positivemoney

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# Energy affordability as the cornerstone of European competitiveness

Our ask: Improve financing conditions for renewables and storage – this is not just a climate issue, it is the most direct lever available for restoring European competitiveness and cutting the EU's €463bn/year energy deficit.

## KEY POINTS TO RAISE:

- EU industrial electricity prices were 158% higher than in the US in 2023 (gas: 345% higher)
- The EU's average yearly energy deficit (2022–2024) was €463bn – roughly equal to the entire annual investment needed for the green transition
- Each percentage point increase in renewable share lowers wholesale electricity prices by 0.6%-1%
- Wind and solar deployment reduced wholesale electricity prices by 24.2% on average (2023-2025) across euro area economies
- Raising interest rates from 2% to 6% increases the LCOE of solar+storage by 33% and wind by ~24%, but only 3.7% for gas - renewables are uniquely exposed to financing costs

## WHAT TO PUSH FOR:

- Expand EIB and national development bank lending: low-interest loans and risk-sharing for renewables, storage, and electrification
- Make the next MFF (2028–2034) fit for green financing: a fully fledged EU Climate and Energy Fund with joint borrowing and a revolving structure
- Introduce a green refinancing rate at the ECB for taxonomy-aligned lending
- Scale up CfDs and PPAs to provide long-term revenue certainty and increase project bankability
- Accelerate cross-border grid infrastructure and invest in flexibility resources
- Reform energy taxation: revive the stalled Energy Taxation Directive to remove the electricity disadvantage vs. fossil fuels

## Executive summary

Since 2022, rising energy costs have negatively impacted European competitiveness, leading to higher production costs, stagnant investment, and a wider trade energy deficit. While having fallen from its peak, energy prices in the EU remain above historic standards and those of its competitors.

Renewable energy deployment reduces electricity price volatility by weakening the link between gas and wholesale electricity prices. Greater renewable penetration consistently lowers electricity costs, with system-wide benefits reinforced by storage and electrification.

The costs of renewable energy and storage are highly sensitive to financing costs. Therefore, finance plays a key role in making them competitive and accelerating their deployment.

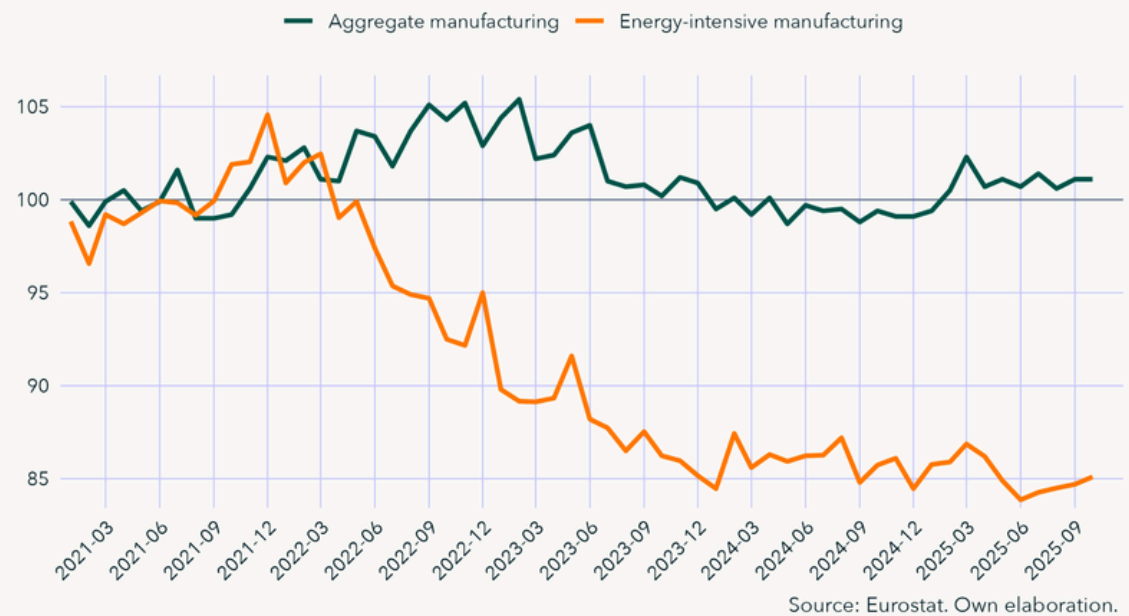
The EU must improve financing conditions and incentives to renewables through:

- Expanded support from public banks (EIB, national development banks).
- A new EU Climate and Energy Fund for grants and cross-border projects.
- A green refinancing rate at the ECB to lower borrowing costs for strategic sectors.
- Wider use of Contracts for Differences (CfDs) and Power Purchase Agreements (PPAs).
- Reform of taxation to remove current disadvantages for electricity compared to fossil fuels.

