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The Political Economy of Energy Security in Europe after the Russia–Ukraine War

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Article Information [YY-MM-DD]

Received

2025-12-21

Revised 2026-01-16

Accepted 2026-02-05

Citation (APA):

Ullah, M, U & Naz, I (2026). The political economy of energy security in Europe after the Russia–Ukraine war. *Social Sciences Spectrum*, 5(1), 167-182. <https://doi.org/10.71085/sss.05.01.475>

Abstract

This study discusses the energy security in the aftermath of the war in Europe based on the full-scale invasion of Ukraine by Russia in 2022 and the underlying political economy of policy choices. It asserts that distributional conflicts, institutional capacity and rent dispersion influenced the choices that fell short of technical supply limitations. The study focuses on the evaluation of the diversification of imports, the adequacy of storage, and the price exposure and fiscal instruments by using a mixed-methods design in the form of a pre/post-2022 panel and comparative case studies. The results indicate that there were major decreases in the dependence on Russian pipeline gas and an augmentation of emphasis on storage. It is concluded in the paper that the solution to the problem of securing energy in the long term is the need to balance between the new demands and social legitimacy.

Keywords: Energy Security, Political Economy, Europe, Russia–Ukraine War, LNG, Gas Storage, Market Governance.



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Introduction

The full-scale Russian invasion of Ukraine in February 2022 was a shock to the energy infrastructure of Europe, a sudden geopolitical shock, disruption of regular trade routes and increasing security of supply as a technocratic issue to the top of the political agenda (Kuzemko et al., 2022; Skalamera, 2023). What had long been regarded as a controlled interdependence, particularly through pipeline gas, suddenly turned into an open strategic liability. In reality, the war reorganized the energy geometry of Europe: import patterns changed, new contracting practices became widespread, and states returned to the market by providing emergency regulation, subsidies, and risk-sharing (Mišík et al., 2023; Kuzemko et al., 2022). The crisis also accelerated discussion of what should be considered a secure form of energy in a decarbonizing economy, in which the stability of supply is traded off against emissions lock-in and the politics of infrastructure decisions (Kemfert et al., 2022).

Europe adjusted empirically, fast and unevenly, in post-2022. New data of the restructured gas supply-transmission-consumption system reveal that Russian gas deliveries to the EU27 and UK failed catastrophically during the post-invasion winters, with LNG becoming the largest source of supply and intra-European flows being restructured to redistribute new points of entry and fill the gaps (Zhou et al., 2025). Such changes were not market adjustments. Policy mediation used policy tools (via emergency demand reduction, expedited permitting, and new coordination tools) and produced new distributional forces on households and firms (Jaeger-Erben et al., 2025).

Crisis governance at the EU level has been crystallised in a set of responses with the aim to decrease reliance on Russian fuel and stabilise the domestic market. The headline plan focused on gas diversification and the acceleration of the abandonment of fossil fuels through renewables and efficiency, which is commonly identified with the policy discourse of REPowerEU (Ah-Voun et al., 2024; Vezzoni, 2023). Coupled with this, the EU sought to enhance security through buffer stocks by increasing requirements for gas storage and synchronization of refueling targets, aiming to mitigate the likelihood that physical scarcity would be translated into extreme prices and political panic (Fernández-Blanco et al., 2023). Market reforms were also an issue that the crisis pushed on the agenda, whether in the form of temporary interventions or longer-term redesign arguments, as the realization that energy markets are not price-setting mechanisms but political institutions became apparent (Kuzemko et al., 2022).

However, the main takeaway from the crisis is that energy security is not merely a technical matter that entails the adequacy of supply. It is a political and distributive fight on who pays, who benefits, who has access to critical infrastructure, and who makes the regulations, which govern risk and rents (Mišík and Nosko, 2023; Kuzemko et al., 2022). The shift to non-Russian gas also opened new profit grounds in LNG importation, trading, and versatile generation, while imposing financial liabilities in the form of subsidies and compensation programs. It also rebalanced power bargaining within the EU, with member states highly differentiated in terms of exposure, infrastructure capacity, and administrative capability to respond to rapid policy change (Mišík et al., 2023; Fernandez-Blanco et al., 2023).

Furthermore, the vulnerability can be reproduced by the drive to become secure in energy. Increased LNG terminals and long-lived gas resources can decrease dependence on a single supplier and increase the carbon lock-in effect and the stranded-asset risk, a problem that scholarship has claimed is presented by gas infrastructure incentivized by crisis as a barrier to a renewable future (Kemfert et al., 2022). On the same note, the political economy of REPowerEU has been seen to face conflicts between green-growth narratives and material constraints, such as

the externalisation of ecological and supply-chain pressures outside Europe (Vezzoni, 2023; Pavlenko and Cherp, 2026). In this regard, the post-war energy policy of Europe can be interpreted as the redistribution of dependency instead of its abolition- the shift of the pipeline geopolitics to the LNG competition and clean-tech supply chains.

