

Climate damage and climate policy in heterogeneous societies (CHIPS)

Climate change impacts as well as climate policy measures like carbon pricing affect households differently, depending on characteristics like income, exposure or ability to adapt. Thereby, climate change may increase inequalities between and within countries. CHIPS aimed to better understand and quantify these distributional consequences, globally but also in selected regions like the EU and Latin America. The overarching goal was to develop transformation scenarios capturing both mitigation and damages and their distributional consequences, allowing to analyze policies to counteract effects which increase inequality.

Key Findings

- Quantitative evidence shows that climate impacts disproportionately affect lower-income households, exacerbating inequality.
- Carbon pricing in the European Union increases overall inequality at the European level, driven by high tax burdens in low-income member states reliant on fossil energy.
- In Mexico, carbon taxation reduces inequality but imposes a significant burden on impoverished rural households.
- Targeted redistribution of carbon tax revenues can mitigate the rise in inequality while providing funds for other purposes.
- Overall, regional or global redistribution is preferable to national redistribution to effectively address negative impacts on the poorest countries and households.
- Behavioral changes, such as increased use of public transport, can help mitigate negative inequality effects resulting from high carbon pricing.



Source: Jensie De Gheest - Pixabay

Long-term benefits of climate policy

In the long run CHIPS shows clear two-fold benefits of climate policy - avoided costs from climate impacts and avoided climate impact-related increases in inequality. Furthermore higher climate impacts on the poor increases the social cost of carbon. Both findings add support to ambitious near-term mitigation action.

Better communication on carbon taxation as effective instrument

However, climate policy does incur costs and related negative distributional consequences. These are best alleviated through targeted redistribution policies. Redistribution on the national level is not always sufficient to balance effects, regional or even global redistribution schemes are required to support the poorest but most affected countries and regions effectively.



Improved communication on carbon taxation as effective instrument would increase popular trust in this measure. This should be combined with a targeted reinvestment of tax revenues in combination with targeted redistribution to those most affected.

More sectoral detail needed for identifying targeted policies against negative distributional effects

A higher sectoral detail both for the effects of carbon taxation (e.g. separating energy and food price effects) as well as climate impacts (e.g. separating capital and labor impacts) would improve the robustness. It would also allow to identify which channels are driving increases in inequality, thereby allowing to identify directed policy measures to avoid the effect. Climate policy measures other than carbon pricing should be investigated, as well as adaptation as a third dimension highly relevant for equality concerns.

About AXIS

The ERA-NET Consortium AXIS (Assessment of Cross(X) - sectoral climate Impacts and pathways for Sustainable transformation) aims to promote cross-boundary, cross-community research with the overall goal to improve coherence, integration and robustness of climate impact research and connect it to societal needs. To this effect, AXIS aims to overcome boundaries between science communities through inter- or transdisciplinary research projects. <https://jpi-climate.eu/programme/axis>

Partners

- [Potsdam Institute for Climate Impact Research](#)
- [Mercator Research Institute on Global Commons and Climate Change \(MCC\) gGmbH](#)
- [French National Centre for Scientific Research](#)
- [Universidad Nacional de Educación a Distancia](#)
- [University of Gothenburg](#)

Project Duration

September 2019 – February 2023

Contact

Dr. Franziska Piontek
Potsdam Institut for Climate Impact Research
Germany
piontek@pik-potsdam.de
www.pik-potsdam.de

CHIPS is part of AXIS, an ERA-NET initiated by JPI Climate, and funded by FONA (german programm for Research for Sustainable Development by the Federal Ministry of Education and Research), ANR (French National Research Agency), FORMAS (a swedish research council for sustainable development), MICINN (spanisch Ministry of Science and Innovation) with co-funding by the European Union (Grant No. 776608).

<https://chips-project.org/>