## 1. The impact of the energy shock on competitiveness

European competitiveness has been gravely affected by the surge in energy price volatility since 2022, driven by soaring gas and oil prices following Russia's invasion of Ukraine. The impact of the energy shock on the European economy has been multifaceted, leading to higher prices, lower demand, stagnant investment, and falling production. Industrial production in the EU has stagnated during the last few years, with a marked decline for energy-intensive industry production, which has reduced its output by more than 15% (Figure 1).

**Figure 1: EU production: Manufacturing and energy-intensive manufacturing**



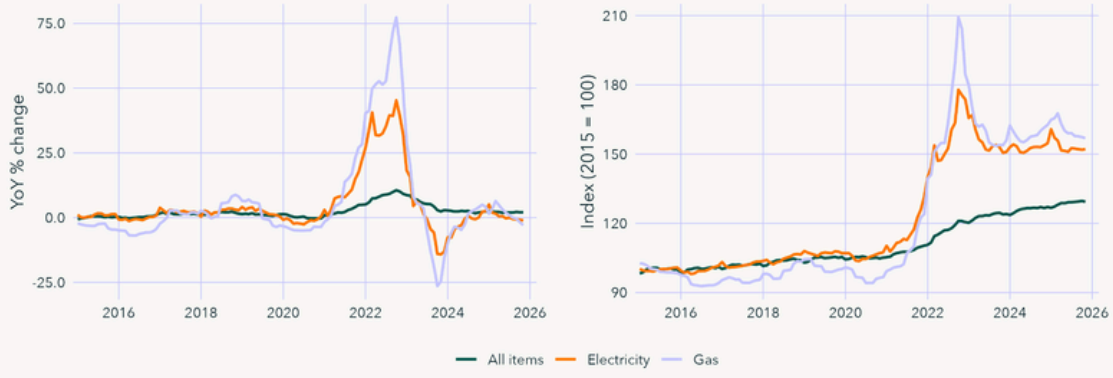

Source: Eurostat. Own elaboration.
Note: Energy-intensive = unweighted mean of C17_C18, C20, C23, C24.

Inflation in gas and electricity prices reached its peak in October 2022, falling thereafter (Figure 2, left). However, their prices have remained very high by historical standards (Figure 2, right). Electricity and gas prices remain well above those of the EU's main competitors, the US and China. In 2023, industrial retail electricity prices were 158% higher than in the US, while gas prices were 345% higher,[1] making it more expensive to produce in the EU.

[1] Draghi, M. (2024). The Future of European Competitiveness — A Competitiveness Strategy for Europ

**Figure 2: HICP inflation and energy prices (Euro area)**

Year-on-year rate of change (left) and level (2015 = 100, right)




Source: Eurostat. Own elaboration.

The elevated cost of energy has weighed heavily on European investment, which has stalled in the last few years. In mid 2024, real corporate investment in the EU was just 1% above its pre-Covid level.[2] In 2024, EU companies identified energy costs as the second most significant barrier to investment, with 45.9% of respondents viewing them as a major obstacle and 30.5% as a minor one (Figure 3, left). In 2022, the corresponding shares were 58.5% and 23.7%, respectively (Figure 3, right).

**Figure 3: Barriers to investment**

Left: distribution of barriers in 2024.
Right: energy costs as a barrier over time (2016–2024).

