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# ENHANCING the SOCIOECONOMIC REPRESENTATION of the SHARED SOCIOECONOMIC PATHWAYS (SSPs)

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# Motivation

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- in considering even the first-order effects of climate change and challenges to adaptation, it is necessary to ask “what’s going to be there when the climate changes?” (Timmerman, 1994)
- “taking into account, social, cultural and institutional aspects and their dynamic interactions would give future scenarios more breadth and could thus increase the understanding of potential future developments” (Rotmans et al., 1995)



# Motivation of Study

Core quantitative drivers of SSP developed by multiple modeling groups, with limited soft linkages

Can we use a multi-sector, integrated model to check internal consistency of quantitative drivers?

Core quantitative drivers provide a limited picture of the SSPs

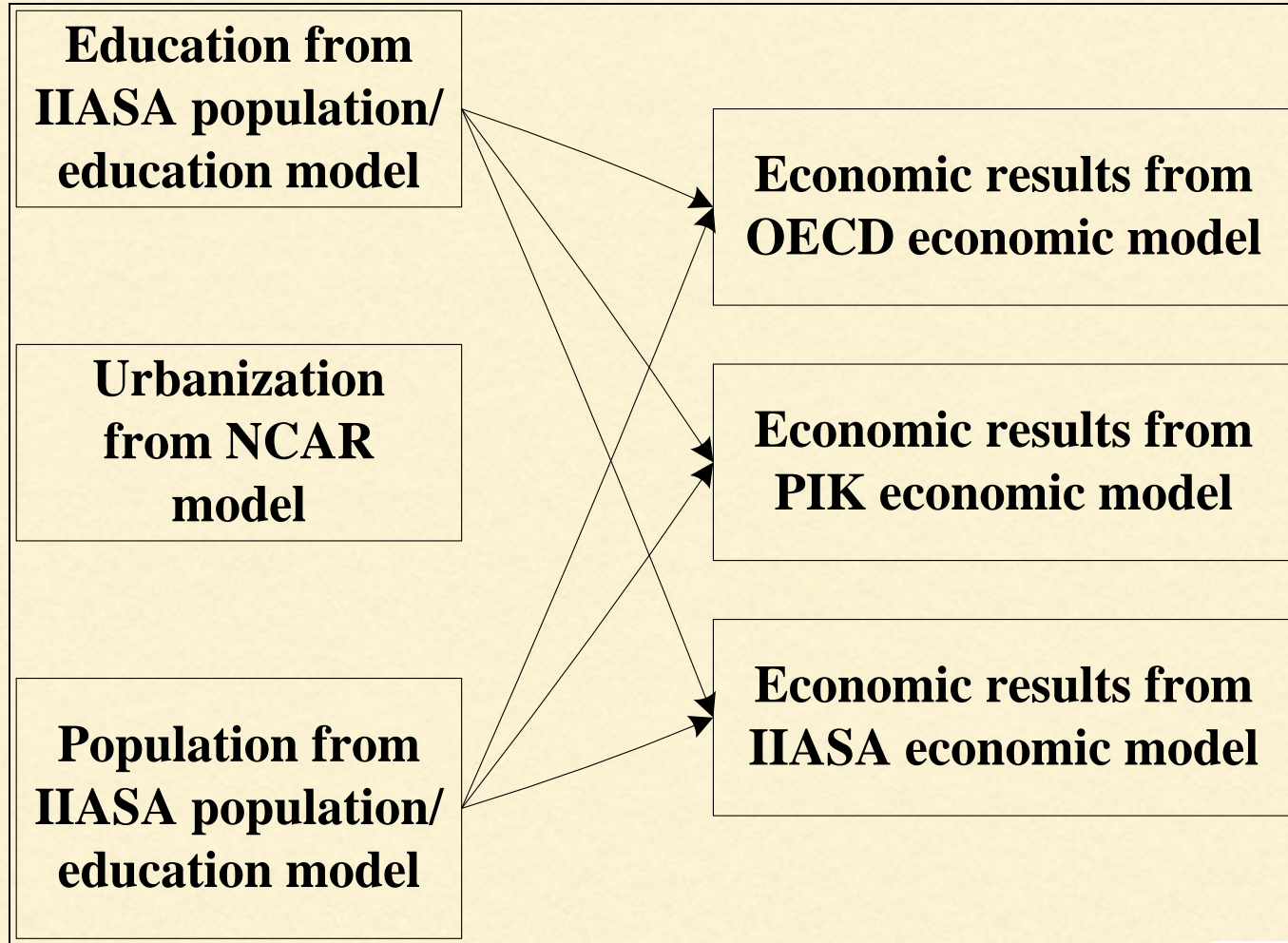
Can we use a multi-sector, integrated model to enhance the quantitative representation of the SSPs?

