

Understanding borderless climate risks: a global index

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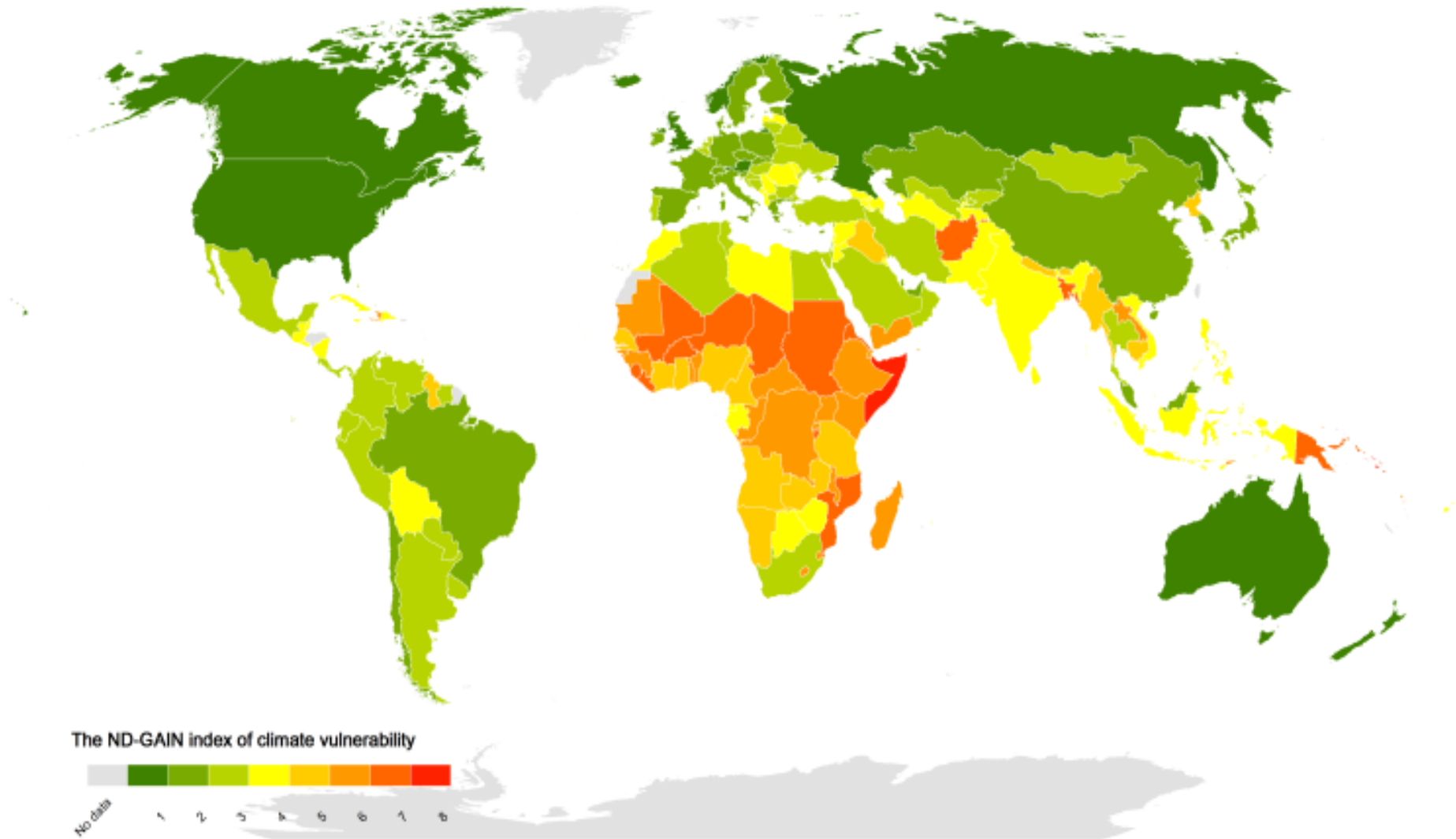
5th Nordic Conference on Climate Change Adaptation