Social interests are also high. The energy-price spiral became household distress within no time, transforming daily energy politics and revealing the pattern of vulnerability determined by income, housing, and support regimes across nations (Jaeger-Erben et al., 2025). The crisis policy was thus a concurrent geopolitics-based operation to stabilize the macroeconomy and provide social protection, in question of legitimacy and fairness, as well as the need to build a coalition behind the emergency policy and longer-term transition decisions (Kuzemko et al., 2022).

In this regard, the aim of the current article is to examine the post-2022 energy security of Europe through a political-economy lens due to the issue that energy security is commonly understood as a narrow supply issue despite it being a matter of distribution, power, and rule-setting in markets and systems; the paper is intended to explain how the war altered the energy security policy of the EU and the way the policy changes and increases diversification distributed unevenly across states, industries, and households; test whether pre-war dependence was a predictor of policy change and accelerated diversification; and evaluate whether Europe had

Literature Review

The concept of energy security is usually presented in the EU as a three-pronged goal, which consists of affordability (the prices that households and firms can afford), reliability (the supply is always available and the system is sufficient), and sustainability (its applicability to decarbonization). The Russia-Ukraine conflict hastened the effort to re-evaluate energy security as more of a strategic issue of governance instead of a highly technical-market one with emergency response (storage, demand reduction, short-term contracting), often tense with long-term transition aspirations (renewables, electrification, efficiency) (Kuzemko et al., 2022; Osicka and Černoch, 2022). Recent EU-oriented measurement studies thus consider energy security to be multidimensional (encompassing both import dependencies and diversification with resilience indicators) (Štreimikienė et al., 2023; Kuzior et al., 2025). Continuing on this strand, the most commonly operationalized metrics are the import dependence, supplier/source diversification, exposure to price volatility, and storage adequacy as a buffer in the system (Štreimikienė et al., 2023; De Rosa et al., 2022).

Political economy approaches emphasize that energy security policies distribute costs and benefits in an institutionalized form: through market rules, contracts, infrastructure control, and fiscal support. This allocative nature is even more apparent in times of crisis, as states interfere with the market by introducing subsidies, emergency procurement, and regulation, which re-establishes power and distribution in the market (Kuzemko et al., 2022; Rogge, 2024). EU energy governance has likewise re-politicized due to the war: collective-action problems between member states due to bargaining over solidarity, burden-sharing and collective procurement are being revealed, particularly where national interests in the short term prevail (Mišik & Nosko, 2023). Meanwhile, legal-institutional work, the energy transition in the EU is becoming an ever more security-centred process, which justifies exceptional instruments and external alliances capable of reorganising intra-EU competences and external trade and energy standards (Marhold, 2023).

The European energy security up until 2022 was based on a market-based integration approach that incorporated high cross-border trade and heavy dependence on pipeline gas where Russian

gas was entrenched through infrastructure lock-in and long-term contracting. This move served as a stress test for this model, as it became an obvious geopolitical vulnerability due to a commercial dependency (Osicka & Černoch, 2022; Kemfert et al., 2022). Research has indicated that exposure was not uniform across member states, forming foreseeable fault lines in national preferences regarding sanctions, procurement, and burden-sharing for the crisis (Mišík & Nosko, 2023; Osicka and Černoch, 2022).

The post-2022 policy package has been widely understood as a two-fold approach: diversify away from Russia and accelerate the pace of renewables and efficiency. There are also lock-ins in the REPowerEU pivot; however, critics warn that this may involve more fossil gas infrastructure and greater reliance on raw materials and manufacturing dependencies, related to the low-carbon transition (Vezzoni, 2023; Kemfert et al., 2022). In addition, the crisis led to new market interventions focused on stability and affordability, such as mechanisms for gas price formation and wholesale market functioning (Rogge, 2024). Emphasis on political economy is the fact that these reforms do not merely correct the markets, but they also redistribute the rents and risks among the producers, traders, consumers, and states (Kuzemko et al., 2022; Rogge, 2024).

One of the main themes in post-war literature is that energy insecurity manifests socially as energy poverty, fiscal strain, and pressure on industrial competitiveness. The degree to which higher prices and volatility are converted into household vulnerability is recorded in reviews, which means defining and measuring (who qualifies as energy poor) is a contentious policy challenge (Campagna et al., 2024; Kashour and Jaber, 2024). Justice-oriented work continues to assert that crisis policies can also inadvertently cause inequity unless informed by participatory and capability-based standards (Shortall & Mengolini, 2025). Crisis support and price-stabilization policies at the macro level interact with inflation dynamics and fiscal trade-offs to determine the ultimate adjustment costs and, thus, the ultimate beneficiaries of the adjustment measures (Casagrande & Dallago, 2025).

As Europe diminished one strategic dependency, the transition-and-diversification direction may create new ones: concentration in solar PV and clean-energy components in the supply chain, and upstream critical minerals, as well as across-the-board environmental and labor risks (Evans et al., 2025; Berthet et al., 2024). It expands the security frame to include fuels to materials, manufacturing, and standards, and raises the question whether Europe is trading the risks of Russian gas for another portfolio of geopolitical and socio-environmental vulnerabilities (Vezzoni, 2023; Marhold, 2023).