Today's Focus



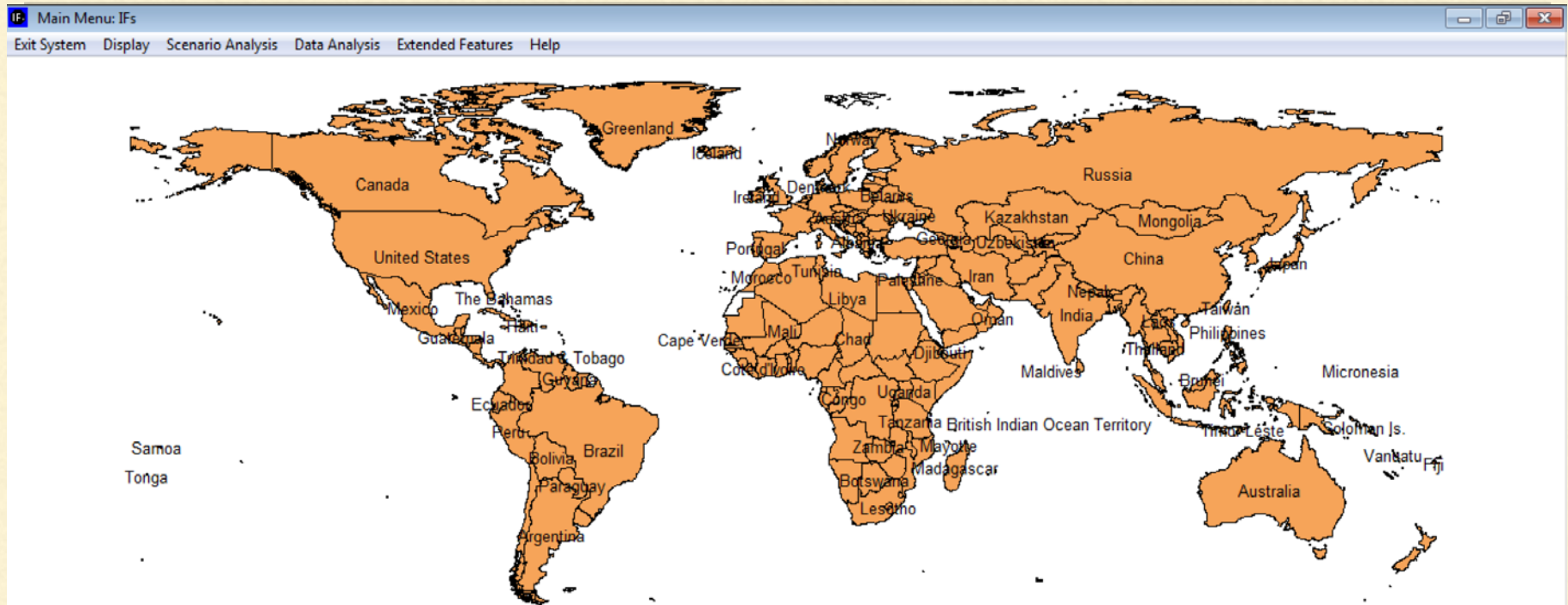
# SSPs

## Core Quantitative Indicators and Sources





# International Futures Desktop Version



If you wish primarily to explore possible futures of a particular country, click on that country (right-click for features that help you control the map, including zooming).

To access the full functionality of IFs, including creating multi-country displays in specific issue areas, building new scenarios, and analyzing historical data, use the menu options.

Remember that you can select the Help option or touch the F1 key at any time.