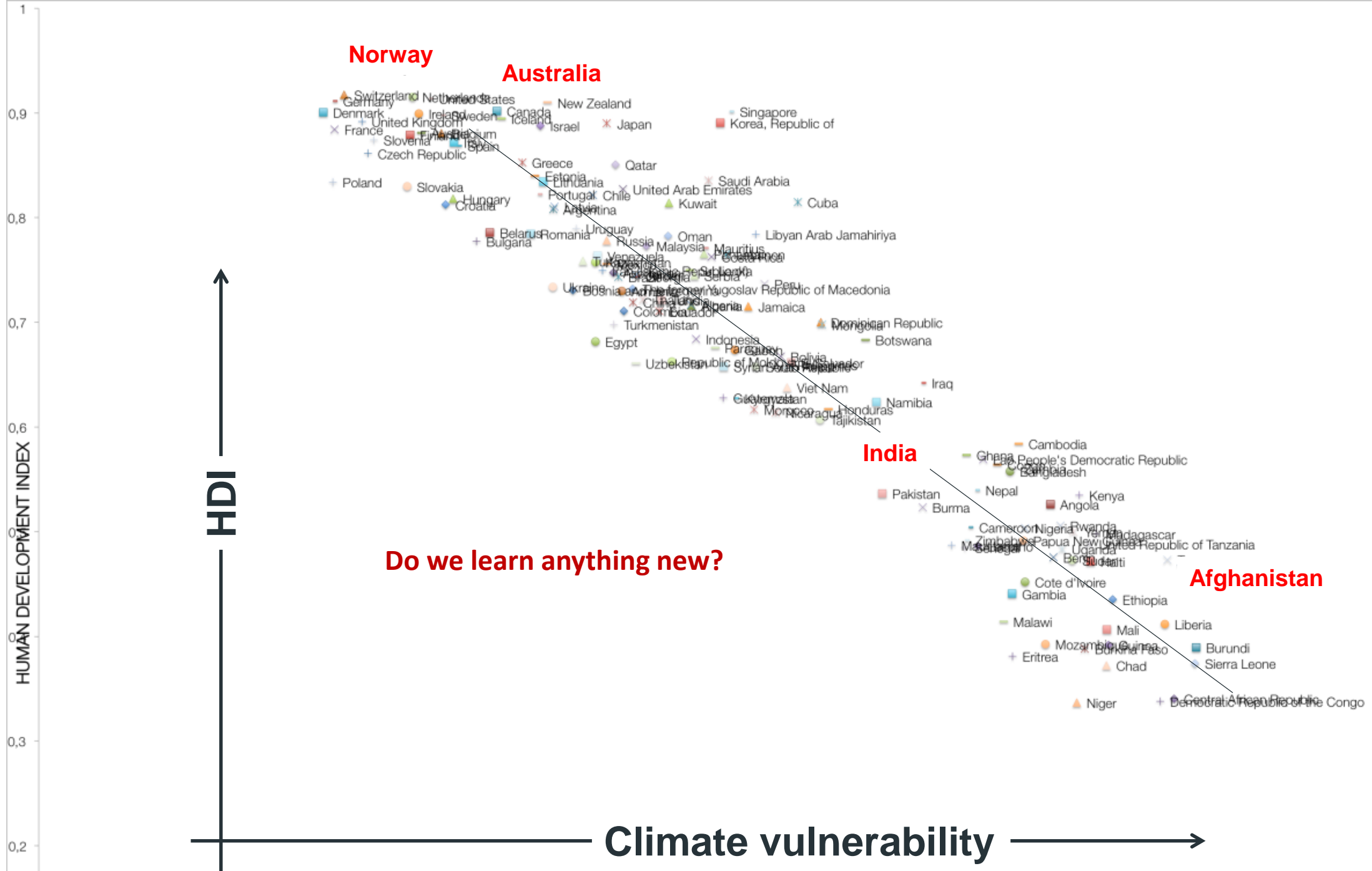
24th October 2018

Quantitative metrics as instruments for measuring progress in reducing vulnerability

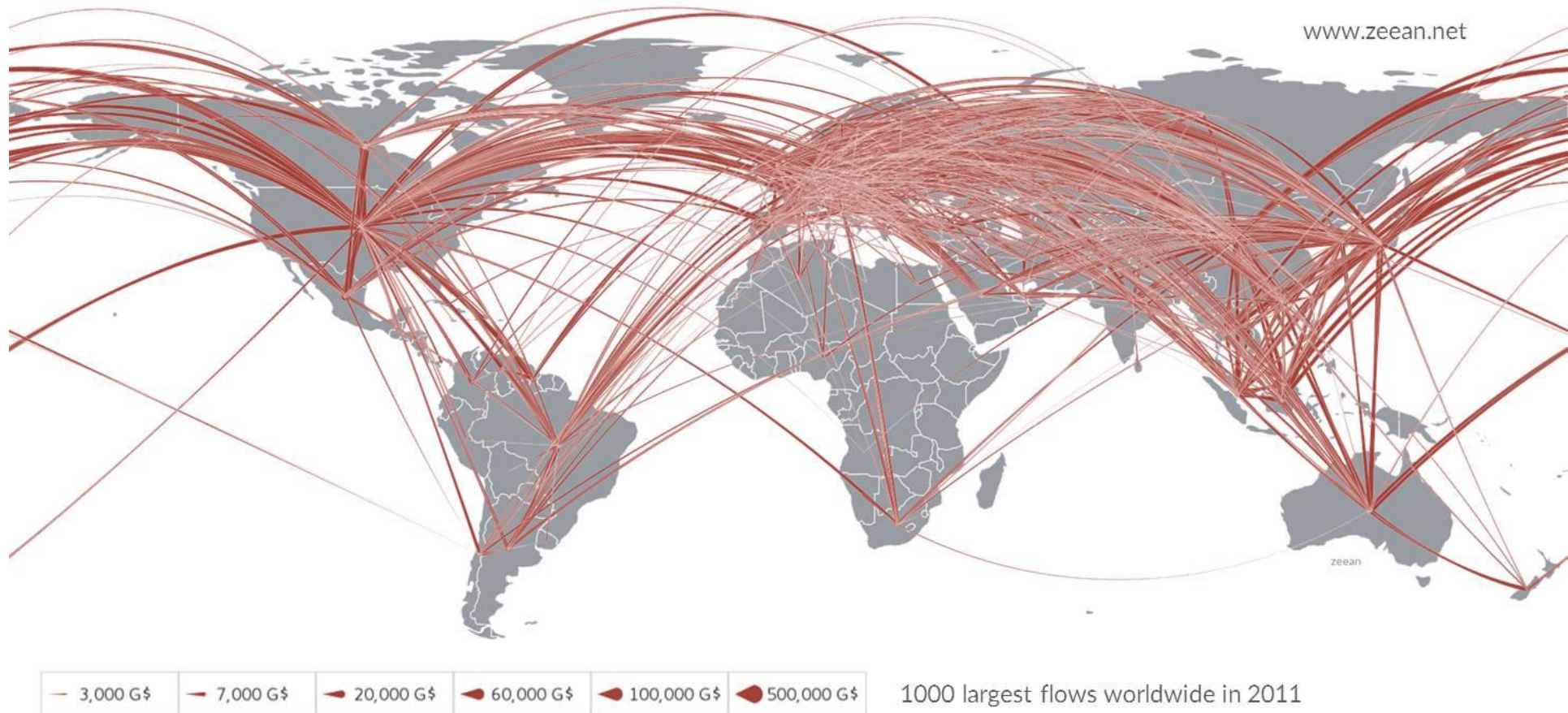
Both scholars and policy-makers are showing increasing interest in developing and using indicators to assess exposure, vulnerability, impacts and adaptation.

