

# The Shared Socioeconomic Pathways (SSPs)

**Brian O'Neill**

Nation Center for Atmospheric Research

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# Shared Socioeconomic Pathways (SSPs)

Descriptions of plausible alternative evolutions of society at the global level

To eventually be combined with assumptions about climate change and policy responses to evaluate climate change impacts, adaptation, and mitigation

**Shared:** to be used by a wide range of studies to provide common assumptions

**Socioeconomic:** i.e., societal (social, demographic, economic, technologic, policy, governance, etc.)

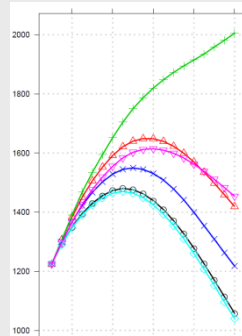
**Pathways:** not end states but also paths to them; not full integrated scenarios, but one component of them

# What's in an SSP



## Narrative

Qualitative description of broad patterns of development  
Logic relating elements of narrative to each other



## Quantitative elements

Population  
Education  
Urbanization  
Income  
Spatial population  
Income distribution  
Etc.

## Hypothetical “reference” development pathway

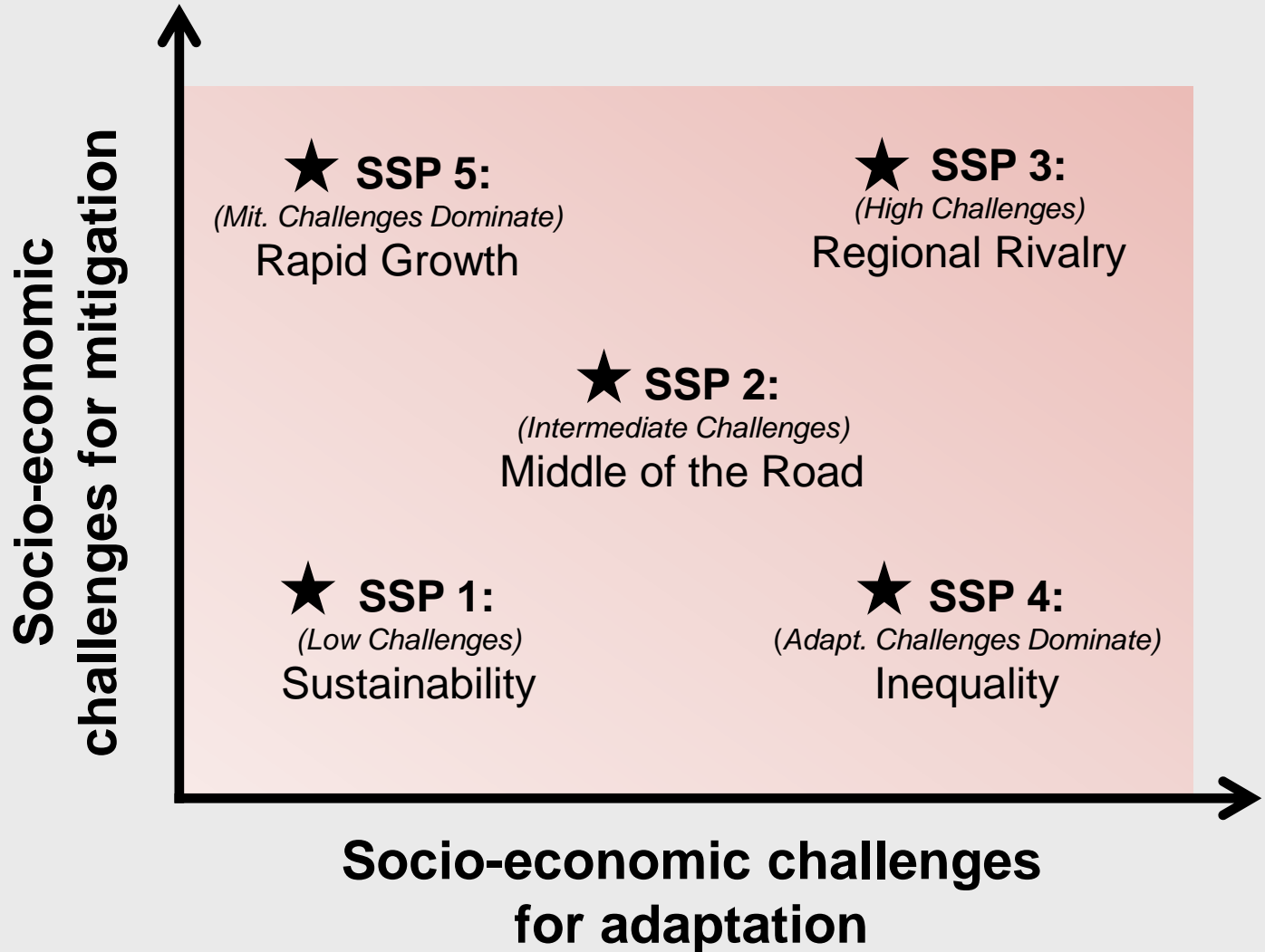
### Reference:

- No effects of climate change
- No climate policy (mitigation or adaptation)

### Development pathway:

- Does not include typical model output (emissions, land use, etc.)

# SSP Logic



Relevant range  
of uncertainty  
spanned:  
challenges to  
adaptation,  
mitigation

## Adaptation challenges



Exposure  
Sensitivity

Adaptive Capacity



Average Wealth  
Extreme Poverty  
Governance  
Water Availability  
Innovation Capacity  
Coastal Population  
Educational Attainment  
Urbanization  
...  
Quality of Healthcare  
Availability of Insurance

## Mitigation challenges



Baseline(no-policy) emissions  
Mitigation capacity



Population  
Carbon Intensity  
Agricultural Productivity  
Energy Intensity  
Energy-related Tech. Change  
CCS availability  
...  
Effectiveness of Policy Institutions  
Energy Tech. Transfer  
Diet

# Narrative Example



## SSP3: Fragmentation

Growing **interest in regional identity** and **concerns about competitiveness and security** push countries to increasingly focus on domestic or, at most, regional issues. This trend is reinforced by the **limited number of comparatively weak global institutions**, with uneven coordination and cooperation for addressing environmental concerns. Policies are oriented towards security, including **barriers to trade**, particularly in the energy resource and agricultural markets. Countries focus on achieving **energy and food security goals** within their own region, **at the expense of broader-based development**. A low international priority for addressing environmental concerns leads to strong environmental degradation in some regions. The combination of impeded development and limited environmental concern results in **poor progress towards sustainability. ... etc.**