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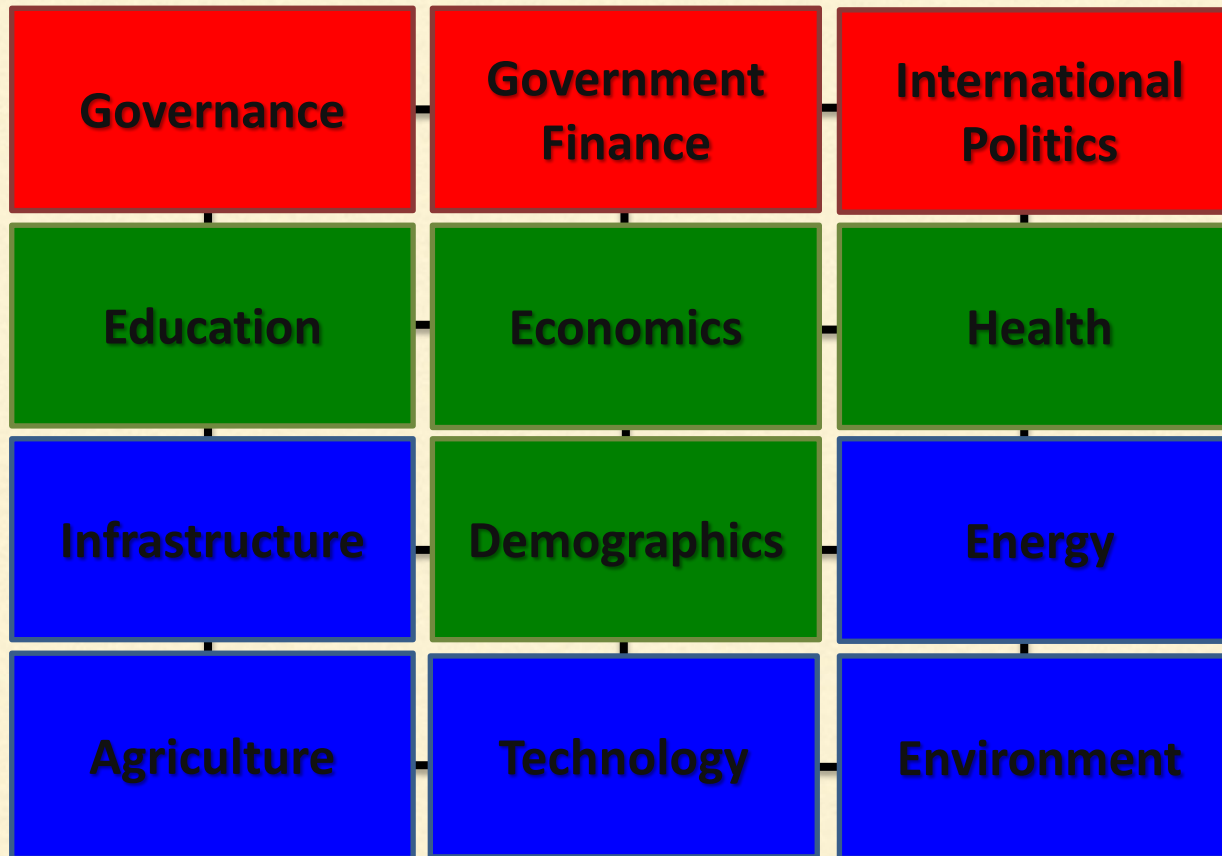
# INTERNATIONAL FUTURES BASIC DESIGN ELEMENTS

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- Global (With Regional and Country Detail)
- Integrated, Multi-Issue
- Data and Theory-Based
  - 100s of historical data sets
- Long-Term:
  - Base cases from 2010
  - Scenario exploration until 2100
- Hybrid model implemented with recursive, difference equations
  - Not analytic solution or comparative statics (but can pursue equilibrium and represent disequilibrium)
- User-Friendly
- Accessible/Available
- Transparent/Open
- Interventions Possible
  - Substantial interface with many intervention points



# International Futures key sub-modules



*between modules*



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# Approach

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- Create IFs model runs with all main drivers set exogenously based on quantitative data from SSP indicator database and additional parameter adjustments based on narratives
- Look at key ‘output’ indicators provided by IFs





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# Quantitative Data from SSP Indicator Database used Exogenously in IFs

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- Population
  - Total Fertility Rate – series taken directly
  - Net Migration Rates – series taken directly
    - small adjustments to ensure global net migration balances
  - Mortality rates
    - based on parameter adjustment
- Economy
  - GDP per Capita in PPP – series taken directly (OECD)
- Education
  - Mean Years of Schooling for adults over 15 and adults over 25 – series taken directly
- Urbanization
  - Urban share of population – series taken directly



