Industrial heat electrification pays off – strong policy key to scale quickly

Press Release

Electric low-temperature industrial heat can already outcompete fossil gas in Europe, according to a new Agora analysis drawing on case studies on Germany, Italy and Poland. The EU's upcoming Electrification Action Plan is a key opportunity to create the conditions for deployment at scale – such as electricity prices that are competitive with gas, improved grid access and simplified permitting.

Brussels, 23 February 2026. Electrifying industrial process heat is already cheaper than using fossil gas in certain applications in Europe, according to a new analysis by Agora Industry and Agora Energiewende. Published ahead of the EU Electrification Action Plan expected in the coming months, the study highlights substantial near-term potential in low- and medium-temperature processes, which account for half of industrial process heat demand. To unlock this potential, Agora proposes a comprehensive policy framework covering measures like reliable carbon pricing, lower electricity taxes and targeted investment support.

For low-temperature processes below 80 degrees Celsius, mature technologies such as industrial heat pumps are economically viable today – even when electricity prices are 4-5 times higher than gas. To unlock broader electrification and cost savings, especially for medium-temperature heat, the electricity-to-gas price ratio needs to be below 3 times retail gas prices, compared with today's range of 3–5 times. Accelerated renewables deployment, a meaningful carbon price and lower electricity taxation are essential to creating these conditions, according to the study.

Julia Metz, Director of Agora Industry, said:

"Switching from gas to electrification for low-temperature process heat is a quick win for Europe's manufacturing industry. Companies can cut costs, save energy and improve their carbon footprint. The upcoming Electrification Action Plan must prioritise industrial heat to accelerate deployment at scale and strengthen industry's resilience, reducing exposure to volatile liquid natural gas markets and geopolitical uncertainty."

The analysis assesses economic, climate and energy security impacts of electrifying industrial process heat through scenario modelling for Germany, Italy and Poland: three countries with strong manufacturing bases, differing power mixes and high reliance on fossil gas. It compares direct electrification with fossil-based and alternative low-carbon pathways, including hydrogen and biomethane, over the period 2025–2050. Across all three case studies, direct electrification cuts most emissions and primary energy consumption thanks to efficiency. This contributes to reducing the cost of producing industrial heat – by about 20 percent if heat pumps are deployed where feasible and retail electricity prices stay below three times gas prices. By contrast, hydrogen reduces emissions only later and at significantly higher cost, while biomethane and biomass face cost and availability constraints.

Process heat accounts for around half of industrial final energy consumption and three quarters of industrial emissions in Europe. Around 60 percent of current fuel use for process heat could already be electrified using

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mature technologies, rising to around 90 percent with technologies expected by 2035. Low- and medium-temperature processes have most potential and cover nearly all heat demand in sectors such as food and beverage, pulp and paper, and textiles, as well as a significant share in chemicals. Industrial heat pumps – already capable of delivering temperatures up to 165 degrees Celsius, and potentially 300 degrees Celsius by 2035 – are highly efficient, while electric boilers provide a flexible solution for generating steam up to 500 degrees Celsius.

Emeline Spire, Co-Director Europe at Agora Energiewende, said:

"Replacing imported fossil fuels with domestically produced renewable electricity would create strong demand for heat pumps and electric boilers, boosting Europe's cleantech manufacturing base. With mature technologies ready to scale, robust policy – including a credible carbon price – is essential to provide investment certainty and thus drive large-scale industrial electrification."

Country case studies show vast potential — and the need for a strong EU policy framework to unlock it

In Germany, electrification can put low- and medium-temperature process heat on track to climate neutrality by 2045, provided carbon pricing keeps electricity competitive with gas. In Italy, targeted policy – such as upfront investment support – could bring forward cost-competitive electrification to the mid-2030s, enabling up to 85 percent electrification and saving 2.3 billion euros for sectors such as food and textiles in cumulative costs between 2025-2050. In Poland, electrification would reduce emissions even with a carbon-intensive grid, driven by the high efficiency of heat pumps and the replacement of ageing coal-fired equipment.

Key policy measures proposed by Agora to scale industrial heat electrification include making electricity competitive with gas through tax reforms and credible EU carbon pricing. Faster renewable energy deployment continues to be essential to provide abundant, low-cost clean energy for industry across temperature ranges.

Governments should furthermore provide targeted, temporary investment support to close short-term cost gaps – for example through carbon contracts for difference or EU-level instruments building on the Innovation Fund and the forthcoming Industrial Decarbonisation Bank. Well-designed support can significantly accelerate deployment, particularly for applications above 80 degrees Celsius, the authors underline.

To avoid delays and bottlenecks, planning and permitting needs to be accelerated and grid reforms should reward flexible industrial loads, while electrification must be integrated into grid planning, adequacy assessments and connection processes. Finally, indicative electrification and fossil gas phase-out targets, supported by national clean heat strategies, can provide long-term visibility, guide investment, support skills development and align infrastructure planning, Agora concludes.

The 84-page study entitled The business case for electrifying industrial heat - evidence from selected EU Member States is available for free download at www.agora-industry.org.

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About Agora Industry and Agora Energiewende

Agora Industry and Agora Energiewende 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.

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