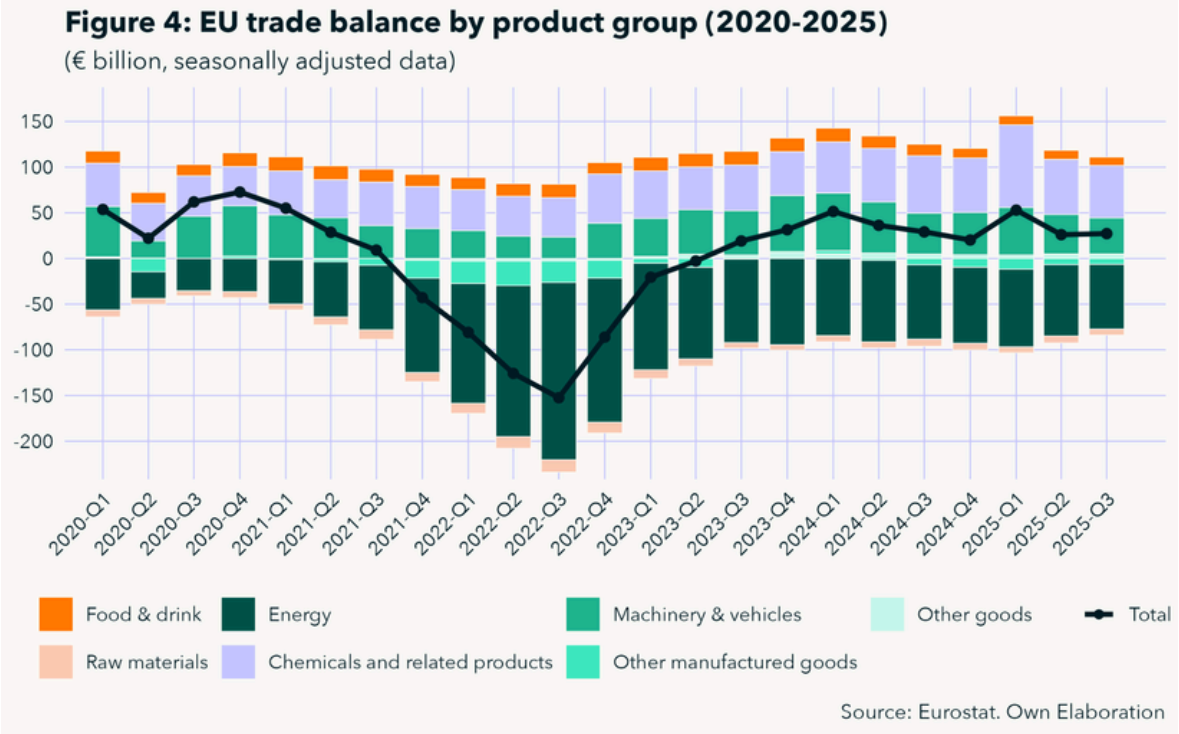

Source: EIB. Own elaboration.

The EU currently relies on fossil fuel imports for almost two thirds of its energy consumption[3]. Between 2022 and 2024, the average of the yearly energy deficit was €463 billion (Figure 4). The amount the EU spends on its energy deficit is almost equivalent to the €477 billion in additional annual public and private investment that the European Commission estimates is needed to finance the green transition in the EU till 2030.[4] In 2022 alone, the EU's energy deficit amounted to €650 billion.

[2] European Investment Bank (2025). Investment Report 2024/25: Innovation, Integration and Simplification in Europe

[3] European Commission (2025). A Competitiveness Compass for the EU

[4] European Commission (2025). Investment Needs Assessment and Funding Availabilities to Strengthen EU's Net-Zero Technology Manufacturing Capacity




The dependence on volatile fossil fuels weighs heavily on European competitiveness by increasing its production costs, limiting investment, creating price uncertainty, and reducing the purchasing power of households, whose demand is instead directed to imported fossil fuels. Reliance on foreign fossil fuels also poses security risks, especially given the current rise in geopolitical tensions, which add uncertainty over future fossil fuel prices.[5] Therefore, decoupling from fossil fuels to provide affordable energy has become a keystone within the EU's goal to boost European competitiveness.[6]

## 2. Ensuring price stability in electricity markets

To reach that goal, Europe must electrify its economy while increasing the deployment of renewable energy necessary to power this transition. The EU currently aims to increase electrification rates—the electricity share of final energy consumption—to 32% in 2030 and 50% in 2050,[7] with the rate standing at 22.9% in 2023.[8] However, the electrification rate in Europe has been stagnant, leaving Europe as a laggard compared to China, where electrification has been on a strong upward trajectory.[9]

