
Powering Europe's industry

Competitiveness, electrification
and the role of electricity

27 May 2026, 10:00-11:30



Agenda

- Opening 10:00
 - EU Context 10'
 - Presentation of study 20'
 - Reaction by decision-makers and stakeholders 20'
 - Discussion 30'
 - Wrap up and closing 11:30
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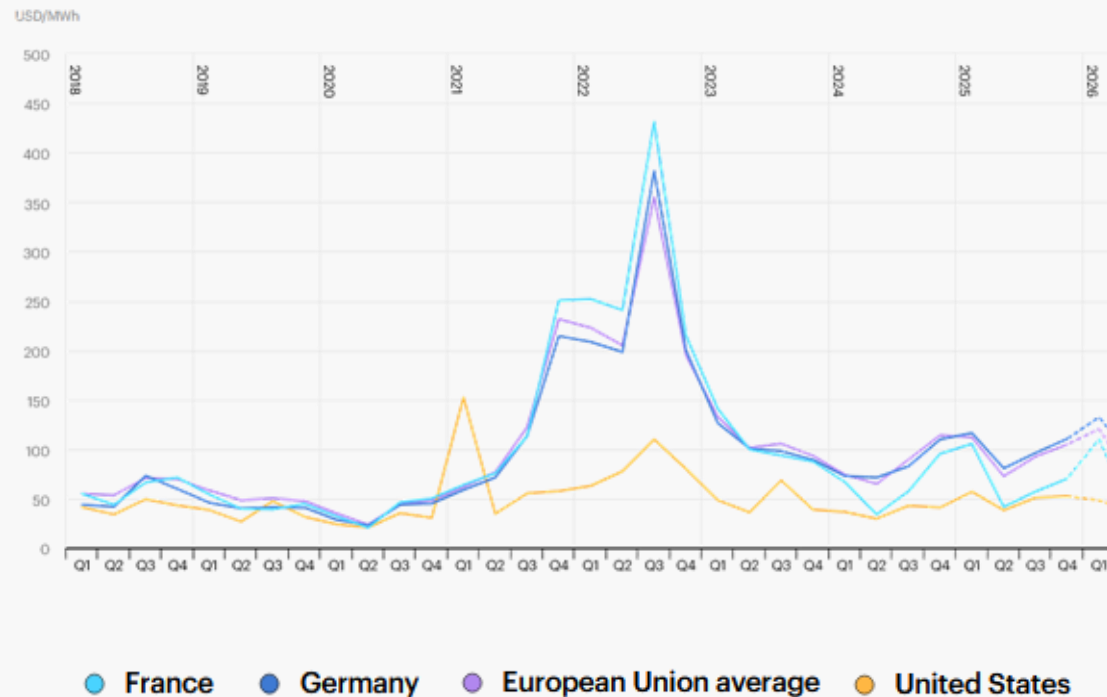
EU context

Frauke Thies

Director Europe, Agora Energiewende

Context & Challenge

Historical quarterly average wholesale electricity prices



Context:

- EU industry faces increasing competitiveness pressures
- Electricity costs often cited as a competitiveness factor
- Long-term vision on electrification & decarbonisation as central factors for the EU's resilience and competitiveness
- A very dynamic European political context
- A new fossil energy crisis

Key questions for the project:


- How important are energy and electricity costs in the competitiveness gap for different industries today and in an electrified future?
- Which guiding principles can help align industrial policy instruments with competitiveness, resilience and decarbonisation objectives?

Figure source: IEA [Electricity 2026 – Prices](#)

4 | Prices are in nominal values, converted to USD based on the average exchange rate of the quarterly period. Continuous lines show historical data and dashed lines refer to forward prices.


The EU's Clean Industrial Deal sets the framework for combining decarbonisation and competitiveness – electrification as a key pillar


 **Affordable Energy & Electrification** → Increase economy-wide electrification rate from 21.3% to 32% in 2030

 **Lead Markets**

 **Financing**

 **Circularity and Access to Materials**

 **Global Markets and International Partnerships**

 **Skills Enhancement**

 **Simplification**

Study presentation:
Powering Europe's industry: competitiveness,
electrification and the role of electricity

Andreas Rüdinger, IDDRI

Murielle Gagnebin, Agora Energiewende

Starting point of this project



- Long-lasting cooperation in co-organising expert workshops and carrying out common studies with a focus on German-French cooperation and EU policies
- Combined knowledge of national contexts & EU policies in the field of energy and climate to better understand the challenges for a successful transition towards a low-carbon economy
- Collaboration with Compass Lexecon to make quantitative assessment for this study



The project

3 stakeholder workshops (Paris, Berlin, Brussels)

