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Next generation of advanced integrated assessment modelling to support climate policy making

Distributional implications of climate policies and impacts

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October 10th, 20223

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 821124.

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Overview

- Distributional implications of climate policies
- Heterogeneity and Inequality, and the impact of climate change
- The potential role for carbon revenue redistribution
- Integrating climate impacts
- Combined assessment, and linking it to the acceptability of climate policies

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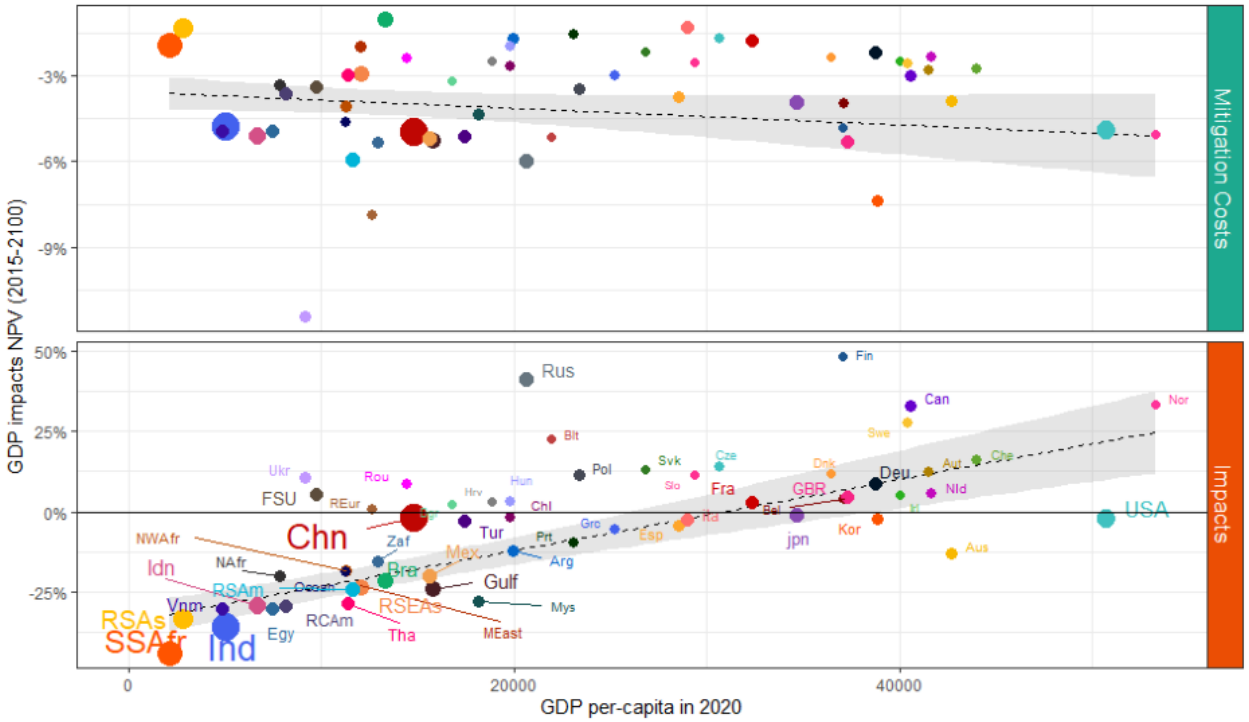
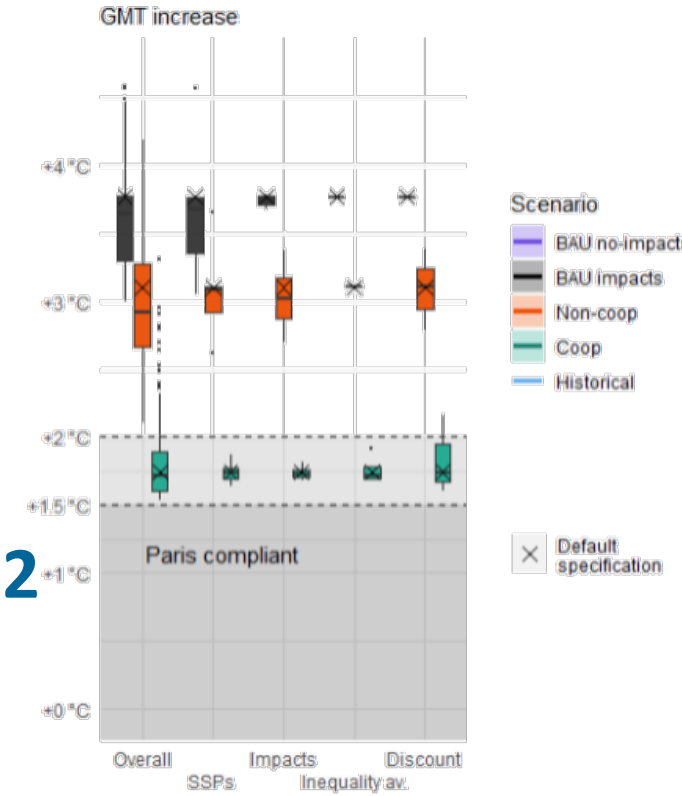
The role of inequalities

