Energy Sovereignty and the Geopolitics of Critical Resources

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This article explores the nexus between energy sovereignty and resource geopolitics in the 21st century. It argues that sovereignty must be redefined from self-sufficiency to resilient control over supply chains, generation technologies, and strategic resources. With the European Union's Green Deal creating new forms of dependency, particularly on Chinese critical minerals, and with energy shocks reshaping global alignments, Central Europe, and Hungary in particular, illustrates the dilemmas of mid-sized powers caught between ideology and pragmatism. Hungary's conservative approach emphasizes nuclear energy, solar expansion, geothermal heating, and partnerships with Turkic states, especially Azerbaijan, as a path to sustainable sovereignty. The article concludes that energy policy is inseparable from geopolitics: the future of sovereignty will be determined not by borders alone, but by control over pipelines, grids, and critical mineral supply chains.

Keywords: Energy sovereignty, resource geopolitics, Hungary, Central Europe, Azerbaijan, European Green Deal, critical minerals.

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Introduction

Energy has always been a source of power, but in the last fifty years, it has become one of the defining elements of sovereignty. The 1973 OPEC oil embargo was a turning point: Western economies discovered that prosperity could be disrupted by political decisions thousands of miles away. Oil prices quadrupled, stagflation shook governments, and the international order shifted. The United States responded with Project Independence, which aimed to reduce reliance on foreign oil through domestic production, nuclear energy, and conservation.[1] Europe, by contrast, accepted interdependence as a fact of life, betting that trade would ensure stability.

During the Cold War, energy became a weapon of influence. Soviet pipelines, such as *Druzhba*, extending from Russia, tied Central and Eastern Europe into a system of dependency.[2] The collapse of communism was supposed to free the region, yet by the 2000s, many EU members had once again placed their fate in a single supplier.

The 'shale revolution' in the United States again reshaped geopolitics. America became the world's largest oil and gas producer, turning liquefied natural gas (LNG) into a geopolitical tool.[3] Yet nothing revealed the fragility of Europe's strategy more than the war in Ukraine. Suddenly, diversification became not an academic debate but an existential necessity.

At the same time, Europe accelerated its European Green Deal (EGD), announced in 2019 as the continent's "man on the moon moment."[4] The EGD aims for climate neutrality by 2050 but, in practice, risks trading one dependency for another: hydrocarbons for Chinese-controlled solar panels, batteries, and critical minerals. In escaping Russian leverage, Europe is binding itself to Beijing.

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1 D. Yergin, *The Prize: The Epic Quest for Oil, Money, and Power* (New York: Free Press, 1991), pp. 589–612

2 D. Balmaceda, *Politics of Energy Dependency: Ukraine, Belarus, and Lithuania Between Domestic Oligarchs and Russian Pressure* (Toronto: University of Toronto Press, 2013), pp. 44–46

3 K. B. Medlock, "The Shale Revolution and Its Implications for International Relations", Baker Institute Report, *Rice University*, 2015.

4 European Commission, The European Green Deal, COM(2019) 640 final (Brussels: European Union, 2019), Available at: ec.europa.eu/info/sites/default/files/european-green-deal-communication_en.pdf (Accessed: November 22, 2025)

This article contends that the notion of energy sovereignty must be redefined for the twenty-first century. Rather than equating sovereignty with autarky, it should be understood as the capacity to maintain resilience, diversify dependencies, and exercise strategic control over vital supply chains and technologies. The study explores how mid-sized European states, Hungary in particular, navigate this new landscape of interdependence, where energy, industry, and geopolitics intersect. By examining Hungary's pragmatic strategy, with special emphasis on its partnership with Azerbaijan and other Turkic states, the article seeks to identify a model of conservative realism that balances sustainability with sovereignty in Europe's evolving energy order.