Online workshop

Bilateral exchanges

Study by Compass Lexecon

Agora & Iddri Policy Brief

Publications

Agora-Iddri Impulse Paper



Study by Compass Lexecon



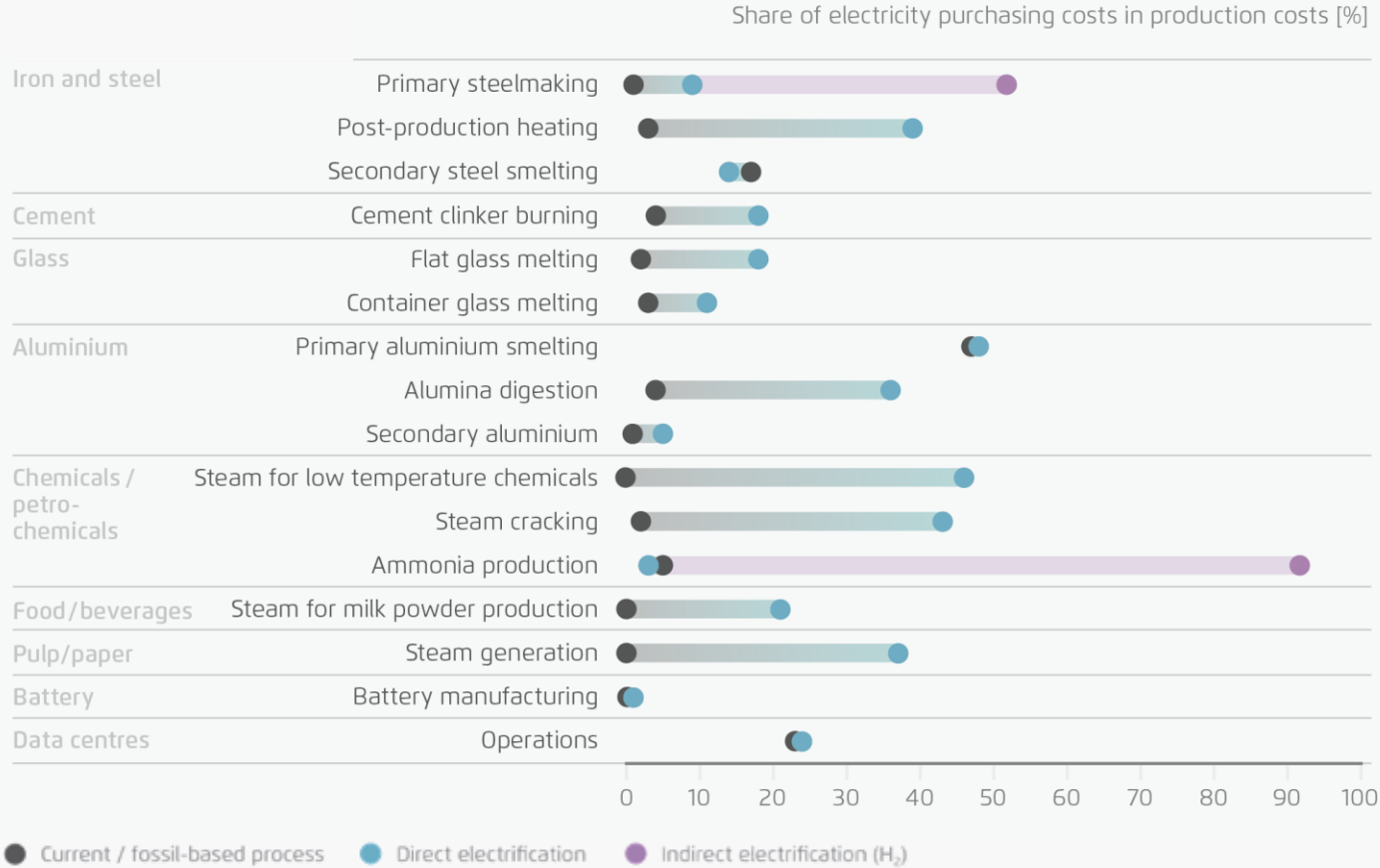
Full report

Executive summary

Technical appendix

Power costs in competitiveness : limited role today, decisive role tomorrow

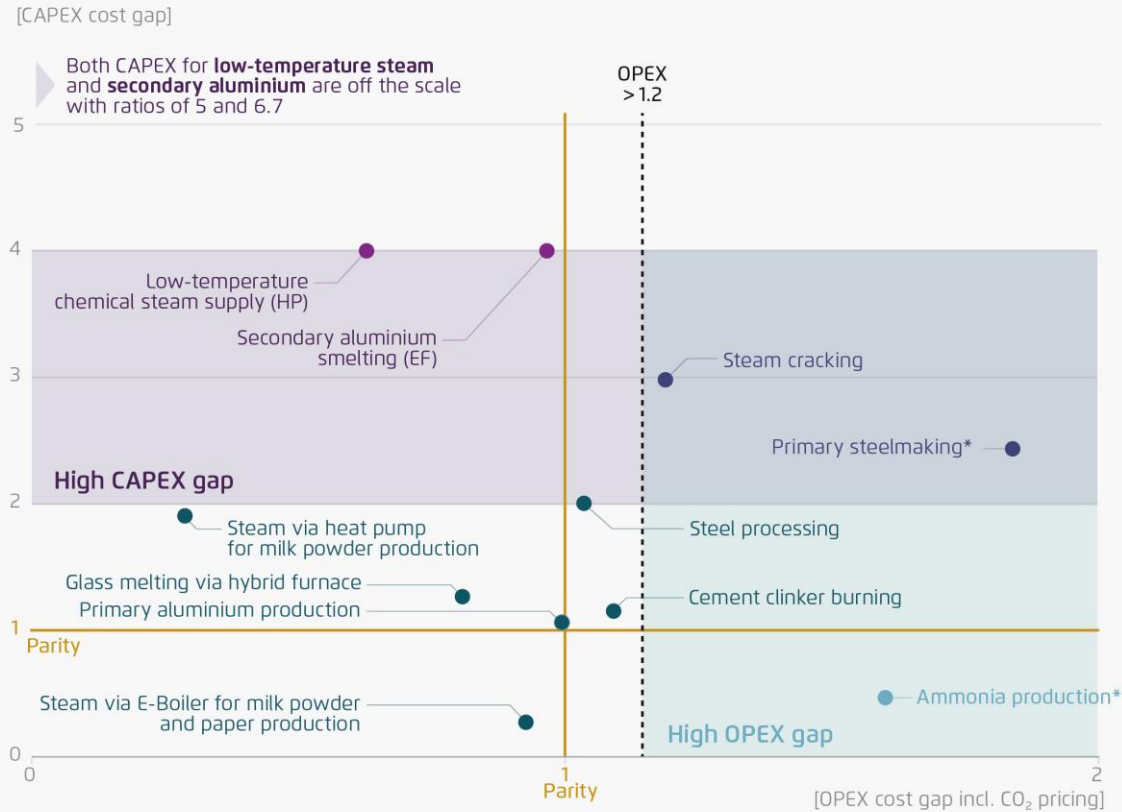
Share of electricity today and after electrification in total cost of production