Climate impacts will lead to an increase of inequality between countries



… which is another important reason that staying below 2 or 1.5 degrees is optimal



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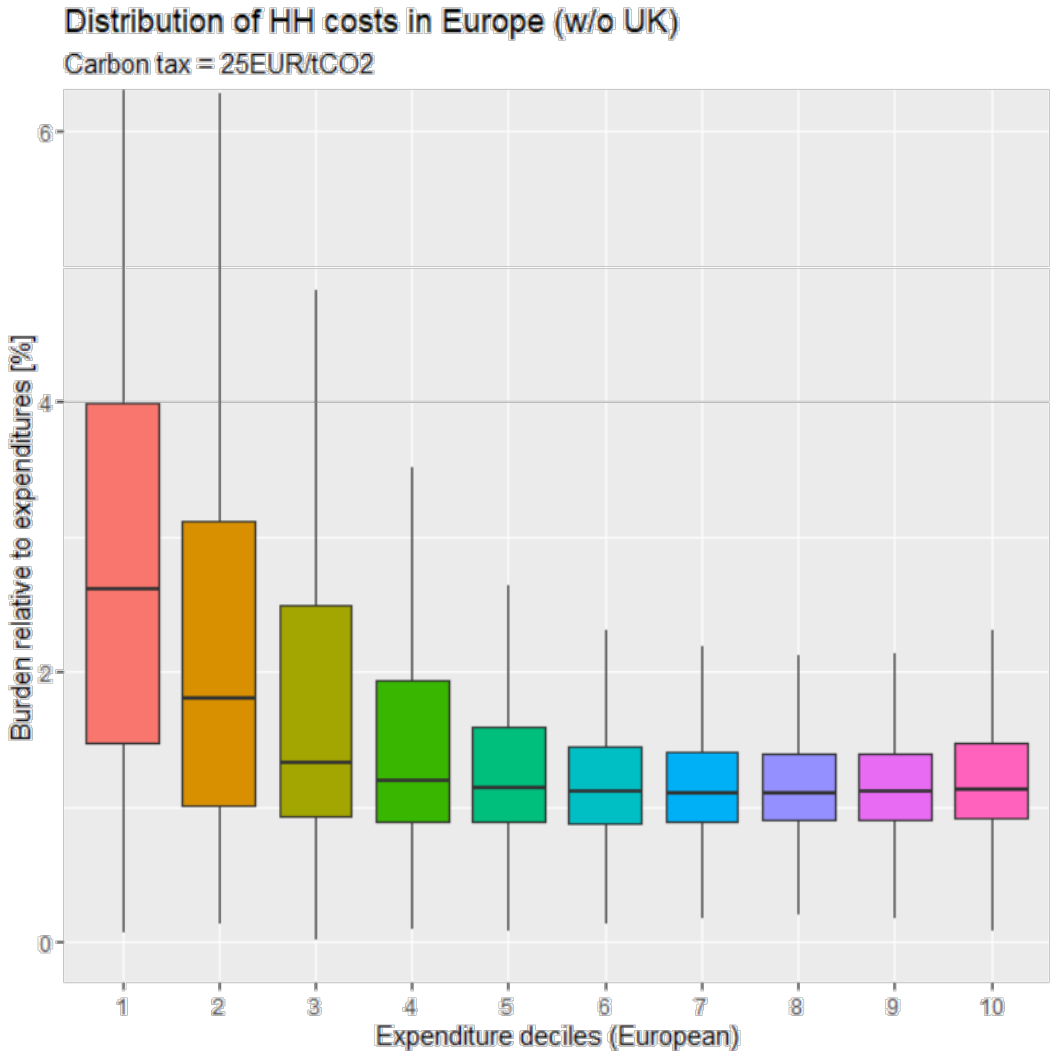
Incidence of climate policies

