AN ACTION PLAN FOR THE AFFORDABLE ELECTRIFICATION OF THE EUROPEAN ALUMINIUM INDUSTRY

POSITION PAPER

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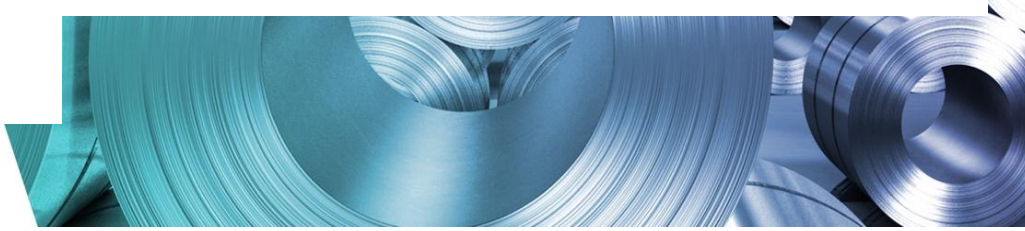

Background

Aluminium is recognised as a strategic raw material under the Critical Raw Materials Act and by NATO for the manufacture of advanced defence systems.[1] The Net-Zero Industry Act also recognises aluminium's crucial role for achieving the EU's climate-neutrality targets as it is a core component of applications like renewable energy technologies, batteries, electricity systems, and electric vehicles. Simultaneously, European primary aluminium production has a carbon footprint that is almost 60% lower than the global average, mostly due to the rising use of low-carbon electricity in smelters.[2] Thus, a competitive European aluminium industry is vital for achieving the EU's key performance indicator (KPI) of a 33% share of electricity in final energy consumption by 2030.

Aluminium primary production is one of the most electro-intensive processes, with electricity costs accounting for between 30% and 45% of total production costs.[3] Yet, European industrial gas and electricity prices are two to four times higher than in the US and China, largely due to regulatory restrictions and charges. This includes carbon costs, regulatory charges on industries energy bills, restrictions on domestic gas exploration, restrictions and regulatory costs on nuclear generation in various Member States, and unclarity on future EU gas demand, which disincentivizes long-term contracts and instead pushes gas importers towards short-term deals or even spot purchases, at higher prices.[4] As a price-taking sector, aluminium producers cannot pass on these higher costs to consumers, decreasing competitiveness compared to third country producers that benefit from lower energy prices. This further undermines the global competitiveness of the European aluminium sector, which is already struggling with overcapacity driven by non-market economies and increasing scrap leakage.

The Draghi Report, the Clean Industrial Deal, Action Plan for Affordable Energy, and Steel and Metals Action all highlight that **lower energy prices are essential for competitive European energy-intensive industries**.

Thus, the Electrification Action Plan must firstly prioritise delivering globally cost-competitive low-carbon electricity, starting with fully electrified industrial processes like primary aluminium. If already electrified plants are curtailing production because of too high electricity prices in Europe and unfair global competition,[5]

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[1] NATO, *NATO releases list of 12 defence-critical raw materials*, December 2024.
[2] European Aluminium (2024). *European Aluminium EPR 2024: Executive summary.*
[3] DG ENER and Trinomics, *Study on Energy Prices and Costs - Evaluating Impacts on Households and Industry's Costs – 2024 Edition*, September 2024.
[4] European Commission, *Report on Energy Prices and Costs in Europe*, February 2025.
[5] Nearly half of Europe's aluminium smelters have been forced to curtail or completely halt production since October 2021 due to increased energy costs.

it is very unlikely that other industrial processes (including aluminium upstream and downstream production processes - still relying mainly on gas) will electrify in the future.

Adopt de-risking instruments to achieve cost-competitive electricity prices

The EU's revised Electricity Market Design (EMD) and initiatives under the Clean Industrial Deal focus on decreasing energy prices by increasing the uptake of Renewable Energy Sources (RES) Power-Purchase Agreements (PPAs). However, the entire EU RES PPA market has evidenced a sharp drop-off in deals over the past year.[6] For example, 81% less RES PPA contracts were signed in May 2025 compared to the previous month, reaching the lowest monthly volume since 2020.[7]

Therefore, the Electrification Action Plan should include the following measures to encourage the aluminium industry to sign PPAs:

