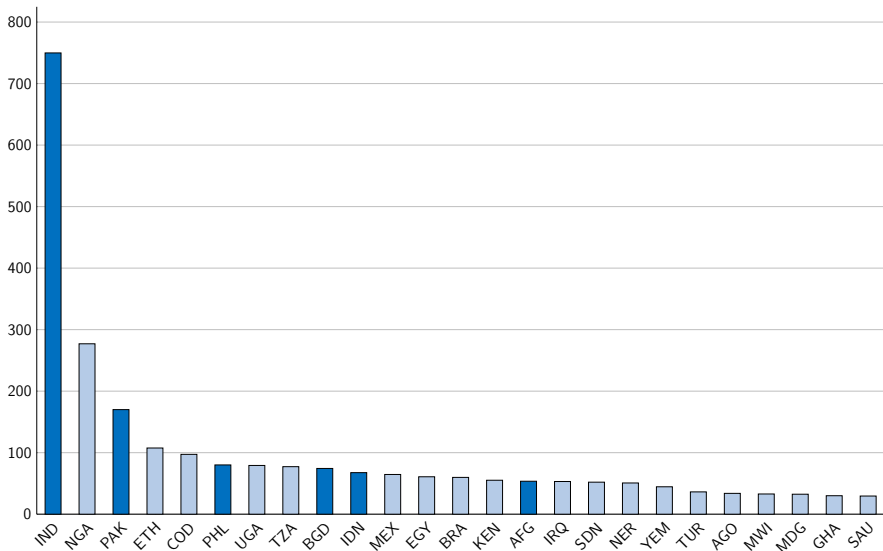
# Contribution to World Population Growth (million): SSP1



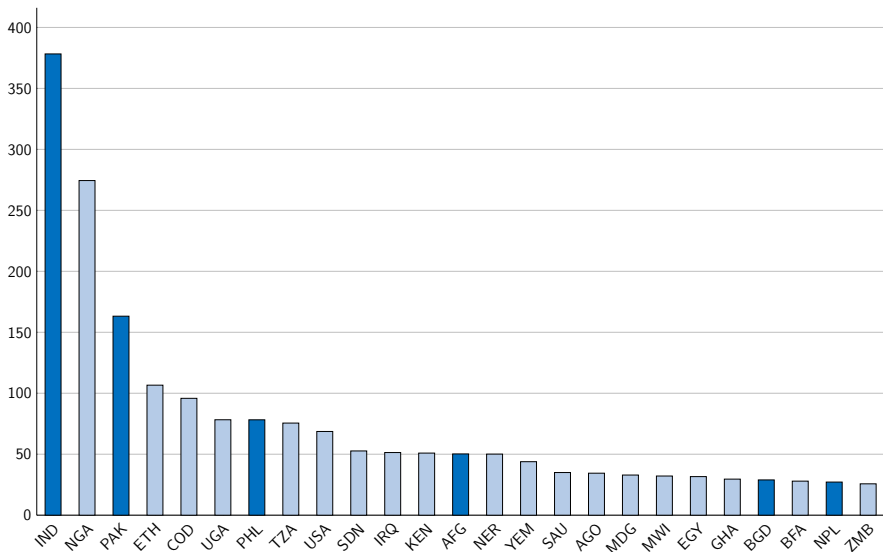
# Contribution to World Population Growth (million): SSP2



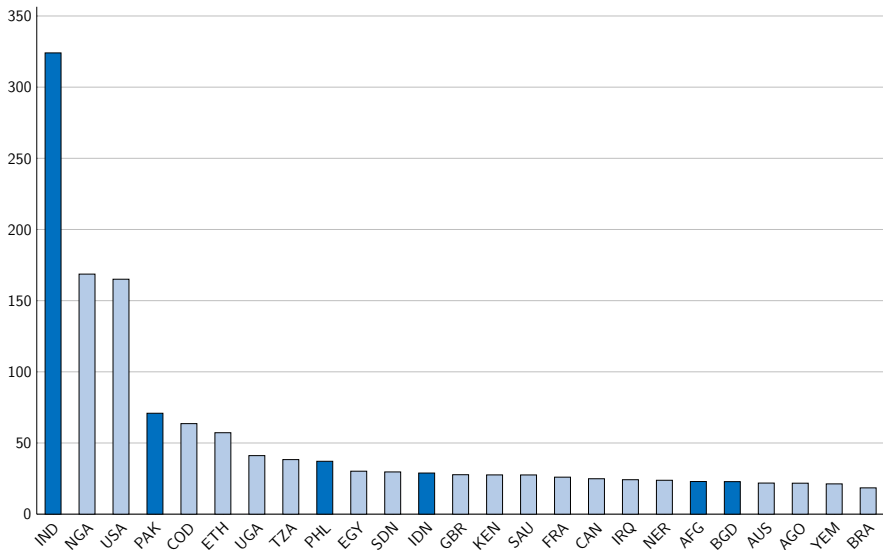
# Contribution to World Population Growth (million): SSP3



