

# Long-term urbanization projections

**Leiwen Jiang and Brian O'Neill**

National Center for Atmospheric Research (NCAR)

Workshop on SMA/SSP Development  
South Korea, 16-17 July 2011

NCAR is sponsored by the National Science Foundation

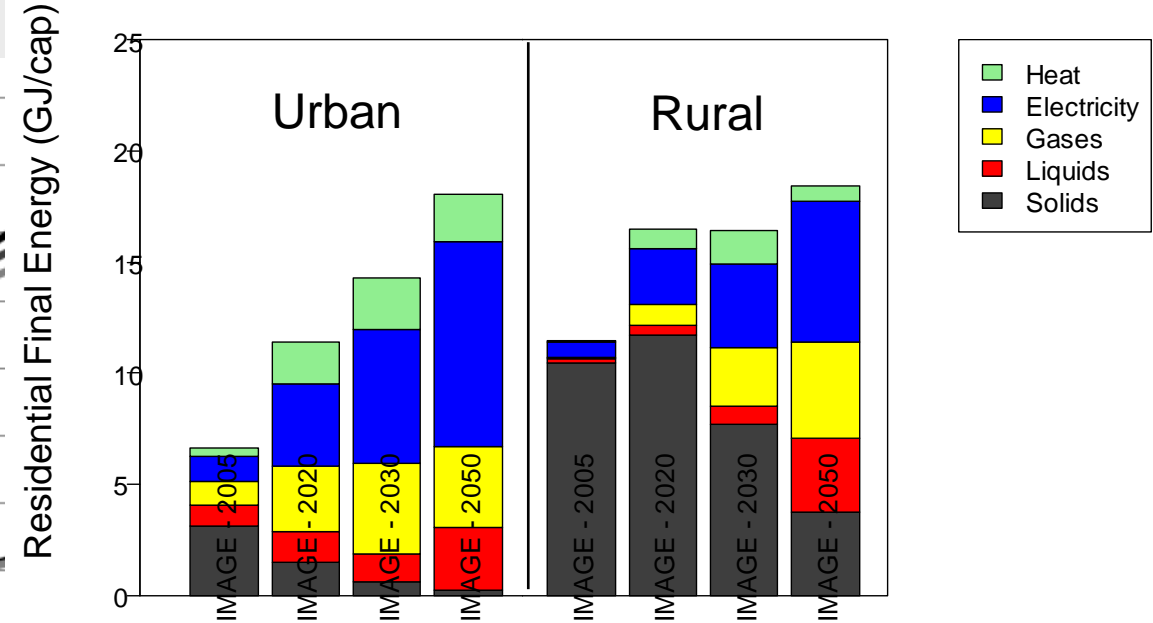
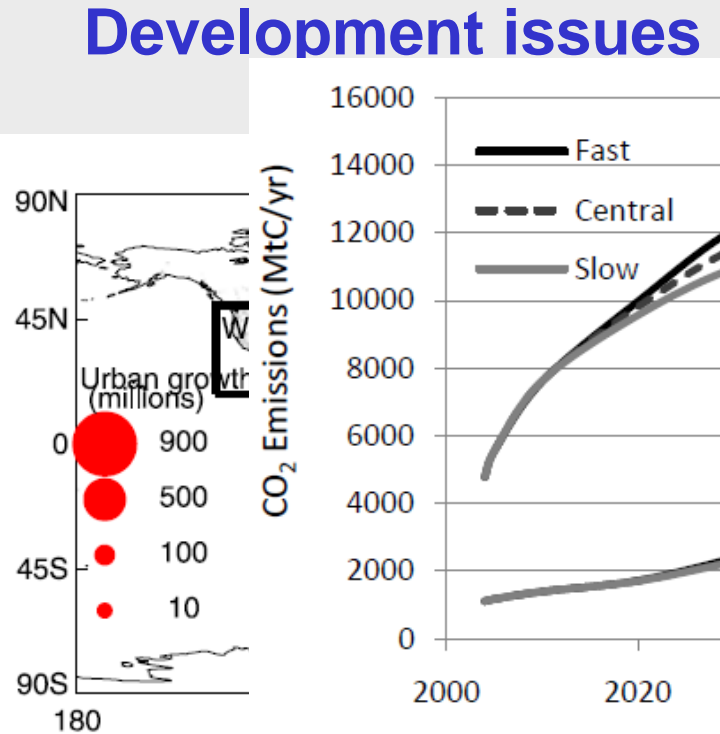
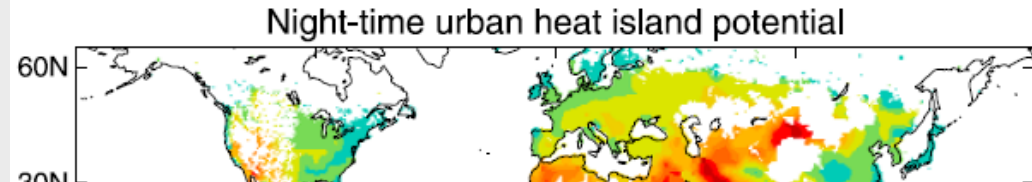