University of Notre Dame Global Adaptation Index (ND-GAIN)





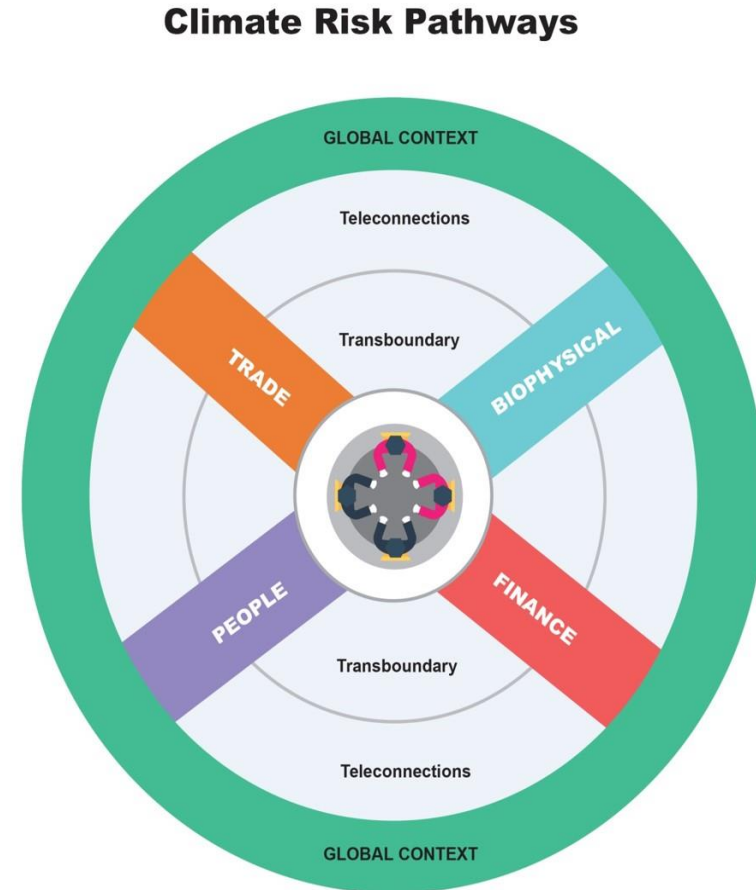
But in an increasingly globalized world this picture does not represent *true* climate risks!



Transnational climate risks

Structures transnational impacts along four risk pathways:

- i) The biophysical pathway*
- ii) The finance pathway*
- iii) The people pathway*
- iv) The trade pathway*



BIOPHYSICAL PATHWAY

1. Transboundary water dependency

FINANCE PATHWAY

2. Bilateral climate-weighted foreign direct investment
3. Remittance flows A country's dependence on the inflow of remittances.