- Currently, electricity consumption represents less than 5% of total production costs in most considered industries
- After (direct & indirect) electrification, power represents at least 60% of all energy consumed in all those sectors, replacing fossil gas
- Their costs will represent between 10 and up to 90% of total production costs, showing large variations among sectors
- Exposure to power prices will generally increase

The economic viability of process electrification depends on the sector

Electrification cost gap ratio for selected industrial applications by 2035



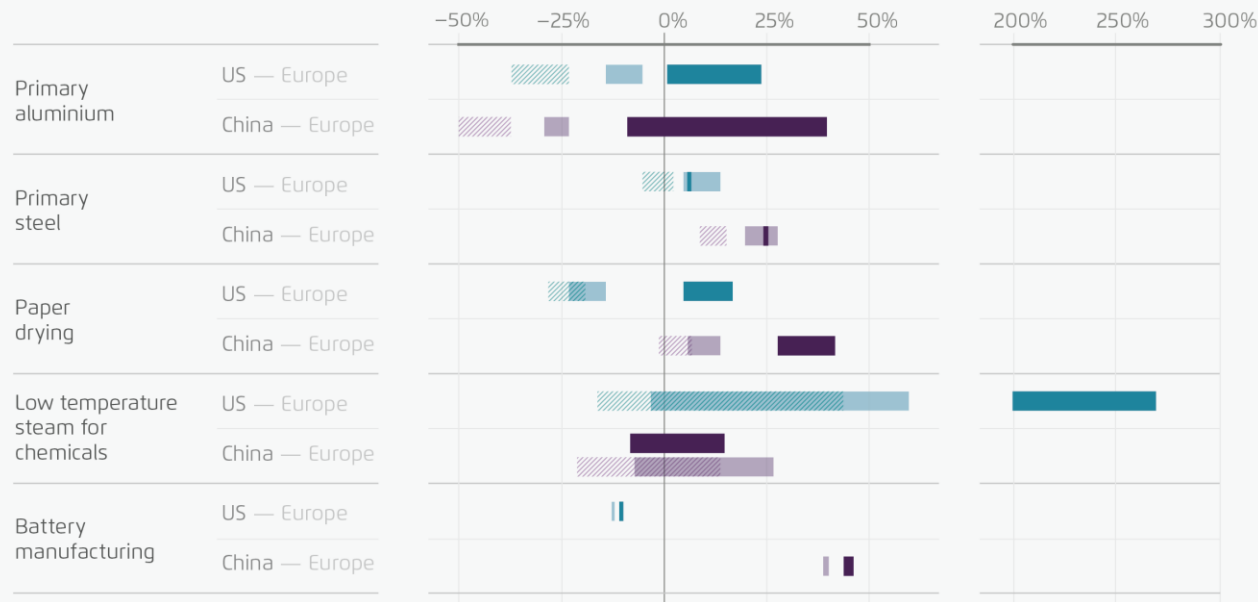
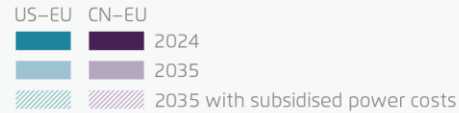
- The economic feasibility of industrial electrification strongly depends on the price ratio between electricity and fossil alternatives, as well as on upfront investment.
- Today, low-temperature process heat can already be electrified competitively under current conditions, through the deployment of high-efficiency heat pumps.
- By 2035, with rising carbon price and effective CBAM, many technologies can reach cost parity with their fossil-based counterparts.
- Others would only require limited additional investment or targeted operational support to achieve it.

Electrification can improve the competitiveness of EU industries

Competitiveness gap in selected industrial applications between Europe and the US or China respectively

How to read this chart: Conventional paper drying is currently 5–17% more expensive in Europe than in the US, and 28–42% than in China. By 2035, the electrified process in Europe could be 23–28% cheaper than conventional and electrified processes in the US and 6–14% more expensive than China. Maintaining similar levels of subsidies in absolute numbers as today in free EU ETS allowances would allow to almost completely close that gap with China.