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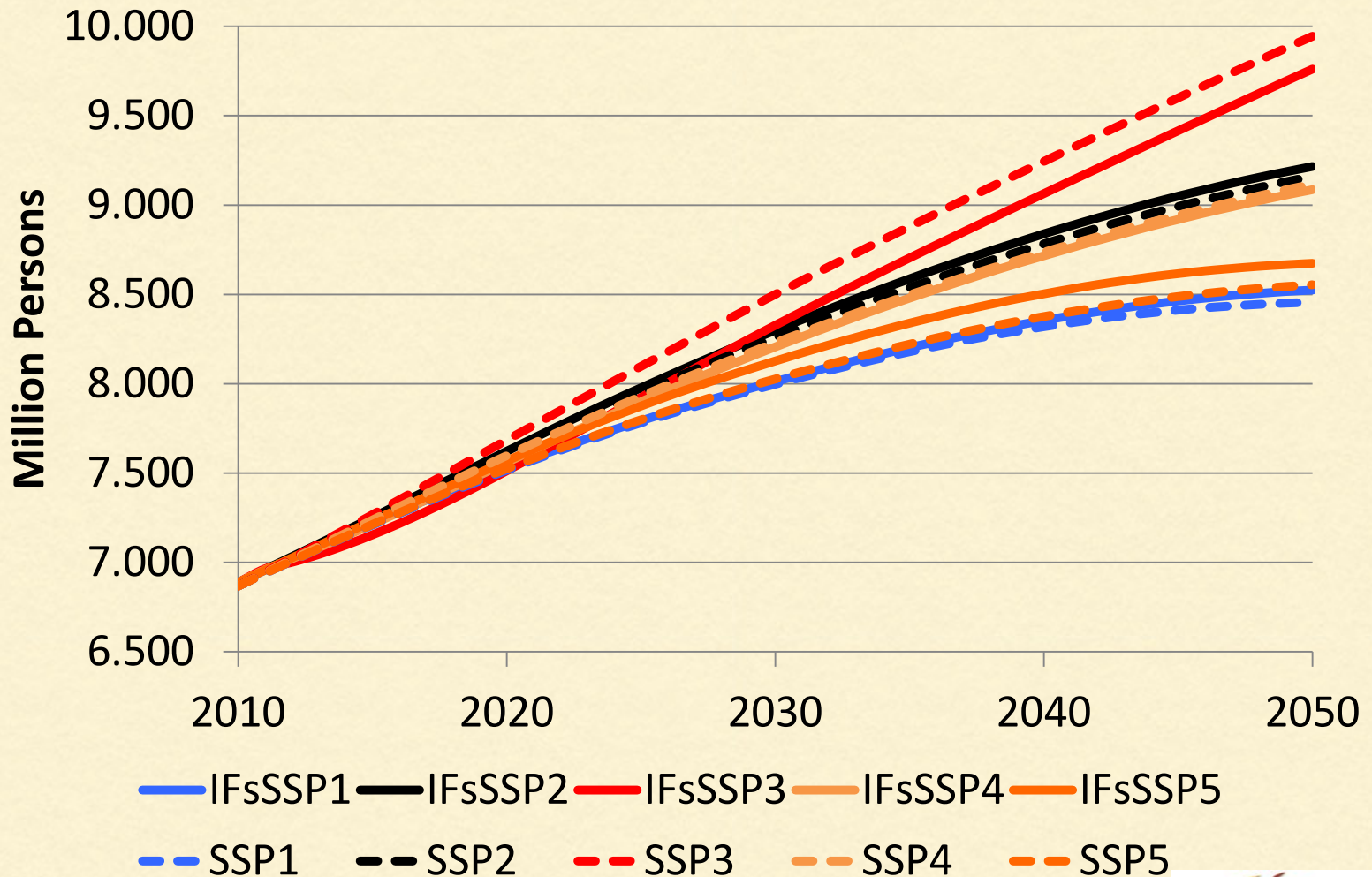
## Some Additional Parameter Adjustments Based on SSP Narratives

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- Trade protectionism
- Size and target of government expenditure
- Size of welfare and pension transfers
- Size and nature of ODA
- Regulatory effectiveness
- Corruption
- Dietary preferences



