

GRETCHEN

The impact of the German policy mix on technological and structural change in renewable power generation technologies



Overarching objective

GRETCHEN investigates the impact of renewable energy, innovation and climate policies (the “policy mix”) on technological and structural change in renewable power generation technologies. GRETCHEN uses an innovative research design based on three pillars: the combination of environmental and innovation economics, a multi-method approach and an integrated analysis on three empirical levels – micro, meso and macro.

Integrating research framework for empirical analysis

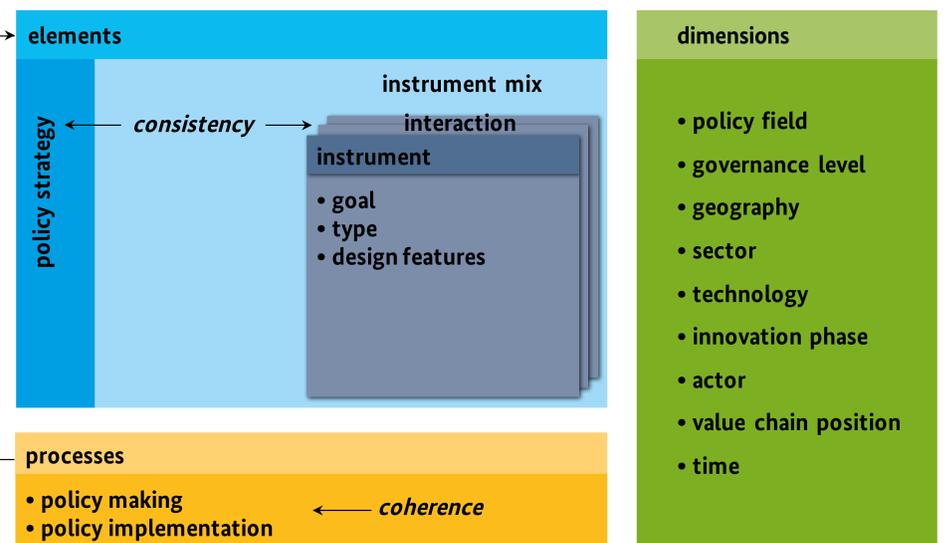


Figure 1: The GRETCHEN policy mix concept with its three building blocks of elements, processes and dimensions (Fraunhofer ISI)

Partners



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Micro-level: Impact on firm-level invention, innovation and adoption (Fraunhofer ISI)

Aim: Understanding of policy mix impacts across the three innovation phases invention, innovation and diffusion, and role of firm characteristics and other contextual factors (such as technology characteristics)

Method: Company surveys of technology providers and industrial adopters in Germany, supplemented by patent-data analysis

Policy Mix: Role of policy mix with its elements and processes, and key characteristics (e.g. consistency, coherence, credibility)

Meso-level: Impact on cooperation and competition (PV, wind) (FSU Jena, Fraunhofer ISI)

Aim: Measuring the policy mix’s influence on a) the connectivity inside PV and wind inventor networks and b) PV industry structure and technological change

Method: a) Cooperation: econometric analysis of inventor networks constructed from patent data, b) Competition: analysis of PV sector data

Policy Mix: Creating qualitative and quantitative policy mix variables representing elements (instruments, strategies), processes, and key characteristics

Macro-level: Impact on diffusion, macro-economy and environment (GWS)

Aim: Endogenizing technological change of renewable power generation technologies in macro-econometric input-output models

Method: Implementation of learning curves, endogenous determination of capacity installed and modeling of feedbacks with the macro-economy through changing IO coefficients and the existing energy module

Policy Mix: Quantification of policy mix elements (instruments, strategies) and their consistency

Relevance and dissemination of findings

- Better understanding of the role of the policy mix for technological change in renewable power generation technologies in Germany
- Derivation of policy recommendations for the German energy transition based on integrated findings from micro, meso and macro analyses
- Working papers, peer-reviewed articles, conference presentations, organization of special sessions, stakeholder workshops, final conference

Further information

Webpage:
www.project-gretchen.de
Project coordinator:
Dr. Karoline Rogge,
karoline.rogge@isi.fraunhofer.de,
 +49-721-6809126

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