To bring forward this transformation, it is imperative that electricity prices in the EU become affordable. Currently, the volatility in gas prices leads to high electricity prices (Figure 2).[10] While natural gas is not the main source of electricity generation, it frequently acts as the marginal unit in the merit order. In this system, cheaper generating units are dispatched first, and the most expensive unit needed to meet electricity demand sets the price according to its marginal costs. As a result, natural gas sets the wholesale market price during most hours.[11]

[5] Oxford Institute for Energy Studies (2025). Closing the Strait of Hormuz: Impact on the Global Gas Market https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220317_2~dbb3582f0a.en.html

[6] European Commission (2025). A Competitiveness Compass for the EU; European Commission (2025). Action Plan for Affordable Energy: Unlocking the true value of our Energy Union to secure affordable, efficient and clean energy for all Europeans

[7] Rossetto, N. (2025). *Electrification, where are we?* Florence School of Regulation

[8] Eurostat (2025). Energy statistics. An overview

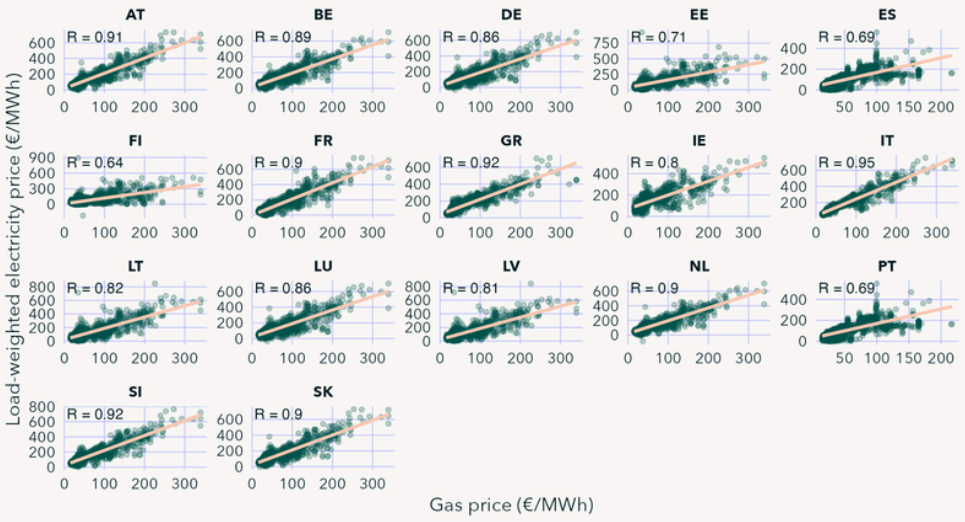
[9] Walter, D., Bond, K. & Butler-Sloss, S. (2025). The electrification imperative, Ember

[10] Alvarez, A. & Kroen, T. (2025). The Energy Origins of the Global Inflation Surge, IMF

[11] Gasparella, A., Koolen, D. and Zucker, A., The Merit Order and Price-Setting Dynamics in European Electricity Markets, European Commission; Zakeri, B et al. (2023). The role of natural gas in setting electricity prices in Europe

There is a very strong positive correlation—close to one for most countries—between gas prices and wholesale electricity prices (Figure 5). There are some exceptions where the correlation is weaker, such as Portugal and Spain, which implemented a gas price cap during the energy shock and have a high renewable penetration, or Finland, where biomass, nuclear, and hydro play a more significant role in the electricity mix.