Conceptualizing Energy Sovereignty

Autarky vs. Resilience

Energy sovereignty has often been confused with autarky. Yet no modern state is truly self-sufficient. Even resource-rich powers, such as the United States or Saudi Arabia, depend on global markets, refined products, or foreign technology. What matters is resilience: the ability to absorb shocks, resist coercion, and maintain supply under stress.[5]

Layered Sovereignty

Energy sovereignty operates in layers:

- Upstream: control over raw resources (oil, gas, uranium, lithium)
- Midstream: refining, pipelines, LNG, processing plants
- Downstream: grids, distribution, heating networks
- Technology: turbines, reactors, batteries, digital control systems.

Weakness in one layer compromises the whole system. Europe may have pipelines, but no domestic gas. It may mine lithium but rely on China for battery assembly.[6] Sovereignty requires securing all levels simultaneously.

5 V. Smil, *Energy and Civilization: A History* (Cambridge, MA: MIT Press, 2017), pp. 411–418

6 Castillo, R. and Purdy, C. "China's Role in Supplying Critical Minerals for the Global Energy Transition", Policy Brief, *Brookings Institution*, August 1, 2022, Available at: www.brookings.edu/articles/chinas-role-in-supplying-critical-minerals-for-the-global-energy-transition-what-could-the-future-hold/ (Accessed: November 22, 2025)

Realism vs. Liberalism vs. Conservative Sovereignty

International relations theory frames energy differently. Realists argue that states must maximize autonomy. Liberals see interdependence as a stabilizer. Conservatives, however, emphasize that sovereignty must never be sacrificed to ideology. Cooperation has value, but only if it strengthens resilience. Hungary's policy embodies this conservative realism: pragmatic, diversified, anchored in sovereignty.[7]

The Geopolitics of Energy Resources

Fossil Fuels: Persistent Power

Hydrocarbons still supply over 80% of global energy.[8] LNG trade has grown dramatically, shifting Europe's dependence from pipelines to maritime routes. U.S. LNG now accounts for a major share of European supply, while Azerbaijan's Southern Gas Corridor (SGC) delivers strategic volumes directly to the continent. Geography still matters: Central Europe, without seaports, remains dependent on vulnerable corridors.[9]

Nuclear Energy: Sovereignty Through Stability

Nuclear energy provides stable, low-carbon baseload power. For Hungary, the Paks I Nuclear Power Plant (NPP) already covers nearly half of electricity consumption; Paks II, scheduled for the 2030s, will secure supply for decades.[10] Nuclear energy shields Hungary from volatility, but uranium supply is concentrated. Kazakhstan has become a key partner, ensuring access for European nuclear plants.[11]

7 J. Mearsheimer, *The Tragedy of Great Power Politics*, updated ed. (New York: W.W. Norton, 2014), pp. 130–137

8 International Energy Agency, World Energy Outlook 2022 (Paris: IEA, 2022), pp. 41–45

9 Congressional Research Service, "U.S. Measures to Provide Liquefied Natural Gas for the European Union", CRS Report R47468, Washington, DC, Library of Congress, 2023, Available at: www.congress.gov/crs-product/R47468 (Accessed: November 22, 2025)

10 World Nuclear Association, "Nuclear Power in Hungary", World Nuclear Performance Report, 2023

11 International Atomic Energy Agency (IAEA), Uranium 2022: Resources, Production and Demand (Paris: OECD/IAEA, 2022)

Critical Minerals: The New Oil

The green transition requires vast quantities of minerals. A single EV battery needs six times more mineral input than a conventional vehicle.[12] Wind turbines require rare earths, solar panels depend on polysilicon, and hydrogen electrolyzers require platinum.[13]

China dominates refining: 90% of rare earths, 80% of cobalt, and over 70% of lithium.[14] The EU imports 98% of its rare earths from China, making sovereignty impossible without diversification.[15]

New Frontiers

Competition now extends to the Arctic (hydrocarbons, rare earths), Africa (cobalt, lithium), and the Indo-Pacific (shipping chokepoints). Sovereignty means preparing for contests in all these theatres.[16]

Europe's Strategic Dilemma

The European Green Deal has been presented as Europe's defining response to climate change. Announced in 2019, it seeks to make the continent climate-neutral by 2050, with interim goals such as cutting emissions by at least 55% by 2030.[17] In practice, however, the EGD exposes the EU to severe strategic vulnerabilities.

