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Allianz Research | 10 March 2026 | Future of Europe series

The second energy shock: Why Europe still isn't energy secure

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In Summary

Strategic autonomy has become Europe's north star in an increasingly fragmented world, almost ten years after President Macron's first Sorbonne speech. But what will it take to achieve it? In our Future of Europe series over the coming weeks, we will examine the necessary reforms, instruments and investments — from trade policy to energy security and the role of the euro — that will enable Europe to address its critical dependencies and vulnerabilities. Today we look at what it will take for Europe to achieve energy autonomy.

- **The escalation of the conflict in the Middle East is a stark reminder of Europe's unfinished business: achieving energy autonomy. Although Europe's reliance on Russian gas has improved since 2022, it is merely replacing one dependency with another.** Recent events have destabilized global energy markets and highlighted the need for greater energy resilience. Around 20 million barrels of oil per day – about a quarter of global seaborne trade – pass through the Strait of Hormuz, making it a key supply chokepoint. Since hostilities began, oil prices have risen, peaking near 120 USD/bbl. Although the Middle East supplies only about 4% of Europe's gas, European benchmark prices have nearly doubled as traders fear Asian buyers could compete for supplies. Europe's industry is most vulnerable to gas disruptions (39% of final energy), transport to oil shocks (with road transport consuming 73% of EU oil), while gas often sets power prices, spreading risks across the economy. The situation recalls the 2022 Ukraine energy crisis and highlights the need to strengthen energy resilience and competitiveness. Russian pipeline gas to the EU fell from 150 bcm in 2021 to 38 bcm in 2025, largely replaced by US LNG (45%), increasing exposure to global market cycles and shipping limits. The EU now operates 33 LNG terminals (215 bcm capacity), with 22 bcm under construction and 78 bcm planned, but without faster electrification and grid expansion it risks replacing pipeline dependence with costly LNG reliance.
- **First, Europe must reactivate its energy emergency toolkit.** The 2022 energy crisis showed that while price volatility cannot be avoided, its economic impact can be limited through coordinated policy responses combining demand reduction, supply stabilization and targeted fiscal support. Policymakers should therefore replay the crisis playbook: demand reduction, encourage efficiency and compensate industry for temporary curtailment. Power generation can also shift away from gas by maximizing nuclear output and temporarily using other available capacity. On the supply side, rebuilding storage and securing LNG imports are essential ahead of winter. Finally, emergency market tools and targeted financial support can stabilize markets while protecting vulnerable households and energy-intensive industries.
- **Secondly, this time around, Europe's energy autonomy agenda should also be a strategic transition program towards more resilience.** The near-term gas pivot worked because governments treated energy security as wartime logistics. But resilience now requires fixing structural weaknesses in market design and delivering a best-in-class power grid. Nuclear power can strengthen Europe's energy resilience by providing reliable, low-carbon baseload electricity that stabilizes power prices, and ensures system reliability, however it is costly and comes with other challenges (e.g. uranium sourcing, waste management etc.). Europe should address the primary bottleneck to the

renewable transition : the inflexibility of the power grid, by building and digitalizing networks, expanding cross-border interconnection and making demand price-responsive at scale in order to enable consumers to shift electricity use when power is cheapest. With congestion costs projected to reach EUR12.3bn by 2030 and EUR56.7bn by 2040 without upgrades, Europe needs to act to avoid price shocks that could reach +22% by 2030 and up to +103% by 2040. To solve this and improve its energy system, we estimate Europe will need to invest around EUR2.27trn in the grid by 2050 (i.e. about EUR 91bn per year), plus EUR101bn per year in wind and solar through 2030 to substantially improve networks, interconnectors, and enable consumers to shift electricity use when power is cheapest.