**Figure 5: Electricity prices and gas prices (2021-2025)**

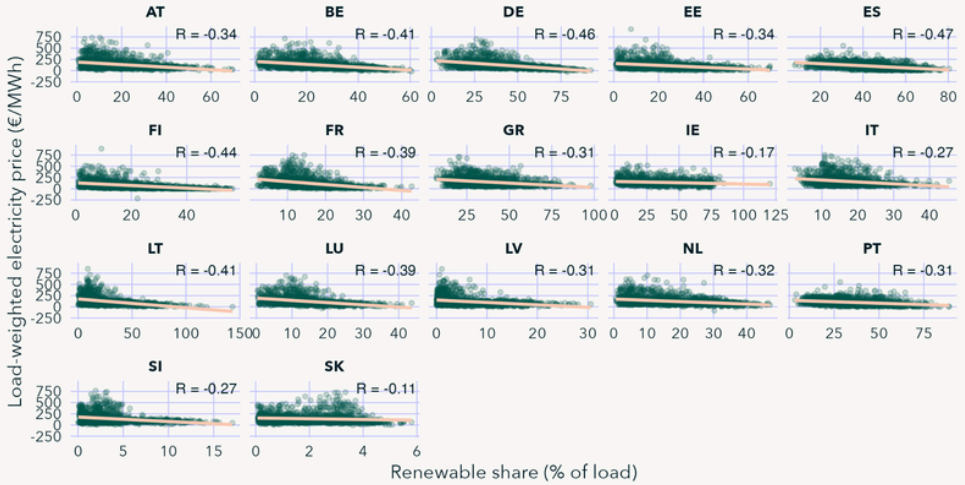



Source: ENTSO-E.Own elaboration.
Note: Each dot represents a day.

Renewable energy technologies are already cheaper than their fossil fuel counterparts, thanks to stark cost reductions. Between 2010 and 2024, the levelised cost of electricity (LCOE) – which reflects a technology's average cost of generating a unit of electricity over its lifetime – fell by 90% for solar PV, 70% for onshore wind.[12] The deployment of renewable energy and storage enables the decoupling of electricity markets from volatile gas prices. There is a negative correlation between the amount of total electricity demand covered by renewable energy and wholesale electricity prices (Figure 6). This negative correlation is weaker, or even non-existent, for countries where renewable penetration is the lowest (e.g. Slovenia and Slovakia).

**Figure 6: Electricity prices and renewable share**

Renewables = Solar + Wind, by country




Source: ENTSO-E. Own elaboration.
Note: Each dot represents a day.

[12] IRENA (2025), Renewable Power Generation Costs in 2024.

There are two main channels through which renewable adoption reduces electricity prices. First, increased renewable generation leads to the most expensive marginal units being displaced. Renewables, such as solar and wind, have no fuel costs: once built, the wind and sunshine are free. This results in a near-zero marginal cost for their electricity. Consequently, they are placed at the very top of the merit order and are always dispatched first whenever they are available. Even when natural gas remains the price-setting technology, renewable generation pushes off the most expensive power gas plants out of the market, so that a lower cost gas plant sets the price, leading to lower wholesale prices. Second, when renewable sources cover total demand, they effectively set the marginal price, which is significantly below other technologies given their near-zero variable costs[13]. Therefore, the effect of renewable deployment on prices is non-linear: the larger the share of electricity demand that is met by renewable sources, the steeper the fall in wholesale electricity prices.

Across Europe, evidence shows that greater renewable penetration decreases wholesale electricity prices, with estimates suggesting that each percentage point increase in the share of electricity covered by renewable energy lowers wholesale prices by a range of 0.6%-1%, with non-linear effects.[14] According to the Bank of Spain, in 2024 wholesale electricity prices in Spain were 40% lower than what they would have been if solar and wind generation remained at 2019 levels.[15] The IEA estimated that newly installed solar and wind capacity produced €100 billion in savings for European consumers between 2021-2023 thanks to their impact on wholesale electricity prices, which would have been 8% higher in the absence of these additions.[16] In a recent report, we estimate that the deployment of wind and solar reduced wholesale electricity prices by an average of 24.2% over the period 2023–2025 across euro area economies.[17]

The price of renewable energy is expected to keep on declining as deployment increases, triggered by learning-by-doing and economies of scale effects.[18] Solar, wind, and batteries, being more standardised, scalable, and with more replicable production processes, experience faster cost reductions than other technologies.[19] This downward trend in costs contrasts with the volatility and upward trajectory of fossil fuel prices (Graph 2).

To accelerate the decoupling from natural gas, the EU must not only accelerate renewable deployment but also promote large-scale investment in storage—whose cost has declined by 93% between 2010 and 2024.[20] Complementarities between the deployment of renewable energy, storage, and electrification drive system-wide benefits. Increased renewable generation drives intraday volatility by depressing prices, particularly during peak solar hours, incentivising investment in storage. The expansion of storage, in turn, allows for further integration of renewable energy, further driving down electricity prices. Falling electricity prices incentivise the electrification of other sectors (e.g., transport and heating), raising electricity demand and further increasing deployment of renewable energy and storage. Faster deployment further accelerates the downward cost trajectory of these technologies through economies of scale and learning-by-doing.