First, the policy rests on an assumption of unilateral effectiveness. The EU produces less than ten percent of global emissions.[18] Even a

12 International Renewable Energy Agency (IRENA), Critical Materials for the Energy Transition (Abu Dhabi: IRENA, 2021)

13 D. S. Abraham, *The Elements of Power: Gadgets, Guns, and the Struggle for a Sustainable Future in the Rare Metal Age* (New Haven: Yale University Press, 2015), pp. 59–64

14 International Energy Agency, The Role of Critical Minerals in Clean Energy Transitions (Paris: IEA, 2021)

15 Seaman, J. "Critical Raw Materials and Europe's Dependence on China", *IFRI (Institut français des relations internationales)*, October 1, 2024, Available at: www.ifri.org/en/external-articles/external-publications/critical-raw-materials-economic-statecraft-and-europes (Accessed: November 24, 2025)

16 Buchanan, E. and Strating, B. "Energy, Geography, and the Indo-Pacific", *Australian Journal of International Affairs*, 76, no. 4 (2022): pp. 390–408

17 European Commission, op.cit.

18 International Energy Agency, CO_2 Emissions from Fuel Combustion 2022 (Paris: IEA, 2022), pp. 12–15. Available at: iea.org (Accessed: November 24, 2025)

complete elimination of Europe's carbon footprint would not offset the continued growth of emissions in Asia, Africa, or the United States. By focusing narrowly on unilateral decarbonization, the EU risks inflicting economic harm on its own citizens while achieving little in global climate terms. This raises fundamental questions about proportionality and sovereignty.

Second, the Green Deal accelerates deindustrialization. The cost of energy for European manufacturers has soared, driven not only by the 2022 energy crisis but also by regulatory burdens imposed by the Emissions Trading System (ETS) and subsidies in competing jurisdictions. Mario Draghi's 2023 report on EU competitiveness warned explicitly that Europe risks becoming a 'museum of technology' unless it restores industrial competitiveness.[19] The Carbon Border Adjustment Mechanism (CBAM), designed to protect European firms, does little to address the broader challenge of structural decline. Instead, the continent is experiencing a relocation of heavy industry to regions with cheaper energy and looser regulation.[20]

Third, the Green Deal creates new dependencies. In its current form, the policy rests heavily on renewable energy technologies – solar panels, batteries, and wind turbines – whose supply chains are dominated by China.[21] Approximately 80% of solar panels installed in Europe originate in China, while Chinese companies also control the processing of rare earths and critical minerals essential to green technologies.[22] By attempting to reduce reliance on hydrocarbons, Europe risks deepening dependence on China. A sovereignty project becomes, paradoxically, a dependency project.

Fourth, the EGD intensifies energy poverty. Even before the Ukraine war, around 35 million Europeans were unable to adequately heat their homes.[23] Europe's climate policies have significantly increased electricity and energy prices, placing a growing burden on households and industries across the continent. Measures such as the Emissions Trading System (ETS) have contributed to higher wholesale prices, while

19 M. Draghi, The Future of European Competitiveness: Report to the President of the European Commission (Brussels: European Commission, 2024)

20 Graziosi, S., "Energy Incoherence: Why Europe Is Repeating Its Mistakes", *Heritage Foundation*, July 15, 2022, Available at: heritage.org/climate/commentary/energy-incoherence-why-europe-repeating-its-mistakes (Accessed: November 22, 2025)

21 Castillo, R. and Purdy, C., *op.cit.*

22 International Renewable Energy Agency (IRENA), Critical Materials for the Energy Transition (Abu Dhabi: IRENA, 2021)

23 Eurostat, "Energy Poverty in the EU", Eurostat Statistical Release, 2021

the uneven capacity of the member states to subsidize their industries risks deepening economic disparities within the European Union.[24] This undermines not only energy sovereignty but also European solidarity.