- Distributional incidence of a carbon tax, here of 25 EUR / tCO2 in Europe
- Regressive, esp. for lower deciles
- Includes direct and indirect emissions



Source: Feindt et al. (2022)

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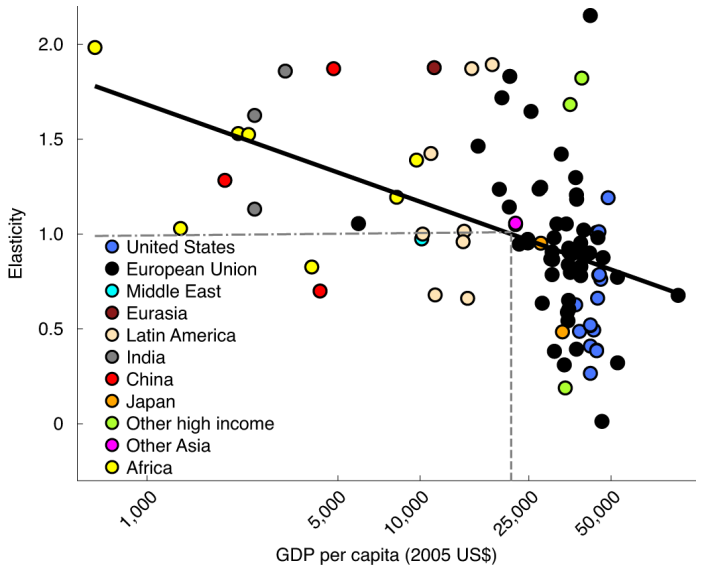
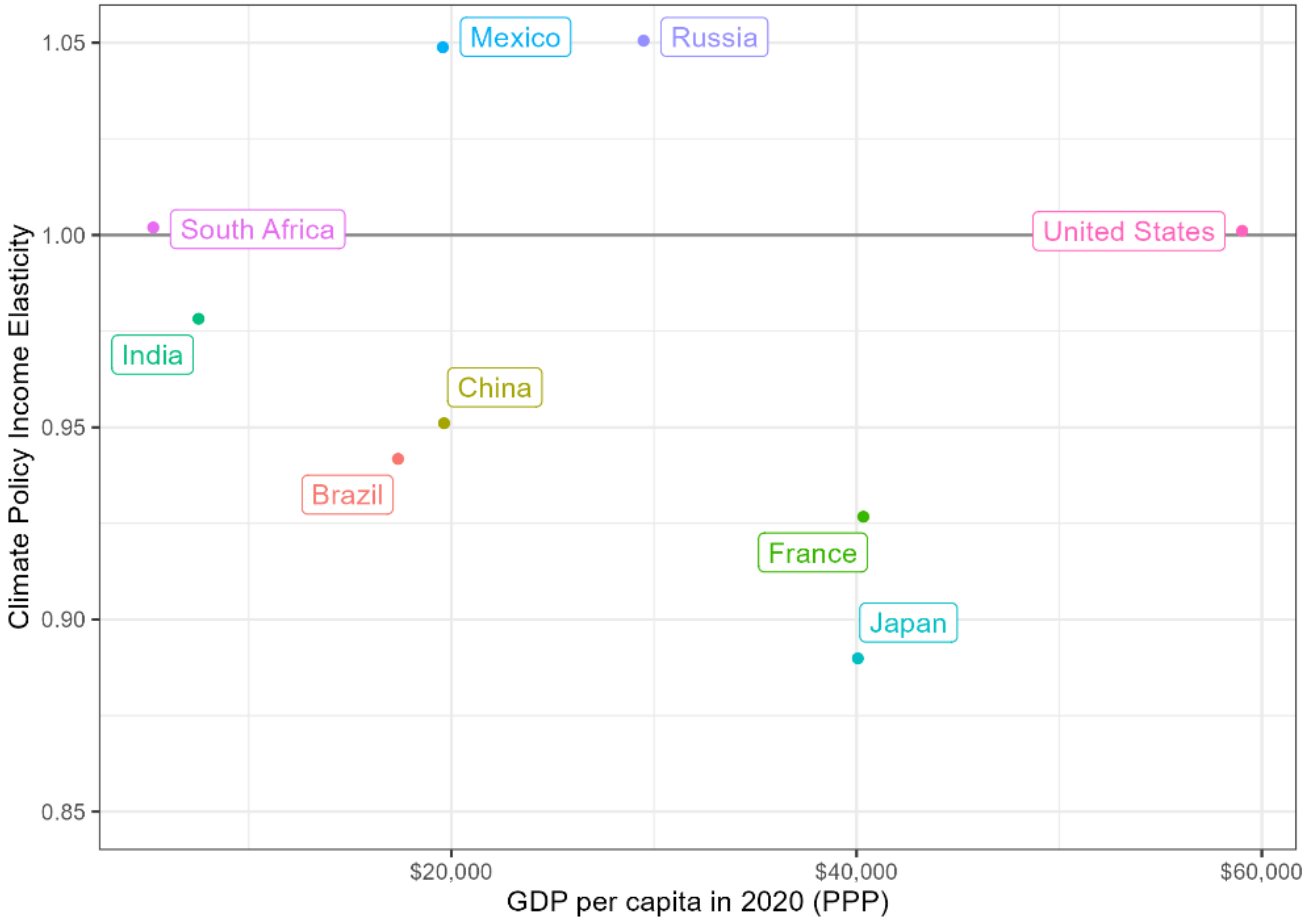
Incidence of climate policies