PEOPLE PATHWAY

4. Openness to asylum
5. Migration from climate vulnerable countries

TRADE PATHWAY

6. Trade openness
7. Cereal import dependency
8. Embedded water risk

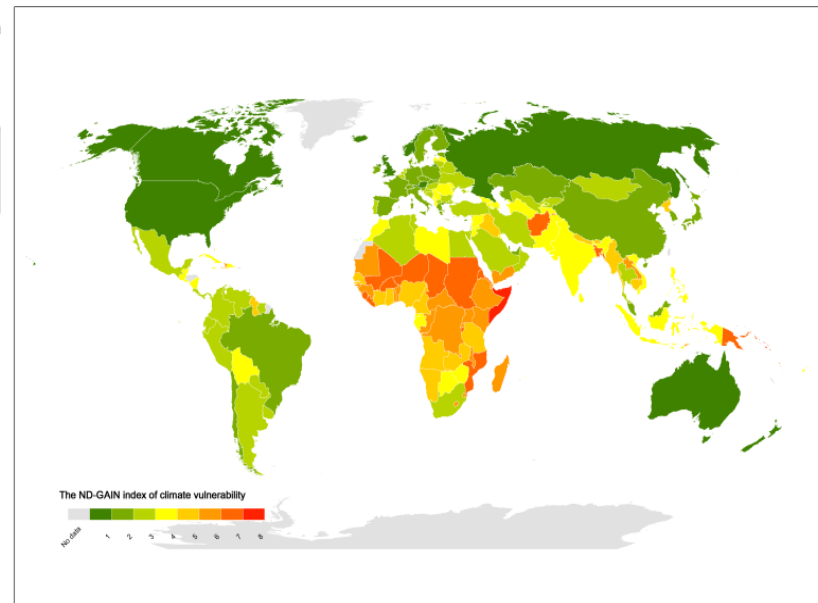
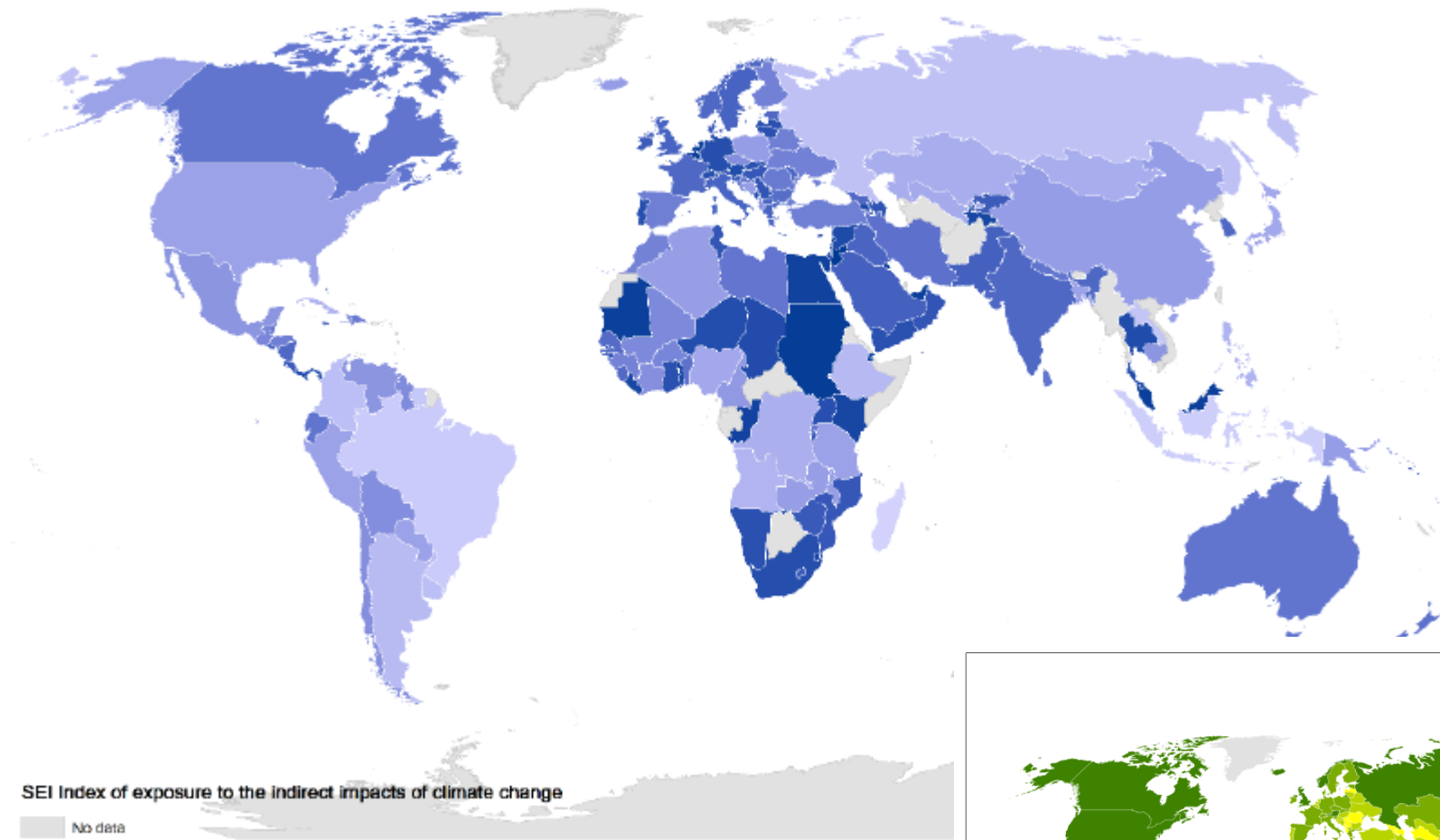
GLOBAL CONTEXT