# Global Population in the SSPs



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# Key Outcome Indicators

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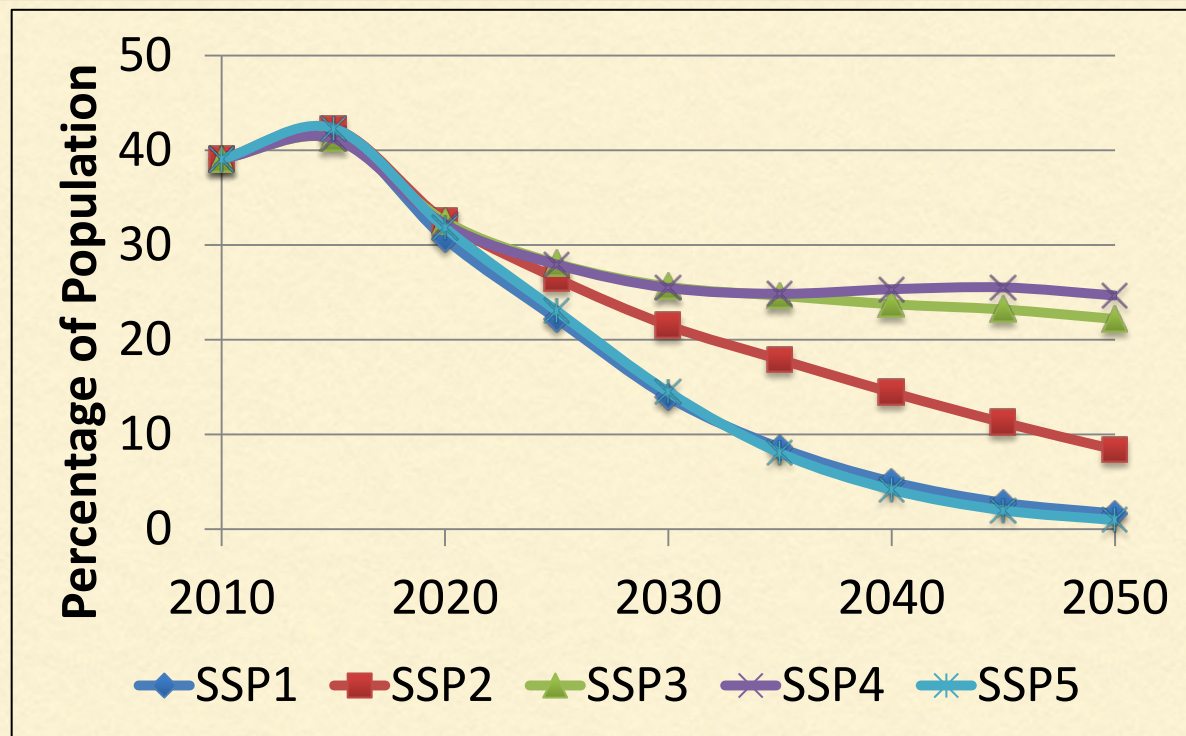
- Income Distribution
  - GINI
  - Population below \$1.25 daily income/consumption
- Food Consumption and Malnutrition
  - Average calories per capita
  - Malnutrition and stunting
- Infrastructure Access
  - Safe water, Sanitation, Roads, Electricity, etc
- Governance
  - Security, Capacity, Inclusion