- (Mildly) regressive
- esp. in richer countries
- overall with an elasticity of 0.95



Source: meta study of Budolfson et al. (2021)



Source: Emmerling et al. (2023)

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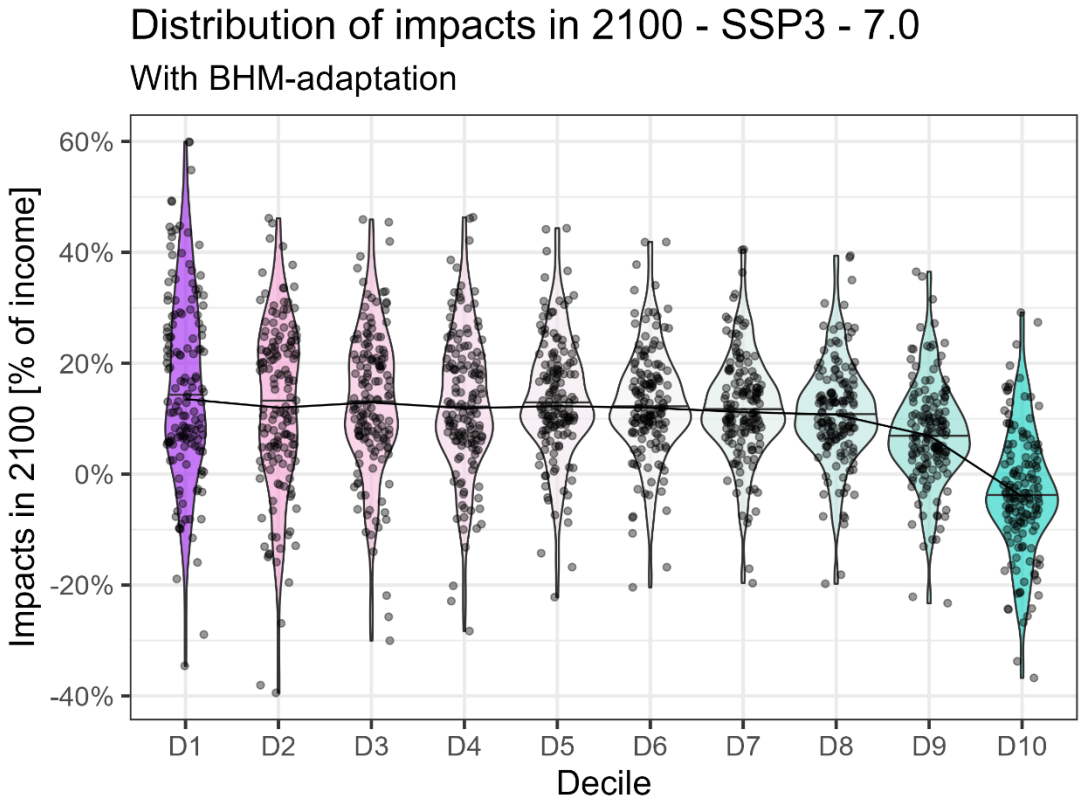
Incidence of climate impacts