# Uses of Urbanization Projections

Emissions and mitigation analysis

Impact, adaptation, and vulnerability analyses

Development issues



# What is available?

## United Nations Urbanization Prospects (2009)

One scenario

2010-2050

No age/sex distinction by urban/rural residence; no migration

## IIASA (2007)

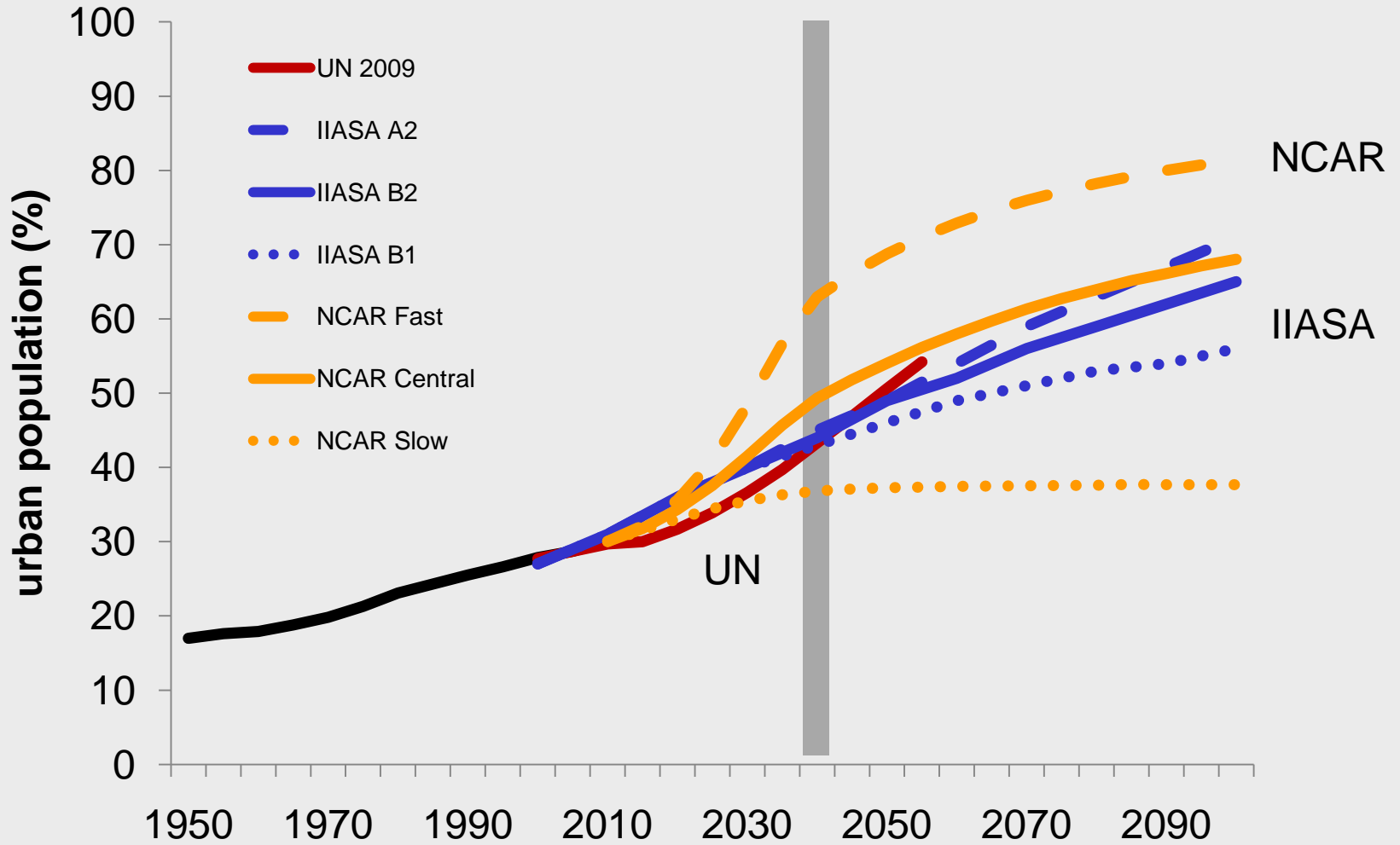
Three alternative scenarios

2000-2100

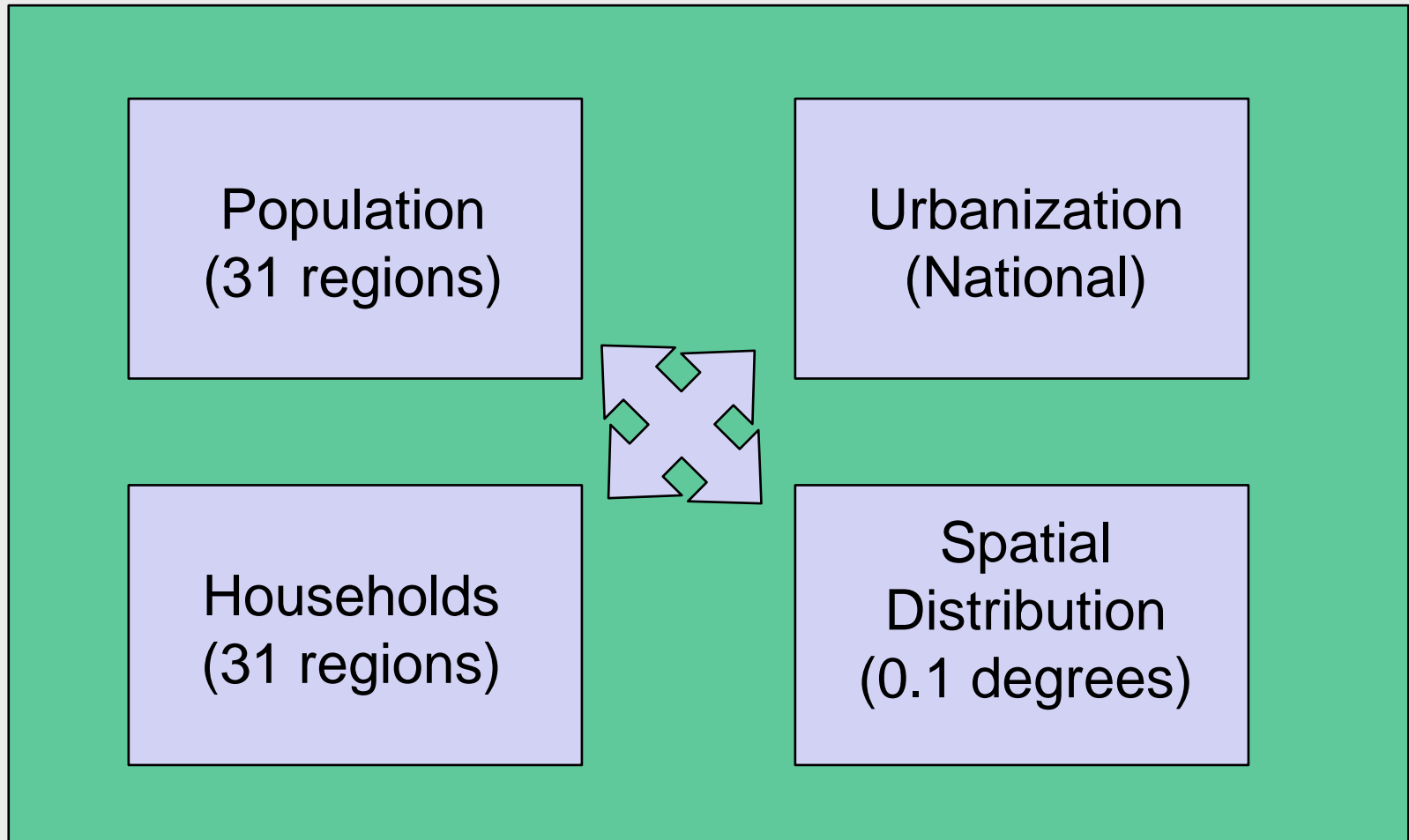
No age/sex distinction by urban/rural residence; no migration

Narrow range of uncertainty over next few decades

# Example: India



# NCAR Community Demographic Model (CDM)



# Features of NCAR Urbanization Projections

Modified and extended UN-type methodology

Based on historical experiences of other countries

Long range (2100)

Three alternatives (fast, central, slow), plausible range of uncertainty for 30+ year time horizon

