From fossil dependence to strategic energy autonomy

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Fossil fuel dependency has emerged as one of the EU's most critical structural weaknesses. It exposes Europe to external supply shocks and volatile energy prices, limiting its room for political manoeuvre while undermining security and industrial competitiveness. In an increasingly fragmented and unstable global order, strengthening strategic autonomy in energy has become an imperative. Strategic autonomy should not be understood as self-sufficiency, but as the capacity to build a resilient, diversified and sustainable energy system that allows the EU to manage interdependence on its own terms.

The principal pathway to achieving this lies in accelerating the transition towards homegrown energy. Given Europe's limited domestic fossil fuel reserves, the health and environmental costs of coal, as well as the supply chain constraints and long lead times associated with nuclear energy, renewable-based energy sourcing offers the most viable and scalable option. By structurally reducing dependence on imported fossil fuels, renewables can significantly lower exposure to price volatility and geopolitical pressure.

That being said, the transition comes with new vulnerabilities too, shifting the focus of strategic autonomy from fuel supply to infrastructure, technologies, and critical raw materials (CRMs). Europe therefore needs to adopt an integrated approach that combines diversification of energy sources, system flexibility, and clean energy value chains to transform current vulnerabilities into long-term strength.

Diversification beyond fossil fuels

Diversifying external dependencies has become central to the EU's strategic autonomy agenda. The decision to ban imports of Russian gas by the end of 2027 marks a structural shift in Europe's energy landscape. However, diversification has so far relied heavily on imported LNG, particularly from the U.S., which is significantly more expensive than the Russian pipeline gas it replaces and creates new forms of concentration around a single supplier. While switching suppliers can alleviate immediate pressures, it does not eliminate structural vulnerability, as LNG trade remains exposed to geopolitical leverage.

A more durable diversification strategy must go beyond fossil fuel substitution. It requires gradually reducing the role of fossil fuels and moving towards a diversified power mix dominated by different sources of renewables – such as solar, wind, hydro and geothermal – as well as nuclear energy, where politically viable. Energy

efficiency and demand reduction are equally important, as they directly lower import needs. This approach can lead to a more diversified and resilient energy mix by increasing the share of homegrown clean energy while reducing reliance on imported fossil fuels.

System flexibility

As the share of renewables grows, strategic autonomy increasingly depends on a flexible and interconnected power system. Unlike fossil fuels, variable renewable sources – including wind and solar – require infrastructure capable of storing or transporting electricity from where it is produced to where it is needed in real time. Therefore, grid infrastructure and battery storage are essential to improve system stability and harness renewable energy more effectively.

The already interconnected European grid is a critical strength that can be further leveraged. As Member States share more electricity among each other, they can alleviate price spikes and minimise supply disruptions. At the same time, the expansion of batteries can further boost resilience by storing renewable power when supply is higher than demand. Green hydrogen could also play a role as energy storage, although costs and infrastructure constraints mean it is not yet commercially scalable. These solutions not only enhance internal security of supply; they also contribute to more predictable and stable electricity prices.

However, Europe still faces bottlenecks, including congested networks, slow permitting procedures, and fragmented planning. The proposed European Grids Package presents an opportunity to address these weaknesses with EU-level planning, accelerated permitting and financing for grids and storage.

Clean energy supply chains

Another pillar of strategic autonomy is access to materials and technologies needed for the energy transition. Europe faces significant concentration risks across clean energy value chains: from CRM – such as lithium, cobalt, nickel and rare earths – to the processing and manufacturing of intermediate and finished goods – like semiconductors, cells, but also batteries, wind turbines and solar photovoltaic systems. China currently holds a dominant position across upstream and downstream segments of clean-technologies value chains, creating strategic vulnerabilities for Europe.

While initiatives to strengthen domestic capacity in mining, processing and manufacturing are required, the EU is unlikely to become completely self-sufficient in the foreseeable future. The EU needs to remain 'open' to collaborate with trusted partners to secure strategic agreements for a diversified and resilient value chain, from CRM to clean tech, embracing a 'Made with Europe' approach. At the same time, the EU can scale up recycling and circular economy solutions to reduce primary material demand, while investing in innovation, including alternative materials and next-generation technologies.

Conclusion

Energy strategic autonomy is a precondition for the EU's security, competitiveness, and political agency. To boost resilience, first, the EU needs to structurally reduce fossil fuel imports and fully leverage homegrown renewable resources. Second, renewables need to be accompanied by investments in system flexibility as well as stronger cross-border cooperation among Member States. Third, building a robust clean energy system requires strengthening domestic industrial capacity while diversifying supply chains in partnership with trusted countries. Although the EU will remain dependent on others for its energy sector, pursuing these priorities can shift vulnerability to managed interdependence, strengthening Europe's capacity to act in an increasingly unstable world.