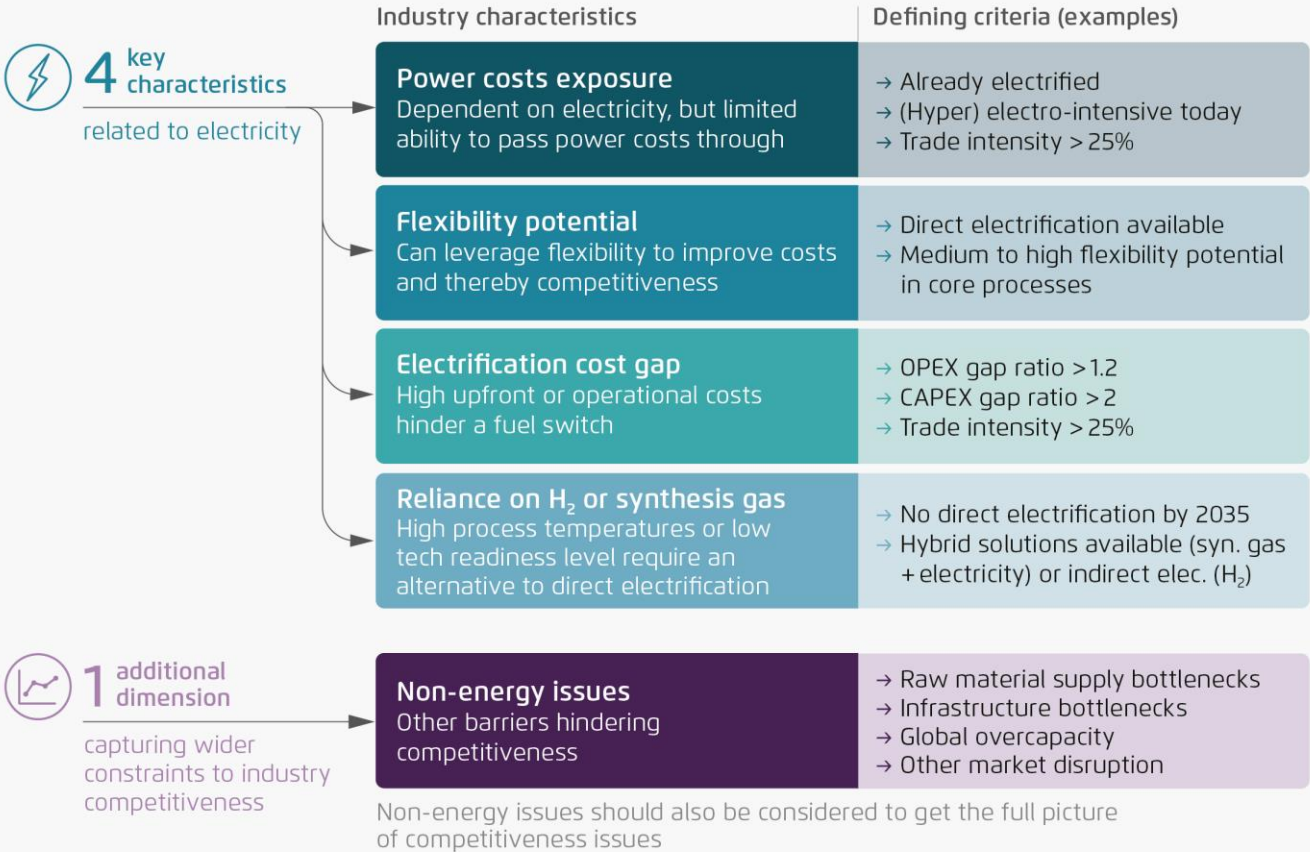
Competitiveness gap



- By 2035, all considered sectors show an improved competitiveness after electrification with an effective implementation of CBAM
- In some cases, additional support could be needed to overcome the residual competitiveness gap, e.g. preferential electricity prices.
- Tailor-made support policies are needed to support strategic industry that need it while simultaneously avoiding overcompensation

A harmonised framework is needed to take into account different characteristics of industries

A practical framework to guide electricity-related policy choices for competitiveness and climate neutrality

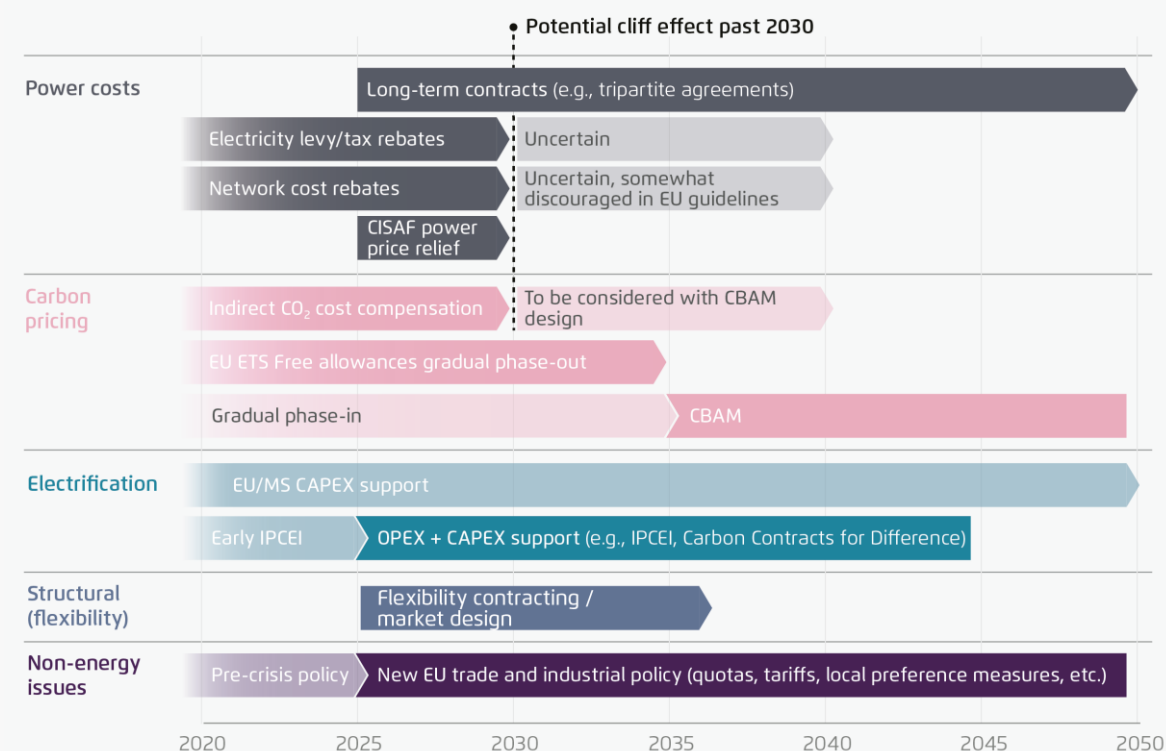


Unity in diversity : alignment and visibility of climate, energy & industrial policies

- High diversity of policy instruments and implementation conditions among Member States today
- Several measures could help address issues industries are confronted with:

- 1. Reducing power system costs at the source + Improving long-term visibility** of energy and carbon price signals to mitigate investment risks
- 2. Aligning and developing a harmonized EU methodology** to assess and differentiate the nature and magnitude of competitiveness and electrification cost gaps across sectors and Member states + **Improving transparency** on actual power prices for industries in different Member States
- 3. Favouring tailor-made approaches** based on clear framework over one-size-fits-all solutions for OPEX and CAPEX support + **Leveraging conditionalities** to incentivise electrification through existing support schemes

Overview of industrial competitiveness and decarbonisation policy toolbox



Moving forward: recommendations for the EU policy framework

1. As Europe works to strengthen competitiveness and resilience, moving away from volatile fossil fuels by electrifying is paramount.
2. Affordable and predictable power prices are increasingly decisive for both electrification and competitiveness, even though large differences among industries will remain.
3. By 2035, decarbonised sectors can be more competitive than today – provided the right conditions are in place.
4. The EU needs a coherent industrial strategy aligned with energy and climate policy.

