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Legally Binding Energy Solidarity: the Green Transition-Equity Trade-off in EU

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Extended Abstract

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Abstract Summary

As electricity systems become more interconnected and reliant on variable renewable energy, cross-border solidarity rules act as risk-sharing mechanisms shaping both crisis outcomes and ex ante investment incentives. We develop a model of interconnected countries facing stochastic supply shortages and compare two solidarity designs used in EU energy law: a capacity-based rule (electricity), where support depends on the assisting country's capacity, and a loss-based rule (gas), where support is tied to the affected country's shortage.

These rules generate a fundamental scale–parity trade-off. The loss-based rule increases aggregate green investment but amplifies cross-country disparities, while the capacity-based rule reduces disparities at the cost of lower investment. We show that the optimal rule depends on asymmetries in endowments and supply risks: with moderate asymmetries, loss-based solidarity dominates, whereas with large or concentrated asymmetries, capacity-based rules can dominate by limiting divergence and moral hazard.

Simulations calibrated to EU data illustrate how solidarity design can shape both the speed and distribution of the green transition.

Presenting Author Biography

Chloé Le Coq is Professor of Economics at the University of Paris Panthéon-Assas (CRED) and Research Fellow at the Stockholm School of Economics (SITE). She is also President of the French Association for Energy Economics. Her research lies at the intersection of energy economics, law and economics and industrial organization, with a particular focus

on energy markets, regulation, and security. Her recent work examines nuclear safety, technology-mix competition, interconnections, and broader energy policy challenges.