Finally, the Green Deal exacerbates geopolitical fragmentation within the EU. Member states with different energy mixes, nuclear in France, coal in Poland, gas in Germany, and hydro in Scandinavia, face divergent costs in the transition. Attempts to impose a one-size-fits-all model risk alienating Central and Eastern Europe, where energy security concerns are immediate and existential. Hungary, for instance, insists on nuclear and gas as strategic pillars, while Brussels often frames these as transitional or even obsolete.[25] This tension illustrates the gap between ideological aspiration and pragmatic necessity.

From a conservative perspective, the problem lies not with the goal of sustainability itself but with the means chosen to pursue it. A sovereignty-oriented strategy would prioritize diversification of supply, investment in nuclear energy, support for domestic industries, and balanced partnerships abroad. Instead, the EU pursues abstract targets without regard to competitiveness, sovereignty, or realism.

The lesson of recent crises is clear: Europe cannot afford to base its future on external dependencies. Just as overreliance on Russian gas left the continent vulnerable, overreliance on Chinese solar and rare earths threatens to replace one form of dependence with another. Sovereignty requires not utopian ambition but pragmatic realism.

Hungary's Pragmatic Energy Path

Hungary demonstrates how a mid-sized European state can pursue sovereignty through realism rather than ideology. Its strategy is not based on utopian visions of full decarbonization but on a pragmatic mix of nuclear energy, renewables, and carefully cultivated international partnerships. This path underscores the conservative conviction that sovereignty must be secured by diversification, long-term planning, and trust-based alliances, particularly with Turkic partners.

24 Hegedős, S., "European Green Policy – the Clash between Dreams and Reality", *Hungarian Conservative*, May 7, 2022, Available at: hungarianconservative.com/articles/current/european-green-policy-the-clash-between-dreams-and-reality/ (Accessed: November 22, 2025)

25 Ancygier, A. et al., "Divergent Paths: Energy Transition in Central and Eastern Europe", *Journal of European Public Policy*, 29, no. 9 (2022): pp. 1331–1348

Nuclear and Solar as Dual Pillars

At the centre of Hungary's energy policy stands nuclear power. The existing Paks I NPP supplies nearly half of the country's electricity demand, providing stable baseload power and insulating the economy from the volatility of fossil fuel prices.[26] The planned Paks II expansion, involving two new VVER-1200 reactors, will double Hungary's nuclear capacity by the 2030s.[27] While often criticized by Brussels for its Russian technology provider, the project reflects Budapest's determination to anchor sovereignty in nuclear stability rather than short-term political fashions.

At the same time, Hungary has embraced solar energy with remarkable momentum: its installed capacity passed 6 GW in 2024 and is projected to surpass 12 GW by 2030, making solar a central component of its dual-pillar strategy.[28] Solar is increasingly integrated into the grid, and despite challenges with intermittency, investments in storage and digital grid management make Hungary one of Central Europe's fastest-growing solar markets. This dual reliance, nuclear for stability, solar for growth, embodies the conservative principle of balancing tradition and innovation.

Geothermal and Hydrogen

Hungary also leverages its geographical endowment in geothermal energy. The Szeged district heating project, Europe's largest geothermal heating network, supplies over 27,000 households and numerous public institutions, reducing reliance on imported gas.[29] Hungary also leverages its geographical endowment in geothermal energy. The Szeged district-heating project includes multiple wells and a heating

26 World Nuclear Association, "Nuclear Power in Hungary", *World Nuclear Performance Report*, 2023, Available at: world-nuclear.org/information-library/country-profiles/countries-g-n/hungary.aspx (Accessed: November 21, 2025)

27 Ministry of Energy of Hungary, Hungary – Final Updated National Energy and Climate Plan 2021–2030, Budapest: Government of Hungary, 2024, Available at: commission.europa.eu/publications/hungary-final-updated-necp-2021-2030-submitted-2024_en (Accessed: November 21, 2025)

28 International Energy Agency, Renewables 2023: Analysis and Forecast to 2028 (Paris: IEA, 2023), Available at: iea.org/reports/renewables-2023 (Accessed: November 21, 2025)

