

# Incorporating quantitative elements into socioeconomic narratives and scenarios

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Presentation to Institute of Medicine  
Webinar

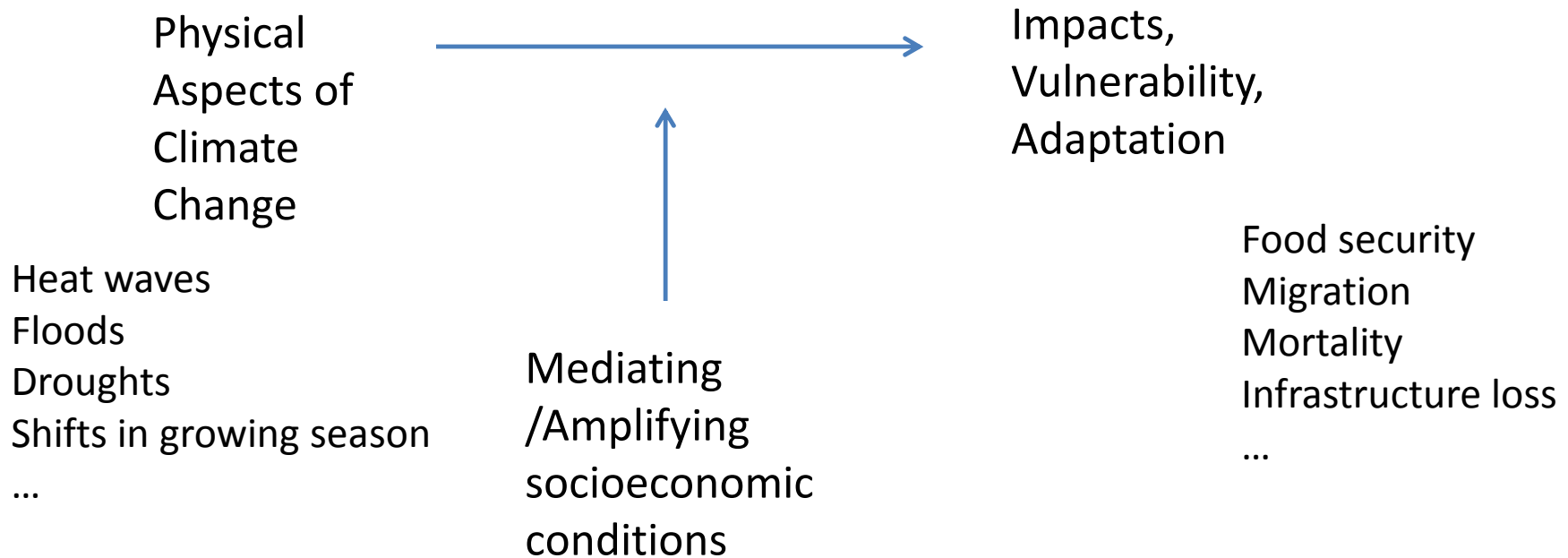
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# Difficult Questions

- What needs to be included?
- How to get the variance right?
- How to get the dependencies right?

# What needs to be included?



**Socioeconomic conditions that have high influence on the direction and/or magnitude of the relationship between physical and social impacts**

# Priority socioeconomic variables

Expert Survey Results, Schweizer and O'Neill, forthcoming, variables that most shape adaptation challenges

- Per-capita income
- Quality of governance
- Extreme poverty
- Coastal population
- Water availability
- Urbanization
- Educational attainment
- Innovation capacity