# Absolute Poverty in Low Income Countries

## % of Population Living on < \$1.25/day

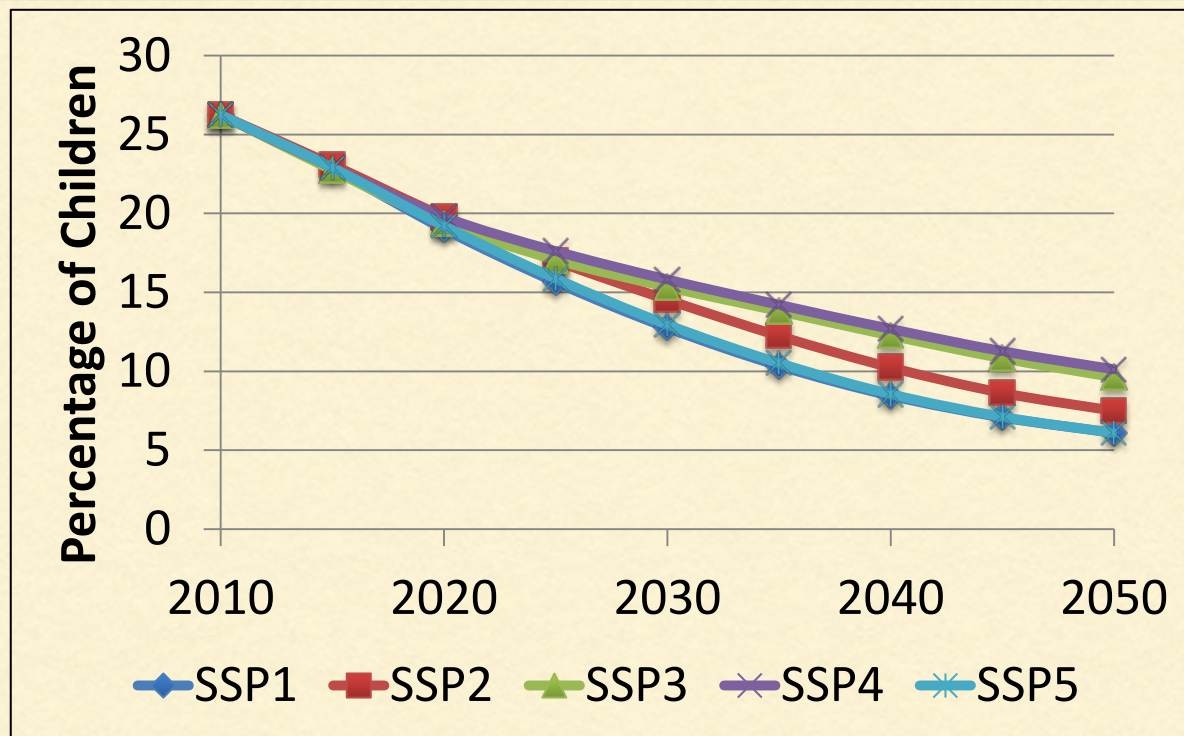


	Million Persons				
	SSP1	SSP2	SSP3	SSP4	SSP5
2010	573				
2030	280	453	555	543	285
2050	39	229	686	732	22



# Undernutrition in Low Income Countries

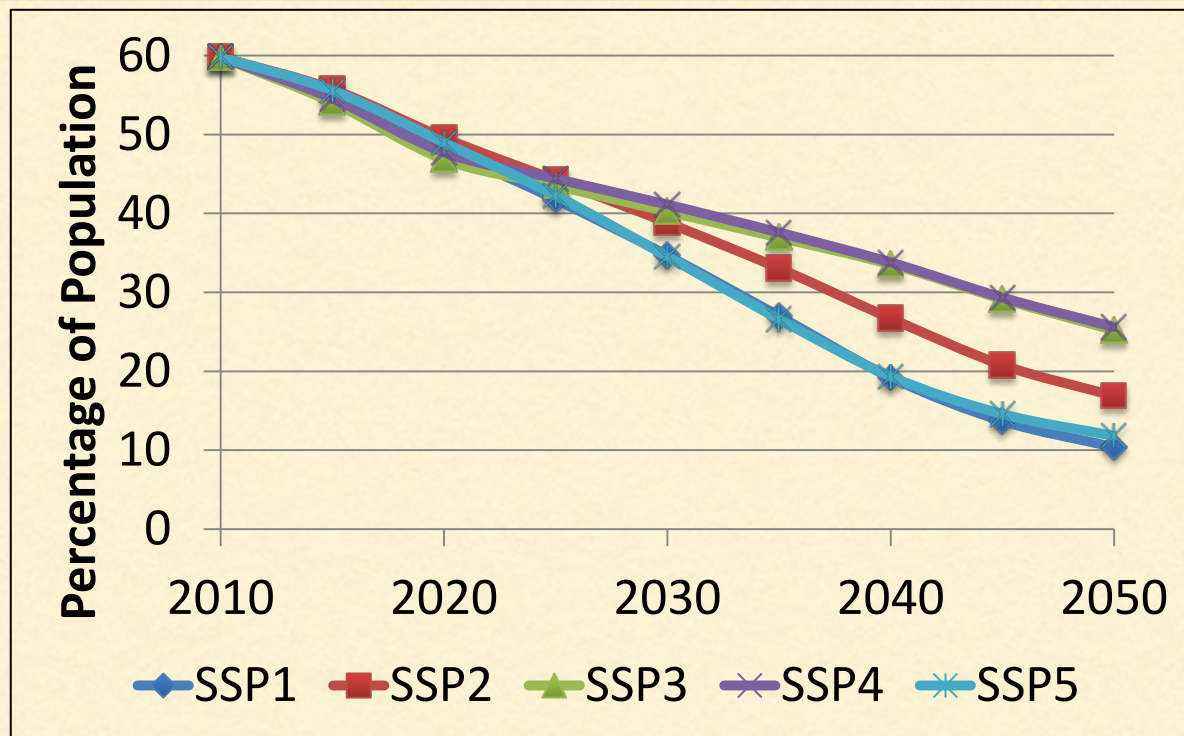
## Children Undernourished



	Million Children				
	SSP1	SSP2	SSP3	SSP4	SSP5
2010	55.3				
2030	23.5	35.0	46.0	45.7	23.4
2050	8.9	18.0	35.1	34.3	8.5