Relative likelihoods across alternative scenarios

Consistent age/sex structure in rural and urban areas

Consistent net rural-urban migration

# NCAR Methodology

## Identify reference countries

Countries that at some point in the past were “like” the target country is today

Similar urbanization level, similar rate of change in level

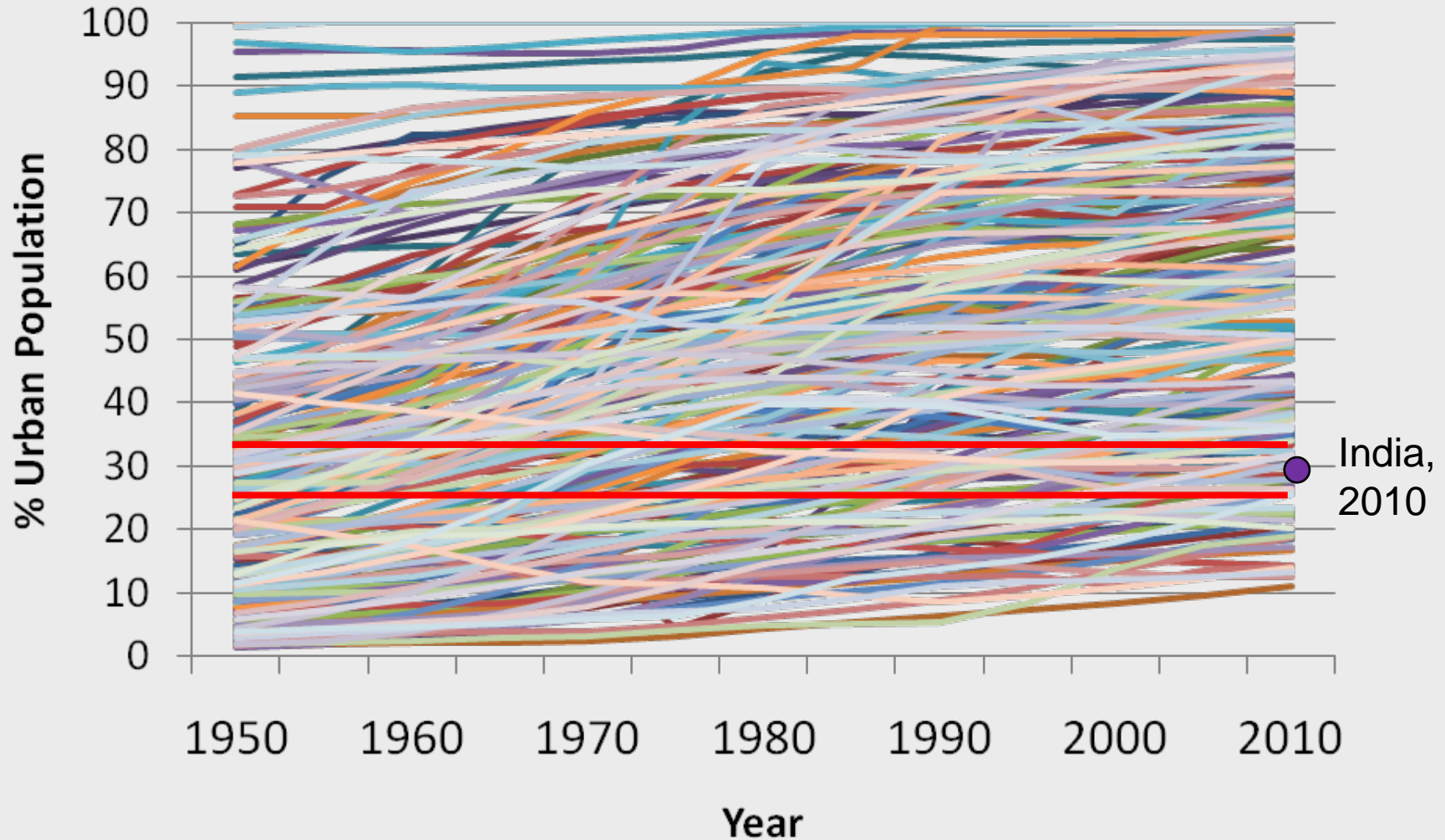
Group into fast, central, slow reference countries