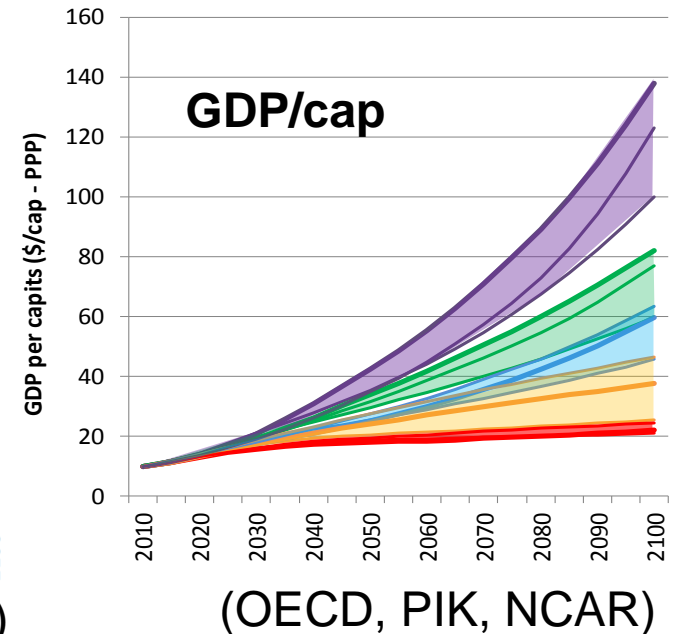
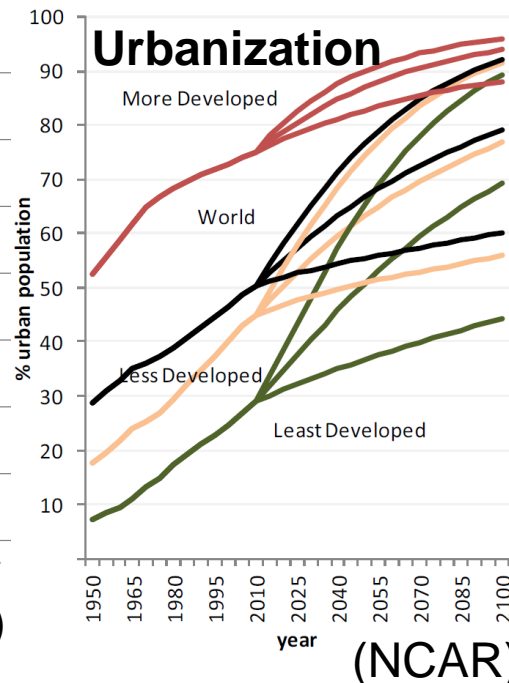
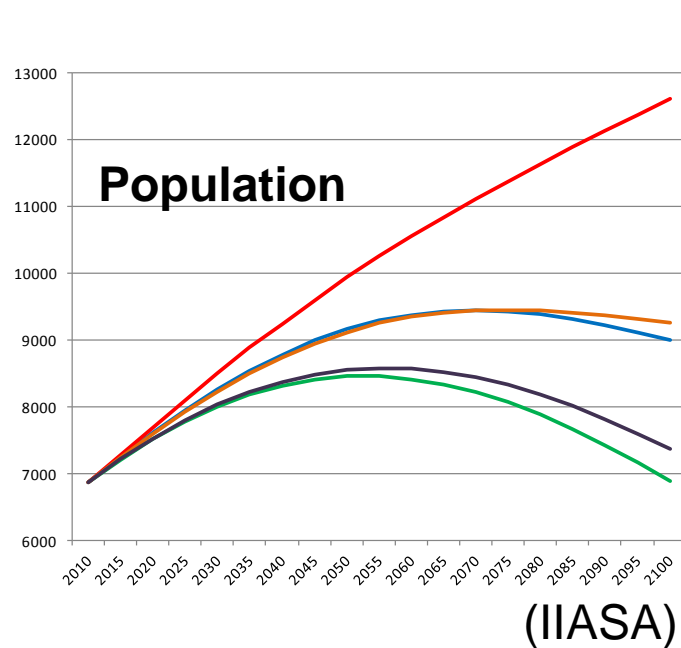
# Summary of SSP Status

## Conceptual framework established

- Special issue of *Climatic Change* published

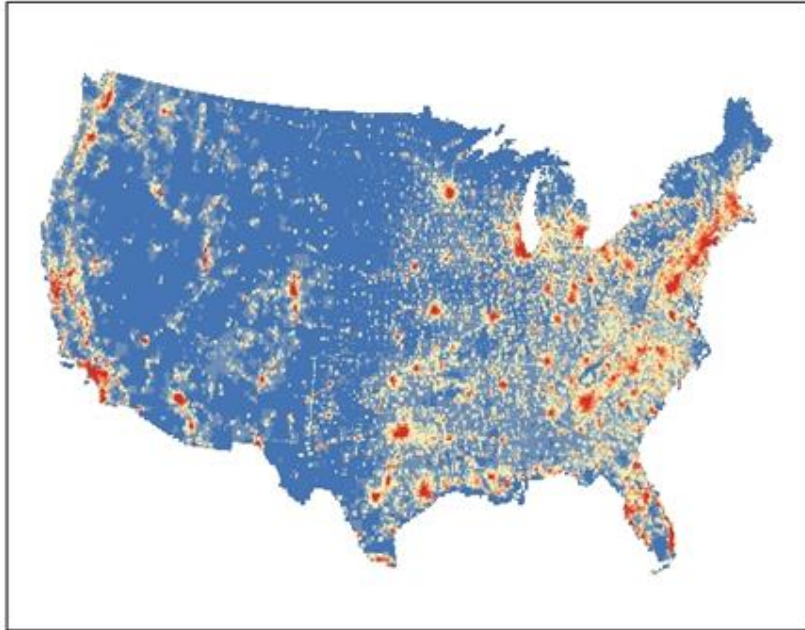
## Narratives and quantification of key drivers completed