29 European Commission, "EU Cohesion Policy: Inauguration of the largest geothermal heating system in the EU, in Szeged, Hungary", Brussels, May 25 2023. Available at: ec.europa.eu/regional_policy/whats-new/newsroom/25-05-2023-eu-cohesion-policy-inauguration-of-the-largest-geothermal-heating-system-in-the-eu-in-szeged-hungary_en (Accessed: November 22, 2025)

network serving thousands of households, reducing reliance on imported gas. In parallel, Hungarian multinational oil-and-gas company MOL launched its first green hydrogen production facility at Százhalombatta in 2022, integrating renewable electricity into its refinery operations and signalling a shift from gas-based hydrogen.[30]

While still at an experimental stage, hydrogen offers long-term potential for decarbonizing transport and heavy industry, further reducing dependence on imported hydrocarbons. These developments illustrate that sovereignty does not mean rejecting the energy transition; rather, it means shaping it according to national interests.

Azerbaijan: The Strategic Bridge

Among Hungary's Turkic partners, Azerbaijan is indispensable. Energy relations between the two countries are rooted not only in trade but in a broader framework of trust and shared strategic outlook. The SGC is the centrepiece of this partnership. Stretching over 3,500 kilometres from Azerbaijan's Shah Deniz field in the Caspian Sea through Georgia and Türkiye to Europe, the corridor delivers natural gas to Central Europe, including Hungary.[31] According to the Ministry of Energy of Azerbaijan, the Southern Gas Corridor is not merely a commercial gas pipeline but a strategic mechanism contributing to Europe's energy diversification and supply security.[32] For Hungary, access to this secure supply reduces vulnerability to volatile LNG markets and reinforces sovereignty through stable, long-term deliveries.

Even more significant for the future is the Green Energy Corridor, stemming from the Agreement on Strategic Partnership signed in

30 MOL Group, *One more step toward energy independence: MOL launches the production of green hydrogen*, Press Release, April 27, 2022, Available at: molgroup.info/en/media-centre/press-releases/one-more-step-toward-energy-independence-mol-launches-the-production-of-green-hydrogen (Accessed: November 22, 2025)

31 European Commission, "Diversification of gas supply sources and routes – The Southern Gas Corridor", Brussels, European Commission, 2021, Available at: energy.ec.europa.eu/topics/energy-security/diversification-gas-supply-sources-and-routes_en (Accessed: November 23, 2025)

32 Ministry of Energy of the Republic of Azerbaijan, "The strategic goal of the Southern Gas Corridor was achieved by transporting commercial gas to Europe", Baku, December 31, 2020, Available at: minenergy.gov.az/en/xeberler-arxivi/avropaya-kommersiya-qazinin-neqli-ile-cenub-qaz-dehlizinin-strateji-meqsedine-nail-olundu (Accessed: November 22, 2025)

Azerbaijan's importance goes beyond energy flows. As a member of the Organization of Turkic States (OTS), Azerbaijan is a strategic partner in embedding Hungary into a broader Eurasian network.

Bucharest on December 17, 2022 by Azerbaijan, Georgia, Romania and Hungary.[33] This ambitious initiative will transmit renewable electricity; primarily solar and wind; produced in the Caspian region across the Black Sea and into European grids. As the President of Azerbaijan Ilham Aliyev emphasised, his country remains more than a gas supplier: it is positioning itself as a reliable partner in Europe's energy security and green transition.[34] For Hungary, this project represents a double gain: immediate diversification of electricity supply and alignment with sustainability goals without sacrificing sovereignty.

Azerbaijan's importance goes beyond energy flows. As a member of the Organization of Turkic States (OTS), Azerbaijan is a strategic partner in embedding Hungary into a broader Eurasian network. The partnership is thus cultural, political, and strategic, extending sovereignty beyond economics. Hungary's conservative strategy aligns perfectly with Azerbaijan's role as both provider and partner.

Kazakhstan, Türkiye, Uzbekistan

While Azerbaijan plays the leading role, Hungary's cooperation with other Turkic states adds depth to diversification.