- **Provide de-risking mechanisms** that address the biggest barrier that electro-intensive consumers face when trying to sign RES PPAs: the risks and costs of the need to match the variable renewable energy sources electricity to the more stable industrial consumption profile, as per the Draghi report (Part B, p. 35).[8] To reduce these costs, the demand for renewable PPAs from electro-intensive consumers could be aggregated by a third-party aggregator and the matching costs should be backed by a state aid scheme via public auction, following the Greek Green Pool Scheme. Alternatives schemes such as **Italy's "Energy Release 2.0" scheme** and **Germany's electricity price relief** could also be considered. Therefore, we propose to include such targeted and temporary schemes under the Plan and that DG COMP will approve EU Member States' proposals for these schemes. Similarly, PPAs bundling Renewable Energy Sources and batteries for Energy-Intensive consumers, with support for shaping costs, improve the batteries' business case, reducing the high investment costs for on-site storage capacity.
- **Introduce state aid criteria for base-load industries (to be further defined), prioritising the generation of long-term, low-carbon, and non-intermittent electricity supply.** The goal is to encourage the development of electricity sources that align with the steady demand profiles of base-load industries, including but not limited to aluminium.
- **Introduce the announced EIB PPA guarantee** scheme and design it to cover both seller and buyer defaults, with clearly defined and balanced risk-sharing provisions. In line with technological neutrality under the Action Plan for Affordable Energy (page 1), the EIB scheme must also apply to existing generation capacities.
- **Under Contract for Difference (CfD) schemes, prioritise projects that have signed PPAs with electro-intensive consumers and industrial companies committed to electrifying their processes**, building on a suggestion in the Draghi report (p. 37) and the provisions of the EU's EMD. CfDs negatively impact

[6] - RE-Source Platform, PPA deal tracker, November 2025
[7] PV Magazine, *Pexapark Reports Significant Slowdown in European PPAs in May*, June 2025.
[8] This was unanimously recognised by both the power sector and energy intensive industries as the key barrier for electro-intensive industries to electrify their processes in the Antwerp Dialogue Recommendations on Industrial Electrification & Competitiveness (see recommendation 1 b at p. 6 of the Recommendations). For more information please see p. 34 of DG GROW's transition pathway's report for the metals sector and Eurometaux's survey report on PPAs (p.7).

the PPA market liquidity as they discourage RES producers from signing PPAs with industrial consumers because banks will be more likely to support state-backed systems.

Further state aid support for baseload energy-intensive industries like aluminium is also essential to protect these industries from carbon leakage. Such support is crucial as aluminium is one of the most exposed sectors as a price-taker sector that is highly electro-intensive and exposed to international trade. Moreover, the announced addition of new sectors under the leaked revised EU Emissions Trading Scheme (ETS) State Aid Guidelines must not have a negative impact on the level of compensation received by already eligible sectors.

Thus, we call to:

- Extend and enhance the EU indirect cost compensation beyond 2030 and support from the European Commission to governments to fully use these schemes.
- Maintain and potentially enhance compensation schemes under Section 3 of EU ETS State Aid guidelines to reduce the burden of carbon costs embedded in electricity prices.

Provide specific upfront OPEX and CAPEX support for all industrial electrification technologies

The high and volatile OPEX of current electrified processes and the unavailability of affordable electricity already put price pressures on the aluminium industry. Electrifying alumina refining, transformation, and recycling will require further substantial decades-long CAPEX investments.[9] Therefore, both upfront private investment and support from new and existing EU and Member State funding instruments are critical to bridge the initial high investment costs in deploying and further developing electric furnaces and heating technologies, infrastructure upgrades, and fuel switching.

As such, we recommend the Action Plan to:

- Direct more CAPEX and OPEX investment from the upcoming Competitiveness Fund and the next Multiannual Financial Framework towards energy-intensive industries. For instance, the public auctions should prioritise EII as the top recipients of OPEX support from such funds.
- Enable Member States to subsidize the OPEX costs of energy-intensive companies for the electrification of carbon intensive production processes. Member States should be enabled to design state aid measures that provide electricity price reliefs (e.g., redesign the electricity price relief under Section 4.5 of the CISAF accordingly) or CCfDs to subsidize the increased OPEX caused by fuel switching.
- Enable Member States to finance re-opening production capacities that were curtailed during the energy crisis. This is a cheaper and more efficient way to increase electricity demand than trying to electrify new industrial sectors using early-stage technologies.
- Ensure an equal treatment of electrification technologies in funding and permitting rules, as per page 1 of the Clean Industrial Deal. Recent European Commission initiatives provide financial support to new and experimental projects (which have a hard time materialising, due to their reliance on immature technologies) while offering little support to help current users access affordable power or

[9] To illustrate, the European aluminium industry requires €33 billion in CAPEX (excl. R&D and infrastructure costs) to reduce emissions by 93% and meet the 2050 climate target, yet it faces a significant gap in subsidies compared to international competitors. Please find more information in our Decarbonisation Pathways report which outlines a roadmap for decarbonising European aluminium production by 2050.

switch to renewables (e.g. hydrogen projects prioritised over electric boilers under the Innovation Fund and the CISAF which differentiates the aid intensity per technology). Instead, both mature and first-of-a-kind breakthrough decarbonization and innovation technologies should receive financial support and permitting benefits, as building the maturity and scale of any industrial process takes capital and time.