9. KOF Globalisation Index

An example: Transboundary water dependency ratio

Indicator 1: Transboundary water dependency ratio

| Transboundary water dependency ratio | |
|---|---|
| Characteristic to measure | The proportion of water resources in a country that originates in transboundary upstream countries. |
| Assumptions | The more a country relies on water from upstream transboundary rivers, the more exposed it will be to climate-related changes in transboundary river flows. For example, heavy rainfall in an upstream country can affect downstream countries by bringing floods. |
| Data availability | <p>Despite extensive research in the area of transboundary waters, data gaps on downstream effects from upstream water still exist due to measuring difficulties. Available sources for proxy water data are:</p> <ul style="list-style-type: none"> • FAO AQUASTAT measures transboundary water dependency ratio.⁴ • PRIO⁵ Shared River Basin Database measures characteristics of shared river basins. <p>Alternative approaches, including gathering data on the world's major transboundary river basins from basin-specific studies (via interviews and desk research) were considered. Given the large body of basin-specific research that exists, coupled with the relatively poor quality of global level data on transboundary river flows, such an approach may prove fruitful in future. However, such an approach would not constitute a true global level analysis.</p> |
| Data used | 2008–2012 |
| Data selection and justification | <p>As the datasets mentioned above leave out upstream/downstream information related to the water data, they were not considered suitable as a measurement for the indicator. The FAO AQUASTAT indicator on transboundary water dependency ratio was selected to proxy for the proportion of water originating in upstream transboundary countries.</p> <p>The data selection for this indicator was made in consultation with water expert Dr. Martina Flörke, Universität Kassel.</p> |
| Method | Existing indicator |