Comments on study results

- Tom Howes – Adviser, DG ENER, European Commission
 - Carsten Rolle – Co-Head of Energy, Mobility, and Environment Division, BDI (Federation of German Industries)
 - Laurent Courtois – Vice President Technical Committee for Electricity, UNIDEN (Union des Industries Utilisatrices d'Energie), & Director of Energy and Climate, Aluminium Dunkerque
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Q&A and discussion

moderated by Julia Metz – Agora Industry

- Tom Howes – DG ENER, EC
 - Carsten Rolle – BDI
 - Laurent Courtois – UNIDEN & Aluminium Dunkerque
 - Andreas Rüdinger – IDDRI
 - Murielle Gagnebin – Agora Energiewende
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Conclusions

Julia Metz, Director Agora Industry

Thank you for your attention!

Any questions or comments?

Murielle Gagnebin | murielle.gagnebin@agora-energiewende.de

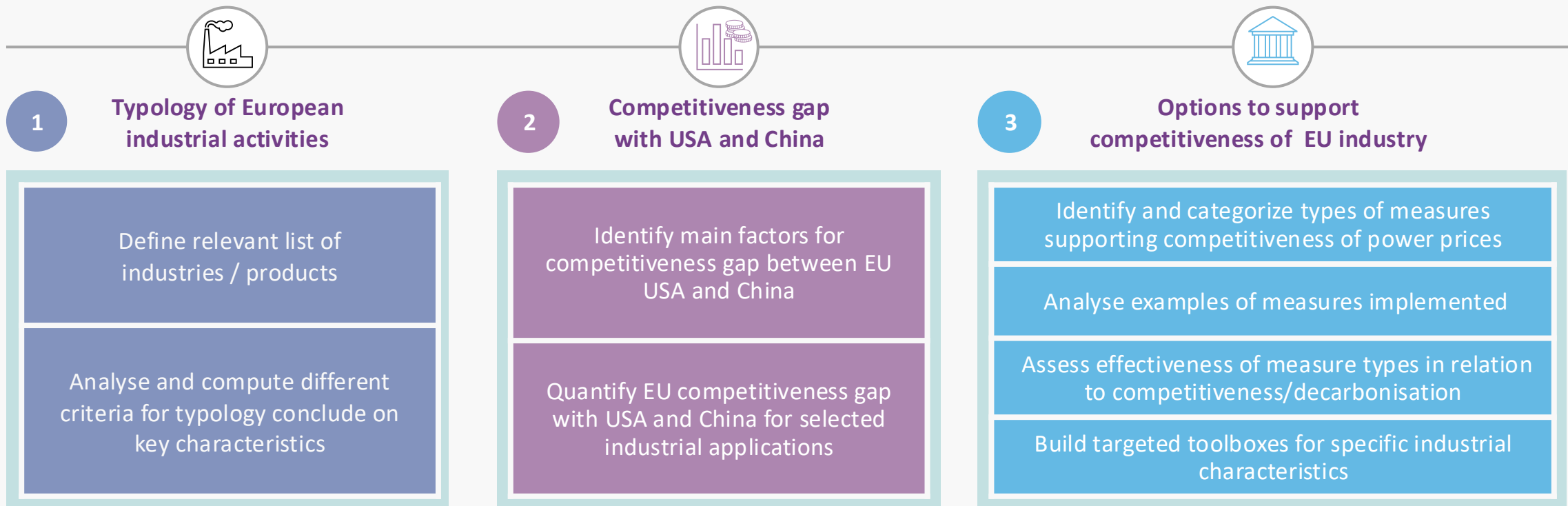
Andreas Rüdinger | andreas.rudinger@iddri.org



Backup

Approach of the study

Three workstreams to classify industries, identify the impact of energy costs on competitiveness, and build targeted policy toolboxes