# Contribution to World Population Growth (million): SSP4

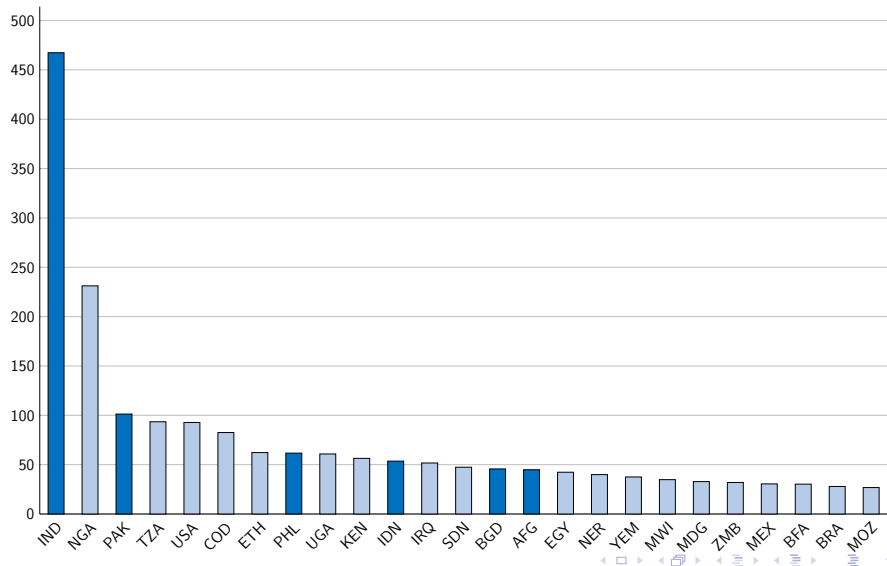


# Contribution to World Population Growth (million): SSP5

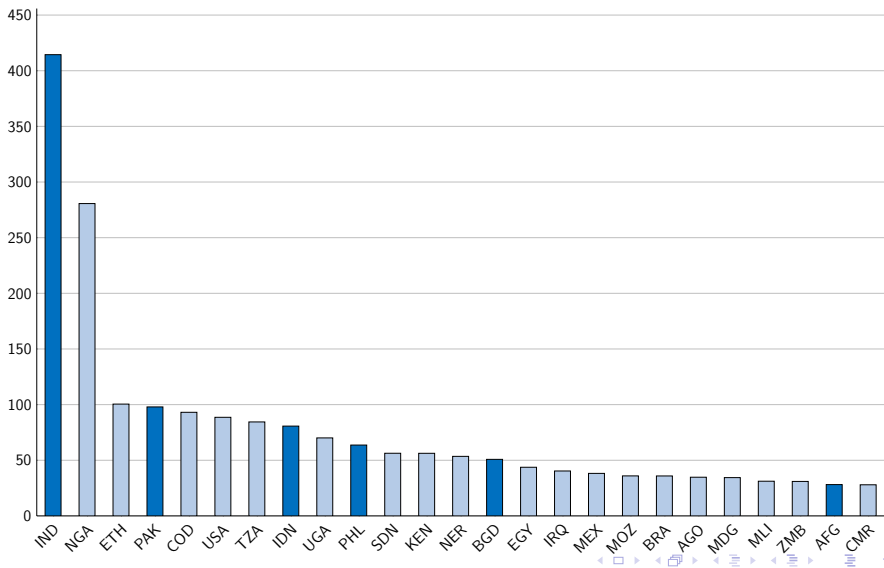




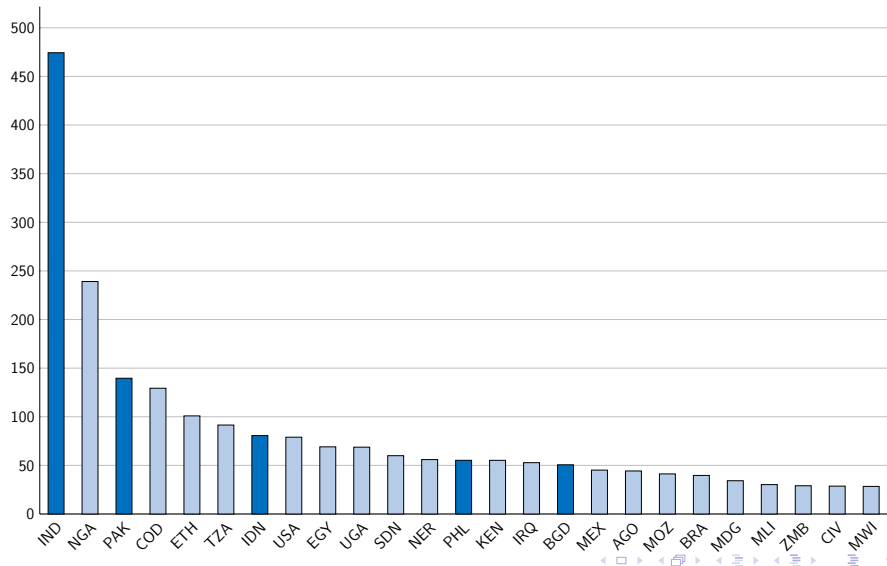
# Contribution to World Population Growth (million): UNMED2010



# Contribution to World Population Growth (million): UNMED2012

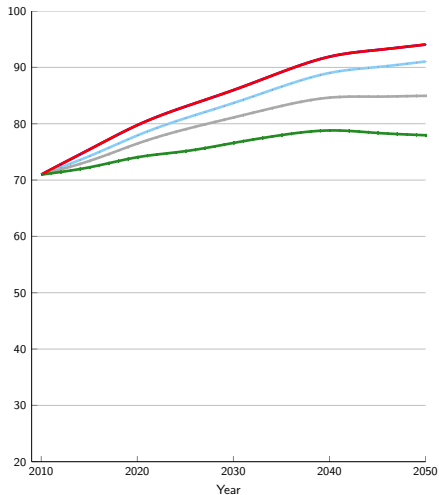


# Contribution to World Population Growth (million): UNMED2015

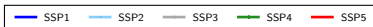
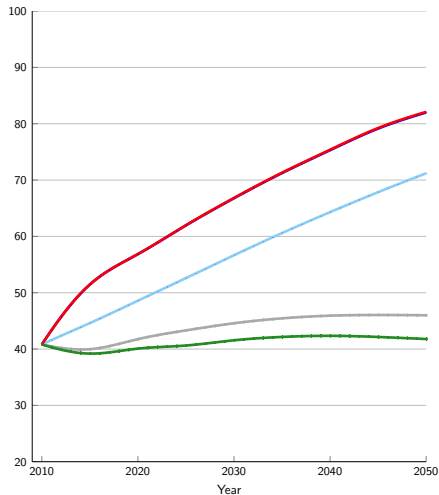


# Education: Secondary+ Level for Working-age Population

East Asia (percent)

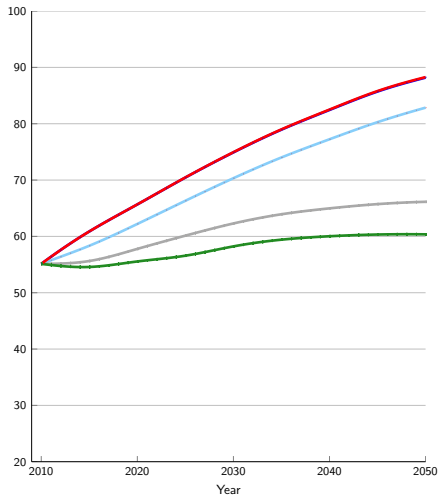


South Asia (percent)