[13] BBVA (2025). Spain | Reaping the Benefits of Renewable Energy in the Spanish Economy

[14] Cevik, S & Ninomiya, K. (2022). Chasing the Sun and Catching the Wind: Energy Transition and Electricity Prices in Europe, IMF. ; Herczeg, B. & Pintér, E. (2024). The Nexus between Wholesale Electricity Prices and the Share of Electricity Production from Renewables

[15] Quintana, J. (2024). The impact of renewable energies on wholesale electricity prices. Banco de España.

[16] IEA (2023). How much money are European consumers saving thanks to renewables?

[17] Schröder Bosch, J (2026). Towards Cheaper Electricity - Moving Europe from Gas to Renewables. Positive Money EU

[18] IRENA (2025). Renewable Power Generation Costs in 2024.

[19] Sharpe, S. et al (2025). System archetypes of the energy transition: Feedback loops and levers of change; Wilson, C. et al. (2020). Granular technologies to accelerate decarbonization

[20] IRENA (2025). Renewable Power Generation Costs in 2024.

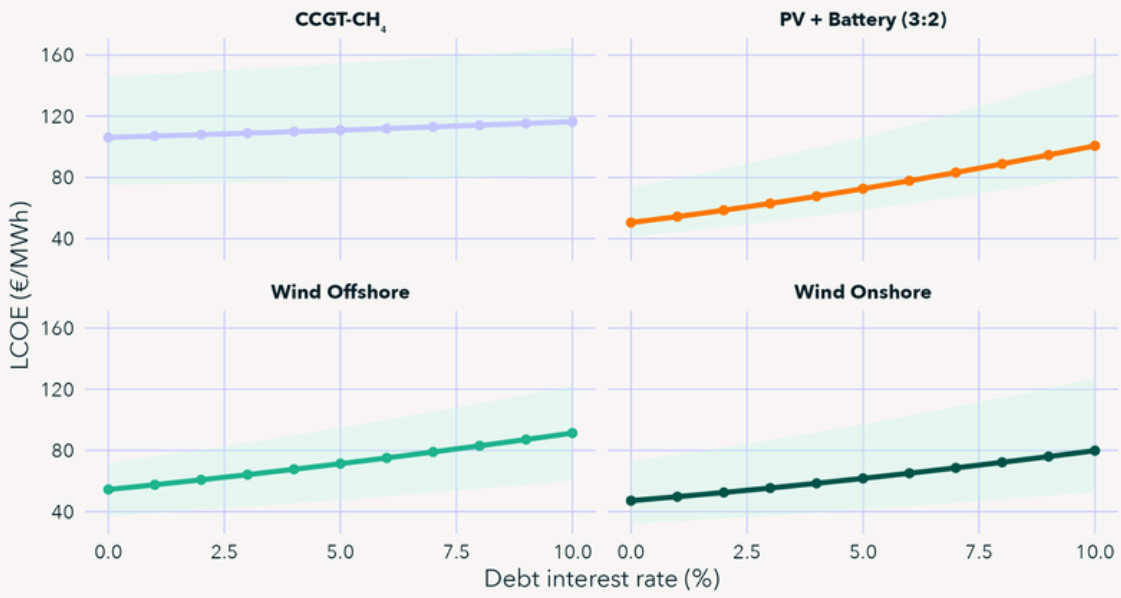
Accelerating this process leads to a virtuous cycle of lower electricity prices, higher demand, and greater deployment, each reinforcing the other. Speeding up this transition seizes system-wide benefits, strengthening European competitiveness. Alongside the rapid growth of storage and electrification tools such as Contracts for Difference and Power Purchase Agreements would provide the revenue certainty that enables investors to finance new capacity.