The current literature tends to view energy security as a technical-economics issue or give policy chronological accounts. The uncharted territory remains, however, the comparative political-economic account of exposure in the pre-war period to institutional capacity for the magnitude/rate of national policy change, as well as the distributional results (winners/losers) and new dependency. The present study bridges that gap by combining the security shock theory with EU bargaining, rent distribution and vulnerability to test the relationship relations on cross-national indicators and policy intervention.

Research Methodology

3.1 Research Design

The current paper adopts a mixed-methods design in order to render the political-economy point argumentable and policy-relevant. First, a quantitative EU+UK/EEA panel (20182025, where existing) will determine whether the RussiaUkraine war (as exogenous security shock since

February 2022) had endogenous effects on energy-security outcomes and whether they vary by the pre-war exposure of countries to Russian energy. Second, the comparative case studies will describe how and why the distributional conflict, institutional capacity and coalition politics influenced the instrument of (subsidies, mandates, market rules) and burden allocation and rent distributions. Such a macro-regularity + within-case mechanisms is in line with multi-stage mixed-method sequencing which involves hypothesis testing alongside process-tracing explanations (Fontana et al., 2024).

3.2 Conceptual Framework

The model represents a political-economy process: Shock (Exposure + Institutions) Policy choices Outcomes. The shock in question is the disruption/weaponization of Russian pipeline gas and subsequent spike in prices that re-alters the energy security objectives to crisis reliability and strategic independence (Kuzemko et al., 2022; Mišík and Nosko, 2023). Dependence on Russian imports and infrastructure lock-in is captured by exposure, state capacity and fiscal space that precondition possible crisis responses is captured by institutions. Diversification, storage, demand reduction, consumer protection, and market design changes are all policy options that are considered distributive decisions and which make some winners/losers (Vezzoni, 2023). Some of the outcomes monitored include: (i) security (diversification, adequacy of storage), (ii) affordability (prices/volatility) and (iii) distribution (who bears costs vs receives rents).

3.3 Hypotheses

- **H1 (Exposure effect):** Higher pre-war dependence on Russian energy predicts **stronger diversification and faster intervention** after 2022 (Kuzemko et al., 2022).
- **H2 (Institutions):** Greater state capacity/fiscal space predicts **larger, more targeted support and faster price stabilization**.
- **H3 (Winners/losers):** Crisis policies and market tightness generate short-run rents for incumbents and traders, while households/SMEs face higher burdens where targeting is weak (Mišík & Nosko, 2023).
- **H4 (New dependency risk):** Declining Russian pipeline dependence correlates with **rising LNG concentration risk** and/or upstream equipment/material vulnerabilities (Vezzoni, 2023; Kemfert et al., 2022).

3.4 Data Sources

The quantitative dataset is assembled from: **Eurostat** energy balances and trade by partner; national and EU **gas storage** series; wholesale gas/electricity price series and consumer price components; and policy-timeline codings from EU and national documents. For supply flows and sourcing shares at higher frequency, the design incorporates a weekly imports-by-source dataset commonly used in European gas monitoring.

3.5 Variables and Measurement

Dependent Variables (energy security outcomes):

1. **Import diversification index** for gas (supplier-share concentration-based; higher values = more diversified), following diversification/concentration measurement logic used in EU energy-security indicator work (De Rosa et al., 2022; Streimikiene et al., 2023).
2. **Storage adequacy**: seasonal storage fill (%), plus an indicator for meeting the 90% pre-winter benchmark.

3. Price volatility: rolling volatility of wholesale gas and electricity, plus pass-through proxies (e.g., retail energy CPI where available).

Key independent variables (political economy):

- **Russian dependence (baseline 2021):** share of gas (and optionally oil/coal) imports sourced from Russia.
- **Market structure proxies:** LNG regasification capacity, interconnector density, and domestic generation mix.
- **Institutional/fiscal capacity:** debt-to-GDP, budget balance, and a composite state-capacity proxy; plus, government ideology where relevant for instrument choice.

3.6 Empirical strategy

The fundamental causal design is Difference-in-Differences (DiD), where country and time fixed effects, high-dependence vs low-dependence countries before vs after February 2022 are being compared. Since the levels of the treatments are heterogeneous, and policy adoption is staggered, the research approximates group-time average treatment impacts by modern DiD estimators that are susceptible to heterogeneous impacts (Callaway and Sant'Anna, 2021) and investigates dynamic patterns with event-study estimators resilient to staggered timing contamination (Sun and Abraham, 2021; Borusyak et al., 2024). Robustness checks use alternative dependence levels, no outliers, placebo shock dates in pre-2022 years, alternative definition of outcomes (e.g. diversification is on volumes rather than values).