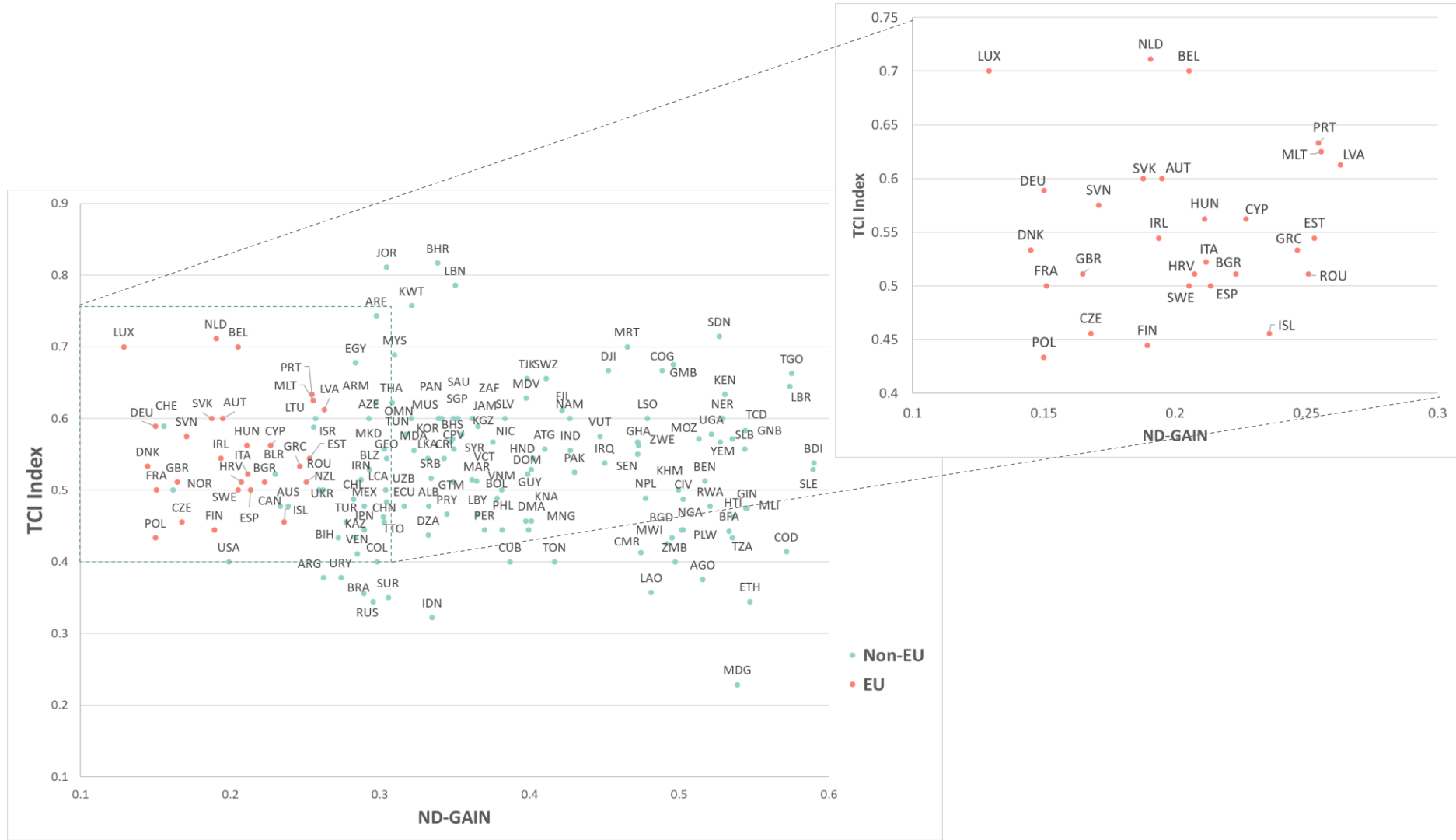
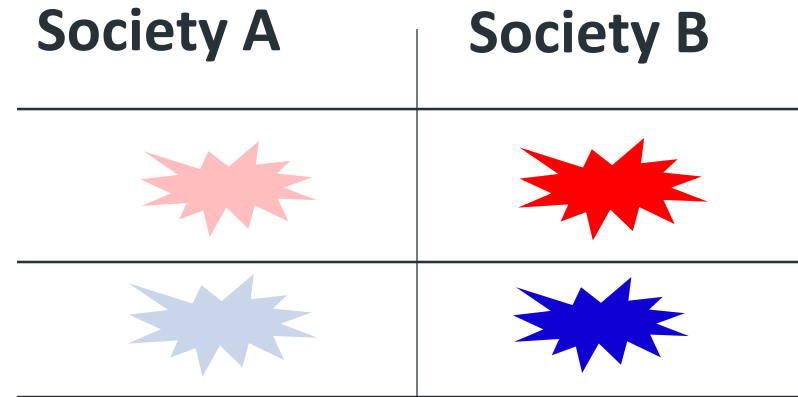
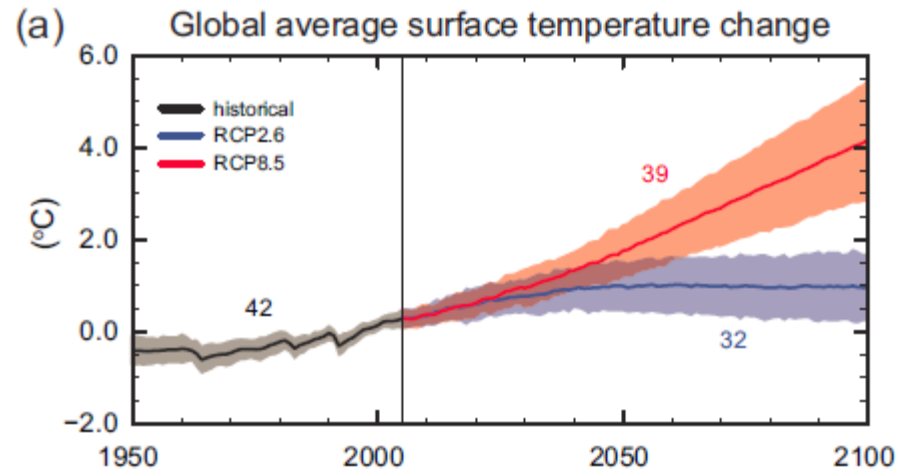