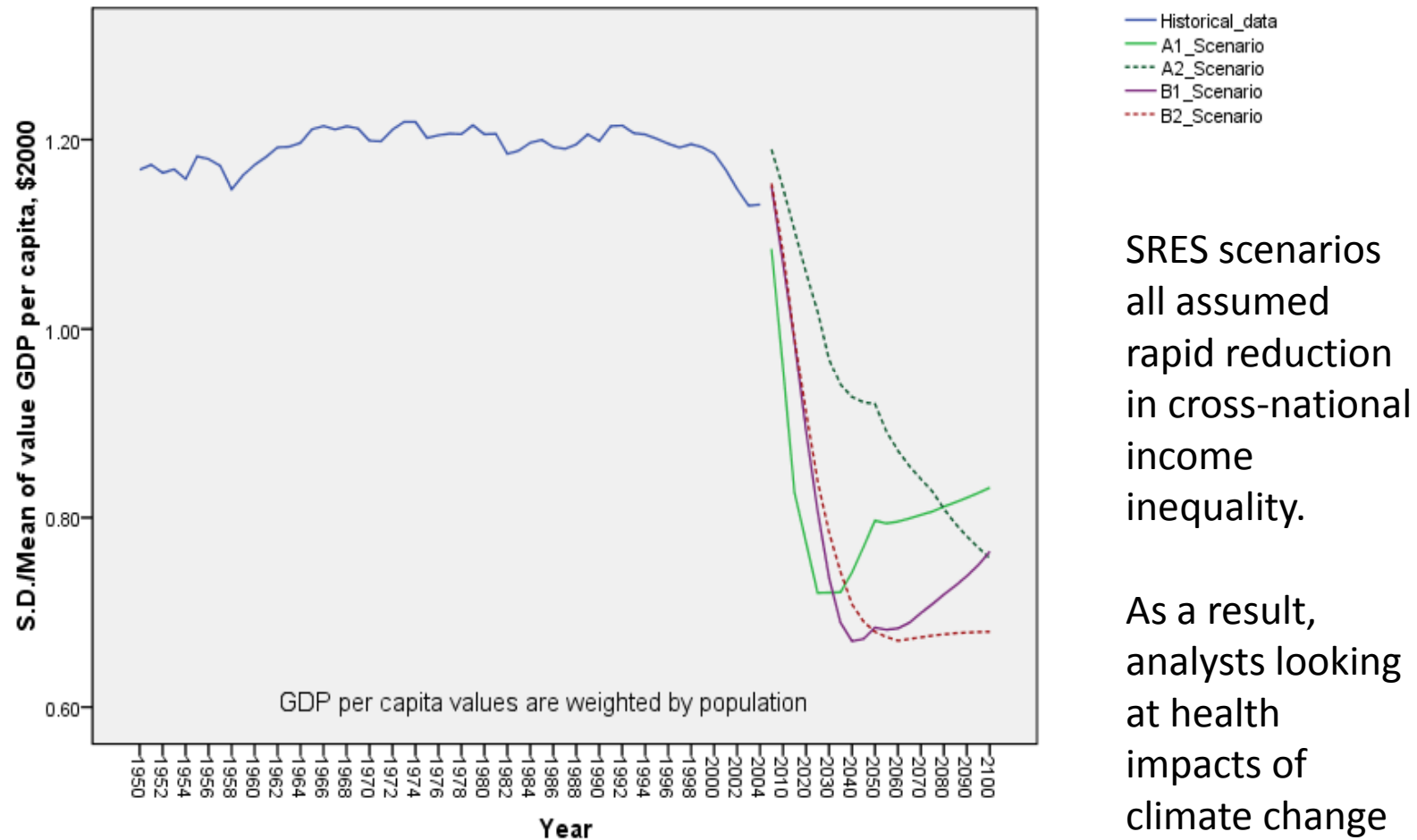
In the absence of quantitative indicators and narratives, analysts often resort to using current conditions to estimate future vulnerabilities

Not everything can be quantified easily  
– e.g. innovation capacity

# How to get the variance right?

- Lesson learned from previous efforts
  - Parameters vary over space and time
  - The relevance of such variance varies widely depending on the question being asked
  - The appropriateness of a given pattern of variance cannot be assumed – the sensitivity to such variance needs to be explored explicitly or big mistakes are likely

