

The Cost Asymmetry of Energy Transition in Central and Eastern Europe: Rebalancing the Trilemma under Regulatory Constraints

Magdalena Zajączkowska

Krakow University of Economics, Krakow, Poland

Extended Abstract

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Abstract Summary

The European Union's decarbonisation agenda — anchored in the European Green Deal, Fit for 55, and REPowerEU — applies a broadly uniform regulatory framework across member states with fundamentally different energy systems. This paper argues that such uniformity produces structural cost asymmetry: a systematic divergence between the transition costs imposed by EU-level regulation and the economic and institutional capacity of Central and Eastern European (CEE) countries to absorb them without compromising energy security or household affordability.

The analysis covers five CEE economies — Poland, the Czech Republic, Hungary, Romania, and Slovakia — over the period 2015–2024. The methodology combines quantitative indicator analysis with qualitative regulatory assessment. Quantitative data are drawn from Eurostat, the World Energy Council Trilemma Index, and IEA investment statistics. Cost asymmetry is operationalised along two dimensions: vertical asymmetry (the gap between household energy expenditure burdens and EU affordability benchmarks) and horizontal asymmetry (divergence in cost-per-unit-of-decarbonisation between CEE and Western EU member states, controlling for GDP per capita and energy mix).

Preliminary findings indicate that CEE households allocate between 8 and 14 percent of disposable income to energy — well above the EU average of approximately 6 percent — and that CEE countries face transition costs between 1.4 and 2.1 times higher as a share of GDP than the EU-15 average. Existing solidarity instruments only partially offset this differential. Regulatory analysis further shows that uniform transition timelines actively reinforce, rather than merely reflect, the underlying asymmetry.

The paper concludes that trilemma rebalancing in CEE requires explicit asymmetry-correcting mechanisms: differentiated regulatory timelines, enhanced solidarity financing, and transition capacity as a variable in EU policy design. The findings contribute to the broader literature on the distributional economics of energy transition and carry direct implications for the ongoing reform of EU energy market regulation.

Presenting Author Biography

Magdalena Zajęzkowska is an Assistant Professor in the Department of Public Management, Krakow University of Economics(KUE), Poland. She holds a PhD in Economics and dual Master's degrees in Law and Economics.

Her research focuses on EU energy policy, energy security, sustainable energy transition, and energy economics, with particular emphasis on CEE economies.

Since 2017, she has served as Poland's representative to the OECD/Nuclear Energy Agency Working Party on Nuclear Energy Economics (WPNE). She is currently the PI CLEaR and DEDYCATING projects, funded by the European Commission. She also directs the postgraduate programme "Manager ESG" at KUE.