- Across 160 countries, estimated impact per deciles

➔Mostly regressive *within countries*

- Increase in the Gini index by about 3 points (median) by 2100 (SSP3-7.0)

- Overall climate impact income elasticity: $\epsilon_{d,y} = 0.72$



- One fourth of global inequality is within countries.

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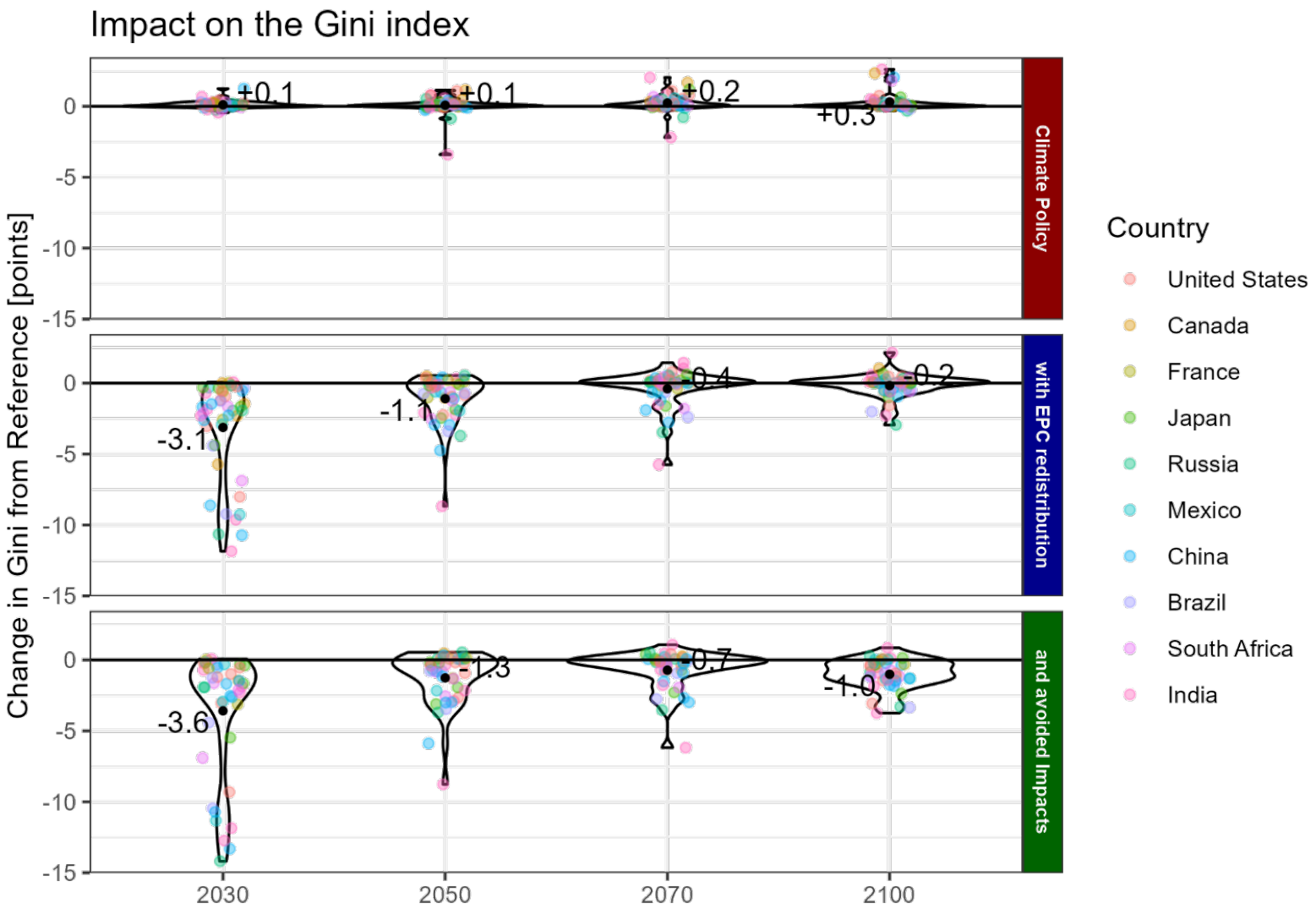
Source: Gilli et al. (2023)

