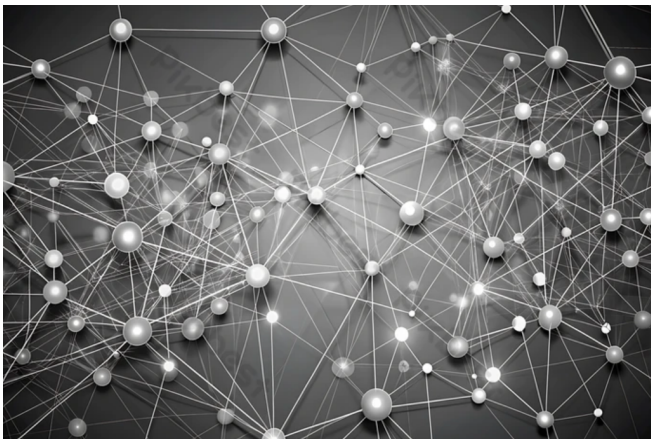




From ambition to execution: why Europe's energy transition succeeds or fails

Europe has no shortage of ambition when it comes to climate and energy policy.



Targets are clear, timelines are defined, and regulatory frameworks continue to expand. Yet the gap between ambition and delivery remains significant and increasingly visible.

The core challenge of Europe's energy transition is not whether decarbonisation should happen, but whether it can be implemented in a way that is economically viable, industrially credible and socially sustainable.

Decarbonisation does not imply deindustrialisation.

On the contrary, without a competitive industrial base, the transition risks becoming economically fragile and politically difficult to sustain over the long term.

The transition is a system challenge, not a sectoral one.

One of the structural weaknesses in Europe's approach is the tendency to address the transition through sectoral lenses. Renewable generation, grids, storage, industrial demand, energy security and affordability are often treated as parallel topics, managed through separate policies, distinct incentive schemes and misaligned timelines.

In practice, the energy transition only works as a system. Additional renewable capacity delivers value only if networks can absorb it, flexibility mechanisms are available to balance intermittency, and overall system costs remain under control. When these conditions are missing, the outcome is predictable: congestion, curtailment, rising costs and delayed investment.

This dynamic has had tangible economic consequences. Italy offers a telling example: the Conto Energia photovoltaic incentive scheme, operating between 2005 and 2013, generated cumulative annual incentive costs reaching approximately €6.7 billion before the system was closed. These legacy commitments, extending over 20-year contract periods, added roughly €15-20/MWh to industrial electricity costs at

peak, a structural competitive disadvantage for energy-intensive manufacturing.

This pattern has been replicated, with variations, across several European countries, where the cost of supporting renewable deployment has been largely borne by final consumers and energy-intensive industries through network charges, system services and incentive schemes embedded in electricity prices.

The result has been structurally higher power costs, pressure on industrial competitiveness, and an increased cost base for European manufactured goods relative to global competitors.

In many markets, generation capacity has expanded faster than grids and flexibility solutions can realistically adapt.

A more system-oriented approach would reverse this logic: strengthening networks and system flexibility first, then scaling generation accordingly.

Recent large-scale system disturbances, such as the major blackout experienced in Spain in April 2025, have highlighted how high shares of variable generation require not just more capacity, but robust grids and a fundamental shift from simple capacity adequacy (enough megawatts on paper) towards full system adequacy (reliable megawatts when and where they're needed).

The strategy-to-execution gap

Europe's difficulty lies less in defining strategies and more in executing them. Between high-level objectives and operational delivery sits a gap shaped by governance complexity, lengthy permitting

processes, fragmented responsibilities and insufficient industrial and technical competence embedded in decision-making structures.

To put this in concrete terms: authorising a wind farm can take 5 to 7 years in some jurisdictions, compared to 18 months in others with equally robust environmental standards. The difference is not ambition; it's process design, institutional capacity and accountability for outcomes.

Regulatory frameworks often prioritise procedural compliance, while ownership of end-to-end delivery outcomes remains diluted across multiple authorities. This creates a situation where objectives are formally met on paper, but progress on the ground remains slow, uneven or significantly more costly than initially modelled.