Define representative pathway for each group

Smooth and extrapolate

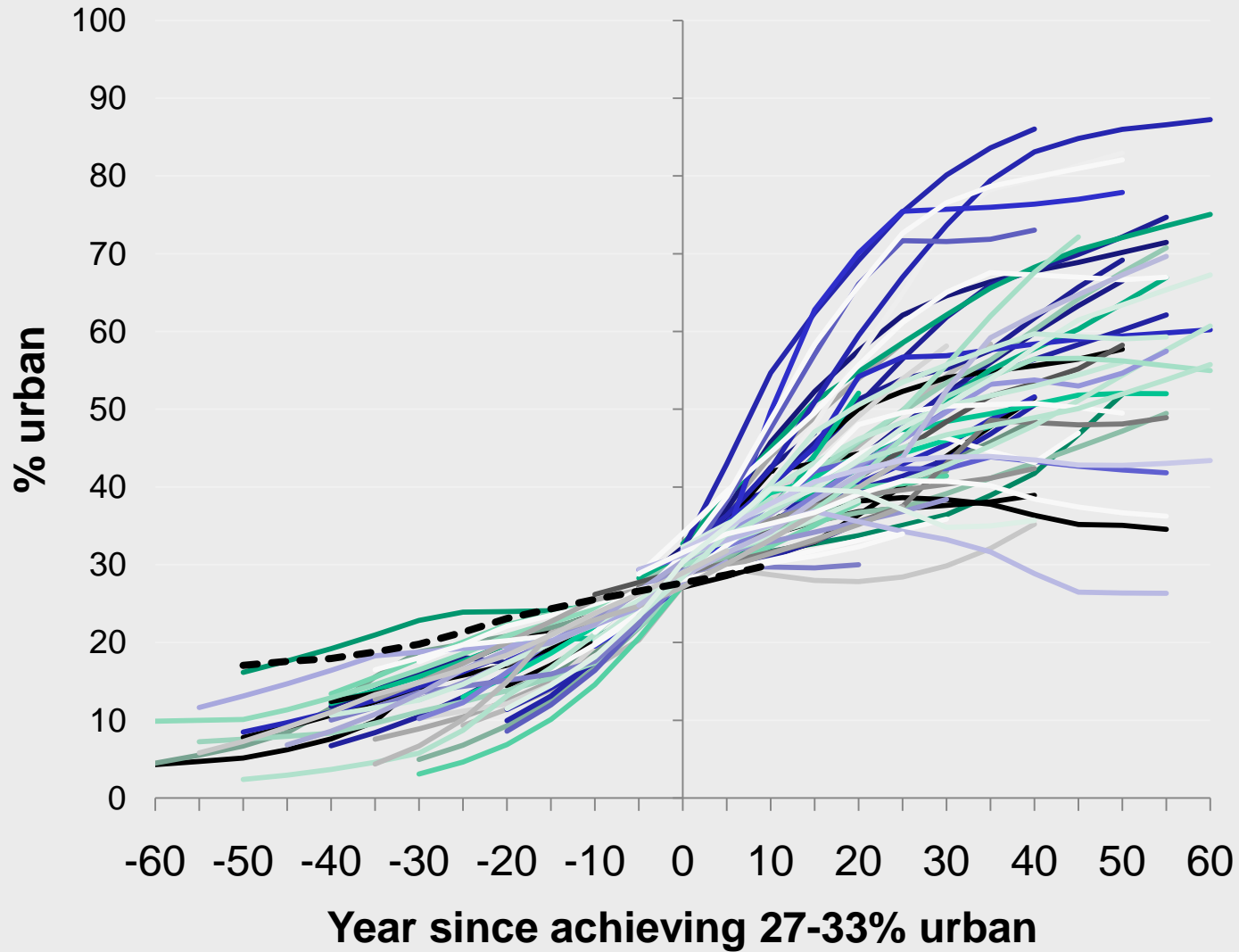
Evaluate relative likelihood

# UN Historical Urbanization Data

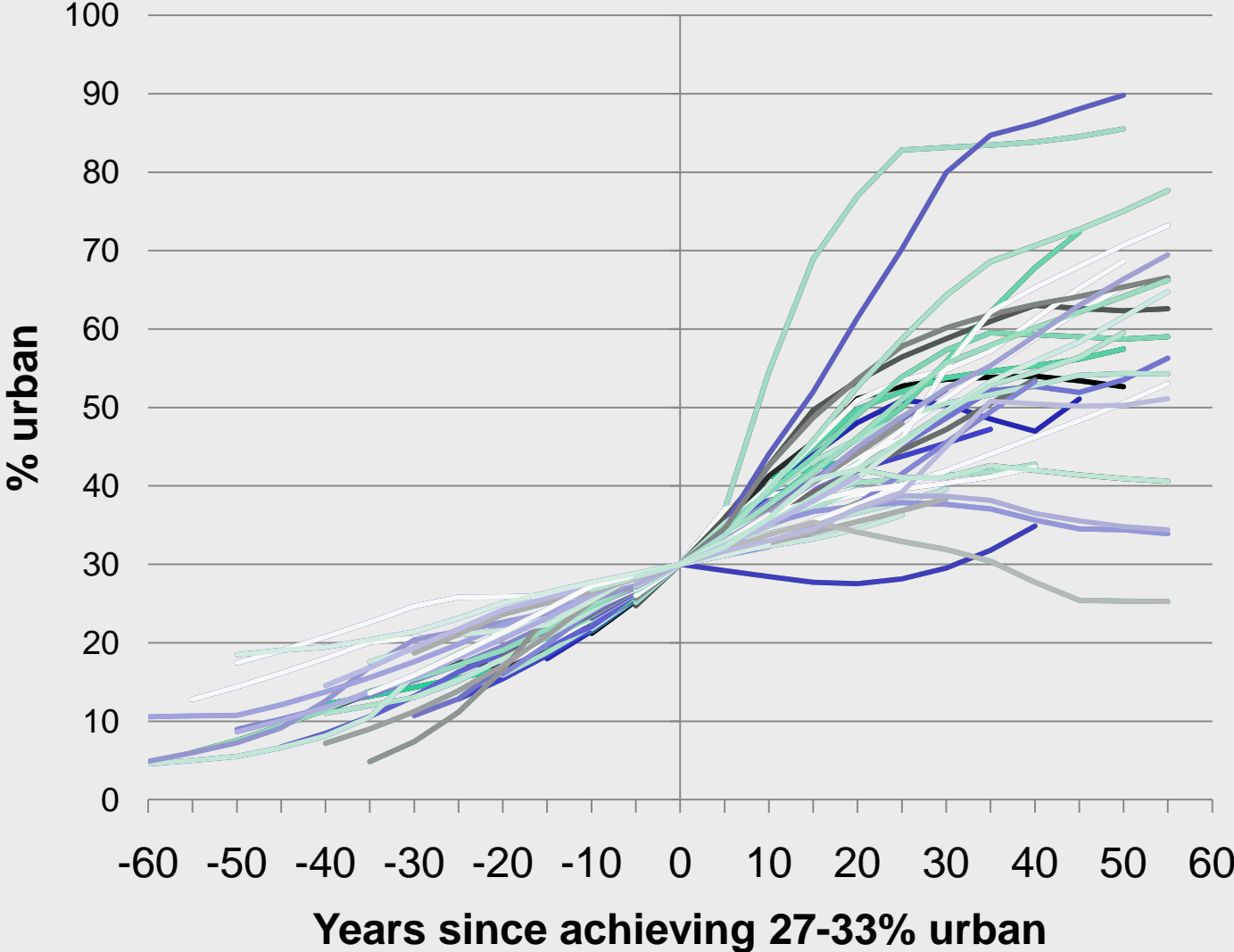




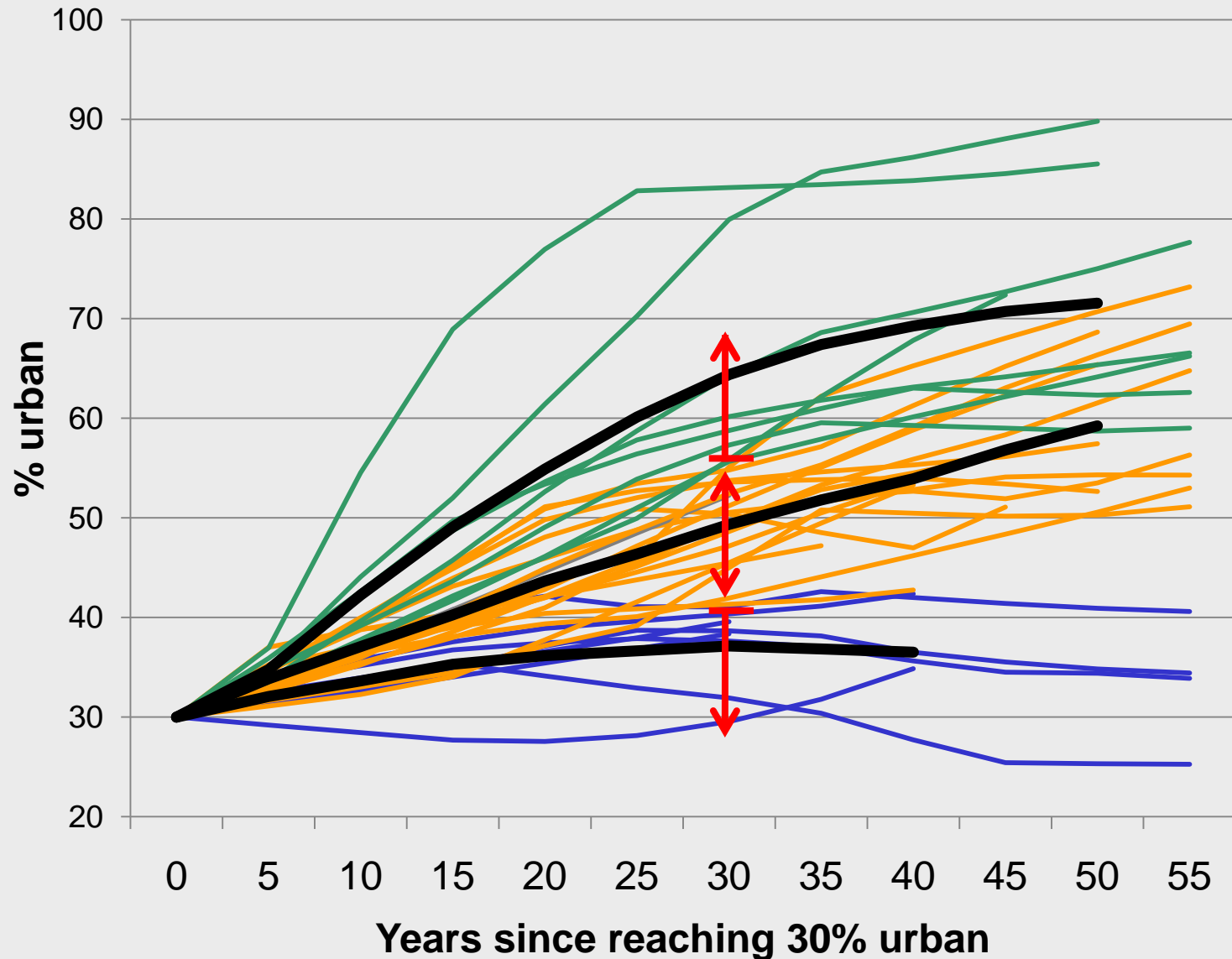
# India Example: Reference countries, level