- Kazakhstan supplies uranium, making it a crucial partner for Hungary's nuclear sector. Kazakhstan accounts for over 40% of global uranium production, and agreements with Hungarian entities ensure secure access to fuel for Paks I and Paks II.[35] This partnership demonstrates the interconnection of nuclear sovereignty with reliable foreign suppliers.

33 Ministry of Energy of the Republic of Azerbaijan, "Agreement on Strategic Partnership in the Development and Transmission of Green Energy between the Governments of the Republic of Azerbaijan, Georgia, Romania and Hungary", Bucharest, December 17, 2022, Available at: area.gov.az/en/page/beynelxalq-emekdasliq/beynelxalq-muqavileler/azerbaycan-gurcustan-ruminiya-ve-macaristan-hokumetleri-arasinda-yasil-enerji-sahesinde-strateji-terefdasliga-dair-sazis (Accessed: November 22, 2025)

34 Azertag, *President Ilham Aliyev: Azerbaijan is a reliable partner of Europe not only in the area of energy, but also in many other areas*, April 25, 2023, Available at: azertag.az/en/xeber/president_ilham_aliyev_azerbaijan_is_a_reliable_partner_of_europe_not_only_in_the_area_of_energy_but_also_in_many_other_areas-2586848 (Accessed: November 22, 2025)

35 IAEA, Uranium 2022, op.cit., p.77–79

- Türkiye functions as an indispensable transit hub. The Trans-Anatolian Natural Gas Pipeline (TANAP), part of the Southern Gas Corridor, runs through Türkiye, underscoring the country's role as a strategic bridge in the European energy network.[36] Beyond pipelines, Türkiye's growing LNG infrastructure strengthens its position as a flexible hub for Central Europe.
- Uzbekistan complements these relationships by contributing to academic and policy cooperation. Hungarian universities and think tanks have expanded ties with those of Uzbekistan, integrating energy into a broader agenda of intellectual and elite cooperation.[37] This illustrates the conservative view that sovereignty is reinforced not only by infrastructure but also by shared knowledge and trust.

Together with Azerbaijan, these partners create a diversified network that elevates Hungary's sovereignty above the vulnerabilities of geography.

Lessons from Resource Geopolitics

The Hungarian experience, combined with the broader European context, provides several important lessons about the meaning of energy sovereignty in the 21st century. These lessons apply not only to Central Europe but also to any mid-sized state confronted with external dependencies and internal vulnerabilities.

First, sovereignty is layered. Energy policy must be understood not as a single chain of supply but as a set of interconnected layers: upstream extraction, midstream transportation and processing, downstream consumption, and the technological backbone that binds the system together.[38] Weakness in any one layer can compromise sovereignty as a whole. The EU's reliance on Chinese refining of rare earths, despite investments in renewable energy generation, illustrates this vulnerability. Hungary's approach, anchoring the downstream layer

36 Anadolu Agency, "Azerbaijan to increase gas supplies to Türkiye by about 17%", June 12, 2023, Available at: aa.com.tr/en/economy/azerbaijan-to-increase-gas-supplies-to-turkiye-by-about-17-/2920289 (Accessed: November 22, 2025)

37 Ludovika University of Public Service, "Strengthening Ties with Uzbek Institutions", November 7, 2024, Available at: en.uni-nke.hu/hirek/2024/11/07/strengthening-ties-with-uzbek-institutions (Accessed: November 22, 2025)

38 V. Smil, *Energy Transitions: Global and National Perspectives*, 3rd ed. (Santa Barbara: Praeger, 2022), p. 143–149

with nuclear power and solar generation, shows how resilience can be built step by step.

Second, diversification is the cornerstone of sovereignty. No single supplier, no matter how reliable, should dominate the energy mix. The collapse of Europe's overreliance on Russian gas in 2022 is the most obvious example of what happens when diversification is neglected.[39] Hungary's pursuit of partnerships with Azerbaijan, Kazakhstan, Türkiye, and Uzbekistan is therefore not merely diplomatic outreach but a structural necessity. Diversification is not a luxury; it is sovereignty itself.