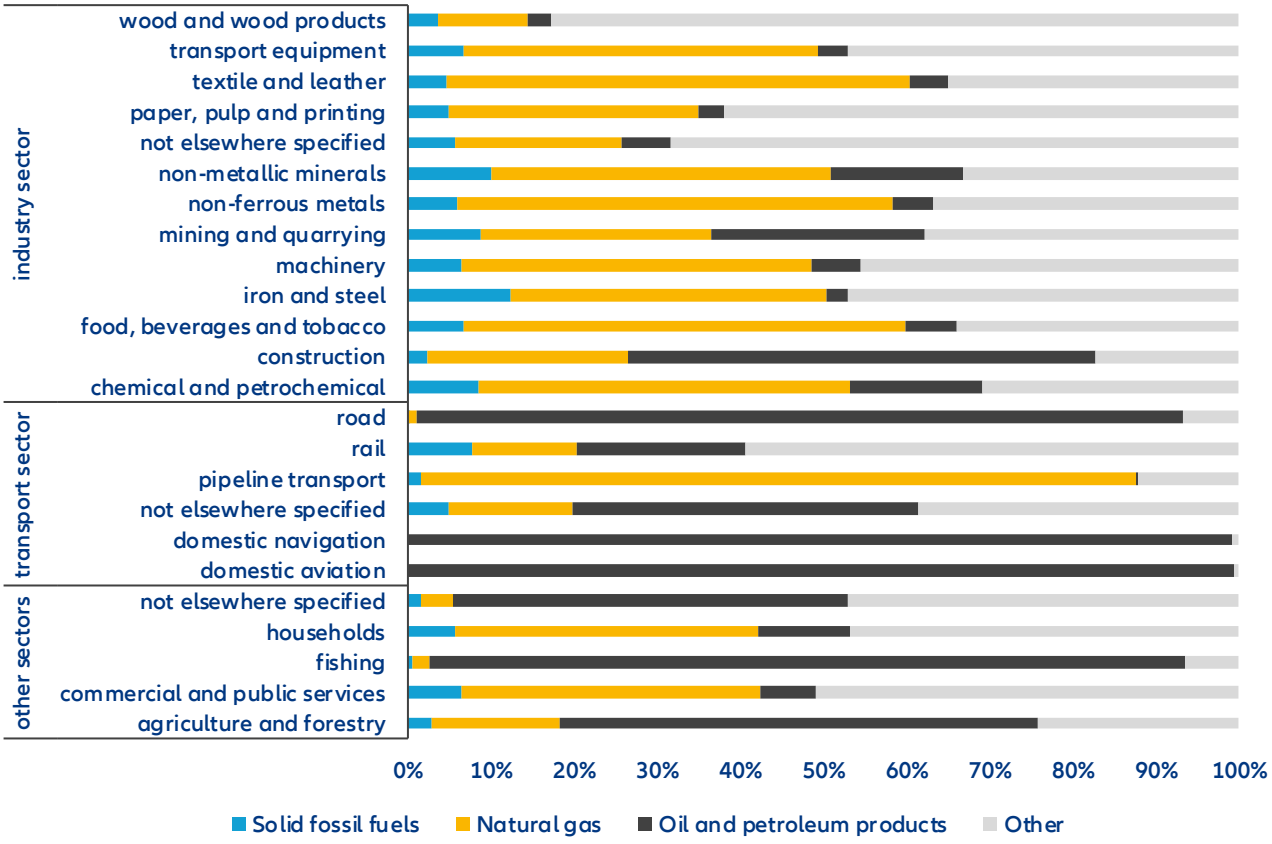
- **The EU ETS is a central tool for reducing Europe's fossil fuel dependence, having already cut power sector emissions by 54% and fossil-based generation by 47% since 2005, with coal imports down 58%.** Yet gaps remain: transport and buildings are largely outside the system, with ETSII only launching in 2028, and over 90% of industrial emissions covered by free allowances. The ongoing ETS review is a critical opportunity to reinforce rather than dilute the instrument, and should prioritize sector expansion, phase-out of free allowances, Carbon Contracts for Difference, better revenue recycling, and a broader Carbon Border Adjustment Mechanism to advance energy autonomy while preserving competitiveness.
- **2040 should be the target for a robust EU strategic autonomy on energy.** Europe will achieve energy autonomy once it can heat homes and power industrial production primarily with renewables, using electricity where possible, green hydrogen where needed and bridging remaining gaps with a diversified portfolio of independent and long-term stable energy sources. A realistic timeline in three stages would be: 2026-2027 delivers "Russian independence on paper", 2028-2035 is the window to reach "operational autonomy" by structurally reducing gas demand and relying less on gas plants during periods of high electricity demand, instead using system flexibility such as storage, demand response and stronger grid links, and 2035-2040 is the more conservative horizon for "robust autonomy" if grid projects and flexibility measures expand more slowly than expected.

