

When Compensation Backfires: Heterogeneity in Acceptance of Hydrogen Infrastructure in Germany

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Extended Abstract

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Abstract Summary

Germany's planned hydrogen pipeline network is a key component of the energy transition and industrial decarbonization strategy. However, the successful rollout of hydrogen infrastructure may depend not only on technical and economic feasibility, but also on public acceptance at the local level. Compensation schemes are frequently proposed to increase support for new infrastructure projects, yet evidence on their effectiveness remains mixed.

This paper examines how different compensation designs affect public acceptance of hydrogen pipeline construction near residential areas. We conduct a randomized survey experiment using a sample representative of the German adult population ($N = 4,025$). Respondents participated in a hypothetical referendum on the construction of a hydrogen pipeline in the vicinity of their residence. Experimental treatments varied by compensation recipient (private household versus community), compensation type, and compensation level.

The results reveal substantial heterogeneity in responses. Low monetary compensation does not significantly increase support relative to a no-compensation baseline. High private household compensation significantly raises acceptance. In contrast, high community-level monetary compensation significantly reduces support, indicating a potential backfire effect. This suggests that collective compensation schemes may trigger concerns about fairness, hidden local costs, or the severity of anticipated burdens.

The findings contribute to the literature on energy infrastructure acceptance by showing that compensation is not universally effective and that policy design matters critically. For policymakers, the results imply that poorly designed compensation schemes may undermine rather than strengthen support for hydrogen infrastructure deployment.

Presenting Author Biography

Ayşe Tugba Atasoy is a postdoctoral researcher at the Institute for Future Energy Consumer Needs and Behavior (FCN), E.ON Energy Research Center, RWTH Aachen University, Germany. She holds a Ph.D. in Energy Economics from RWTH Aachen University. Her research lies at the intersection of behavioral economics, energy economics, and environmental policy, with a particular focus on consumer decision-making, technology adoption, and public acceptance of energy transition policies and infrastructure. Her recent work examines residential photovoltaic adoption, dynamic electricity pricing, and hydrogen infrastructure acceptance.