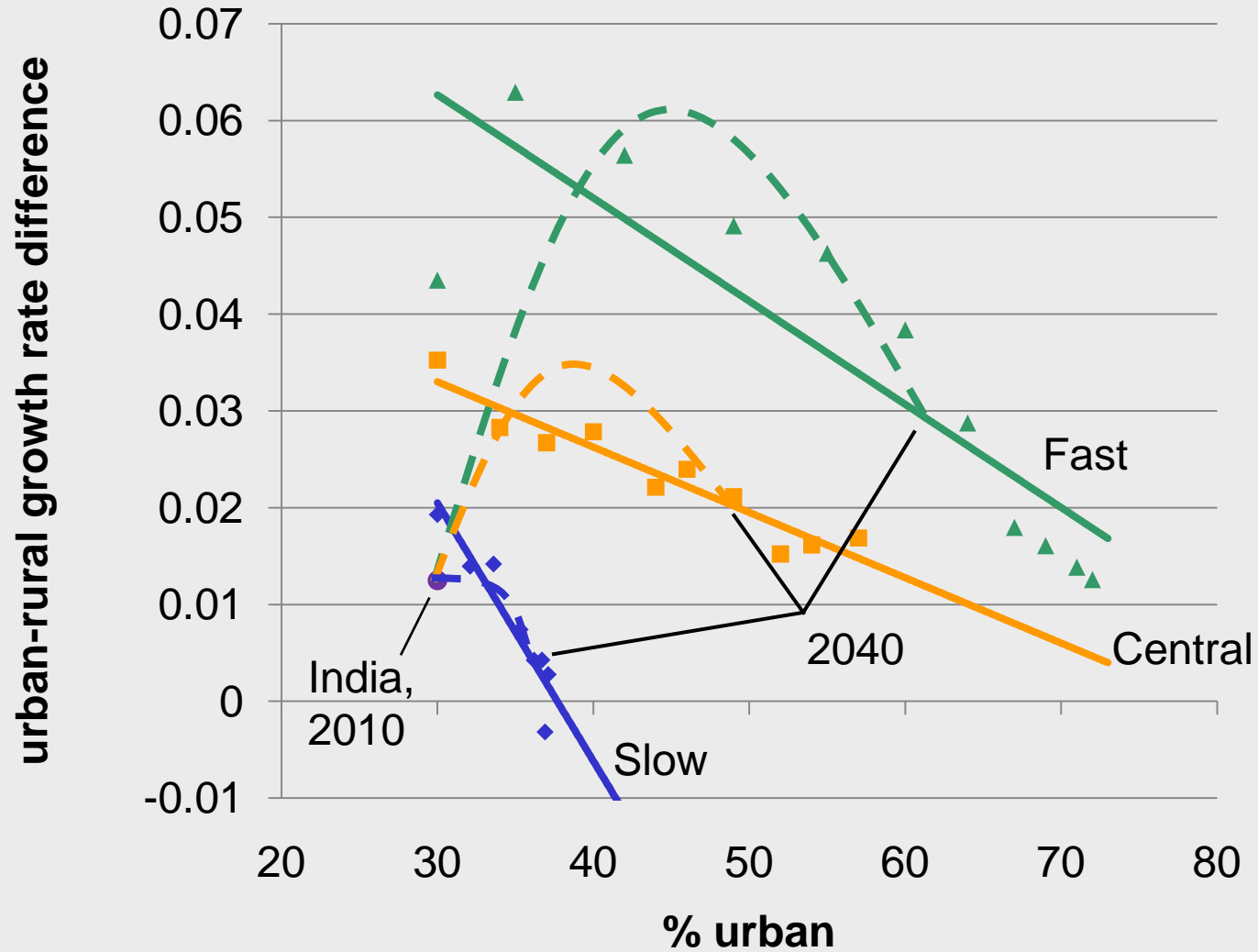
# Reference countries, level + rate of change



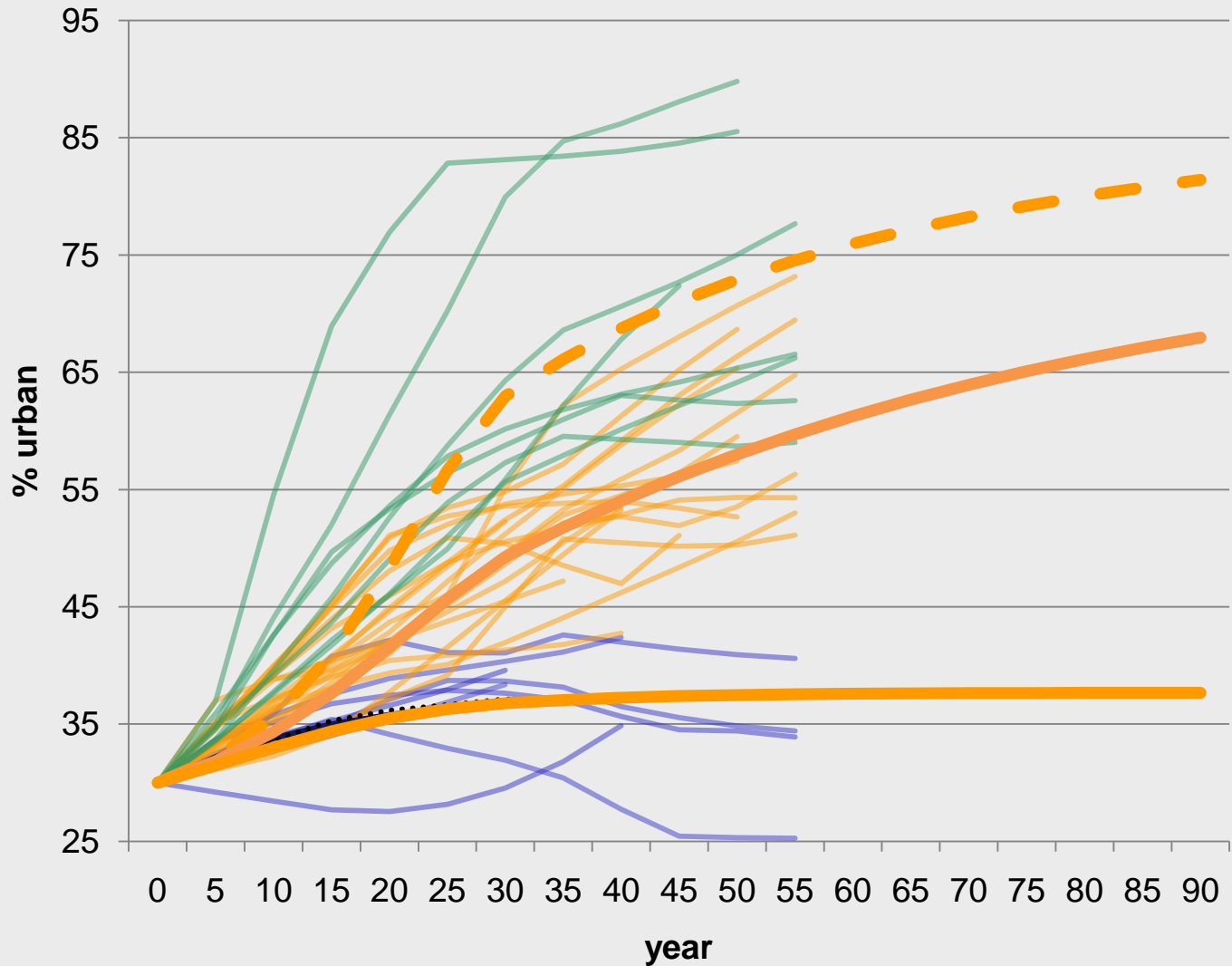
# Fast, Central, Slow reference countries and representative pathways