Ten countries, Eight models MIP

Mitigation Costs

EPC Redistribution

and with impacts



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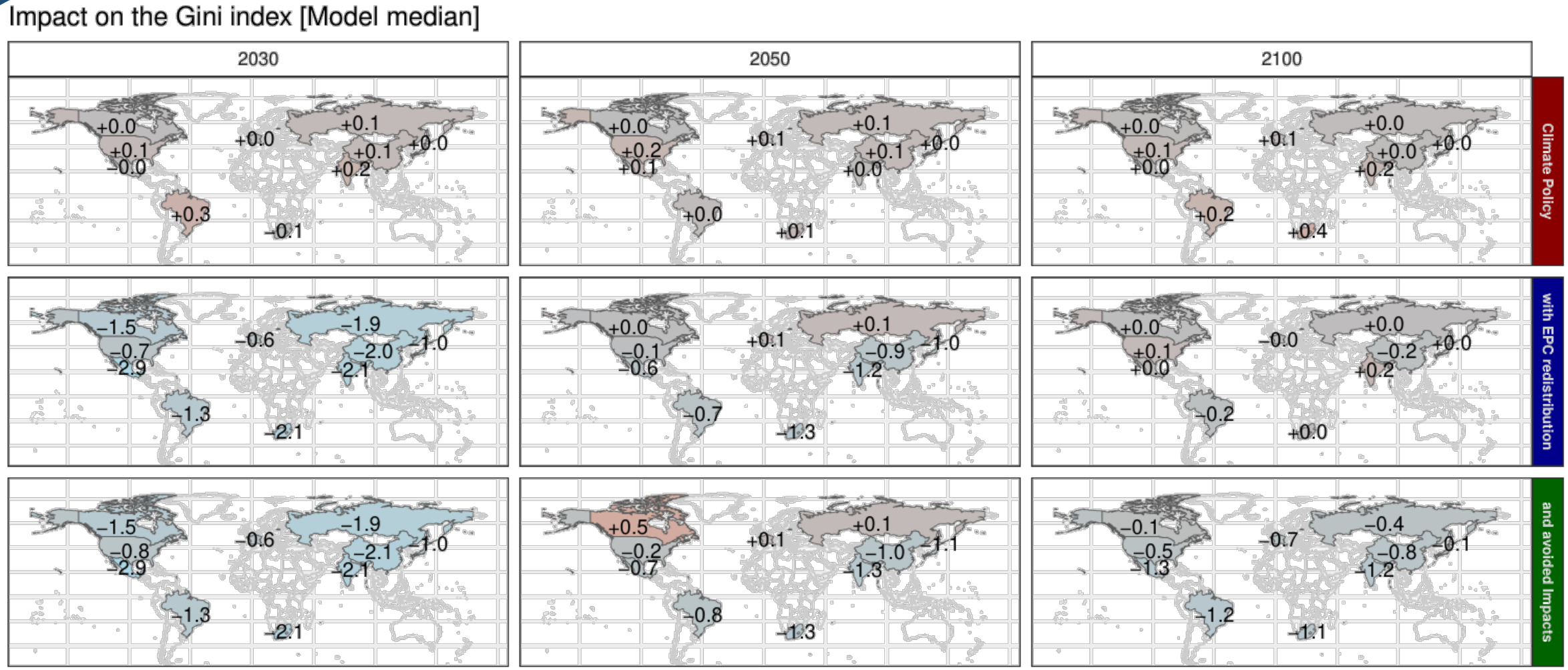
Ten countries, Eight models MIP