# Illustration: compare historical variation in per-capita income across countries with country-downscaled SRES values

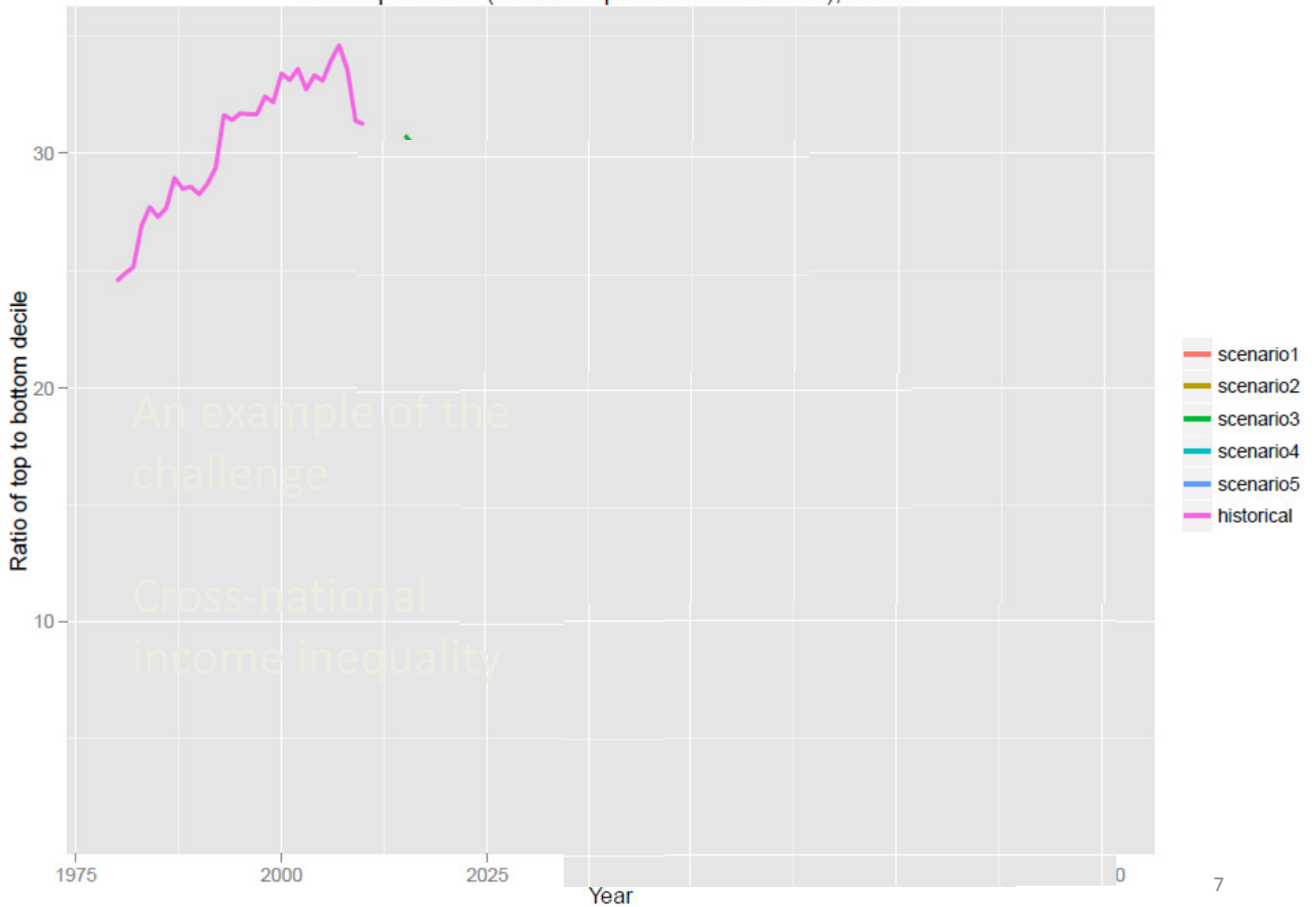


SRES scenarios all assumed rapid reduction in cross-national income inequality.

As a result, analysts looking at health impacts of climate change in Africa found them unusable.

Variation = mean-normalized standard deviation.