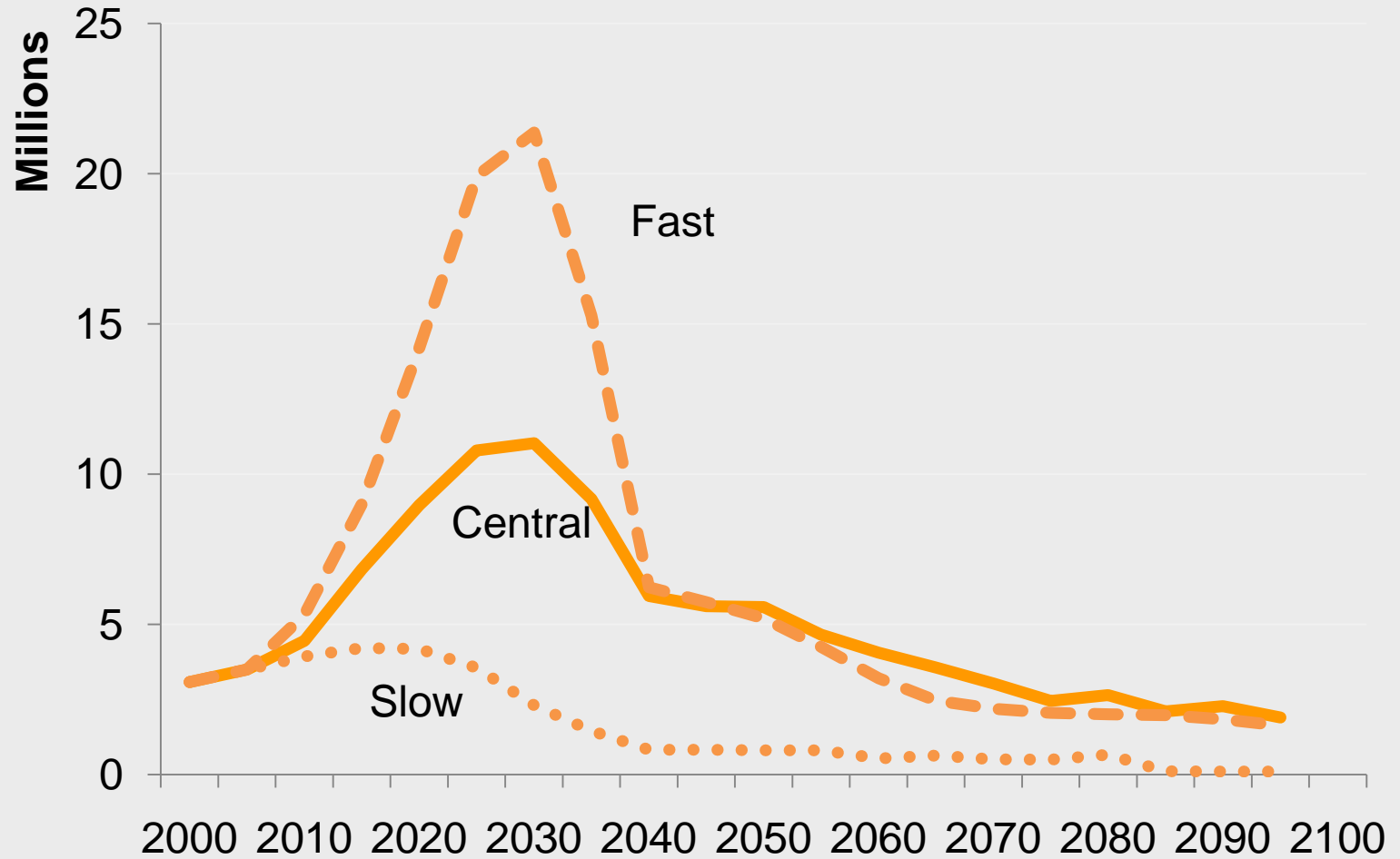
# Smooth and extrapolate



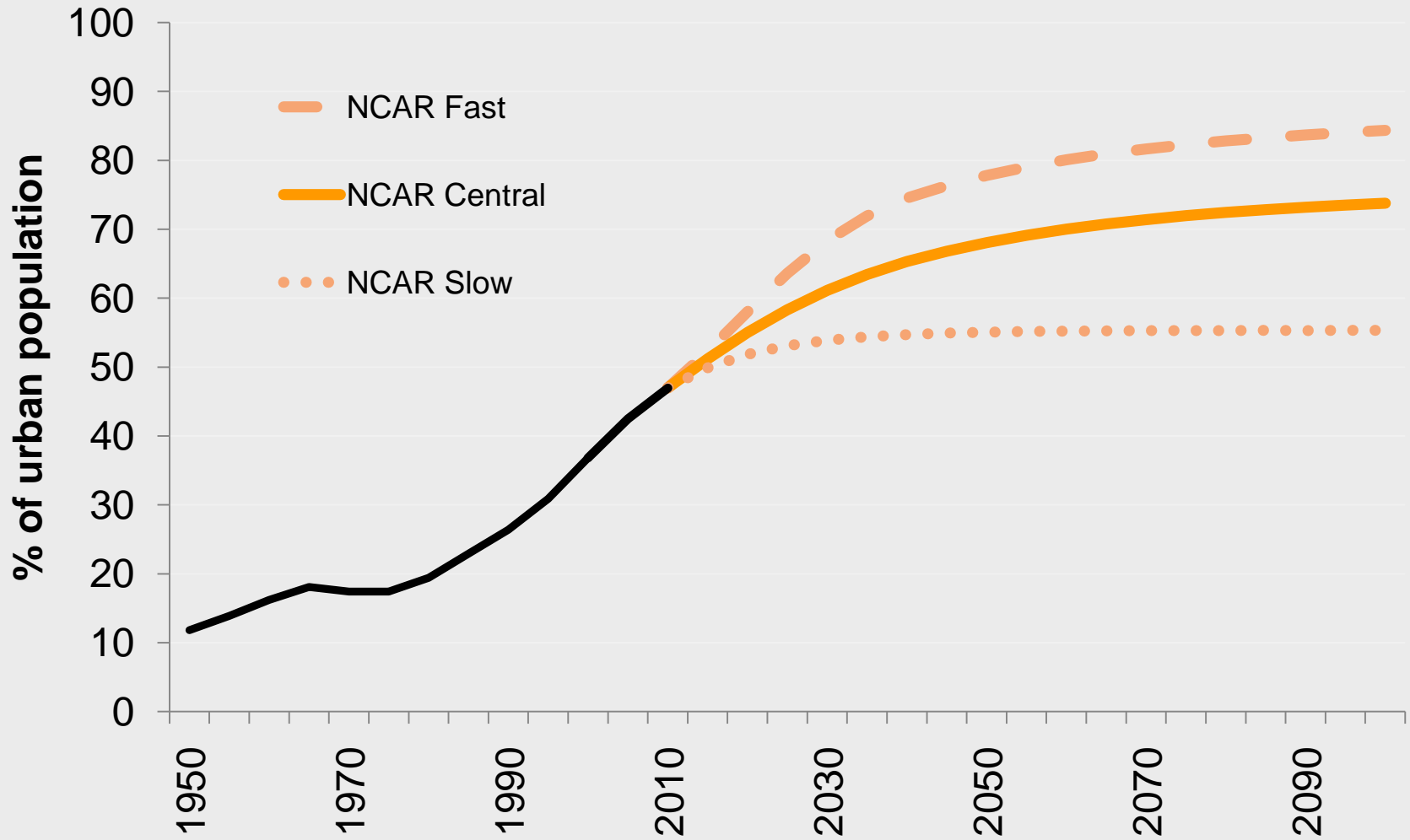
# Urbanization Scenarios for India



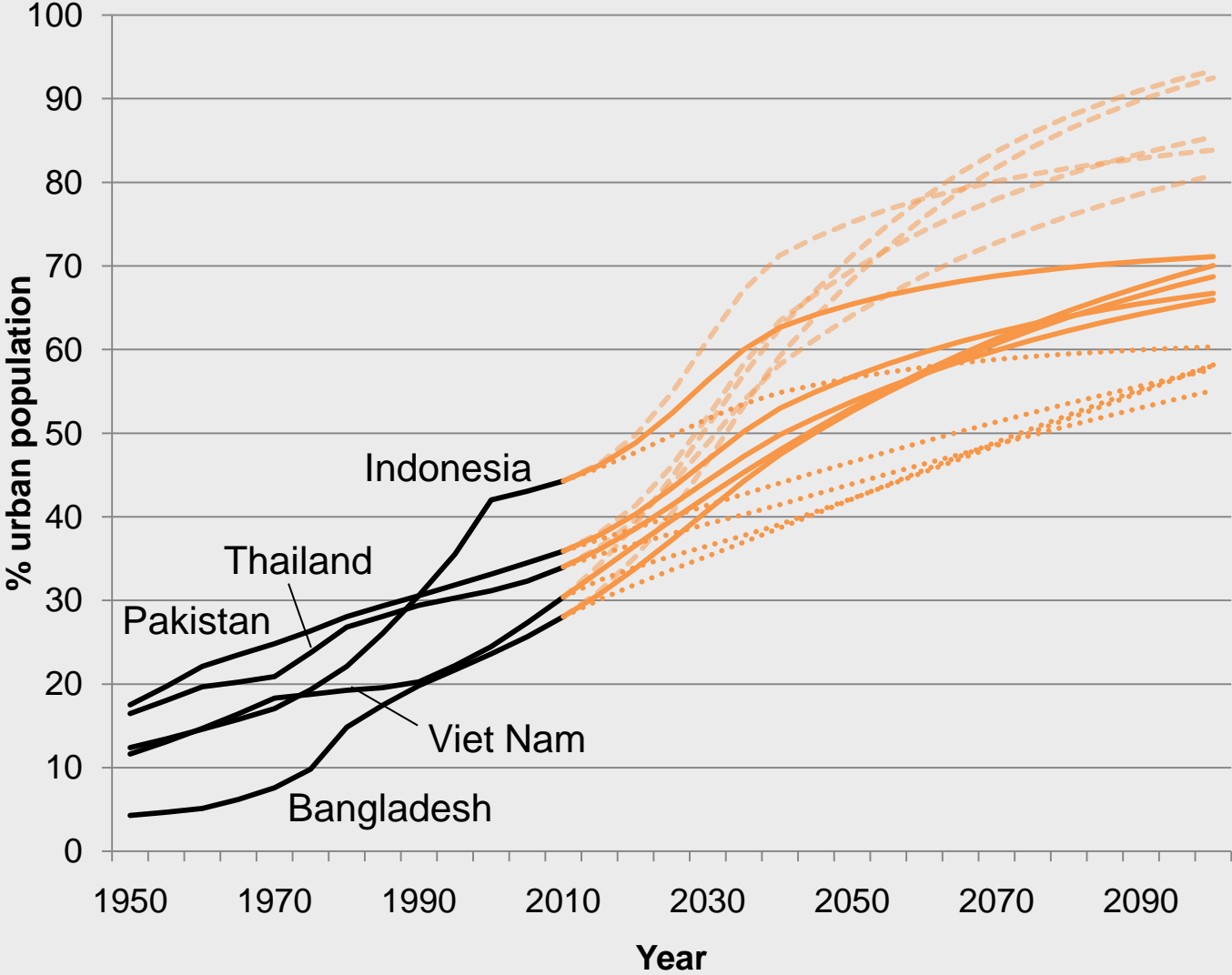
# Implied Net Migration for India



# Urbanization Scenarios for China

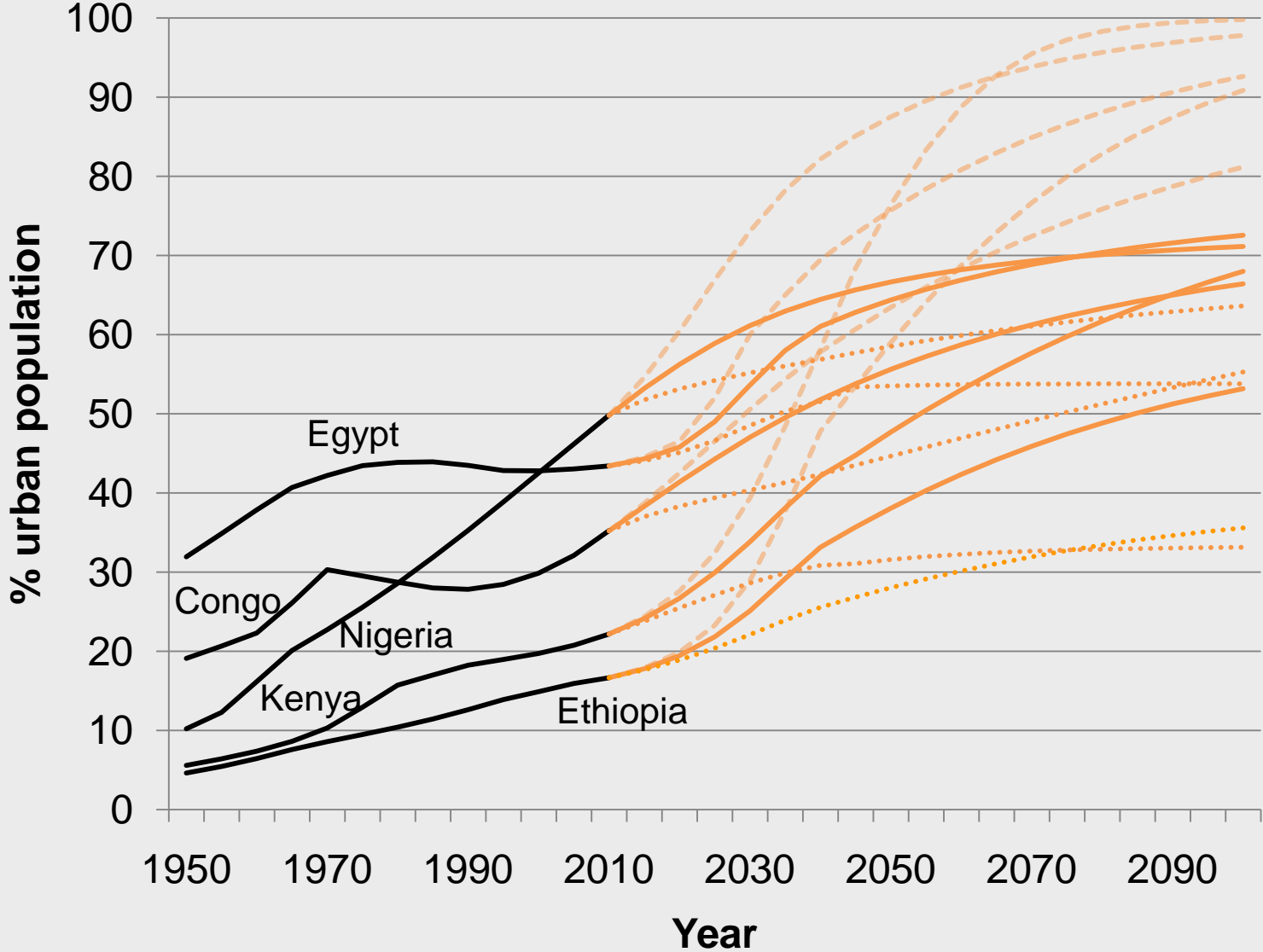