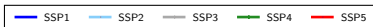
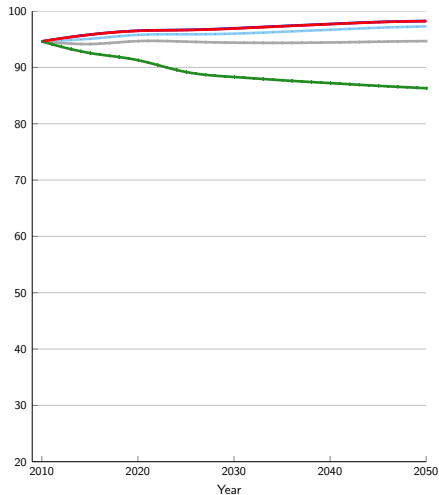


# Education: Secondary+ Level for Working-age Population

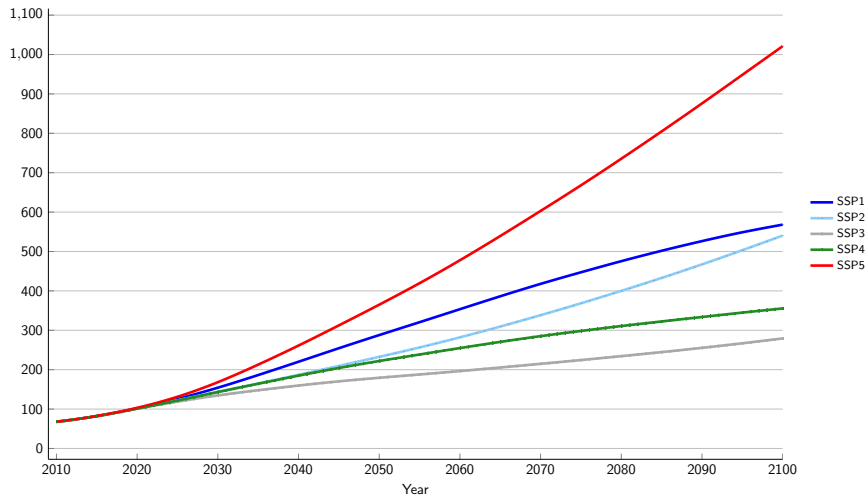
South-East Asia (percent)



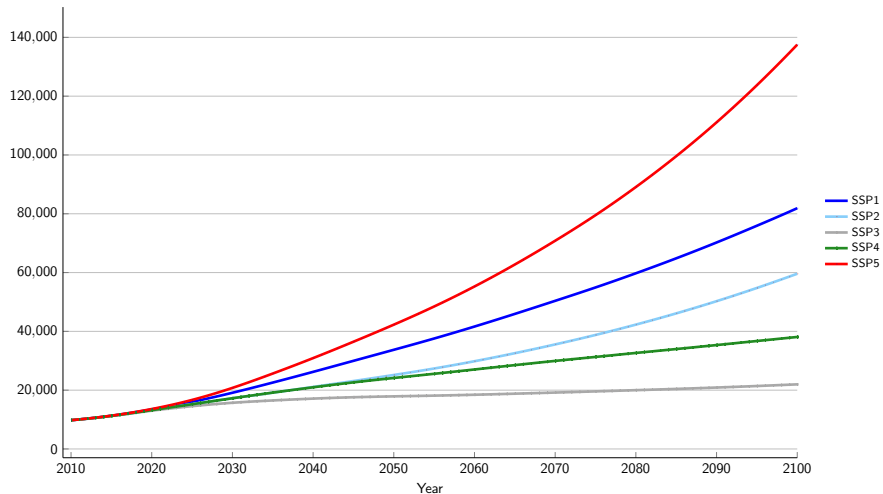
Central Asia (percent)



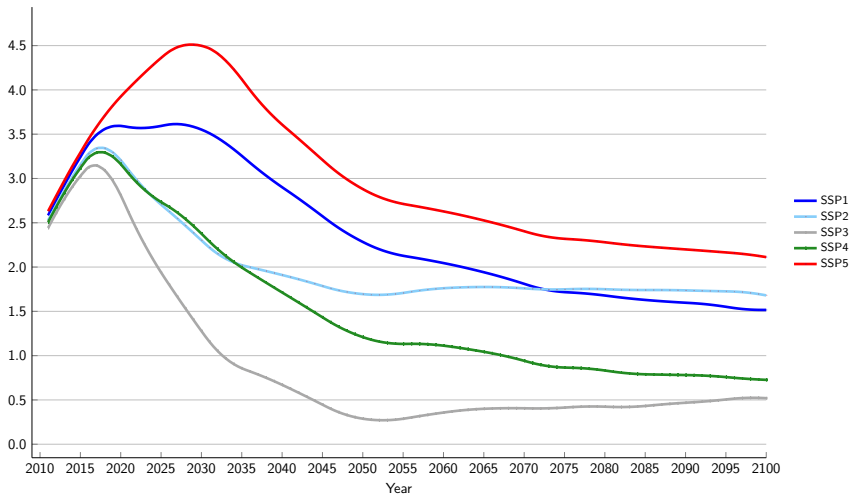
# World GDP (\$2005 trillion)