## 3. The role of finance

Finance plays a key role in either enabling or hindering the deployment of renewable energy and storage and its impact on energy affordability. These technologies are capital-intensive, with no fuel consumption nor significant operating expenses, making financing costs the key determinant of their LCOE.[21]

In contrast, changes in financing costs have a limited effect on fossil fuel sources, given that fuel costs represent the larger portion of their LCOE. As shown in Figure 7, based on Fraunhofer's data,[22] renewable energy technologies are highly sensitive to changes in interest rates. While the LCOE curve for natural gas (CCGT-CH4) is almost flat, the curves for solar PV with batteries, offshore wind, and onshore wind are steep. For example, raising the interest rate from 2% to 6% leads to an increase of the LCOE of PV with batteries by 33% and that of offshore and onshore wind by about 24%, whereas the LCOE of natural gas rises by only 3.7%.

**Figure 7: LCOE and the cost of capital**




Source: Fraunhofer (assumptions) and own calculations. Own elaboration.
Note: Lines show the mid case ribbons show the min-max range.

Furthermore, as fast-growing industries, renewable energy and storage have a limited capacity to finance their growth through retained earnings, unlike fossil fuels. Instead, these industries rely on external finance to sustain their growth. This underscores that the EU's current aim to make energy affordable to boost European competitiveness must place strong emphasis on providing advantageous financing conditions for the strategic industries that enable this affordability.

[21] IEA (2023). Electricity - Renewables 2023 ; Bianchi et al. (2023). Impact of rising interest rates on sustainable projects ; IRENA (2025). Renewable Power Generation Costs in 2024

[22] Kost (2024). Levelized Cost of Electricity- Renewable Energy Technologies, Fraunhofer

## 4. Policy implications

There are multiple policy levers that can improve the financing conditions for the growth of renewables and storage:

1. *Boosting the role of the European Investment Bank and National Development Banks*

These public institutions have the potential to provide targeted support to key strategic sectors. To this end, they must step up their support to project developers and households through direct low interest loans, as well as counter-guarantees and risk-sharing agreements to banks lending to renewable energy, storage, and electrification (e.g., heat pump installation). A recent initiative is the proposed Industrial Decarbonisation Bank, which is an envisaged €100 billion financing vehicle that aims to mobilise investment for industrial decarbonisation.[23] To fulfil their role effectively, however, such initiatives and programmes must be embedded within a strong framework of democratic oversight and a clear policy mandate. In this context, democratic institutions should play a central role in setting investment conditions aligned with EU priorities.[24] In particular, de-risking programmes should aim to facilitate the scaling-up of the renewable energy and electricity sectors, which are essential to advance the green transition while strengthening affordability and EU sovereignty.

2. M*aking the next Multiannual Financial Framework (MFF) fit for green financing purposes*

The Commission's proposal for the 2028–2034 Multiannual Financial Framework (MFF) includes a European Competitiveness Fund (ECF), which aims to support strategic sectors through dedicated investment allocations, including a clean transition and industrial decarbonisation window with an indicative allocation of €23.3 billion.[25] To maximise its impact, such a window should be structured as a fully fledged EU Climate and Energy Fund (CEF).[26] By drawing on joint borrowing the CEF could leverage the initial EU allocation to increase its overall financing capacity and de-risk investments, thus accelerating the deployment of renewable energy and storage technologies, and finance European public goods that are essential for the clean transition. Loan repayments could then be recycled into the CEF, creating a revolving, sustainable funding mechanism. The ECF's budget for clean transition should also be much larger, including a €50 billion InvestEU instrument to de-risk clean tech investments, and bound to clear ex ante criteria, including social and environmental conditionality, explicit provisions to support a just transition and meaningful civil society involvement. The next MFF also includes the Connecting Europe Facility (CEF) for investments in trans-European energy and transport networks. The energy component of the CEF should be fully climate-aligned, with a 100% climate-fit and renewable energy focus. Priority should be given to cross-border electricity interconnectors and grid infrastructure, which are crucial for integrating high shares of renewable energy, balancing variable generation, and enhancing system resilience across Member States with differing generation mixes and weather patterns.[28]

[23] European Commission. Industrial Decarbonisation Bank
[24] Wigger (2024). The New EU Industrial Policy: Opening Up New Frontiers for Financial Capital. Politics and Governance
[25] European Commission (2025), A dynamic EU Budget for the priorities of the future - The Multiannual Financial Framework 2028-2034
[26] Abraham et al (2023). The legal and institutional feasibility of an EU Climate and Energy Security Fund, ECB
[27] https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2023/05/The-CO2-content-of-the-TLTRO-III-scheme-and-its-greening.pdf
[28] Abraham et al (2023). The legal and institutional feasibility of an EU Climate and Energy Security Fund, ECB