The war in Iran is a timely reminder of Europe's energy weaknesses. The ongoing conflict involving Iran is already reverberating across global energy markets, highlighting once again the structural vulnerability of energy systems to geopolitical shocks. Sharp price volatility and renewed concerns over supply security are back, particularly because of the region's central role in global oil and gas markets. This reinforces a key policy target for Europe: energy resilience. Although Europe does not get much oil or gas through the Strait of Hormuz. It is a key route for Qatar's LNG, which might lead its usual Asian buyers to compete with Europe for LNG from other suppliers. Indeed, disruptions affecting Gulf export infrastructure could temporarily remove close to 20% of global LNG supply. Such shocks would translate quickly into electricity price spikes, inflationary pressure and industrial competitiveness risks for the region. The current situation echoes the 2022 energy crisis triggered by Russia's invasion of Ukraine, which exposed Europe's dependence and its vulnerability to gas price volatility. Gas prices averaged over 130 EUR/MWh in 2022, more than seven times the historical average. Europe ultimately stabilized its energy system through rapid LNG diversification, demand reductions exceeding 10% and aggressive storage policies that pushed gas inventories to around 95% capacity ahead of winter. Europe should build from that episode to prepare not only for the potential Iranian shock but more importantly for futures ones, in a world where geopolitical risk remains structurally high. Energy resilience will increasingly define economic security and stability.

Europe's final energy-consuming sectors exhibit markedly different exposure to fossil fuel shocks. Industry relies heavily on natural gas, which accounts for 39% of its final energy consumption, leaving it particularly sensitive to gas supply disruptions (see Figure 1). Transport is largely dependent on oil, with road transport alone consuming 73% of EU oil in 2024, making it the most vulnerable sector to oil price spikes. The power sector's reliance on gas as the primary fossil fuel and marginal price-setter spreads upstream supply risks across the entire economy, amplifying the impact of any gas shock well beyond the energy sector itself. Reducing sectoral vulnerability therefore requires a combination of structural demand reduction, fuel switching toward electricity, and decarbonization of power supply. Electrification of transport through electric vehicles is central to lowering

exposure to global oil markets, while broader electrification and grid expansion can mitigate the systemic risks that stem from gas dependency in power generation.

Figure 1: Final energy consumption shares by sub-sector and energy source in 2024 (in %)

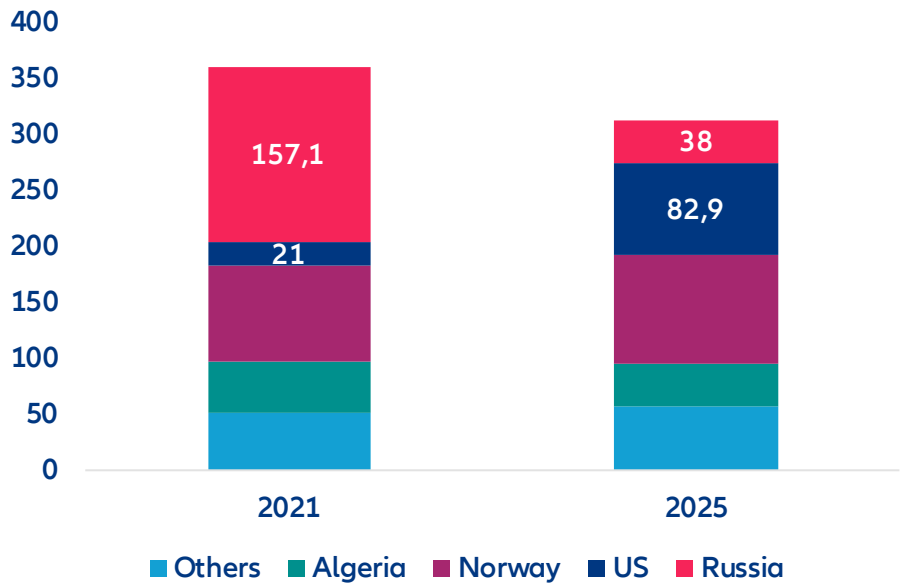


Sources: Allianz Research based on Eurostat; Note: Final energy consumption for electricity & heat was attributed to primary energy sources using gross generation shares.