3.8 Case analysis and selection using qualitative methods.

Cases are chosen to balance as much as possible exposure and institutional differences and capture political difference in the management of the crisis: e.g., Germany and Italy (high dependence + large industrial coalitions), Poland or a Baltic state (security-driven diversification), and Hungary (policy deviation/contestation). Structured process tracing is applied on the individual cases: policy documents and regulatory decisions, parliamentary debates, and mapping of energy incumbents, industrial users and consumer groups. The qualitative evidence is applied to explain whether the observed quantitative changes are coalition bargaining, rent creation, or capacity constraint (Kuzemko et al., 2022; Vezzoni, 2023).

3.8 Validity, reliability and limitations.

The major risks are endogeneity (policies react to prices), policy simultaneity (retail pass-through multiple instruments), and dependence and retail pass-through measurement error. Mitigation encompasses lag structures, time fixed effects in the presence of common shocks, estimator family robustness (Callaway and Santana, 2021; Borusyak et al., 2024), and panel result triangulation and within-case causal narrative. The remaining weakness is that the weaknesses of new dependencies (e.g., critical minerals, equipment supply chains) can be visible only partially in short time post-war time windows (Vezzoni, 2023).

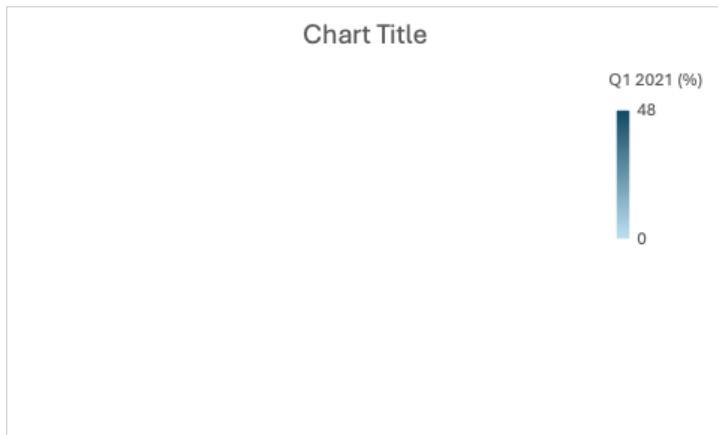
Results

4.1 Re-ordering of European gas trade after the war: pipeline collapse from Russia, LNG surge

Eurostat partner-share data show a clear “two-track” adjustment: (i) a sharp reduction in Russia’s role in *pipeline gas*, and (ii) a major expansion of *LNG* with an increasingly dominant role for the United States (Eurostat, 2025).

Table 4.1A. Main partners for extra-EU imports of natural gas in gaseous state

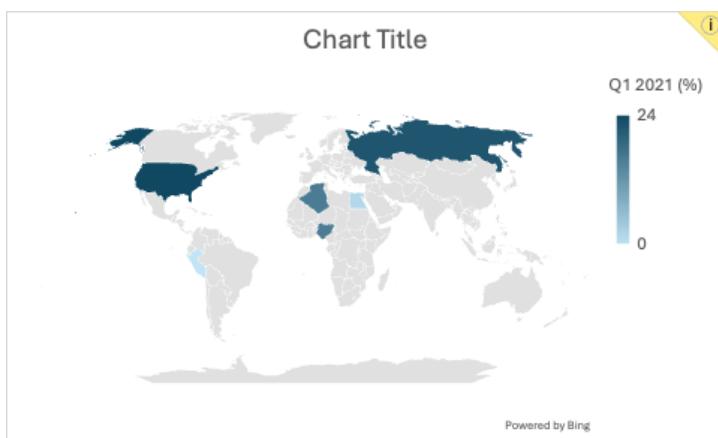
Partner	Q1 2021 (%)	Q3 2025 (%)	Δ (percentage points)
Russia	48	15	-33
Algeria	25	23	-2
Norway	15	25	+10
Azerbaijan	5	13	+8
United Kingdom	2	21	+19
Libya	3	0	-3
Ukraine	1	0	-1
Kazakhstan	0	1	+1
Serbia	0	1	+1
Other	0	1	+1



Key result (pipeline gas): Russia’s share fell **48% → 15%** (a **33-pp** drop), while the supplier mix broadened (notably UK and Azerbaijan gains), consistent with a rapid geopolitical re-routing of flows and contracts.

Table 4.1B. Main partners for extra-EU imports of liquefied natural gas (LNG), Q1 2021 vs Q3 2025 (% share)

Partner	Q1 2021 (%)	Q3 2025 (%)	Δ (percentage points)
United States	24	56	+32
Russia	22	15	-7
Algeria	16	9	-7
Nigeria	16	4	-12
Qatar	12	5	-7
Trinidad and Tobago	4	3	-1
Egypt	2	0	-2
Peru	0	3	+3
Other	3	6	+3



Key result (LNG): LNG sourcing shifted strongly toward the **United States (24% → 56%)**, while **Russia remained a top LNG supplier (15% in Q3 2025)**—an important political-economy detail because “de-Russianisation” via pipelines partly coincided with continued Russian LNG exposure.