Assumptions on electricity, fossil gas and carbon prices for 2024 and 2035

Price assumptions

→ Table 2

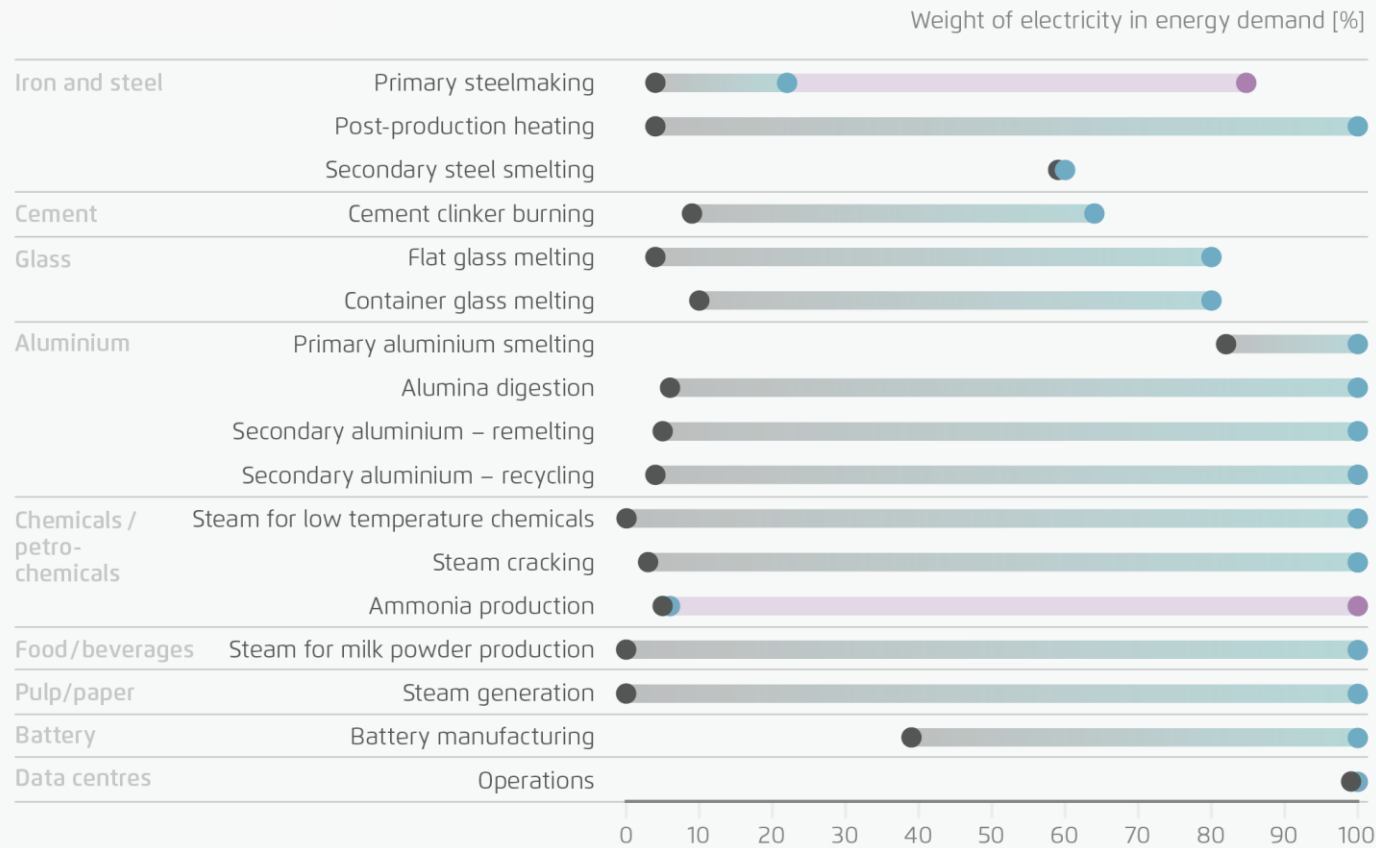
Electricity (include network charge and tax rebates)		2024 (EUR ₂₀₂₄ /MWh)	2035 (EUR ₂₀₂₄ /MWh)
EU (selection) • Hungary (max) • Germany • France • Sweden 3 (min)	Hyper electro-intensive	• 136 • 87 • 62 • 45	• 104 • 85 • 71 • 69
	Electro-intensive	• 158 • 107 • 77 • 51	• 126 • 105 • 85 • 75
	Electro-sensitive	• 180 • 126 • 92 • 57	• 148 • 124 • 100 • 81
USA		58–76	53–70
China (subsidised)		72–86 (47)	80-95 (40)
Fossil gas		2024 (EUR ₂₀₂₄ /MWh)	2035 (EUR ₂₀₂₄ /MWh)
EU		45 (Greece) – 112 (Sweden)	40
USA		8–25	24,3
China		65	35
Carbon price		2024 (EUR ₂₀₂₄ /tCO ₂)	2035 (EUR ₂₀₂₄ /tCO ₂)
EU		65	130
USA		–	–
China		–	20

Agora Energiewende, Agora Industry and IDDRI based on Compass Lexecon (2026). Several sources: Historical data from Eurostat and average yearly market data. 2035 data from International Energy Agency, World Energy Outlook 2024; EIA 2025 Energy Annual outlook. Chinese power prices adapted from Chinese provinces data for large industrials in 2021. More details in the Technical Appendix of the report by Compass Lexecon).

- Differentiated power price assumptions at Member State (EU), state (US) or regional level
- Differentiation between types of industrial consumers and level of power-intensity
- Sensitivity analysis with on-site coal power plants for China
- Phase-out of indirect carbon cost compensation by 2035 while CBAM is fully implemented
- Gas prices include supply, charges and levies