From single-supplier pipeline trap to single-supplier LNG habit? Russian pipeline gas deliveries to the EU collapsed from 150bn cubic meters (bcm) in 2021 to 38 bcm in 2025. LNG has been the main substitute, and the US the marginal supplier, providing almost 45% of EU LNG in 2024 and roughly 60% in 2025. But this leaves Europe exposed to US commercial cycles, shipping constraints and Washington's shifting political mood (see Figure 2). Resilience will require treating gas as a strategic balancing commodity, not a comfort blanket, by keeping demand structurally lower than the 2021 level (EU consumption in 2024 was down -19% compared to 2021), ringfencing storage and system services, diversifying the "energy portfolio" across Norway, North Africa and domestic biomethane, as well as accelerating the renewables energy transition, rather than locking in a second era of long-term overconcentration.

Europe can only be independent if it lowers the strategic value of imported hydrocarbons in its industrial model. Europe has built enormous LNG optionality: 33 large EU terminals in operation with 215 bcm of annual regasification capacity, plus 22 bcm under construction and 78 bcm planned. Yet these solutions do not remove geopolitical risk, they re-route it. The security challenge is to shift from "supply substitution" to "system substitution": electrify heat and low-temperature industry where it is cost-effective, accelerate efficiency that permanently reduces peak demand and ensure firm low-carbon capacity and flexibility

Figure 2: EU gas imports (bcm)



Sources : Eurostat, Allianz Research

The experience of 2022 showed that while price volatility cannot be eliminated, its economic impact can be contained through a combination of demand reduction, supply stabilization and targeted fiscal support. Europe could be again confronting an energy shock that echoes the crisis of 2022. However, conditions are slightly different: this time the continent is approaching spring rather than entering winter, which means heating demand will soon fall. Yet this seasonal relief is deceptive. Gas storage levels are currently below historical averages and the refilling season begins precisely when global energy markets are turning more volatile. The structural vulnerability also remains intact and policymakers should turn to a familiar crisis playbook:

- **Demand management remains the fastest and most cost-effective lever.** Because gas-fired plants frequently set the marginal electricity price in Europe, reducing power consumption directly lowers gas demand and wholesale electricity prices. Governments should therefore encourage coordinated demand-reduction efforts across households, services and industry. Public campaigns and regulatory guidance can promote lower heating levels and reduced non-essential consumption. Dynamic pricing and demand-response schemes can shift electricity use away from peak periods, while voluntary curtailment programs can compensate large industrial users for temporarily reducing demand. Careful coordination of gas storage withdrawals can also smooth market tensions and limit sudden surges in LNG demand.
- **Reducing gas use in power generation provides another immediate buffer**. Since gas-fired plants often determine electricity prices, even modest reductions in gas-fired output can stabilize markets. Utilities can temporarily increase generation from other available sources. Where capacity remains available, coal plants can be brought back online—as Germany did during the 2022 crisis—while maximizing nuclear output in France could significantly reduce reliance on gas across European power markets. Although these measures carry environmental trade-offs, they can provide a rapid safeguard against supply shortages and price spikes.
- **On the supply side, rebuilding gas storage and securing LNG cargoes remain Europe's primary defenses ahead of next winter.** Competition for shipments could intensify if global markets tighten, particularly if Asian demand strengthens. Maintaining high storage levels is therefore essential to cushion supply disruptions and dampen price volatility.
- **Governments also retain/reactivate emergency market tools.** Strategic oil reserves can be released during periods of acute stress to stabilize global oil markets and indirectly ease energy prices. At the European level, coordination remains crucial. During the 2022 crisis the EU introduced a "market correction mechanism" allowing authorities to cap gas futures prices on the Dutch TTF hub if they exceeded 180 EUR/MWh and diverged significantly from global LNG benchmarks. Although never triggered, the

mechanism helped calm markets by signaling a credible willingness to intervene. Joint gas purchasing, coordinated storage refilling and flexible state-aid rules can similarly strengthen Europe's collective response.

