
Making European industry more competitive through electrification

Press release

Energy costs shape Europe's industrial competitiveness, yet electricity still plays a limited role. Agora and IDDRI show electrification can strengthen competitiveness under the right conditions. Beyond just power price support, success requires combining de-risking tools like contracts for difference and power purchase agreements, alongside robust carbon pricing.

Brussels | Paris, 27 May 2026. Europe's industrial base faces both structural and cyclical challenges, but electrification could improve its competitiveness relative to the United States and China. Unlocking this potential requires decisive policy action to remove structural barriers and align industrial, energy and climate policies, according to a new analysis by think tanks Agora Energiewende, Agora Industry and IDDRI.

The paper comes amidst another global fossil energy price shock and ahead of the European Commission's Electrification Action Plan expected in the summer. It finds that power currently represents up to just 5 percent of total production costs for industries that have not yet electrified their processes. This is in stark contrast with the share of fossil fuel expenses which ranges from 30 to 80 percent of production costs for many energy-intensive sectors.

However, European industry can be expected to increasingly electrify to reduce fossil fuel dependencies, improve efficiency and meet decarbonisation targets. Technologically feasible and, in many cases, already economically viable, electrification is set to significantly reshape energy consumption. Electricity will directly and indirectly account for 60 to 100 percent of total energy use in most sectors by 2035, with power representing 10 to 90 percent of production costs. The share depends largely on energy intensity of the industrial process, with aluminium standing out as a sector where power accounts for 90 percent of production costs.

"Rapidly shifting to electrification powered by domestic, clean energy is Europe's best resilience strategy," said Frauke Thies, Director Europe at Agora Energiewende. "Driving it forward requires competitive and predictable power prices, combined with robust investment incentives - making the Electrification Action Plan a key opportunity to establish a common European framework."

Electrification as Europe's strategic imperative

Drawing on a technical analysis by consultancy Compass Lexecon, the paper examines five key industrial sectors – primary aluminium, primary steel, paper, steam production for chemicals and battery cell production – across relevant countries and regions in the EU, the United States and China. To assess the competitiveness gaps, Compass Lexecon compared 2024 production costs with projections for 2035. Decarbonisation cost gaps were calculated comparing conventional and electrified production processes, accounting for both capital (CAPEX) and operational (OPEX) expenditures.

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The analysis shows that electrification can improve Europe's competitiveness in many sectors and even close the gap with the US and China. This is the case particularly for primary aluminium and low-temperature heat applications, where effective carbon pricing through both the EU Emissions Trading System (EU ETS) and Carbon Border Adjustment Mechanism (CBAM) would ensure cost-competitiveness.

It also shows strong sectoral and geographical variability: for example, primary aluminium production in EU countries, such as France, where low-carbon electricity prices align with industrial needs is already cost-competitive. At the same time, primary steelmaking is more expensive in Europe due to higher raw material and energy costs. While targeted electricity price support would help some industries, it will likely not close the competitiveness gaps for those facing non-cost related issues, requiring other types of measures like quotas or local content policies, the think tanks underline.

"Moving away from fossil gas is a key strategy for industrial producers to increase their competitiveness. As the technical path to electrification varies by sector, targeted policy solutions are essential," said Julia Metz, Director Agora Industry. "Such solutions should be supported by a coherent European approach, combining trade policy with a long-term electrification framework, alongside measures like lead markets and strong carbon pricing."

A policy framework for competitiveness and resilience

Agora and IDDRI propose a comprehensive policy framework to align competitiveness, resilience and decarbonisation. Deploying two-sided contracts for difference (CfDs) for low-carbon generation would help to cap consumer exposure to fossil fuel price spikes while ensuring revenue stability for investors. By expanding power purchase agreements (PPAs) with public guarantees, governments could provide industrial consumers with predictable electricity costs, particularly for energy-intensive processes like electrolysis or electric boilers. Phasing out blanket electricity price supports in favour of time-bound, degressive mechanisms tied to decarbonisation conditions would safeguard incentives to invest in clean production methods.

The overall effectiveness of policy intervention highly depends on the coherence and sequencing of instruments across energy, climate and industrial policy, the authors underline. Several industrial policy measures can reduce the need for extensive and potentially costly electricity price support by addressing structural competitiveness factors more directly. The development of lead markets such as foreseen in the Industrial Acceleration Act (IAA) is one such instrument. By stimulating early demand for low-carbon and electrified products, lead markets can accelerate deployment and induce cost reductions through learning effects and economies of scale.

"Europe has the tools to lead in industrial transformation and innovation," said Nicolas Berghmans, Director for New Industrial Policies at IDDRI. "What's needed now is the political will to deploy them coherently across sectors to unlock the potential of electrification. By coordinating across Member States, Europeans can de-risk industrial power prices where it matters the most and secure the success of the Clean Industrial Deal."

The paper "Powering Europe's industry: competitiveness, electrification and the role of electricity prices" was written by Agora Energiewende, Agora Industry and IDDRI, based on a technical analysis by Compass Lexecon using proprietary sectoral data and policy scenario modelling. Both publications are available for free download at www.agora-energiewende.org.

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➔ About Agora Energiewende and Agora Industry:

Agora Energiewende and Agora Industry develop scientifically sound and politically feasible strategies for a successful pathway to climate neutrality – in Germany, Europe and internationally. The organisations which are part of the Agora Think Tanks work independently of economic and partisan interests. Their only commitment is to climate action.

➔ About IDDRI:

IDDRI is a globally influential think tank that seeks to create the conditions for a just transition to prosperity compatible with the Earth's capacities. It focuses on two areas of action: international cooperation, and European policies. Created nearly 25 years ago by public authorities, research centres and major French companies, IDDRI is now recognized for its decisive contributions to the major multilateral agreements of the last 10 years (climate, biodiversity, high seas) and for its ability to facilitate multi-stakeholder debates on concrete development pathways compatible with these commitments in key countries and sectors.

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