Illustration by Frida Lager

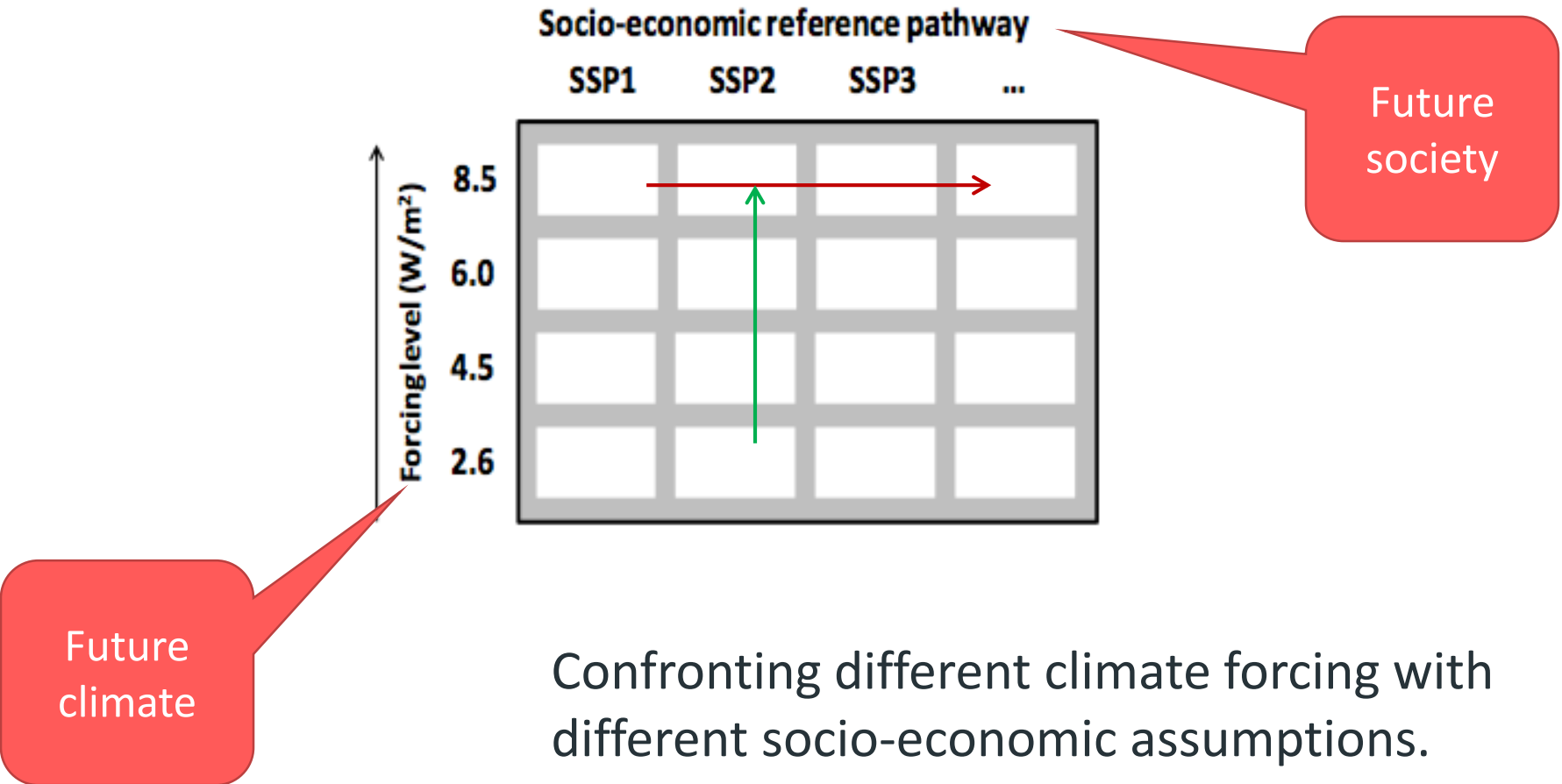
Future research

- i) More empirical data is needed
- ii) The index is static – add a futures perspective

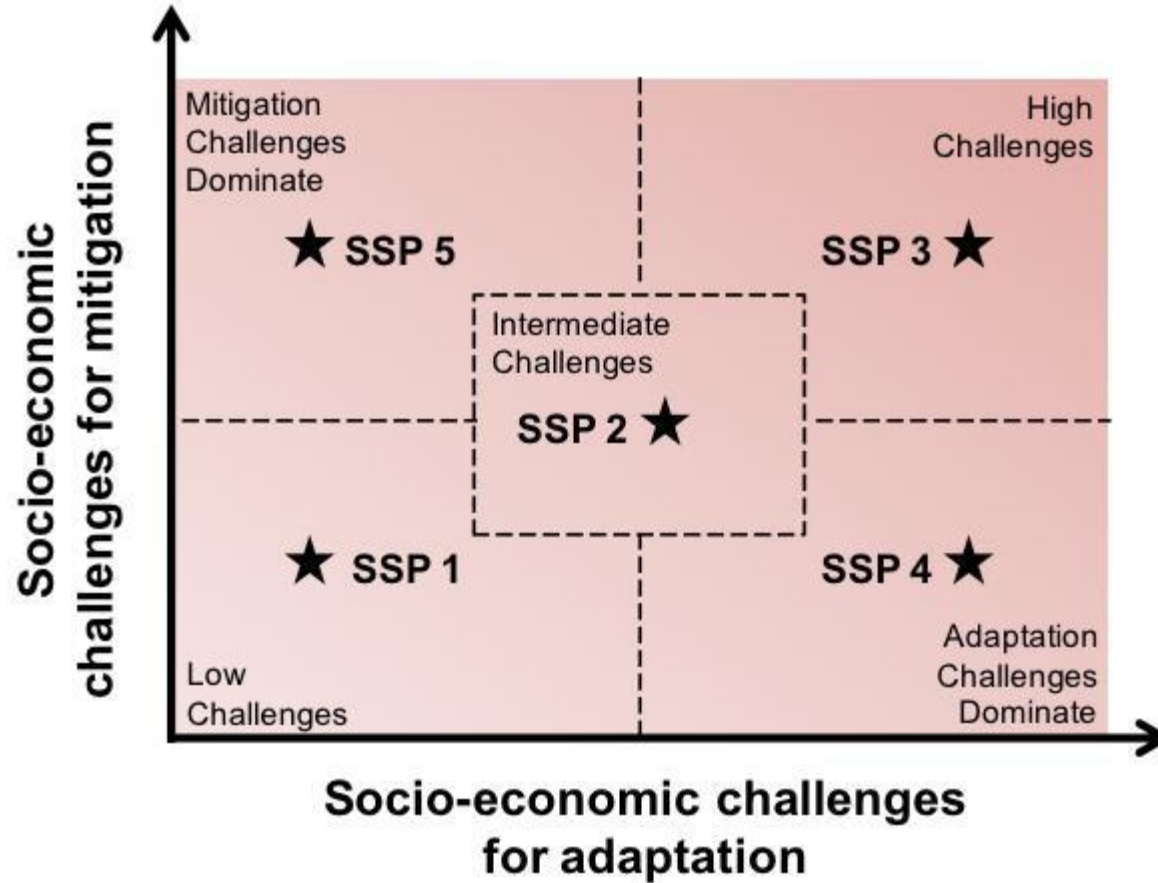
Different future societies will react differently to one and the same climate