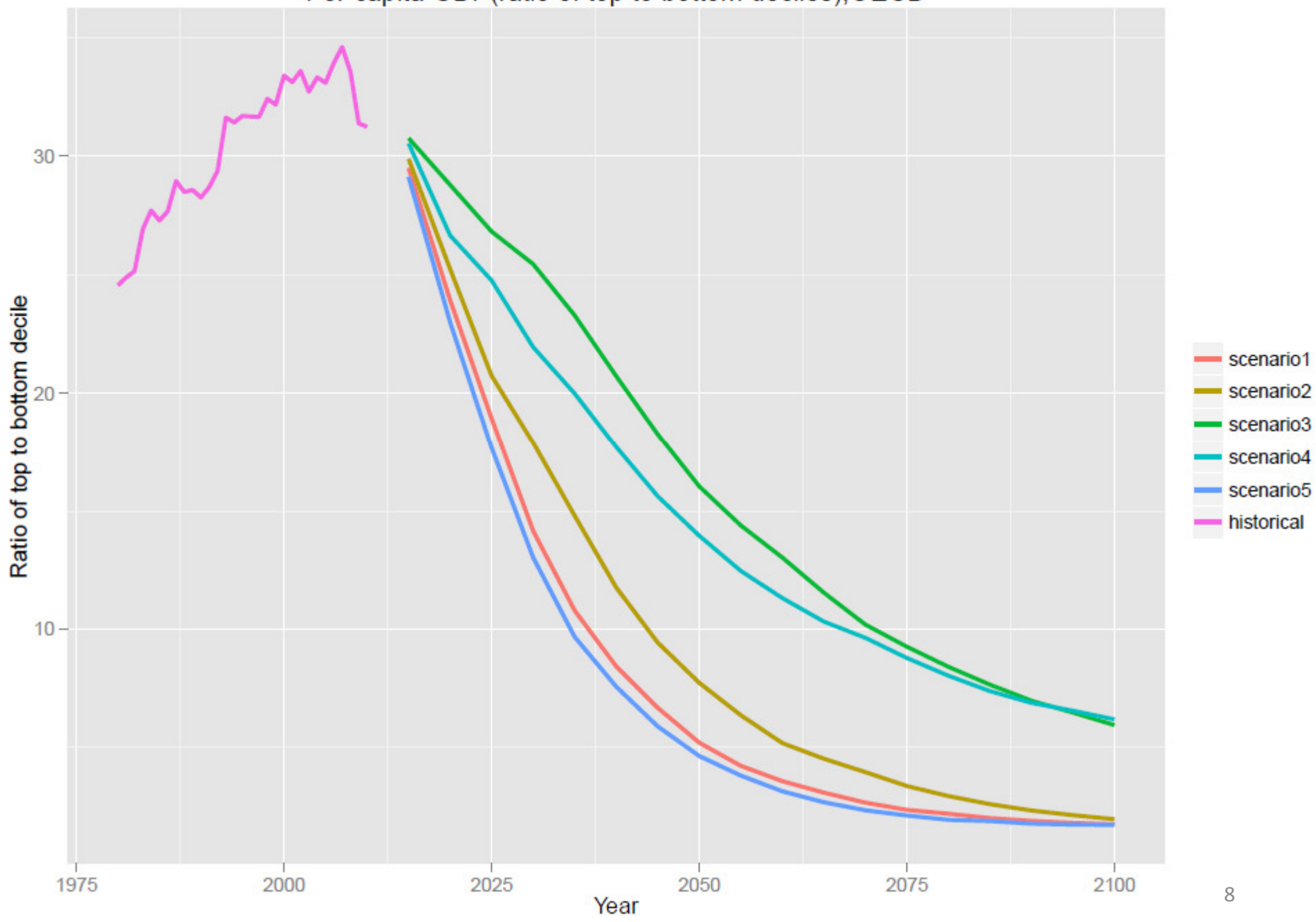
Per capita GDP(ratio of top to bottom deciles),OECD