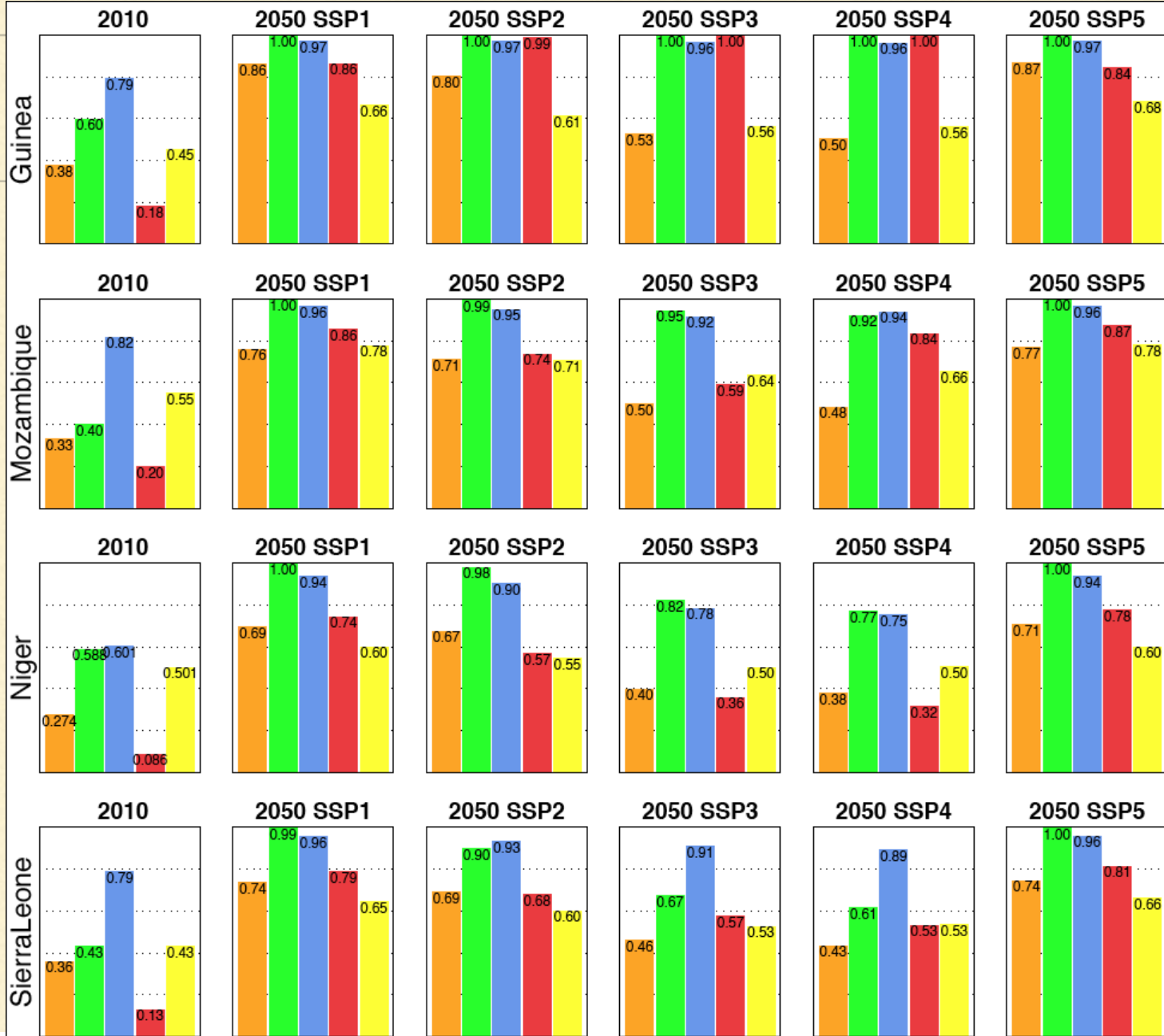
# Infrastructure Access in Low Income Countries Population without Access to Improved Sanitation