Eurostat also reports a large **volume** reconfiguration: compared with Q1 2021, **LNG import volumes were up 107.5%**, while imports of gas in gaseous state were **down 44.8%**—consistent with infrastructure substitution (floating terminals, regas capacity, and shipping) rather than a simple “one-for-one” supplier switch.

4.2 Diversification improved for pipeline gas but worsened for LNG: evidence of “new dependency”

Using the partner shares above, diversification was summarized with a standard **Herfindahl-Hirschman Index (HHI)** and its implied “effective number of suppliers” ($1/HHI$). Results show **more diversification in pipeline gas but greater concentration in LNG**.

Table 4.2. Supplier concentration and diversification (computed from Eurostat partner shares)

Market	HHI (Q1 2021)	HHI (Q3 2025)	Effective suppliers (Q1 2021)	Effective suppliers (Q3 2025)
Pipeline gas (gaseous state)	0.319	0.199	3.13	5.02
LNG	0.175	0.354	5.73	2.83

Interpretation: Europe's pipeline gas supply became structurally **less concentrated** (effective suppliers $\sim 3.1 \rightarrow 5.0$), while LNG became **more concentrated** (effective suppliers $\sim 5.7 \rightarrow 2.8$) because of the U.S. share jump. This pattern directly supports the “reduced one dependency, created another” hypothesis pathway.

4.3 Storage adequacy: binding targets met, but the politics of “buffer-building” persists

EU storage policy translated into consistently high end-of-season stock levels. In late 2024, the Commission reported EU storage **~95% full** (ahead of the 90% target) and noted many Member States exceeded the benchmark early.

By **1 October 2025**, storage stood at **83%** (~ 85 bcm) after refilling from **34% on 1 April 2025**, implying roughly **50 bcm injected** over the refill season. In parallel, the EU adopted **intermediate storage targets** for 2025 (to guide refill trajectories), reinforcing governance through monitored milestones rather than a single deadline.

Table 4.3. EU gas storage outcomes versus targets (selected milestones)

Milestone	Reported EU storage level	Benchmark/target	Result
Late Oct 2024	$\sim 95\%$ full	90% by 1 Nov (legal target)	Target exceeded
1 Apr 2025	34%	Start-of-refill baseline (seasonal)	Low base, refill required
1 Oct 2025	83% (~ 85 bcm)	Trajectory governed by intermediate targets	High refill achieved
Apr→Oct 2025 change	+ ~ 50 bcm injected	Refill season performance	Strong buffer-building

Political-economy implication: storage is not just “security”; it reallocates costs (who pays to finance inventory, who benefits from stability) and intensifies EU-level rule-setting over national energy systems.

4.4 Distributional outcomes: crisis support scaled up massively, mostly through broad measures

A central political-economy result is the **scale and design** of fiscal intervention. The Commission's energy subsidies reporting shows that total EU energy subsidies rose from **€213bn (2021)** to **€397bn (2022)** and then fell to **€354bn (2023)** (about **2.10% of GDP**, down from **2.37%** in 2022). Crisis measures alone were estimated at **€187bn (2022)** and **€145bn (2023)**, with **households** as the main direct beneficiaries (**€121bn** over 2021–2023). The ECB similarly estimates discretionary support at **1.8% of GDP (2022)** and **1.3% (2023)**, projected to fall below **0.5% annually** over 2024–2026—evidence of a planned wind-down as prices normalized.

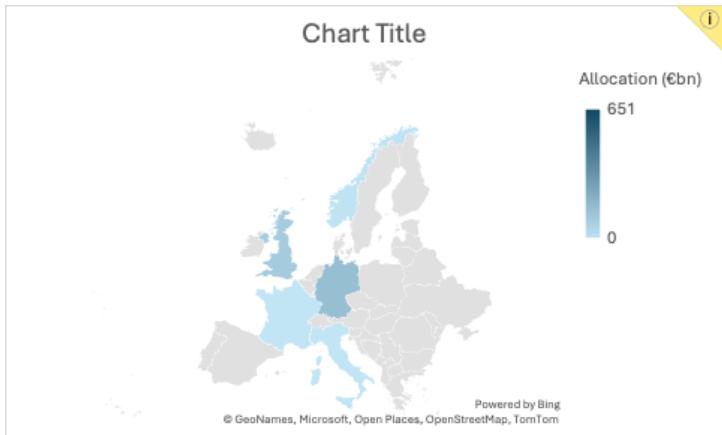
Table 4.4. EU energy-crisis fiscal support and beneficiaries (selected indicators)

Indicator	2021	2022	2023	Notes
Total EU energy subsidies (€bn)	213	397	354	2023 = 2.10% of GDP; 2022 = 2.37%
Crisis-measure component (€bn)	—	187	145	National measures protecting consumers
Household direct beneficiaries (€bn)	-	-	-	€121bn cumulated (2021–2023)
Industry direct beneficiaries (€bn)	-	-	-	€30bn cumulated (2021–2023)
Transport direct beneficiaries (€bn)	-	-	-	€28bn cumulated (2021–2023)
ECB discretionary support (% GDP)	—	1.8	1.3	Projected <0.5 (2024–2026)

At the cross-country level, Bruegel's tracker reports **€651bn allocated/earmarked across Europe since Sept 2021**, including **€540bn in the EU**, with **Germany (€158bn)** the single largest national allocator; the UK (€103bn) and Norway (€8.1bn) are also noted in the same accounting frame. A VoxEU synthesis using the same Bruegel-based evidence reports that Germany's fiscal measures were around **€158bn**, while **Italy and France** allocated ~**€90bn each** (selected-country comparison).