An example of the challenge

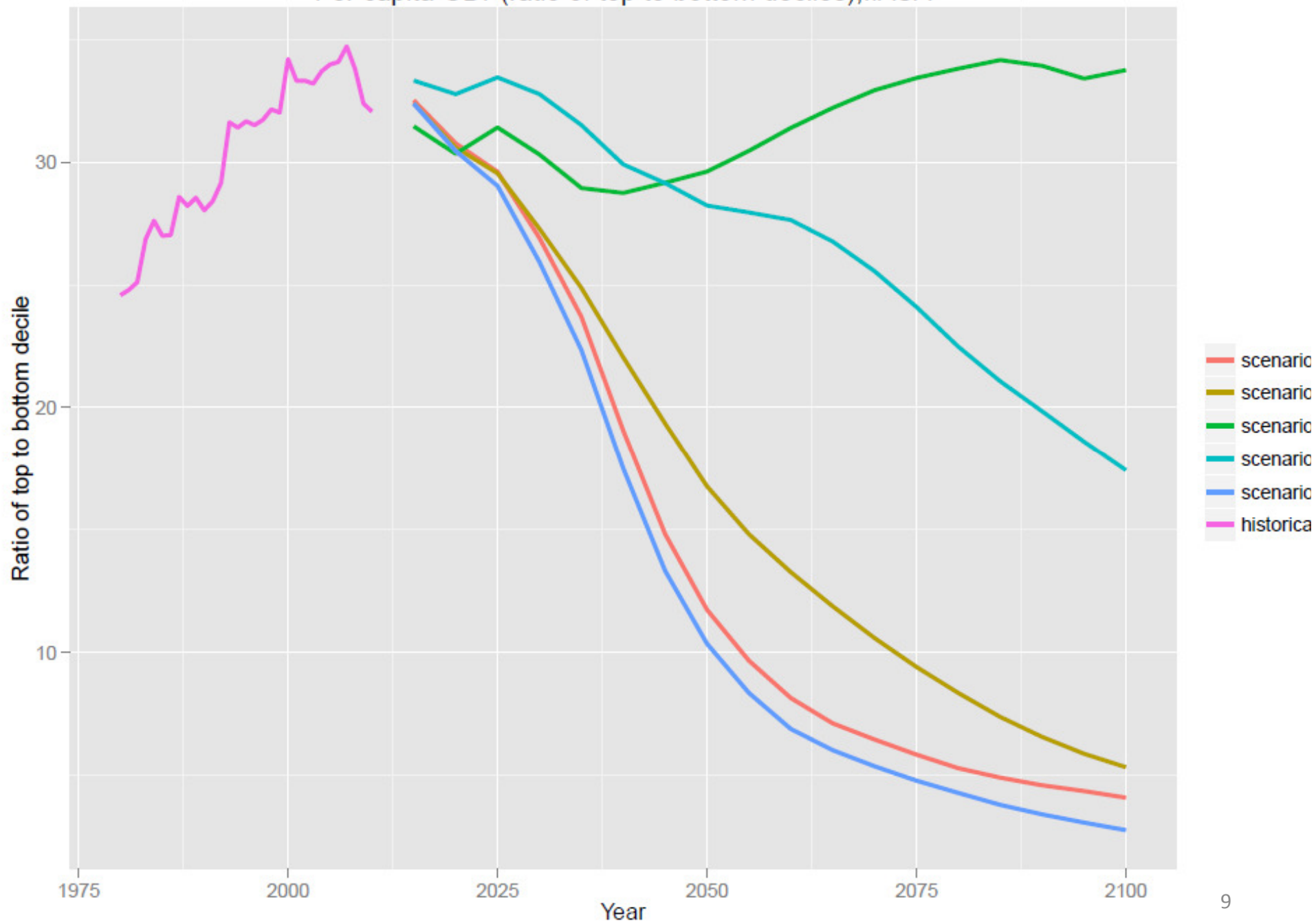
Cross-national income inequality

Per capita GDP(ratio of top to bottom deciles),OECD





Per capita GDP(ratio of top to bottom deciles),IIASA



# How to get the dependencies right?

- Tension
  - If we are confident that there are predictable relationships among scenario elements, we want those relationships to be represented faithfully in our indicators.
    - E.g. if urbanization rises with income, it would be problematic to have indicators that reflect the opposite.
  - But if we are worried about the emergence of new vulnerabilities we might not want to impose too much determinism in such dependencies
    - E.g. perhaps infrastructure generally improves as incomes go up, but we may want scenarios where rich countries have deteriorating infrastructure, in order to understand the implications for vulnerability
- Tradeoffs should be made explicitly and transparently, with careful attention to relevant risks.
  - Local and regional scenario exercises tend to do this better than global exercises

# Summary: current status bleak but future is promising

- What to include:
  - We currently leave out all the important stuff; we are working to bring it in
- How to deal with variance:
  - Historically we have not done this well
  - The new processes represent a big improvement
- How to represent dependencies:
  - Mismatch between scales – local more relevant; global more consistent. Need new experiments at how to blend effectively.