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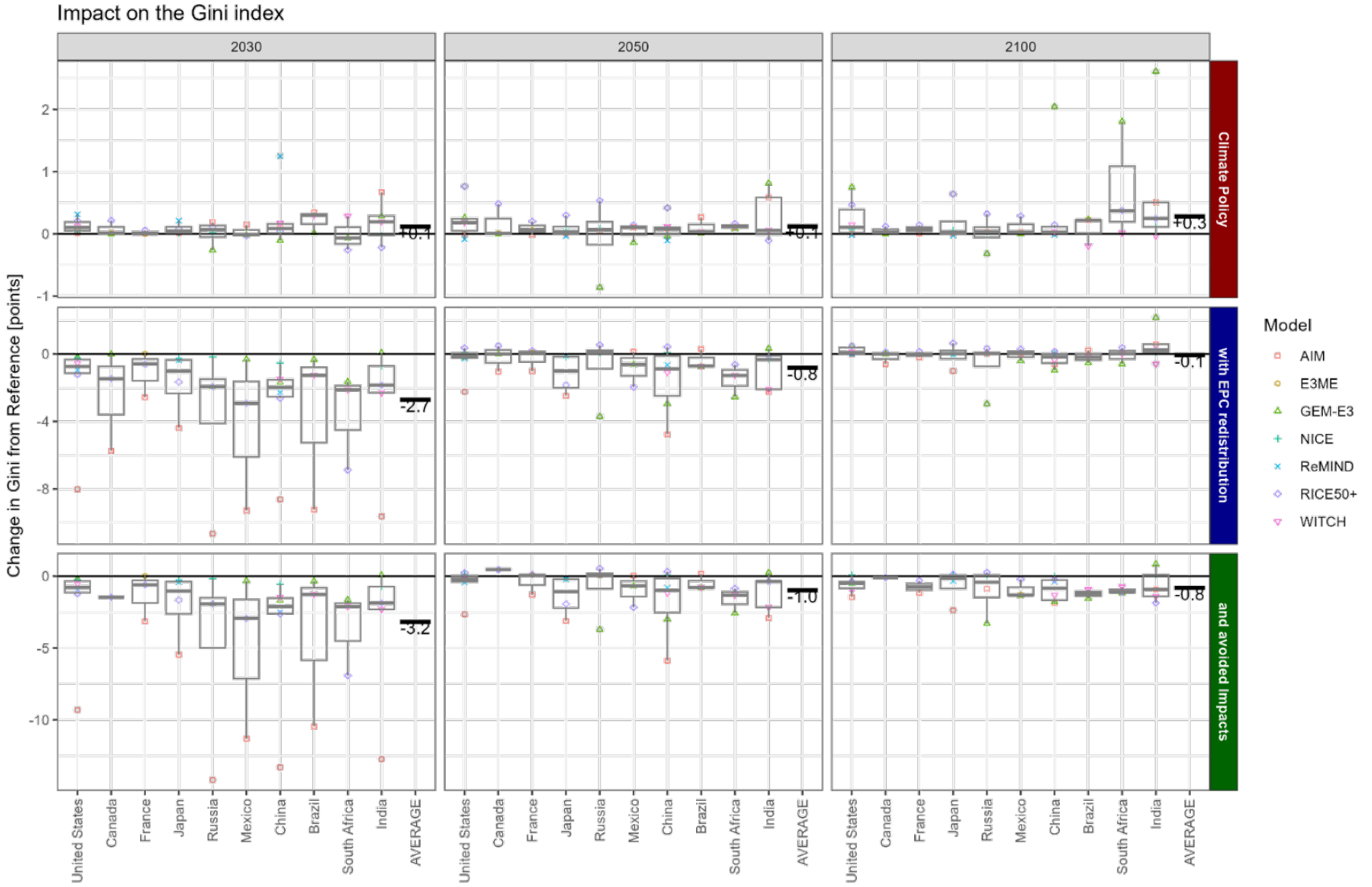