Third, domestic capacity is indispensable. Even the best diversification strategy cannot substitute for strong domestic production. For Hungary, nuclear energy, solar expansion, and geothermal heating provide anchors that reduce the share of imports and give the government more room for manoeuvre. These anchors do not eliminate dependence but transform it into a manageable element of a balanced portfolio. This reflects the conservative conviction that sovereignty begins at home, with long-term investment in self-reliance, where possible.

Fourth, regional cooperation multiplies sovereignty. Mid-sized states often lack the bargaining power of great powers. Yet, by embedding themselves in regional frameworks, whether Central Europe's Visegrád Group or the OTS, countries like Hungary gain leverage in negotiations with larger actors.[40] Sovereignty is not eroded by cooperation if that cooperation strengthens collective resilience and enhances trust among partners. The Hungarian–Azerbaijani partnership illustrates how bilateral trust, when embedded in regional frameworks, can yield disproportionate strategic benefits.

Fifth, ideology becomes a direct threat to sovereignty. The European Green Deal shows how lofty ambitions, detached from material realities and competitiveness, risk undermining European sovereignty by saddling industry and households with heavy costs and dependencies.[41]

39 M. Balmaceda, *Russian Energy Chains: The Remaking of Technopolitics from Siberia to Ukraine to the European Union* (New York: Columbia University Press, 2021), p. 217–220

40 Gizińska, I., and Łoskot-Strachota, A. "Hungary is starting to import gas from Turkey", *OSW Analyst Report*, April 26, 2024, Warsaw, Available at: www.osw.waw.pl/en/publikacje/analyses/2024-04-26/hungary-starting-to-import-gas-turkey (Accessed: November 22, 2025)

41 Furchtgott-Roth, D., "Net Zero Is Crippling the EU. Now Brussels Wants To Export Its Madness Globally", *Heritage Foundation Commentary*, September 19, 2025, Available at: www.heritage.org/energy/commentary/net-zero-crippling-the-eu-now-brussels-wants-export-its-madness-globally (Accessed: November 22, 2025)

Hungary's conservative critique is not that sustainability is unworthy, but that sovereignty and realism must precede ideology. Only when security and competitiveness are assured can climate policy be sustainable in both political and economic terms.

The Hungarian–Azerbaijani partnership illustrates how bilateral trust, when embedded in regional frameworks, can yield disproportionate strategic benefits.

Taken together, these lessons underscore that sovereignty in the energy domain is not static, but dynamic. It must be continually reinforced across layers, diversified across suppliers, anchored domestically, supported regionally, and freed from ideological rigidity. Hungary's path is not perfect, but it offers a conservative blueprint for mid-sized powers seeking to navigate a turbulent geopolitical landscape.

Policy Recommendations

The lessons of recent crises underline a simple truth: sovereignty cannot be safeguarded by declarations alone but must be built into the very structure of energy systems. For Hungary, Central Europe, and the EU, this requires a pragmatic reorientation away from ideology and toward resilience, diversification, and trust-based partnerships.

The first priority is to consolidate nuclear and solar power as dual pillars of sovereignty. Nuclear provides stable baseload power, ensuring security against volatile fossil fuel markets, while solar delivers scalability and flexibility. Hungary's Paks II expansion and its rapid solar rollout should be seen not merely as national projects, but as a regional model. Other Central European states could benefit from adopting a similar 'dual-pillar' strategy, supported by EU funding frameworks that recognize nuclear and solar as complementary rather than contradictory sources.[42]

Second, geothermal energy must be scaled up as a strategic tool of heating sovereignty. Hungary's Szeged geothermal project proves that local resources can significantly reduce reliance on imported gas. If replicated across Central Europe, geothermal networks could shield millions of households from energy poverty and seasonal dependence on foreign suppliers. The EU should actively prioritize geothermal within its funding instruments, correcting its overemphasis on intermittent renewables alone.