The age of electrification of European industry

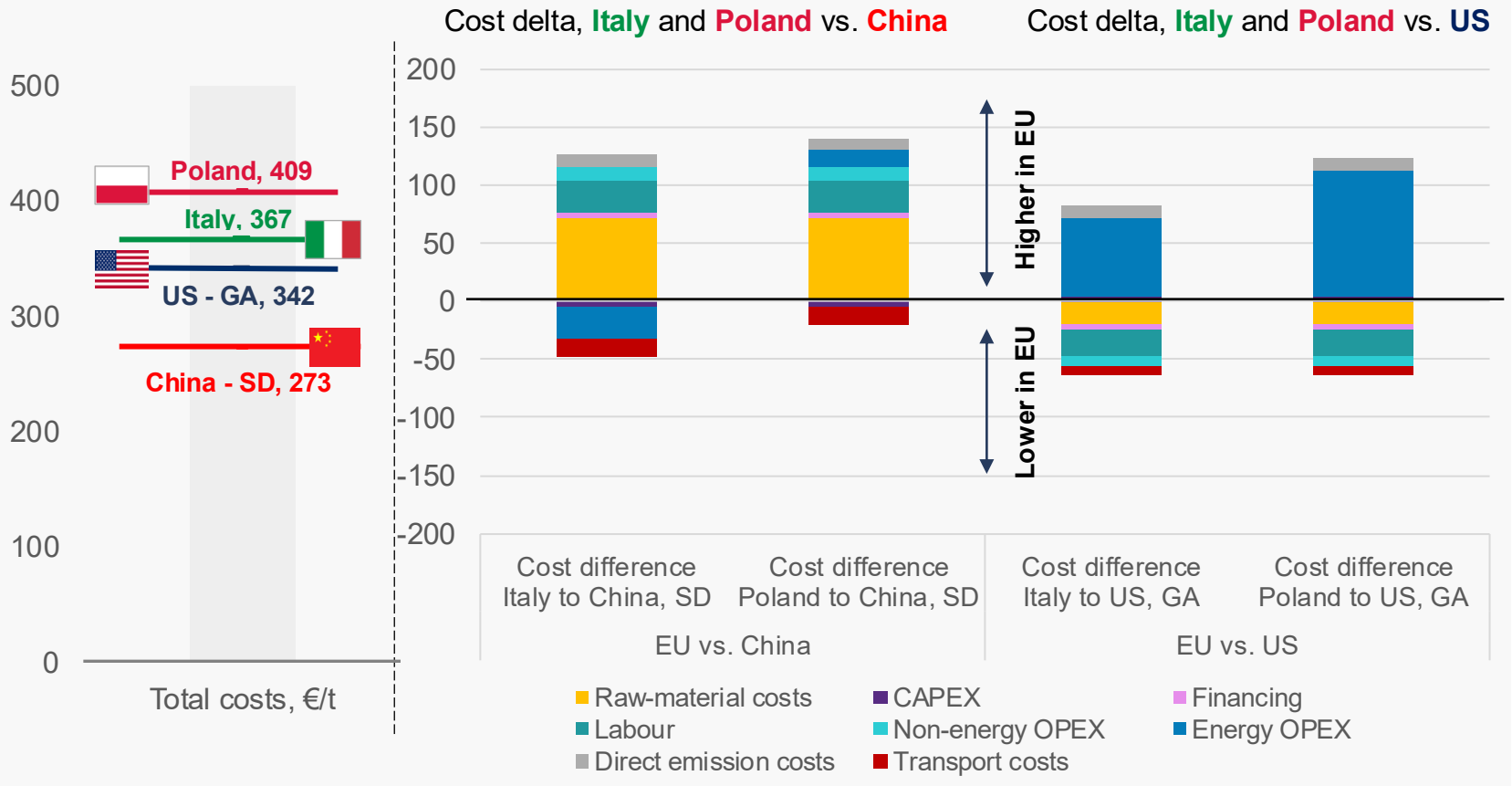
Share of electricity today and after electrification in total energy demand



- Except for primary aluminum, electricity currently represents a limited share of consumed energy
- 90% of current fossil fuel consumption in industry could be technically electrified by 2035
- Under the right enabling conditions, electricity could become the major energy source for most industrial processes (60 to 100% of total energy use), replacing fossil gas.

Illustration: competitiveness gap assessment for the paper industry

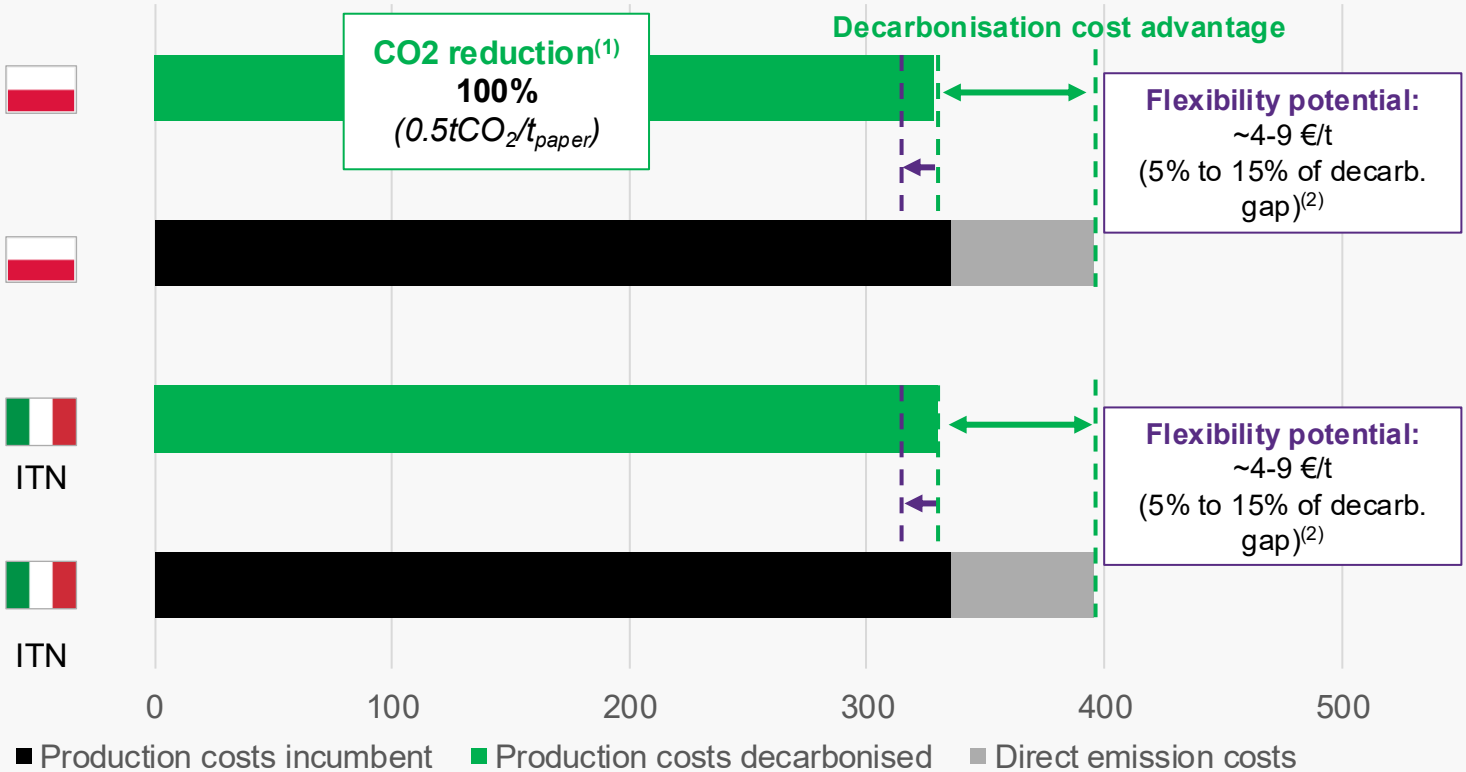
Net-cost difference breakdown paper drying process:
incumbent (CHP plant) Italy and Poland vs. China and US in 2024, in €₂₀₂₄/t_{paper}