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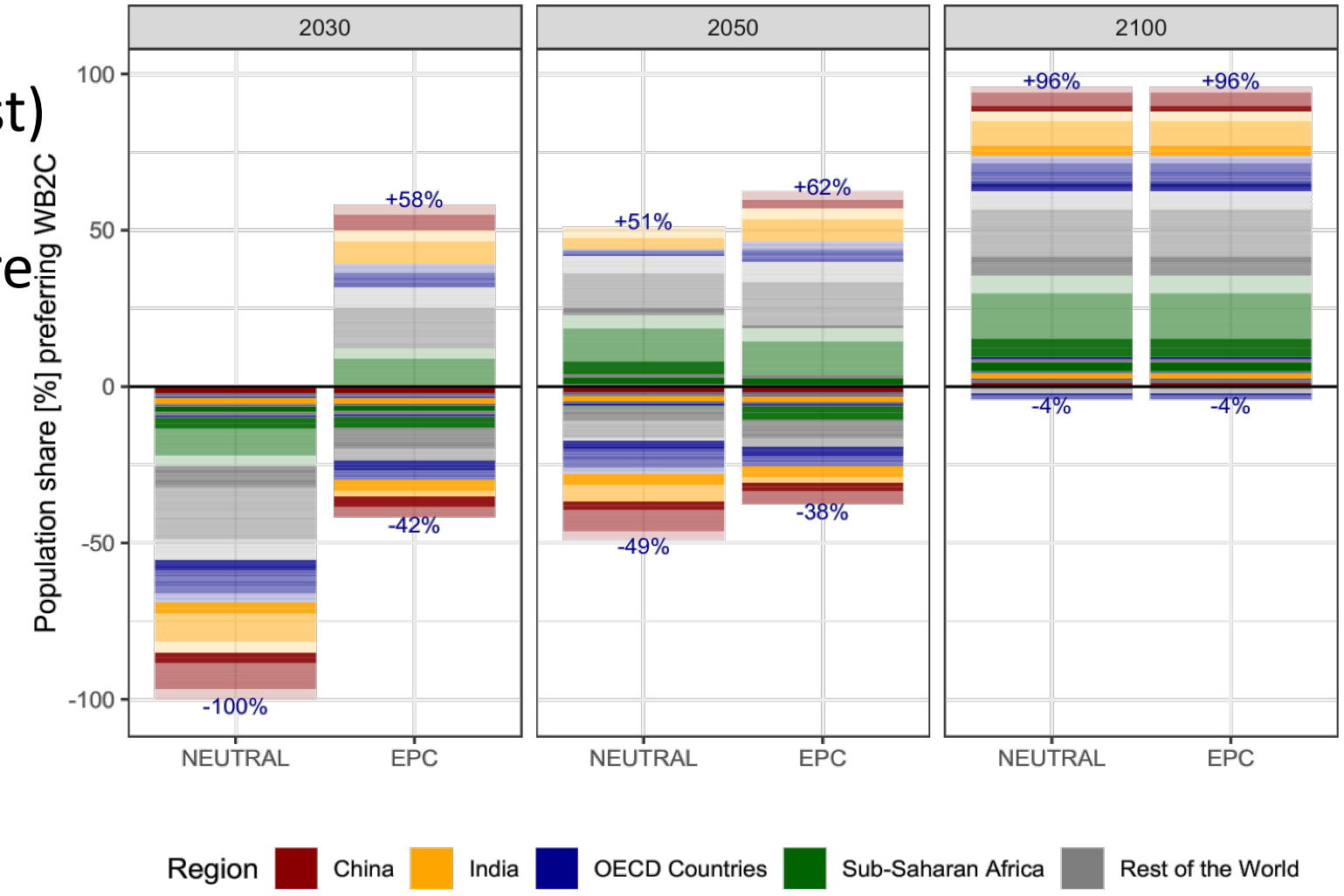
Distributional implications and acceptance

- Global assessment (almost) at the country level
- Which sub-populations are better off under WB2C or Current policies
- Short term: EPC transfers crucial
- Long term, revenues dissipate, impacts dominate



Source: Emmerling et al. (2024)

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Conclusions

- Climate policies will be most likely regressive including in Europe
- Redistribution is key, a “climate dividend” can easily achieve progressivity of the policy
- Taking into account potentially regressive climate impacts makes climate ambition inequality-reducing
- but more so in the long run…
- While for policy acceptance redistribution is key in the short term (from virtually everyone opposing to a two-third majority)

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Thank you!

Questions?

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