Table 4.5. Selected national fiscal allocations to shield consumers (Bruegel-tracked, €bn)

Country/Group	Allocation (€bn)	Reference frame
Europe (total)	651	Since Sept 2021
EU (total)	540	Since Sept 2021
Germany	158	Since Sept 2021
United Kingdom	103	Since Sept 2021
Norway	8.1	Since Sept 2021
Italy (selected estimate)	~90	Sept 2021–Jan 2023 window (VoxEU synthesis)
France (selected estimate)	~90	Sept 2021–Jan 2023 window (VoxEU synthesis)



Political-economy interpretation: the crisis response was large and often broad-based, shaping distributive conflict (taxpayer's vs beneficiaries; targeted transfers vs price caps) and intensifying intra-EU debates over fiscal capacity and “level playing field” concerns.

4.5 Case-linked evidence of exposure and rents: dependence shaped both policy urgency and who benefited

Country cases illustrate how **pre-war exposure** mapped onto policy urgency and distributional outcomes.

Table 4.6. Illustrative national exposure and distributional indicators (selected cases)

Case	Pre-war Russian gas exposure	Post-war adjustment / distributive indicator
Germany	Russia = 55% of gas imports in 2021	Exposure drove rapid LNG infrastructure push; Russian share fell to 26% by End-June 2022 in the cited snapshot (Reuters via WEF).
Italy	Russia ~ 40% of gas imports pre-war	Fell to 19% in 2022; energy bill limitation measures estimated at €62.8bn over 2021–2022.
Poland	Historically highly dependent; ended Russian imports by Q1 2023	Policy mix emphasized diversification + infrastructure; Russian flows through EU pipelines fell sharply in 2022 (PEI summary).
Hungary & Slovakia	Reliance on Russian pipeline gas 57% (2021) → 70% (2024)	Evidence of political capture/rent dynamics: MOL operating income +30% vs pre-invasion; domestic pre-tax fuel prices ~5% above EU average in 2024.

Result takeaway: exposure interacted with domestic institutions and coalition politics to produce uneven adjustment: some states diversified quickly (Germany, Italy, Poland), while others maintained or deepened Russian-linked dependence (Hungary/Slovakia), consistent with a political-economy mechanism rather than a purely technical “optimal security” model.

Discussion

The findings reveal that the post-2022 energy security transition in Europe was not an uninvolved process of market correction, but the politically mediated transfer of risks, rents, and dependencies. First, the drastic decline in Russia's share of pipeline gas and the emergence of alternative pipeline sources are consistent with H1 (exposure effect): Russia and EU institutions responded to the shock as a strategic weakness and focused on quick diversification and buffer-stocking. It helps argue that energy security is best understood as a multidimensional phenomenon comprising dependence on imports, diversification, storage sufficiency, and exposure to prices (De Rosa et al., 2022; Štreimikienė et al., 2023). Simultaneously, the LNG boom (particularly, the further concentration of power in the hands of a key supplier) demonstrates the constraints of the so-called de-risking, which is discussed solely as de-Russification. Politically and economically, Europe reduced a geopolitical dependency in one part of the system (pipeline gas) and increased the risk of concentration in another (LNG), which aligns with H4 (new dependency risk) (Vezzoni, 2023; Marhold, 2023).

Second, H2 (institutions): The fiscal shielding was large-scale and unevenly distributed across the country, so states that had larger fiscal and administrative capacity were at an advantage in stabilizing the prices and protecting consumers, and larger or more strained states had to make tougher trade-offs. This is consistent with more extensive conceptualizations of EU crisis governance as a layered system in which common rules coexist with national discretion, and in which distributive capacity is a fundamental factor in who bears the adjustment costs (Kuzemko et al., 2022; Mišík & Nosko, 2023). The crisis further intensified internal asymmetries within the single market: the varying ability to pay subsidies can be converted into uneven competitiveness and political conflict over solidarity and state support (Osicka and Černoch, 2022).

Third, the effects of distribution are core and not peripheral. The size of support and design (wide price action versus transfers) was the determinant of the social legitimacy of the governance of the crisis. The problem of affordability is macroeconomic but socio-political in nature, because household vulnerability and the dynamics of changing energy practices in the crisis also draw to the fore the emergence of energy poverty and the risks of protests when burdens are perceived as unfair or opaque (Jaeger-Erben et al., 2025). Inflation and debt dynamics also interact with fiscal support, and therefore, crisis management is a competition over the intertemporal shifting of burdens (Casagrande & Dallago, 2025).