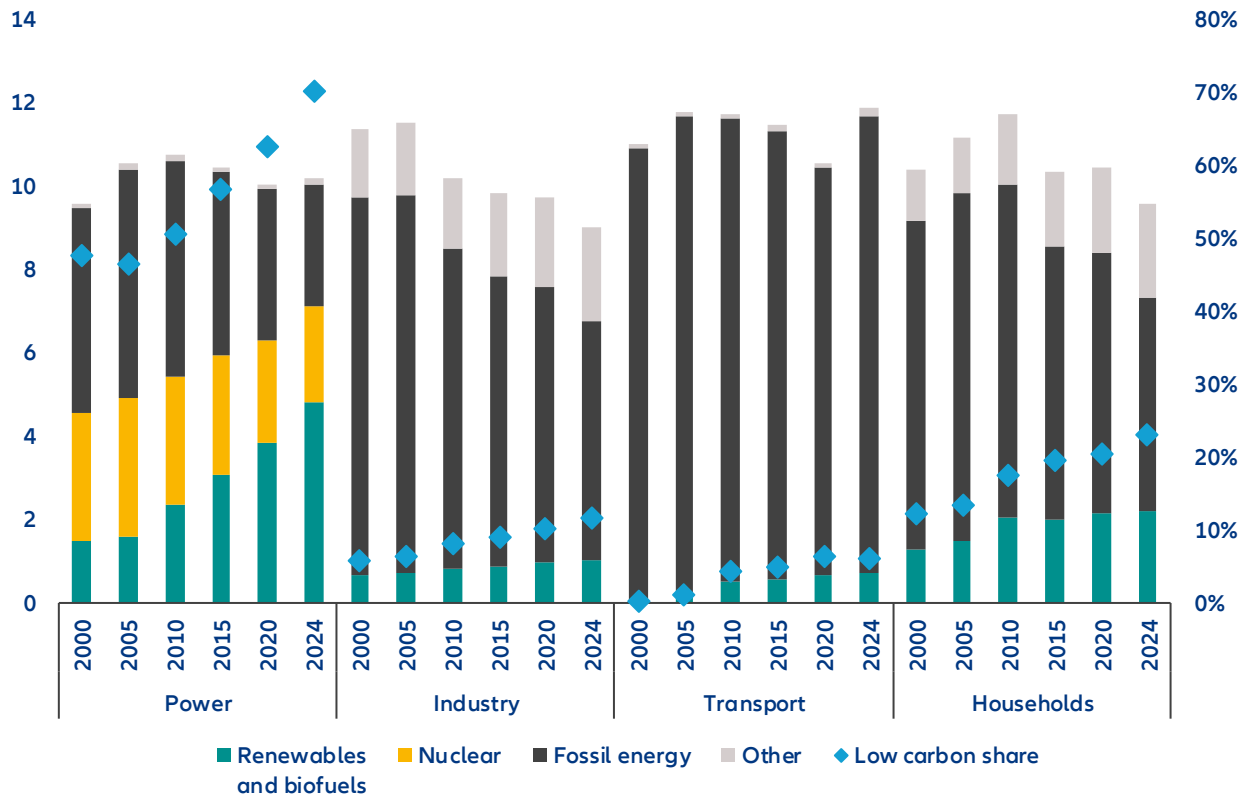
- **Finally, targeted financial support can shield households and firms without blunting incentives to conserve energy.** Lifeline prices (subsidizing a basic level of consumption while charging market prices for additional use) can protect essential energy use while preserving price signals. Income-tested transfers, energy vouchers and temporary protections against disconnection can provide additional relief for vulnerable households. For energy-intensive industries exposed to international competition, governments may need to offer temporary credit lines, guarantees or limited state aid to ease liquidity pressures. Windfall revenue caps on low-cost electricity producers can help finance such measures, recycling extraordinary profits to support households and businesses while limiting additional strain on public finances.