# World GDP per capita (\$2005)



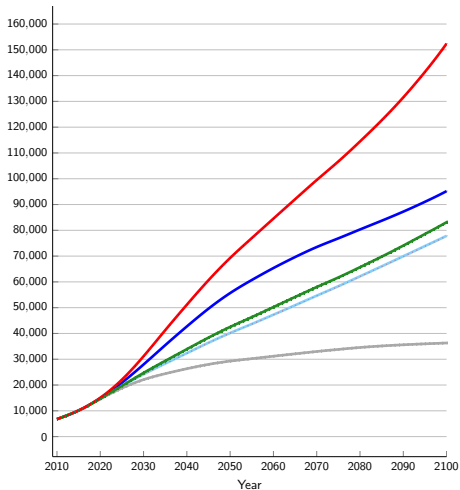
# Growth of Global per capita GDP (percent per annum)



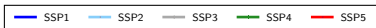
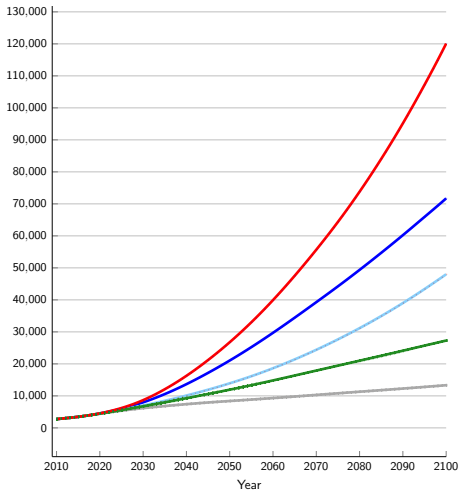


# GDP per capita Profiles for Regions of Asia

East Asia (\$2005)

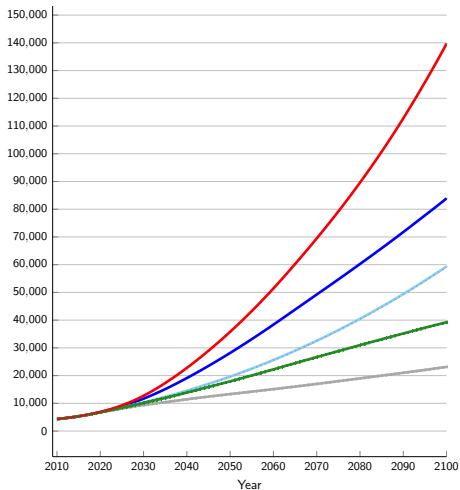


South Asia (\$2005)

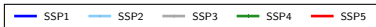
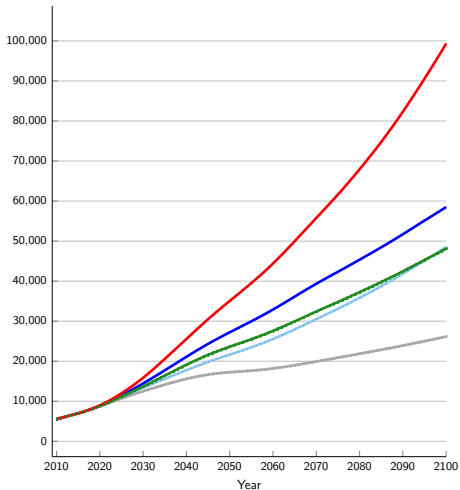


# GDP per capita Profiles for Regions of Asia

South-East Asia (\$2005)



Central Asia (\$2005)