Lastly, the results validate H3 (winners/losers): scarcity of crisis, emergency procurement, and market interventions have the potential to generate short-run rents for incumbents and traders and expose households and SMEs to greater risk in market situations where targeting is poor. This enhances the political-economy argument that energy security policy is both a resilient and rent-distribution issue (Mišík et al., 2023; Kuzemko et al., 2022). The most important implication is that the future stability of energy security following the war lies not in the diversification and storage, but in governance decisions according to which the new dependencies should be managed, the fossil lock-in should be avoided, and the distributive legitimacy should be preserved (Kemfert et al., 2022; Vezzoni, 2023).

Conclusion

The paper explored the status of European energy security following the Russia-Ukraine war through the political-economy prism, arguing that institutional, bargaining, and distributional warfare influenced the post-2022 change as much as technical supply limits did. The findings reveal that Europe quickly reduced its exposure to Russian gas pipeline energy and enhanced short-

run resilience through diversification and buffer-building, while continuing to focus on storage sufficiency and synchronized crisis tools. These results are in line with the assumption that countries more exposed to the war faced a greater incentive to intervene and diversify, and that EU-level rules stabilized collective action at minimum security standards (Kuzemko et al., 2022; Mišík & Nosko, 2023).

Yet, the results also indicate that there is a key political-economy trade-off: to de-risk one weakness, another may emerge. With a decrease in pipeline dependence, the European reliance on LNG became heavier and more centralized, suggesting that the concept of energy independence should be seen as a shifting set of relations rather than its removal (Vezzoni, 2023; Marhold, 2023). In addition, the response to the crisis was dependent on massive fiscal stimulus that cushioned households and firms, yet differed among the states, and this indicated the inequitable fiscal capacity and created an issue with equity, competitiveness, and long-run sustainability of support (Jaeger-Erben et al., 2025; Casagrande and Dallago, 2025).

The overall point is that the politics of burden sharing and rent allocation cannot be separated in energy security in post war Europe. Price stabilizing and supply policies must also be legitimate, in the sense of being aimed at vulnerability, reducing windfall rent, and preventing the making of infrastructural choices that tie up future risks. Future studies are encouraged to conduct the analysis of the political economy of gas dependency not only on gas but also on the political economy of the strategic autonomy of Europe (including critical minerals, manufacturing concentration, and grid and storage bottlenecks) in which new dependencies are likely to shape the strategic autonomy and distributive conflicts over the next decade (Kemfert et al., 2022).

Conflict of Interest

The authors showed no conflict of interest.

Funding

The authors did not mention any funding for this research.

References

Ah-Voun, D., Chyong, C. K., & Li, C. (2024). Europe's energy security: From Russian dependence to renewable reliance. *Energy Policy*, 184, 113856. <https://doi.org/10.1016/j.enpol.2023.113856>

Berthet, E., Lavalley, J., Anquetil-Deck, C., Ballesteros, F., Stadler, K., Soytas, U., Hauschild, M., & Laurent, A. (2024). Assessing the social and environmental impacts of critical mineral supply chains for the energy transition in Europe. *Global Environmental Change*, 86, 102841. <https://doi.org/10.1016/j.gloenvcha.2024.102841>

Borusyak, K., Jaravel, X., & Spiess, J. (2024). Revisiting event-study designs: Robust and efficient estimation. *The Review of Economic Studies*, 91(6), 3253–3285. <https://doi.org/10.1093/restud/rdae007>

Callaway, B., & Sant'Anna, P. H. C. (2021). Difference-in-differences with multiple time periods. *Journal of Econometrics*, 225(2), 200–230. <https://doi.org/10.1016/j.jeconom.2020.12.001>

Campagna, L., Radaelli, L., Ricci, M., & Rancilio, G. (2024). Exploring the complexity of energy poverty in the EU: Measure it, map it, take actions. *Current Sustainable/Renewable Energy Reports*, 11, 116–126. <https://doi.org/10.1007/s40518-024-00240-x>

Casagrande, M., & Dallago, G. (2025). Energy price surges and inflation: Fiscal policy to the rescue? *Structural Change and Economic Dynamics*, 72, 617–630. <https://doi.org/10.1016/j.strueco.2025.03.017>

De Rosa, M., Gainsford, L., Pallonetto, F., & Finn, D. P. (2022). Diversification, concentration and renewability of the energy supply in the European Union. *Energy*, 253, 124097. <https://doi.org/10.1016/j.energy.2022.124097>

Evans, T. L., et al. (2025). The solar photovoltaic supply chain in an era of energy security. *iScience*, 28, 112751. <https://doi.org/10.1016/j.isci.2025.112751>

Fernández-Blanco, R., Giaccaria, S., Costescu, A., & Bolado-Lavín, R. (2023). Assessing the impact of storage obligations on the EU gas market: An uncertainty analysis. *Energy Strategy Reviews*, 50, 101254. <https://doi.org/10.1016/j.esr.2023.101254>