3. *Introducing a green refinancing rate at the European Central Bank (ECB)*

The ECB should introduce a discounted interest rate for green taxonomy-aligned activities to support investment in strategic green sectors, from renewable energy production to green building renovation. This instrument would allow banks that provide financing to eligible green activities to access ECB refinancing at preferential rates. By lowering the cost of funding that banks receive when providing green lending, this instrument would ensure that lower rates are passed-through to these green activities. This would reduce their financing costs, resulting in improved competitiveness and accelerated deployment.

4. *Scaling up Contract for Difference (CfD) and Purchase Power Agreements (PPAs) to increase supply*

These instruments can play a key role in accelerating renewable deployment providing long-term revenue certainty to electricity generators by stabilising revenues independently of short-term wholesale price fluctuations. Under both schemes, generators receive a fixed price, selling it either to a public offtaker in the case of CfDs or to a private one in the case of PPAs. By reducing exposure to price volatility, these instruments reduce price risk for both consumers and producers, increasing project bankability, lowering the cost of capital, and supporting investments in renewable energy generation. Public institutions play a key role in promoting these instruments by providing a clear regulatory structure. Currently, this direct price support is granted and regulated by the EU Electricity Regulation and the Renewable Energy Directive. In December 2025 the European Commission published a non-binding Guidance on the design of two-way CfD, providing suggestions to Member States on how to design such contracts to reap all benefits. Public institutions also play an important role by acting as counterparties in CfDs and offering guarantees that cover offtaker default risk for smaller PPA offtakers, securing their creditworthiness thereby expanding the pool of bankable projects.[30]

5. *Boosting grids and flexibility resources for an efficient matching of green energy supply and demand*

EU energy infrastructure remains insufficiently integrated across borders, preventing the emergence of a genuinely integrated EU renewable electricity market. This fragmentation keeps electricity prices high for households and industry and undermines the competitiveness of electricity-intensive sectors. Strengthening cross-border grid infrastructure is therefore essential to enable system integration and cost-efficient optimisation at EU level. In December 2025, the Commission published an EU Grids Package aimed at accelerating grid expansion.[31] Policymakers should focus particularly on advancing cross-border infrastructure, which could lower energy costs by improving the system's flexibility in responding to different weather patterns across the Union. At the same time, enhanced digitalisation, storage capacity and demand response programmes are essential for maintaining grid stability, as they help improve flexibility, manage intermittency and ensure adequate backup capacity.

[29] Sustainable ECB Coalition (2025), Stability through sustainability. Three Recommendations for the ECB's 2025 Monetary Policy Strategy Review
[30] Baringa (2022). Commercial Power Purchase Agreements
[31] European Commission (2025), EU Grids Package

6. *Reforming the tax system*

Currently, the fragmented EU tax system imposes higher taxes and levies for electricity than for fossil fuels.[32] This introduces precisely the opposite incentives to energy consumptions that the ones needed to boost electrification, especially given the relevant role that taxation plays in the final cost of electricity in the EU.[33] For example, the electricity-to-gas price ratio plays a key role in heat pump installation: the countries with higher heat pump sales are those where the price of electricity is lower relative to that of gas.[34] Therefore, the tax system needs to incentivise electrification, not undermine it, as it currently does. In 2021 the Commission tabled a proposal for a revision of the Energy Taxation Directive aiming to align the taxation of energy products with EU energy and climate policies.[35] In particular, the proposal would allow for a minimum taxation of electricity and enable EU countries to lower the tax rate down to zero for energy intensive industries and households. Since then, however, the text has been stalled by the Council of the EU and the European Parliament. It is paramount that the legislative process moves swiftly to align taxation with climate targets.

[32] OECD (2025). Economic Surveys: European Union and Euro Area 2025

[33] Harrison, T. (2025). Plugging heat in: smart policy can help electrify household heating in Europe. Ember

[34] Letz, C. et al. (2025). Heat pumps are gaining ground in Europe – electricity prices matter. KfW

[35] European Commission (2021), Council directive restructuring the Union framework for the taxation of energy products and electricity (recast)

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