- Special issue of *Global Environmental Change* in progress

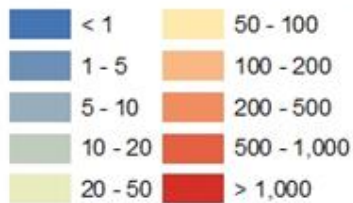


# Global Spatial Population Projections

NCAR Projection, 2100

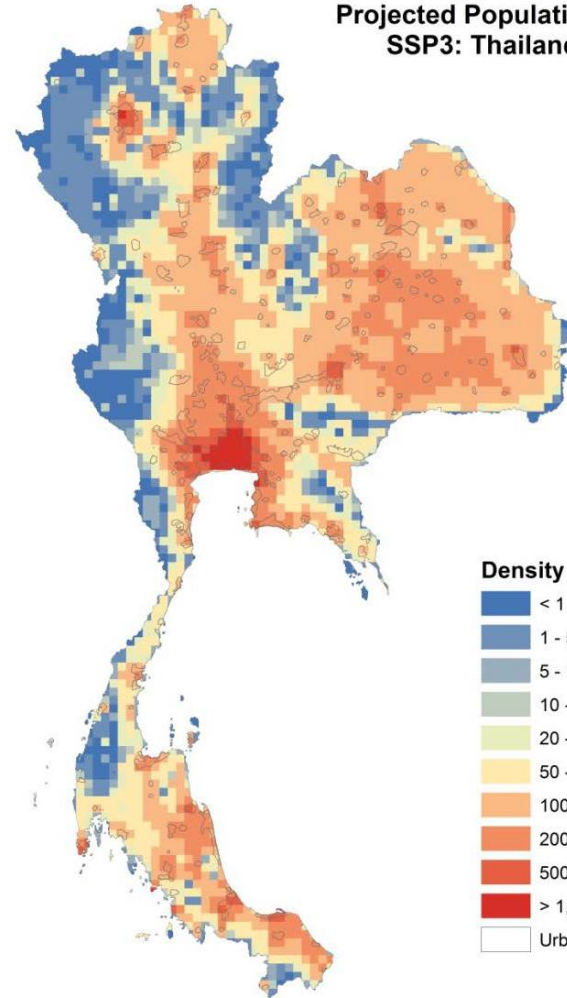


Population Density (km<sup>2</sup>)

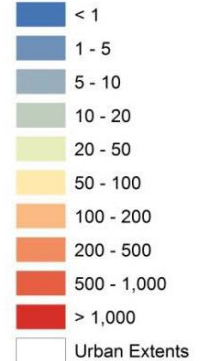


Jones & O'Neill, 2013.

Projected Population Density  
SSP3: Thailand, 2100



Density (km<sup>2</sup>)



0 50 100 200 300 400  
Kilometers

Jones & O'Neill, in prep.



# Next Steps

**Emissions and land use scenarios based on SSPs to be completed**

**Looking for ways to carry out extensions of SSPs: regional, sectoral, additional global information**

**Research based on framework!**

**Continue to re-evaluate current SSPs, possibly develop new versions (or variants of existing ones)**



# The Parallel Process