	Million Persons				
	SSP1	SSP2	SSP3	SSP4	SSP5
2010	877				
2030	697	819	872	877	679
2050	248	461	778	759	269

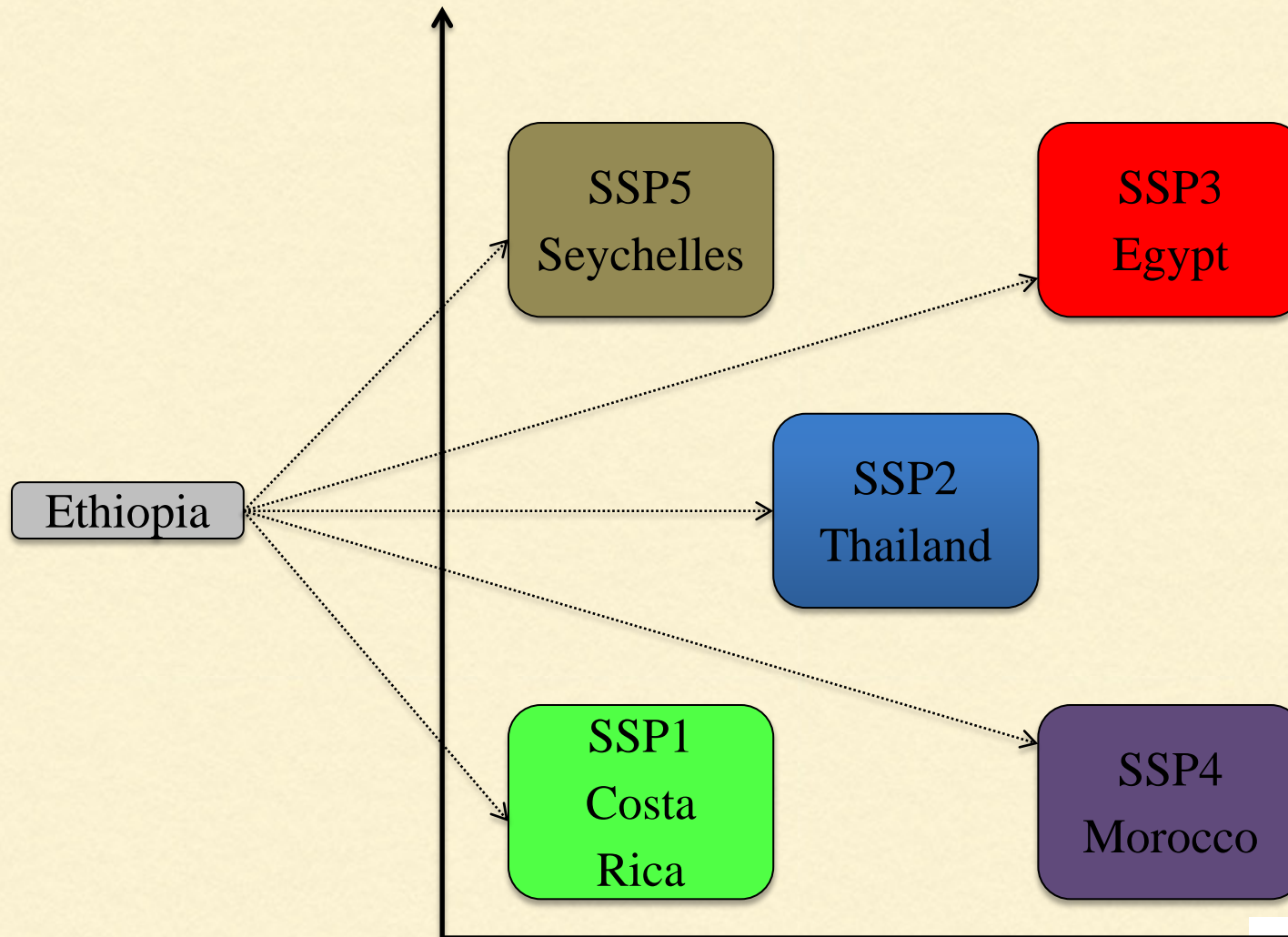


# Socio-economic Profiles of Countries





# What Does Life Look Like in Ethiopia in 2050 in the Different SSPs?



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# THANK YOU

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*learn more about ifs at [www.pardee.du.edu](http://www.pardee.du.edu)*



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