

Climate Change Impacts and Policies in Heterogeneous Societies (CHIPS)

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Project framework

Objective:

An integrated understanding of distributional effects of future climate change impacts and policies based on

- a robust conceptual, empirical and microsimulation-based understanding
- improved quantification of hazard-specific impacts
- the integration of these effects into integrated assessment models which do not cover distributional effects at all and rarely include climate change impacts



Policy relevance:

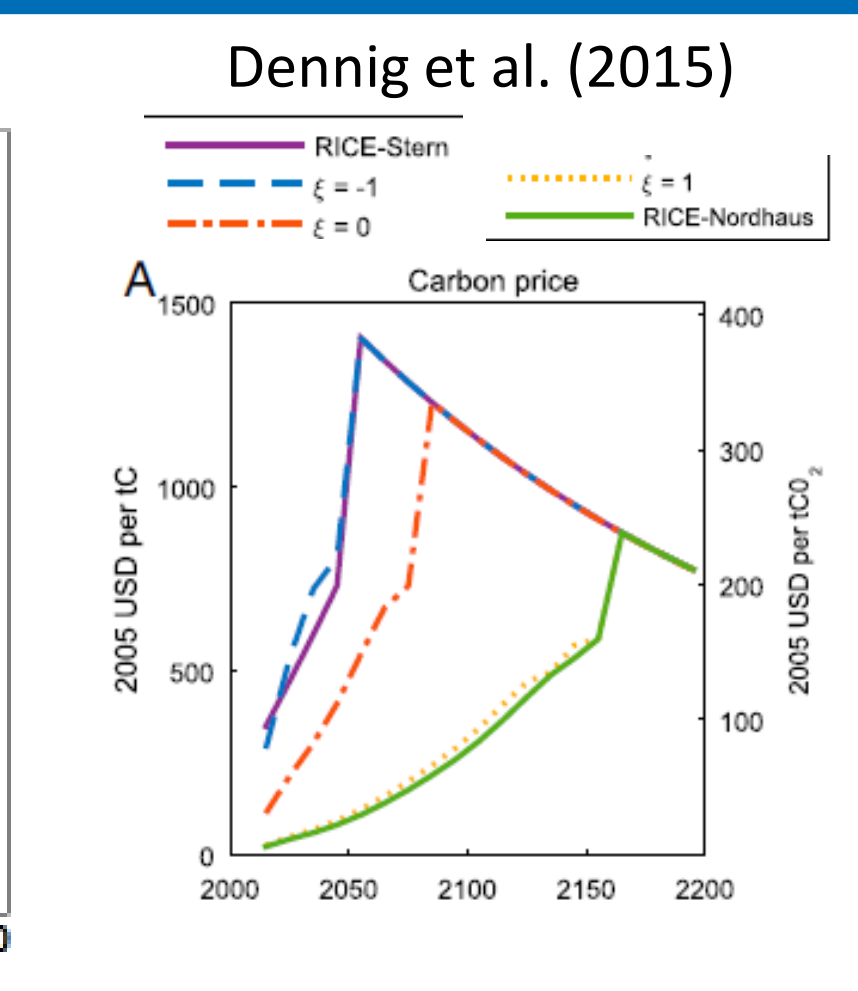
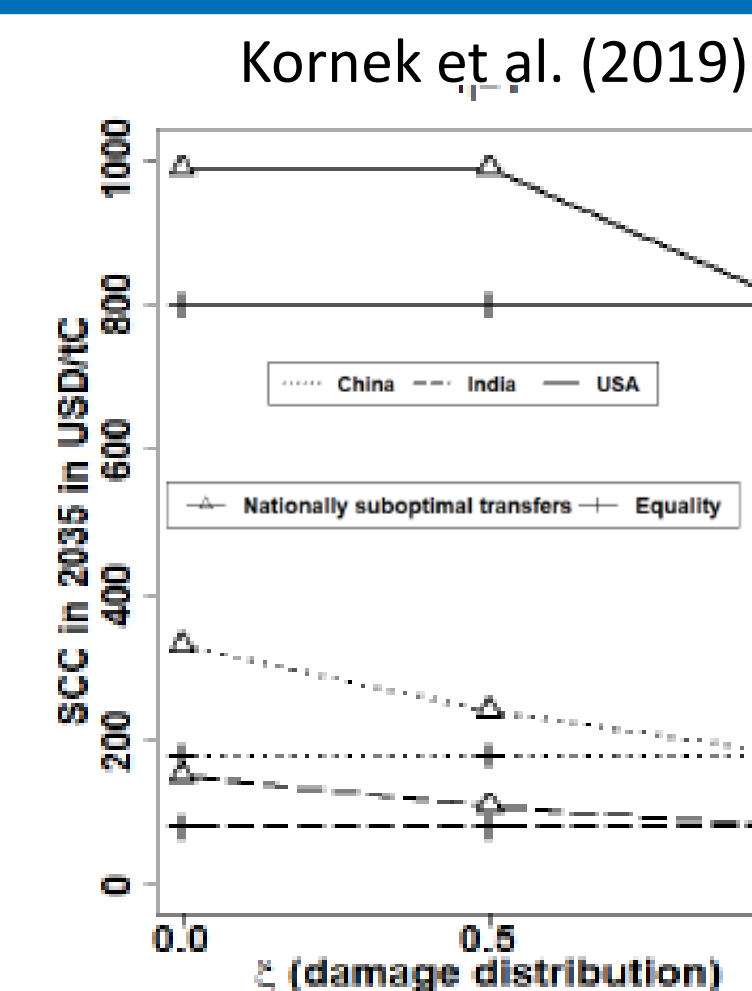
- Implementation of Paris agreement requires robust assessment of effects of policies on different societal groups and proposals for reducing hardships
- Motivating the implementation of the Paris agreement requires an understanding of the avoided impacts which will vary across locations and societal groups
- Reducing inequality is a central concept in the Sustainable Development Goals
- A continuous dialogue with a selected Board of Stakeholders and Experts will be an integral part of the project, focusing on project guidance, co-design scenarios, metrics and output and ensure transparency and usability. At the core of the dialogue will be three stakeholder workshops.