Europe's energy resilience agenda should therefore be framed as a strategic transition program, not another emergency procurement scramble. The near-term gas pivot worked because governments treated energy security as wartime logistics. The next phase requires treating it as market design: faster permitting, stable network returns and EU-level coordination that makes cross-border infrastructure and flexibility remunerative. Underinvestment in the energy transition is the expensive option, because indirect GDP losses dwarf the direct congestion bill – this is a fiscal argument as much as a climate one. On geopolitics, the strategic discomfort of US "energy dominance" is significant even if LNG is less easily weaponized than pipelines and the US is still a European ally. However, Europe should aim at reducing US leverage by ensuring it can run its economy with materially less gas in a cold winter, a dry hydro year or a shipping disruption. Practically, that means a disciplined sequence: lock in the electricity backbone (grids, interconnection, digital control), monetize flexibility (dynamic rates, smart meters, demand response) and then let clean generation and electrification do the strategic work of shrinking import dependence.

Nuclear energy is a short term fix that offers firm, low-carbon baseload capacity that could improves Europe's grid stability, seasonal reliability and fuel security. The EU now has about 98 GW of nuclear installed, and the Commission estimates EUR 241 bn investment needed by 2050 for new builds and life extensions.. US (about 100 GW), China (60 GW), Russia (27 GW) and India (9 GW) are the other key players in nuclear energy. China is the country that is building most of the world's new capacity. Nuclear operates nearly continuously, unaffected by weather, so it supplies reliable winter power and cuts the hours when gas turbines must run. Wind and solar are intermittent and need backup (storage or gas) during lulls. Nuclear's near-zero fuel cost means it typically displaces gas plants in the market order, smoothing prices and cutting volatility. European countries with large nuclear shares (e.g. France, Finland) see far fewer price spikes than others in the region. Demand response and batteries can shift load peaks, but cannot yet substitute tens of GW of capacity. Nevertheless, nuclear deployment faces long lead times (10–15 years) and high costs (capex at EUR 2 000 to 6 500 per kW). Complex permitting, public opposition and waste disposal are also key hurdles. Small Modular Reactors (SMRs) promise repeatable, factory-built construction and can supply industrial heat or hydrogen, but none are built yet – first EU SMRs are unlikely before the early 2030s without major policy support. Extending lifetimes of existing reactors could significantly raise EU nuclear capacity to about 144 GW by 2050 in a favorable scenario. Uranium fuel supply is also another risk factor: the EU imports ore (mainly from Kazakhstan and Canada) and has domestic conversion/enrichment. EU policy should therefore treat nuclear as a strategic resilience asset: accelerate licensing, ensure stable financing, coordinate cross-border grids and fuel planning, support joint SMR development and maximize life-extension of existing plants.

Strengthening and expanding the EU ETS as Europe's primary decarbonization instrument will be central to bolstering the region's energy independence. Since its introduction in 2005, the system has delivered meaningful results in the power sector, reducing emissions by -54% and cutting power generation from fossil sources by -47% (Figure 3). These reductions have significantly reduced Europe's coal dependence, with coal imports falling by -58% between 2005 and 2024. The same shift has not occurred in sectors outside the ETS scope, such as transport and buildings, nor in the industrial sector, where over 90% of emissions remain covered by free allowances. Therefore, with the ongoing ETS review presenting a critical opportunity, reinforcing rather than diluting the instrument is essential to any credible energy autonomy strategy. This requires both a timely expansion to currently excluded sectors and a continued phase-out of free allowances, as well as targeted reforms such as Carbon Contracts for Difference, better revenue recycling, and a broader Carbon Border Adjustment Mechanism to ensure competitiveness is maintained throughout the transition.

Figure 3: Final energy consumption and gross electricity production (EJ, lhs) and low carbon share (in %, rhs)