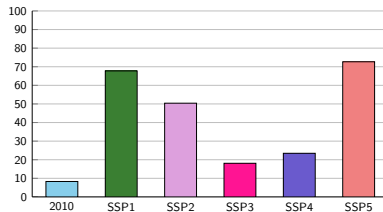


# Convergence in 2100

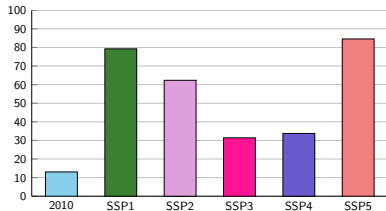
### East Asia (percent)



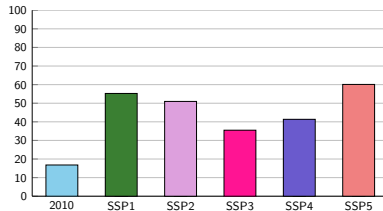
### South Asia (percent)



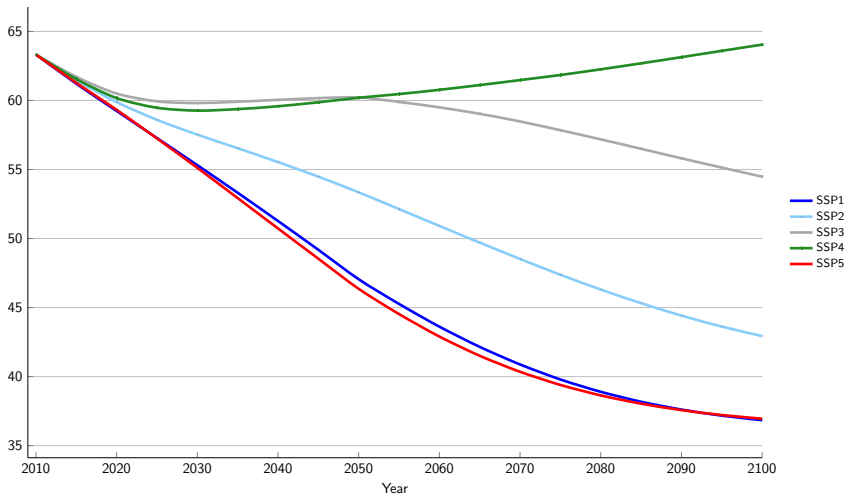
### South-East Asia (percent)



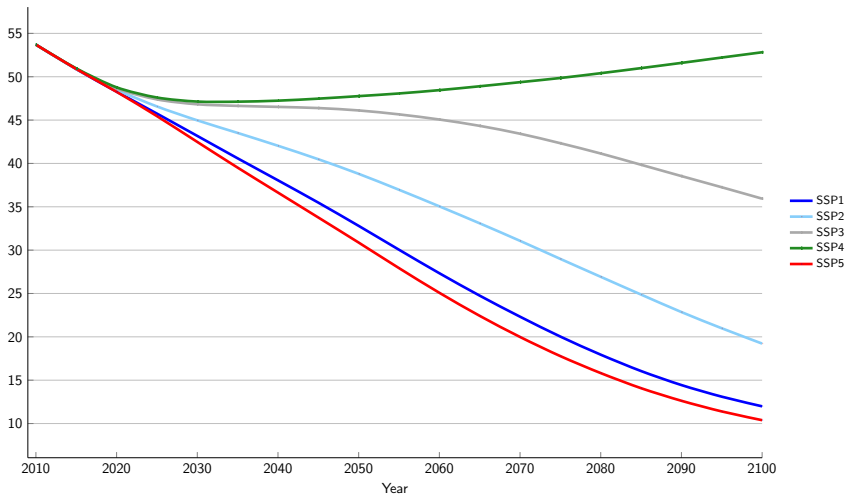
### Central Asia (percent)