This is not a critique of regulation itself. It is a call for regulation informed by operational realism, industrial logic and execution discipline. Without these elements, even well-intentioned policies risk delivering suboptimal outcomes, or worse, creating unintended costs that undermine the competitiveness they aim to preserve.

Energy security: essential, but not cost-neutral

Energy security has rightly become a central concern in Europe. However, security is not free.

Strengthening resilience, diversification and redundancy inevitably comes at a cost, and that cost is not borne equally across global economies.

This raises a fundamental question: how much economic competitiveness is Europe willing to trade off if other major players pursue different cost structures and policy choices?

Ignoring this tension does not remove it; it simply shifts the burden to industry, public finances or households, often in ways that become visible only when damage to industrial competitiveness has already occurred.

In many systems, transitional solutions, including natural gas as a bridge fuel and existing nuclear capacity, continue to play a role in balancing decarbonisation objectives with security of supply and affordability. Acknowledging this reality is not a retreat from climate ambition, but a recognition that transitions unfold under real-world technical, economic and political constraints. Managing these trade-offs transparently is a mark of policy maturity, not weakness.

From geopolitical risk to supply-chain risk

The energy transition is often presented as a way to resolve Europe's energy security challenge by reducing dependence on imported fossil fuels.

In reality, it transforms the nature of that challenge rather than eliminating it.

Increasing the penetration of domestic resources such as wind, solar and hydropower reduces exposure to geopolitical risks linked to oil and gas imports and stabilise average generation costs over the long term.

At the same time, it shifts security concerns from the geopolitical sphere to the

industrial one, embedding new vulnerabilities along global technology supply chains.

Today, key technologies, photovoltaic modules, battery cells and their upstream value chains, including anodes, cathodes and critical raw materials such as lithium, cobalt and rare earths, are highly concentrated. A significant share of global production capacity is controlled by a limited number of manufacturers, predominantly located in Asia. This creates a new form of vulnerability: commercial and industrial rather than geopolitical in nature, rooted in manufacturing capacity, trade relations and supply-chain concentration.

Relocating production to Europe alone does not automatically create resilience. It can easily replace one dependency with another, while introducing higher costs, longer lead times and new regulatory compliance challenges.

The real challenge is to manage trade-offs between cost, scale, quality, delivery times and reliability, without undermining the economic viability of the transition itself.

Incentives, markets and technology neutrality

Behind the debate on industrial resilience lies a simple economic reality: markets do not automatically price or pay for resilience.

Developers and investors respond to prices and risk-adjusted returns. Without appropriate frameworks, lower-cost solutions will continue to dominate investment decisions, regardless of long-term strategic considerations or systemic vulnerabilities.

This does not imply an unlimited expansion of subsidies. On the contrary, it highlights the need for a technology-neutral, outcome-oriented approach. Policy frameworks should define clear objectives, establish stable rules and generate transparent price signals, allowing the market to identify the most efficient and sustainable solutions over the medium to long term, while internalising system costs and strategic risks in a disciplined, predictable way.

European initiatives aimed at strengthening industrial resilience, including the Net-Zero Industry Act, represent an important and necessary step in this direction. Their effectiveness will depend on the ability to balance industrial security, technological neutrality and market competition, avoiding both excessive dependency on single sources and excessive market distortion through poorly designed interventions.

As Daniel Yergin observed in the context of Europe's gas dependence, the continent faces a strategic choice: paying today's visible and manageable "resilience premium" or accepting tomorrow's uncertain and potentially far more disruptive "cost of vulnerability".

One can be budgeted and planned for; the other cannot.

Conclusion

The success of Europe's energy transition will depend less on the ambition of its targets and more on execution discipline, system thinking and credible incentive structures that align public objectives with private investment logic.

Competitiveness, affordability and decarbonisation are not mutually exclusive objectives, but aligning them requires institutional realism, technical capacity and a clear-eyed understanding of trade-offs.

In the end, Europe will not be judged by the boldness of its commitments, but by its ability to translate them into deliverable, bankable and economically sustainable outcomes that preserve industrial strength while advancing climate goals.