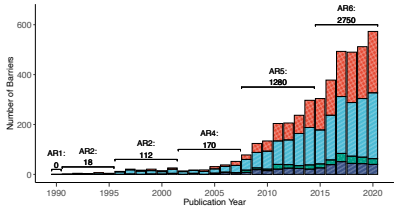
Mixed-method Evidence Synthesis of the Barriers and Enablers to Decarbonization

Simon Montfort, Dr. Lukas Fesenfeld, Prof. Dr. Karin Ingold

Introduction

- Research on barriers to decarbonization is growing exponentially.



- Barriers and enablers are hard to access.
- Evidence synthesis needs to keep up with a growing number of publications while not losing track of the specific enablers.

Research Question

What are the most prominent barriers to climate change mitigation; and what enablers to overcome these barriers does the cross-sectoral literature present?

Methodology

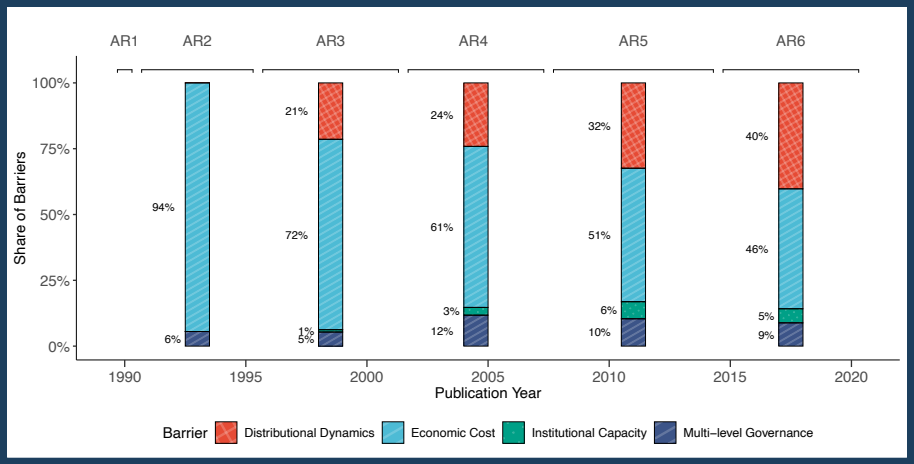
1) Search publications
- Define the search term.
- Retrieve 11,580 unique articles.

2) Machine Learning
- Annotate 10% of the abstracts by hand.
- Use machine learning to predict topics, barriers and sectors of the other 90%.
- Map barriers to decarbonization across sectors and regions using 11,580 abstracts.

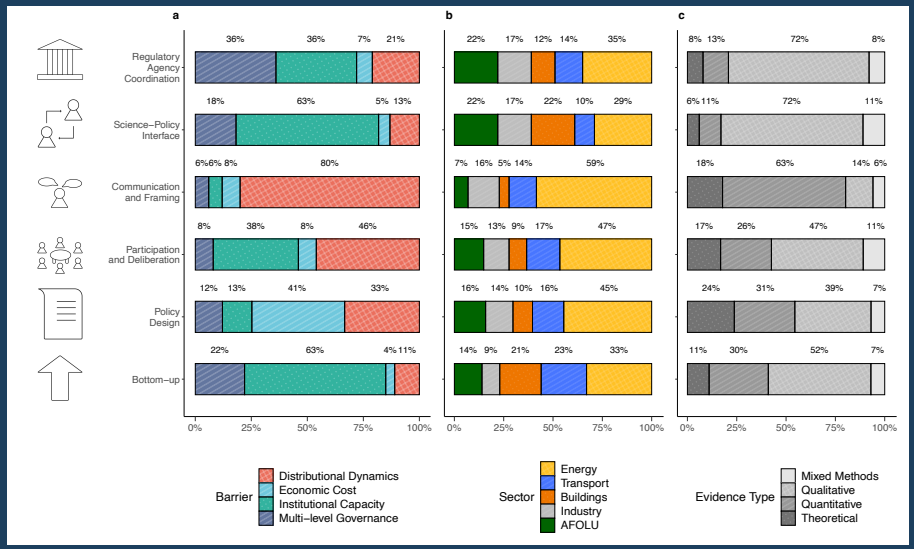
3) In-depth mixed-method review
- Select 292 articles on political feasibility, barriers and impact factor.
- Define a typology of enablers.
- Provide an in-depth qualitative evidence synthesis.

Our proposed method and the results may guide future evidence synthesis for the Intergovernmental Panel on Climate Change Assessment Reports.

Distributional barriers have become more prominent from the Intergovernmental Panel on Climate Change Assessment Reports (AR2 – AR6).

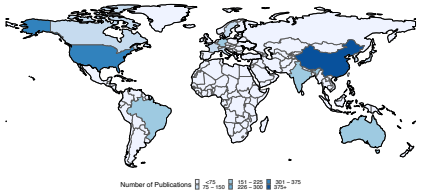


A high share of most of the six enablers addresses institutional capacity barriers and the energy sector.

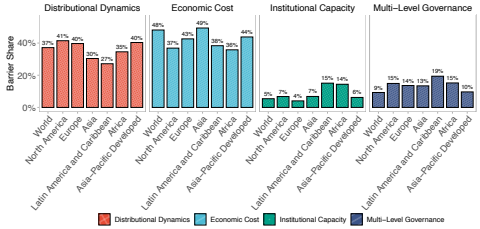


Geographic Distribution of the Research

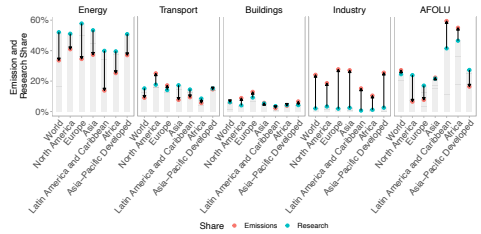
Research on decarbonization covers mostly China and the US.



Distributional barriers are important in developed countries.



There is too little decarbonization research on the industry sector.



Conclusion

- We map barriers in 11,580 publications.
- We inductively define a typology of six enablers and synthesize the evidence.
- Global evidence synthesis efforts, such as those by the Intergovernmental Panel on Climate Change, can benefit from the proposed mixed-method procedures.

Take a picture to download the full paper

UNIVERSITÄT BERN
OESCHGER CENTRE CLIMATE CHANGE RESEARCH