- Encourage the use of refundable tax credits for electrification, following DG TAXUD's **Recommendations on Tax Incentives for the Clean Industrial Transition**. As highlighted in the Letta report (pp. 26-27) and the Draghi report (p. 36), they offer several significant advantages over loans including direct financial incentive to companies and individuals by reducing their tax liability and higher predictability, allowing for better financial planning.

Make demand-side response voluntary and adequately remunerated to recognize sectoral limitations

Demand-side response (DSR) is not a one-size-fits-all solution and must accommodate different sectors' technical, regional, and economic constraints. The potential for DSR across the aluminium value chain potential is very limited and dependent on plant configurations. Moreover, aluminium producers' and recyclers' core business is metal production, not energy trading. Therefore, any DSR should remain voluntary by avoiding sector-agnostic flexibility targets as well as schemes that penalize baseload consumers (e.g. time-based grid tariffs that do not foresee reductions for baseload consumers). To remain voluntary, any DSR for EII should also be compensated through high remuneration, including expedited grid connection, market-based valuation or financial support to any form of automated peak shaving, especially those with minimal cost or disruption and supported by artificial intelligence. Electricity should be provided to consumers where and when they need it which requires a balanced energy mix recognizing the constraints of RES to provide round-the-clock supply to baseload industries.

For more information, please see our position paper on flexibility here, the Clean Industrial Deal State Aid Framework here, and SmartEn's study on flexibility here.

Optimize grid efficiency and balance industrial network costs among all consumers

The drive to decarbonise the electricity sector using variable renewables and existing electrified industries is placing growing pressure on electricity grids. The increasing intermittency of electricity supply will further necessitate greater public investment in renewables, storage, capacity mechanisms, flexibility, and supply security, increasing the costs for consumers. Public investment is also likely to fund the necessary modernization, digitalization, and expansion of grid infrastructure and interconnectors under the upcoming Grids Package. As such, network charges and other consumer costs are expected to increase to cover these costs, at a time when these costs in Europe are already higher than in the US and four times higher than in China.[10]

Both demand and offer levers shall be activated to achieve overall cost optimization. To increase the economic feasibility of electrification, reduce the cost burden placed directly on electricity consumers. Therefore, any KPI must be followed by policies that ensure a robust electricity supply and demand balance at EU and national

[10] WindEurope and VaasaETT, *Revamping electricity bills for a competitive and secure Europe*, April 2025.

level. Indeed, grid efficiency should improve to maximize capacity and minimize costs for consumers by balancing costs among governments, producers, and consumers.

To level the playing field with competing regions, improve grid efficiency, and minimize network costs for industrial consumers the Action Plan should:

- Introduce network tariff regimes to lower network charges for industrial consumers exposed to carbon leakage and sensitive to electricity price increases and extend their scope to future grid costs and capacity mechanisms.[11] For example, the UK's Industry Supercharger already fully exempts electro-intensive sectors from capacity charges and is expected to provide a £32 to £44 per MWh reduction in electricity costs. Indeed, such measures are both feasible and effective in reducing industrial network costs.[12]
- Guarantee all surcharges, taxes, levies and network charges placed on energy intensive industries cumulatively do not exceed 0,5% of most exposed electro-intensives' gross value added (GVA), as per the Draghi report.
- Design a targeted band of network charges for flexible consumers whose intention is to solely consume electricity during times of oversupply, ensuring baseload consumers like primary aluminium producers are not required to pay more for their energy costs.
- Include and align above recommendations with the upcoming guidance document on promoting renumeration of flexibility in retail contracts, the Network Code on Demand Response, and the Grids Package.

For more information on European Aluminium's work on climate and energy related policies, all papers, external studies, and memos are available at the "Climate & Energy Section" of our website.

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[11] This is also recognized in Recommendation 3C of the Antwerp Dialogue Recommendations on Industrial Electrification and Competitiveness, published by the energy-intensive industries and the power sector, December 2024.
[12] Subsidy Advice Unit of the Department for Business and Trade, *Report on the British Industry Supercharger Subsidy Scheme*, December 2023.