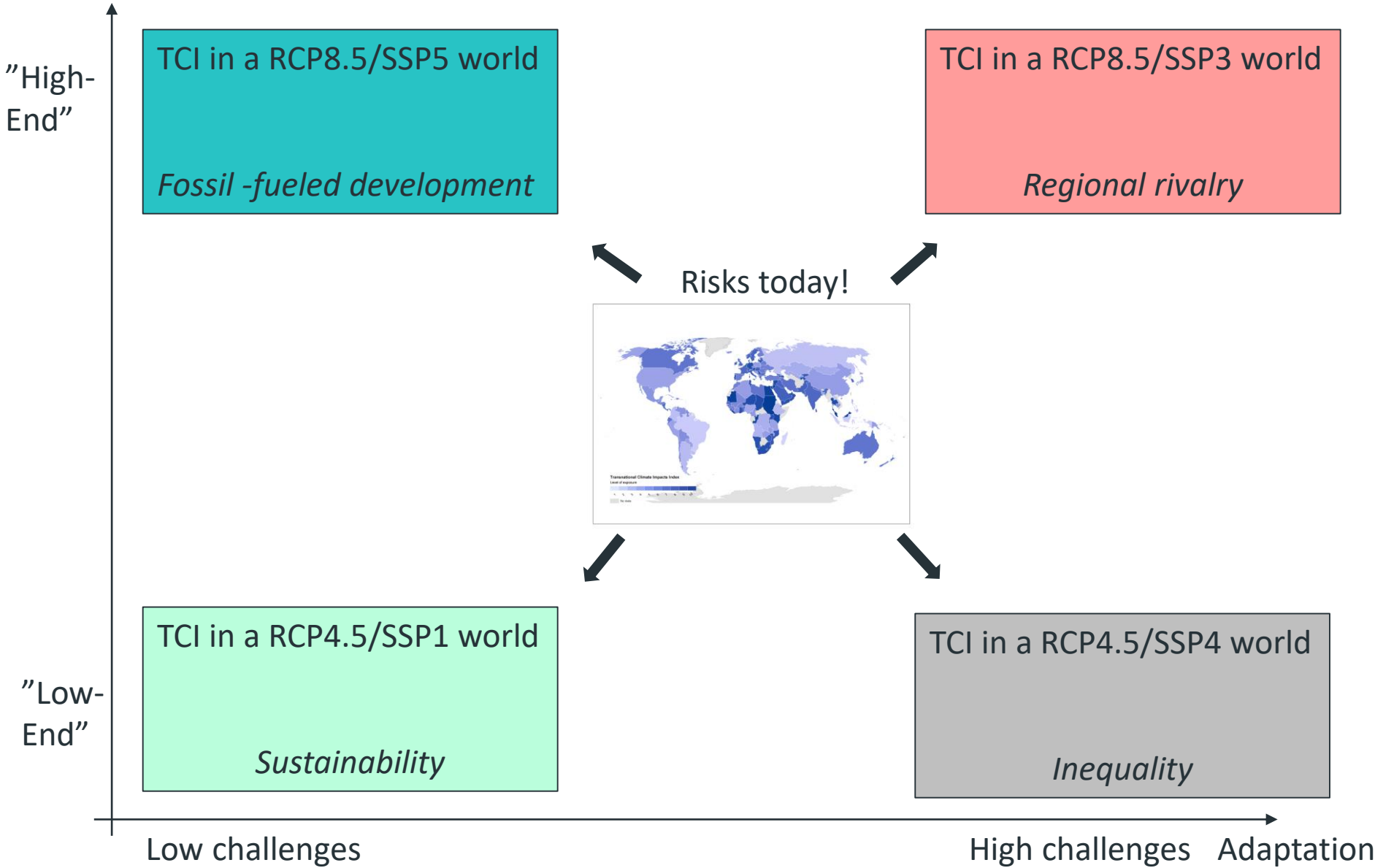
The Scenario Matrix Architecture



Spanning adaptation/mitigation space



Climate change



Thank you!

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Hedlund, J., Fick, S, Carlsen, H., Benzie M. (2018),
"Quantifying Transnational Climate Impact Exposure: new
perspectives on the global distribution of climate risk",
Global Environmental Change 52, 75-85.

<https://www.sei.org/featured/climate-adaptation-must-be-reframed/>

<https://www.sei.org/featured/inescapably-intertwined/>