42 Ministry of Energy of Hungary, *Hungary – Final Updated National Energy and Climate Plan 2021–2030*, op.cit.

Third, hydrogen and storage technologies must be elevated from pilot status to core components of energy strategy. MOL's hydrogen pilot plant is promising, but insufficient at scale. Broader investment in hydrogen corridors, supported by EU-wide infrastructure, could provide decarbonized energy for heavy industry and transport. At the same time, storage, whether batteries, pumped hydro, or hydrogen-based, must be integrated into the grid to stabilize renewables. This is an area where Hungary and its Turkic partners could cooperate in research and development, embedding technological sovereignty into diplomacy.

Fourth, equity stakes in Turkic energy and mineral projects should be pursued more actively. For Hungary, ownership in Azerbaijan's renewable projects, Kazakhstan's uranium sector, and refining ventures with Türkiye would elevate its role from consumer to stakeholder. At the EU level, partnerships with trusted suppliers outside China are essential to diversify critical-mineral supply chains. According to the International Renewable Energy Agency, the growth in demand for critical minerals and the concentration of supply chains create strategic dependencies the continent cannot afford if it wants true sovereignty.[43]

Fifth, policy frameworks must adapt to regional realities. A one-size-fits-all transition cannot succeed in Europe. Central and Eastern European countries face unique vulnerabilities: higher energy poverty, weaker infrastructure, and greater geopolitical exposure. EU policy must reflect these asymmetries by offering flexible pathways to sovereignty. This means supporting nuclear in France and Hungary, geothermal in Central Europe, hydro in Scandinavia, and solar in Southern Europe, without ideological discrimination.

Finally, trusted partnerships with external actors must be elevated to a strategic priority. Azerbaijan, through both the SGC and the GEC, should be recognized as a cornerstone of European sovereignty. Türkiye's hub role, Kazakhstan's uranium exports, and Uzbekistan's growing intellectual cooperation further reinforce this diversified network. Hungary's diplomatic outreach in the Turkic world demonstrates how trust, embedded in long-term cooperation, can strengthen sovereignty for both sides.

In sum, policy recommendations must move beyond rhetoric. For Hungary and Central Europe, the path lies in balancing nuclear and

43 International Renewable Energy Agency, Critical Materials for the Energy Transition (Abu Dhabi: IRENA, 2021), Available at: www.irena.org/Technical-Papers/Critical-Materials-For-The-Energy-Transition (Accessed: November 22, 2025).

solar, scaling geothermal, advancing hydrogen, and deepening Turkic partnerships. For the EU, the task is to reshape the Green Deal into a sovereignty project, rooted in realism, competitiveness, and trusted diversification.

Conclusion

This study set out to explore how mid-sized European states can strengthen their energy sovereignty in an age of global resource competition and shifting dependencies. It examined Hungary's approach as a case of conservative realism – an effort to balance sustainability with strategic control through domestic capacity, diversification, and trusted partnerships.

The analysis has shown that Hungary's model rests on several interlinked pillars. Nuclear and solar energy provide a stable and flexible foundation, while geothermal and hydrogen initiatives strengthen self-reliance and technological resilience. Beyond its borders, Hungary's cooperation with Azerbaijan through the Southern Gas Corridor and the emerging Green Energy Corridor demonstrates how partnership, rather than isolation, can secure sovereignty. Complementary ties with Kazakhstan, Türkiye, and Uzbekistan add further strategic depth, embedding energy diplomacy within a wider network of political and cultural trust.

At the European level, the findings suggest that the Green Deal, while ambitious, risks undermining competitiveness and sovereignty if pursued without attention to resilience and diversification. A sovereignty-focused transition – rooted in pragmatic realism rather than ideology – offers a more credible path forward.

The 20th century was defined by oil; the 21st will be defined by critical minerals, nuclear stability, and the partnerships that sustain them. Hungary's experience shows that energy sovereignty is not achieved by isolation but by disciplined diversification, balanced strategy, and trusted alliances. It is a blueprint for Europe's future – one in which freedom and sovereignty remain inseparable.