# Urbanization Scenarios, 5 Asian Countries





# Urbanization Scenarios, 5 African Countries



# Summary

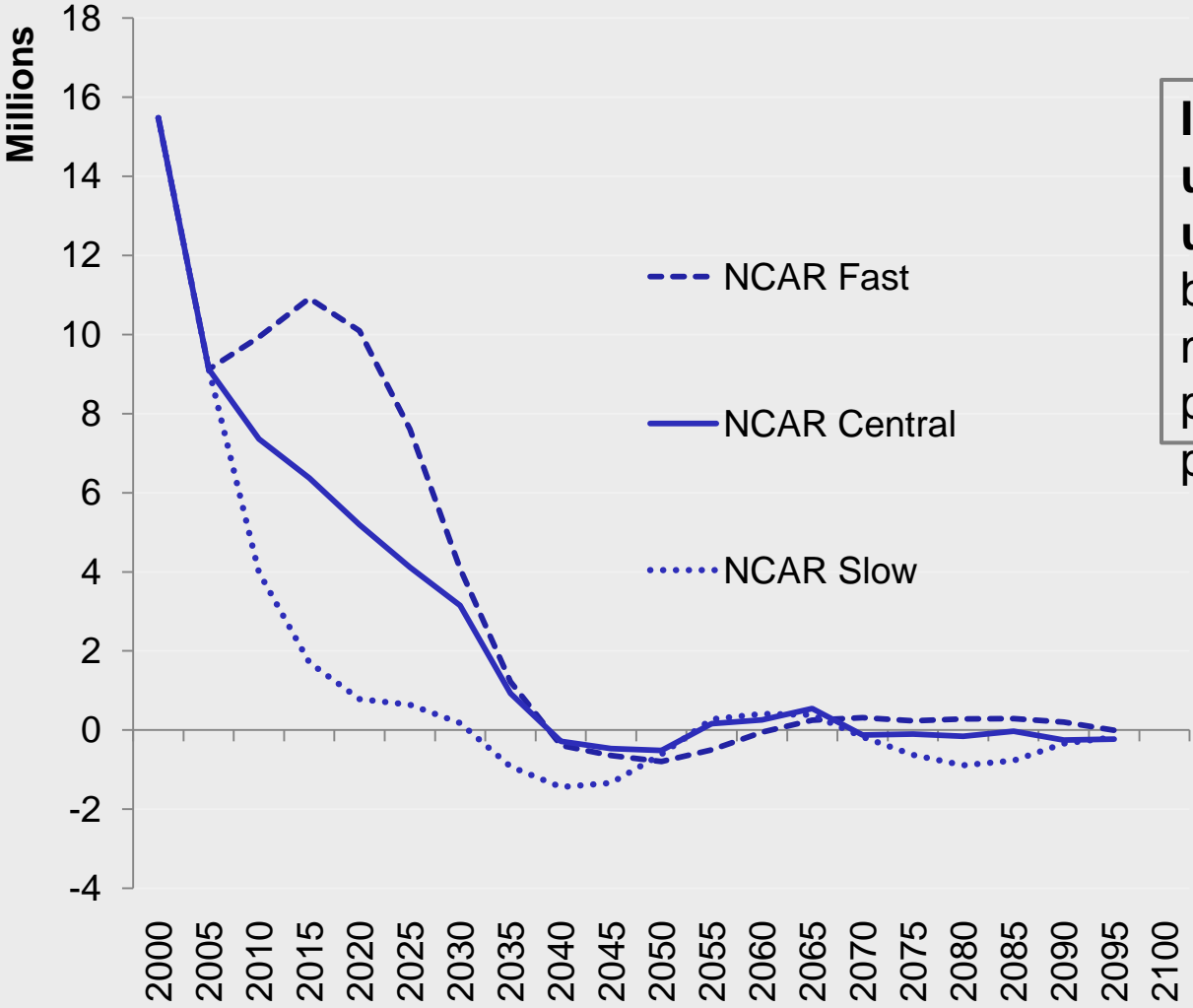
**Urbanization an important element of SSPs (initial or extended)**

**Current options have limitations**

**Production of new set of alternative scenarios for all countries underway with aim to complete by this fall**



# Urbanization Scenario for China



**Implied net migrations under different urbanization Scenarios:** based on the multiregional population/urbanization projection model

# SSP Logic