- Comparative assessment of illustrative total production costs (2024) for two EU Member states, one US state and one Chinese region
- Decomposition of the underlying cost variations for multiple cost factors to illustrate relative weight (cf. « raw materials » for China, « energy OPEX » for US)

Illustration: Decarbonization gap for the paper industry

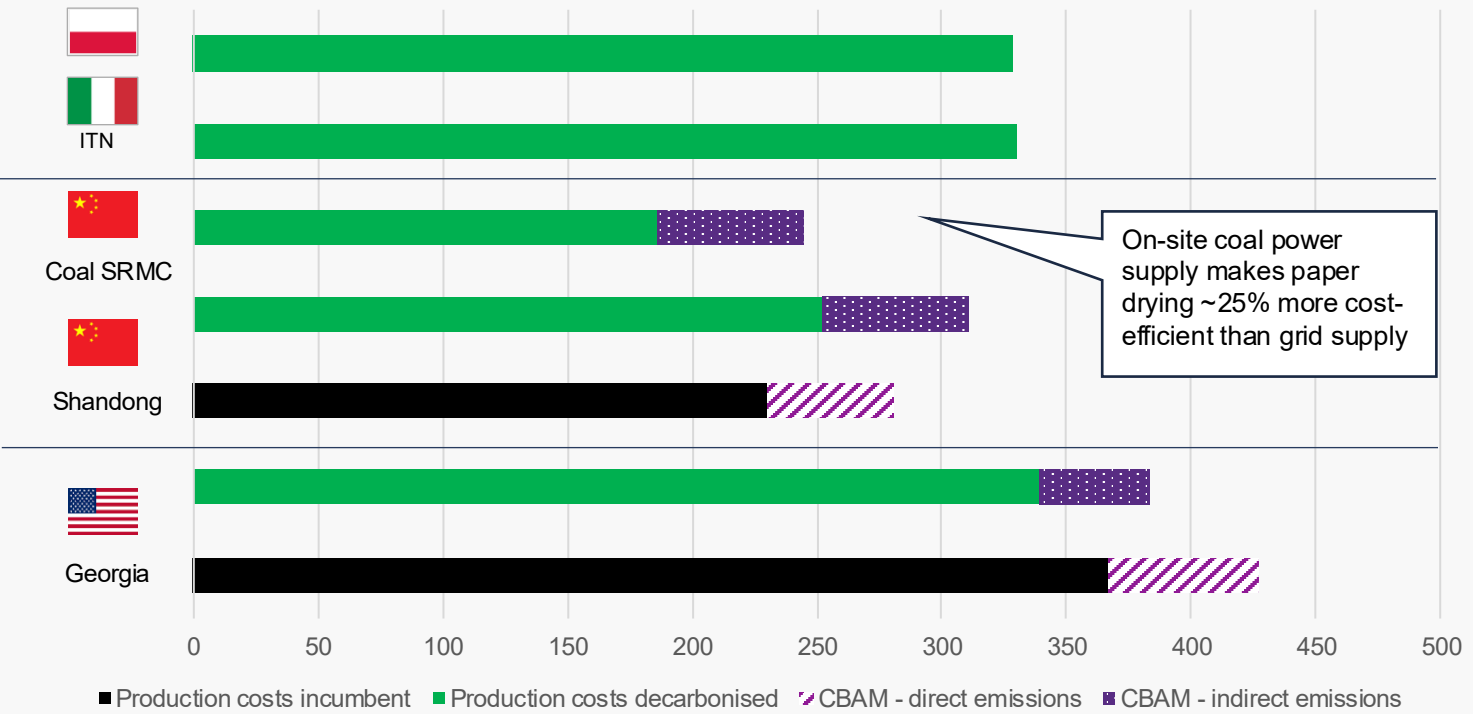
Paper drying process illustrative cost comparison ITN and Poland, €₂₀₂₄/t_{paper}



- Comparative assessment of total production costs by 2035 comparing the incumbent and decarbonized (electrified) process
- Identification of potential value of increased flexibility (through on-site batteries)

Illustration: Competitiveness gap for the paper industry in 2035

Paper drying process illustrative cost comparison under several carbon leakage policy configurations
 Poland, Italy, China and US, €₂₀₂₄/t_{paper}⁽¹⁾



On-site coal power supply makes paper drying ~25% more cost-efficient than grid supply

- Comparison of total production costs in 2035 for electrified processes in the EU and electrified and incumbent processes in China and the US
- Differentiation of direct and indirect carbon costs under the CBAM
- No free allocations under the EU ETS or indirect carbon cost compensation for EU industries in 2035

Disclaimer: Total production costs are estimated based on EU representative installations and should be considered as estimates rather than true values for real sites.

Source: Compass Lexecon (2026)