Heterogeneity in integrated assessment models

Aim: Improve the representation of household heterogeneity in the IAMs NICE and REMIND

Methods:

- Conceptual analysis of inequality and redistributive measures in a two-level governance model, focus on incentive constraints
- Improved damage representation in NICE, empirical constraints for income elasticity of damages
- Inequality module in REMIND
- Explore possible linkages with microsimulation model

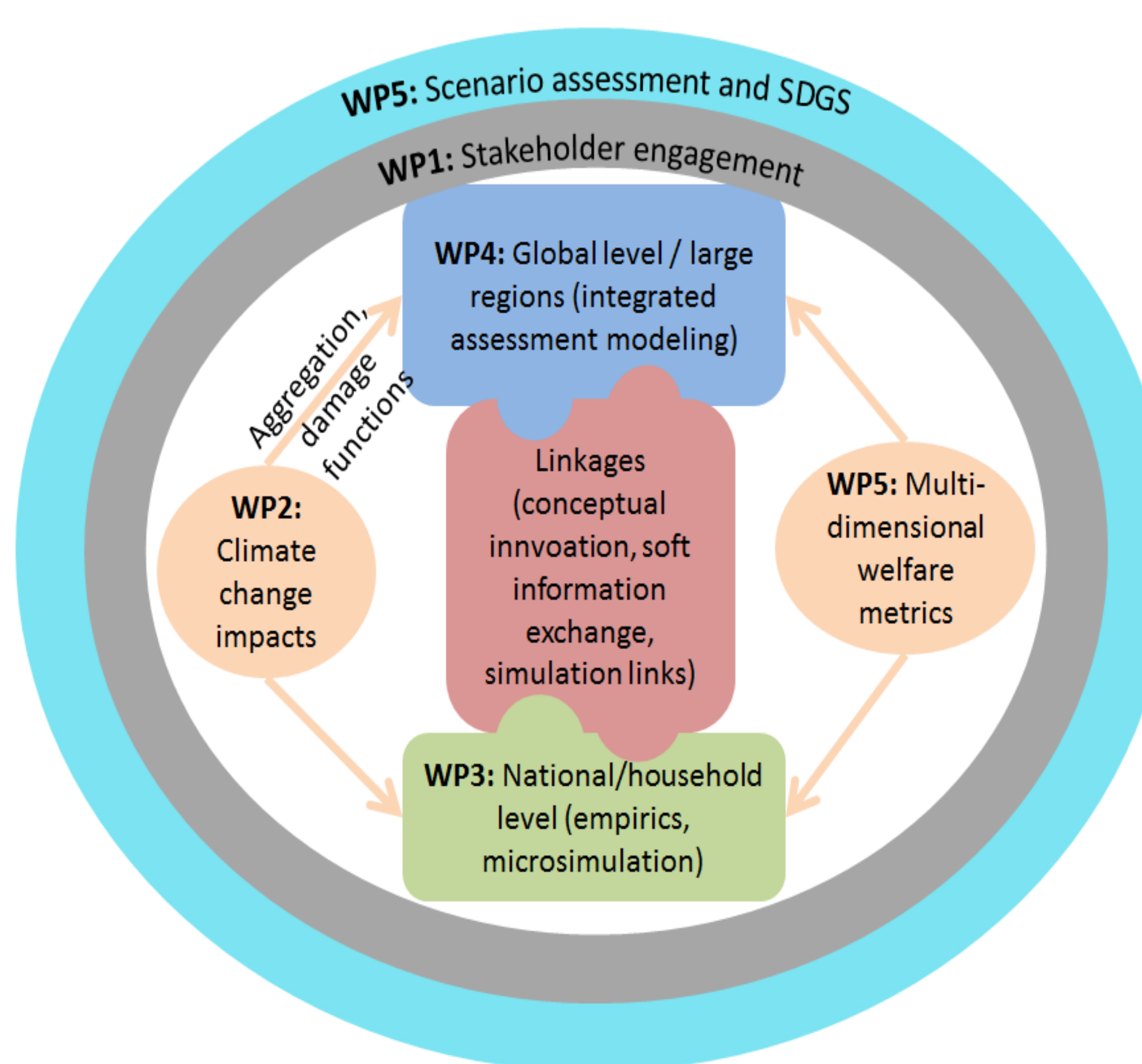
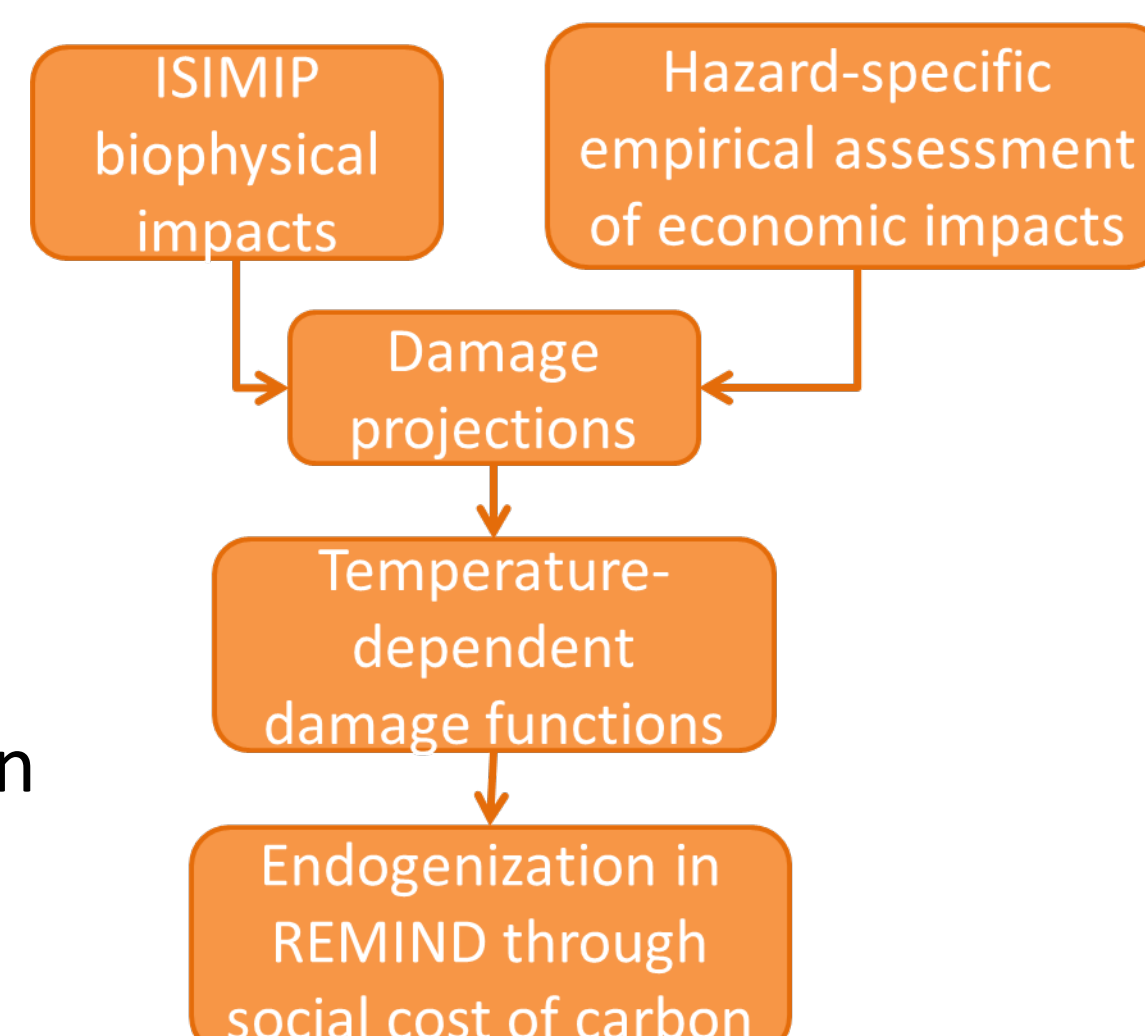