# SSPs and Potential Global Gini Profiles

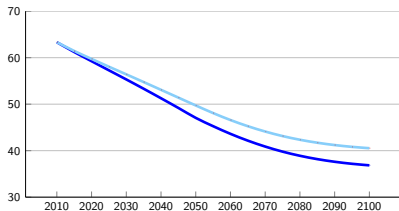


# Global Gini Ignoring Within Country Distribution

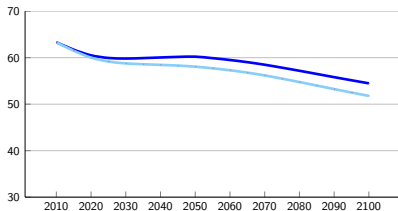


# Global Gini: with and without SSP Storylines

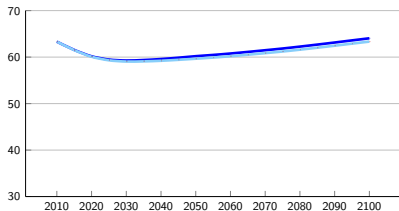
SSP1



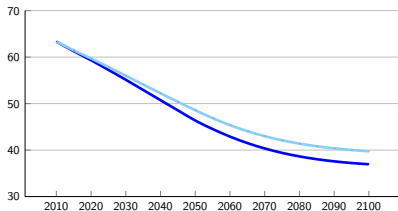
SSP3



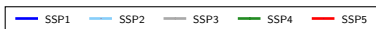
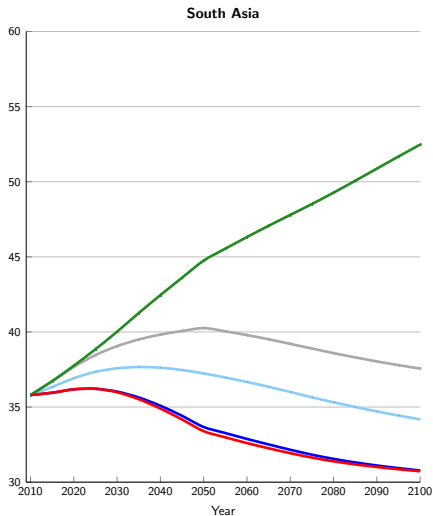
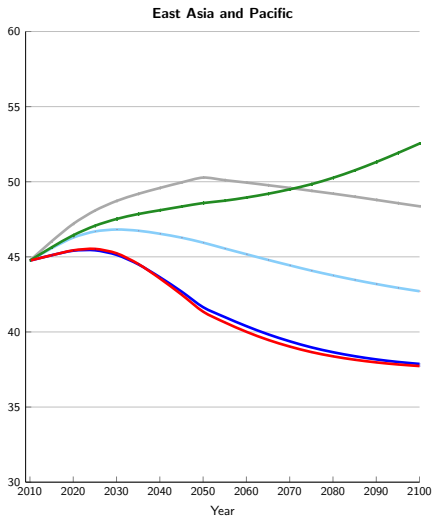
SSP4



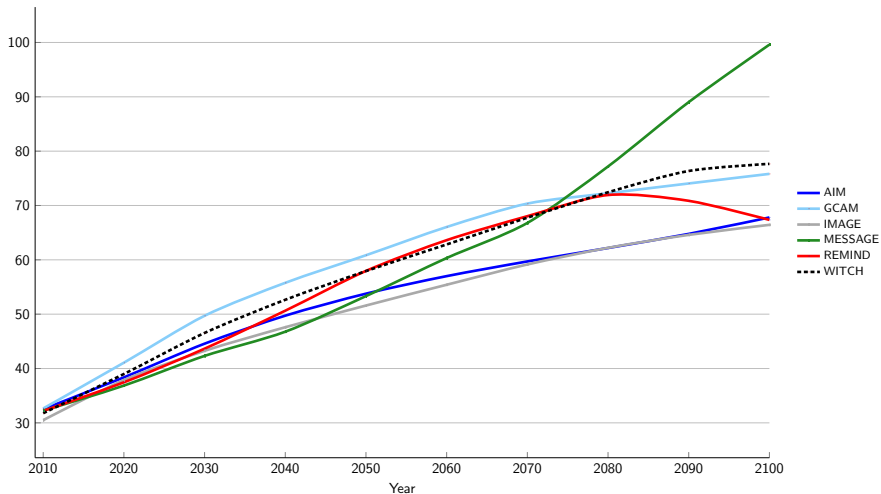
SSP5



# Income Distribution Profiles for Regions of Asia



# CO2 Emission Profiles from Various IAMs: SSP2





# Deepening the SSP Storylines

- Consumer preferences (e.g. diets, life-style, sustainability)
- Productivity (agriculture, manufacturing and services)
- Energy technologies
  - Fossil fuel reserves
  - Cost of renewables
  - New technologies—cost and availability
- Economic and environmental policies
  - Trade
  - Distributional (taxes)
  - Local emissions, INDCs
  - Land-use regulations