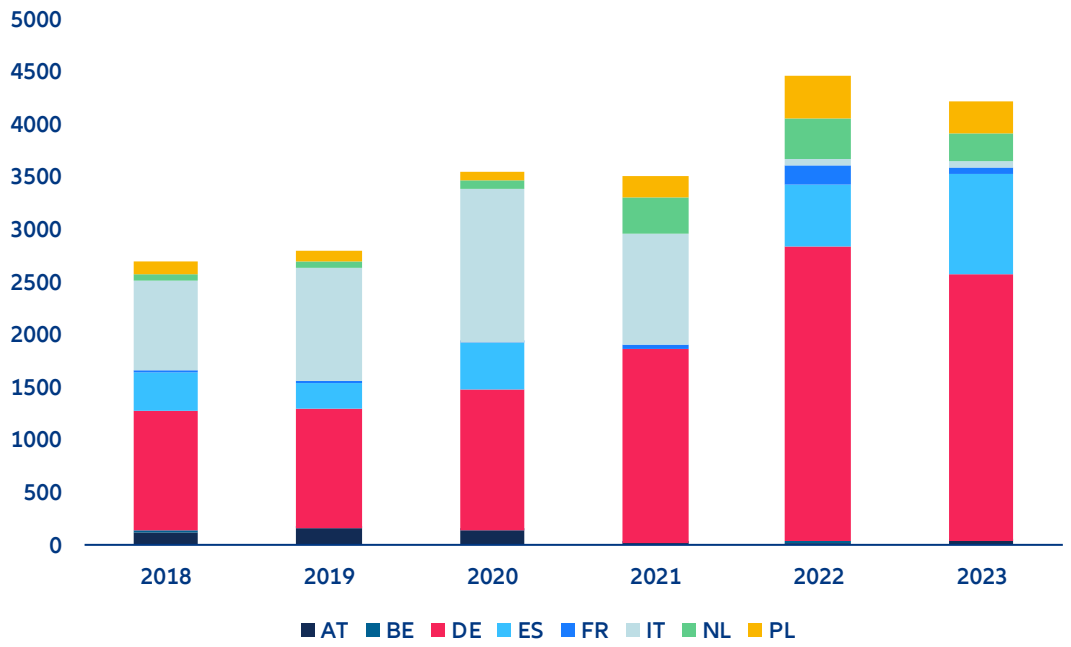


Sources : Eurostat, Allianz Research

The primary bottleneck to a rapid, full renewable transition in Europe is the inflexibility of the power grid. Congestion and limited flexibility amplify intraday volatility (i.e. high prices at peaks, negative prices off-peak) while shifting costs from the network into the bill (see Figure 4). In Germany alone, compensation for renewables reached EUR21bn in 2024. Congestion costs are projected to reach EUR12.3bn by 2030 and EUR56.7bn by 2040 without upgrades, translating into implied price shocks of +22% by 2030 and up to +103% by 2040 in a business-as-usual pathway1. The macroeconomic stakes are also significant: We estimate that cumulative GDP losses from electricity congestion could reach EUR4,700bn across the EU by 2050 under a business-as-usual pathway, even before counting wider strategic damage from de-industrialization and investment flight. The remedy is to build and digitalize networks, expand cross-border interconnection and make demand price-responsive at scale so that renewables displace imported gas in practice, not just on annual averages. On investment, we put the order of magnitude at about EUR2,270bn of grid infrastructure by 2050 (about EUR390bn over 2025–2030 and EUR1,880bn over 2030–2050), averaging EUR91bn per year, with distribution networks absorbing 56% of the total. The region also needs to increase wind and solar generation capacity through EUR101bn of investment per year to 2030. This would build an energy-security asset that reduces reliance on LNG during stress events, when cargoes and politics tighten simultaneously.

[1] *See our previous report : Plug, baby, plug: Unlocking Europe's electricity market*

Figure 4: Congestion management costs in Europe (EUR mn)



Sources: ACER monitoring reports, Allianz Research

2040 should be the target for a robust EU strategic autonomy on energy. Europe will achieve energy autonomy once it can heat homes and power industrial production primarily with renewables, using electricity where possible, green hydrogen where needed and bridging remaining gaps with a diversified portfolio of independent and long-term stable energy sources. On the gas side, the EU's own legislative trajectory implies the formal endpoint is close: The Council and Parliament struck a deal in December 2025 to phase out Russian gas imports, with a ban on Russian LNG by end-2026 and Russian pipeline gas by autumn 2027. In practice, however, the strategic endpoint is later, because it requires enough electricity-system flexibility to keep gas from setting marginal prices and emergency procurement. A realistic timeline in three stages would be: 2026–2027 delivers "Russian independence on paper", 2028–2035 is the window to reach "operational autonomy" by cutting gas demand structurally and replacing gas peaking with flexibility and 2035–2040 is the more conservative horizon for "robust autonomy" if permitting, interconnection and demand response scale only gradually.

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