Impact channels & damage functions

Aim: Improve damage functions and their representation in IAMs

Methods:

- Link ISIMIP and REMIND IAM through empirically based hazard-specific economic damage functions (floods, tropical cyclones, droughts, labor productivity)
- Soft-coupled approach to include impacts into IAM via social cost of carbon, allowing for higher process detail for damages and climate
- Channel-specific representation in IAM (impacts on output, capital, labor productivity)



Synthesis and synergies with sustainable development goals

Aim: Comprehensive analysis of distributional effects of climate change impacts and mitigation policies across scales

Methods:

- Develop and apply new welfare metrics capturing distributive effects
- Synthesize results through a common scenario framework across scales, focus on Europe
- Explore synergies and trade-offs between climate policies, climate impacts and relevant SDGs

Distributional effects for households

Aim: Robust assessment of the distributional effects of carbon pricing and climate impacts through empirical analysis and microsimulation, accounting for uncertainty

Methods:

- Use empirical analysis and microsimulation methods to assess distributional effects related to climate change in selected European countries
- Focus on distributional effects of climate change impacts as the greater literature gap: prototype study on the effects of droughts in Spain (other possible case floods in Germany)
- Challenge: estimate income elasticity of damage on a global level as input for IAMs?
- Policy dimension: analysis of carbon pricing for different classes of goods capturing household demand and industry supply effects