Fontana, G., Kartsonaki, A., Neudorfer, N. S., & Wolff, S. (2024). The Multi-Stage Mixed Methods Framework: A new research design to combine hypothesis development and hypothesis testing and to embed machine learning and practitioner engagement in the social sciences. *International Political Science Review*. <https://doi.org/10.1177/01925121241293109>

Jaeger-Erben, M., Gram-Hanssen, K., Hansen, A. R., Frąckowiak, M., Guilbert, A., Pluciński, P., Sahakian, M., Wethal, U. B., & Wertheim-Heck, S. (2025). Policies for times of disruptions: How households in Europe dealt with the energy crisis in the winter 2022/2023. *Energy Policy*, 205, 114711. <https://doi.org/10.1016/j.enpol.2025.114711>

Kashour, M., & Jaber, M. M. (2024). Revisiting energy poverty measurement for the European Union. *Energy Research & Social Science*, 109, 103420. <https://doi.org/10.1016/j.erss.2024.103420>

Kemfert, C., Präger, F., Braunger, I., Hoffart, F. M., & Brauers, H. (2022). The expansion of natural gas infrastructure puts energy transitions at risk. *Nature Energy*, 7, 582–587. <https://doi.org/10.1038/s41560-022-01060-3>

Kuzemko, C., Blondeel, M., Dupont, C., & Brisbois, M. C. (2022). Russia's war on Ukraine, European energy policy responses & implications for sustainable transformations. *Energy Research & Social Science*, 91, 102842. <https://doi.org/10.1016/j.erss.2022.102842>

Kuzior, A., Kovalenko, Y., Tiutiunyk, I., & Hrytsenko, L. (2025). Assessment of the energy security of EU countries in light of the expansion of renewable energy sources. *Energies*, 18(8), 2126. <https://doi.org/10.3390/en18082126>

Lu, S., & Ren, J. (2023). A comprehensive review on energy poverty: Definition, measurement, socioeconomic impact and its alleviation for carbon neutrality. *Environment, Development and Sustainability*, 1–9. <https://doi.org/10.1007/s10668-023-04143-7>

Marhold, A.-A. (2023). Towards a 'security-centred' energy transition: Balancing the European Union's ambitions and geopolitical realities. *Journal of International Economic Law*, 26(4), 756–769. <https://doi.org/10.1093/jiel/jgad043>

Mišík, M., & Nosko, A. (2023). Each one for themselves: Exploring the energy security paradox of the European Union. *Energy Research & Social Science*, 99, 103074. <https://doi.org/10.1016/j.erss.2023.103074>

Osicka, J., & Černoch, F. (2022). European energy politics after Ukraine: The road ahead. *Energy Research & Social Science*, 91, 102757. <https://doi.org/10.1016/j.erss.2022.102757>

Pavlenko, M., & Cherp, A. (2026). Do energy security crises accelerate decarbonisation? An analysis of the REPowerEU Plan. *Energies*, 19(1), 200. <https://doi.org/10.3390/en19010200>

Rogge, E. (2024). The European energy crisis, the Dutch TTF, and the market correction mechanism: A financial markets perspective. *The Journal of World Energy Law & Business*, 17(3), 184–200. <https://doi.org/10.1093/jwelb/jwae004>

Sant'Anna, P. H. C., & Zhao, J. (2020). Doubly robust difference-in-differences estimators. *Journal of Econometrics*, 219(1), 101–122. <https://doi.org/10.1016/j.jeconom.2020.06.003>

Shortall, R., & Mengolini, A. (2025). Filling in the gaps from the bottom up: Energy justice guidelines for European Union energy poverty policy. *Energy Research & Social Science*, 103975. <https://doi.org/10.1016/j.erss.2025.103975>

Skalamera, M. (2023). The geopolitics of energy after the invasion of Ukraine. *The Washington Quarterly*, 46(1), 7–24. <https://doi.org/10.1080/0163660X.2023.2190632>

Štreimikienė, D., Siksnielyte-Butkiene, I., & Lekavicius, V. (2023). Energy diversification and security in the EU: Comparative assessment in different EU regions. *Economies*, 11(3), 83. <https://doi.org/10.3390/economies11030083>

Sun, L., & Abraham, S. (2021). Estimating dynamic treatment effects in event studies with heterogeneous treatment effects. *Journal of Econometrics*, 225(2), 175–199. <https://doi.org/10.1016/j.jeconom.2020.09.006>

Vezzoni, R. (2023). Green growth for whom, how and why? The REPowerEU Plan and the inconsistencies of European Union energy policy. *Energy Research & Social Science*, 101, 103134. <https://doi.org/10.1016/j.erss.2023.103134>

Zhou, C., Zhu, B., Halff, A., Davis, S. J., Liu, Z., Bowring, S., Ben Arous, S., & Ciais, P. (2025). Europe's adaptation to the energy crisis: Reshaped gas supply–transmission–consumption structures and driving factors from 2022 to 2024. *Earth System Science Data*, 17, 3431–3446. <https://doi.org/10.5194/essd-17-3431-2025>.