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POLICY PAPER

The Challenge of grids in the Clean Industrial Deal and Affordable Energy Action Plan: an incomplete answer to a key problem

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European University Institute **Robert Schuman Centre for Advanced Studies** Florence School of Regulation

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Abstract

The Clean Industrial Deal and Affordable Energy Communications set out a series of over 30 actions to enable the EU to pursue the aims of decarbonisation and industrial competitiveness at the same time. One of the key challenges identified is reducing electricity costs and increasing security by increasing the amount of renewable electricity in the EU's electricity mix, and increasing electrification in industry, buildings and transport. However, one key bottleneck to achieving this is grids – in countries with already high RES shares, grids are congested and curtailment costs are skyrocketing. The Commission puts forward a number of suggestions on how to solve this. This paper asks – is this enough, and what more needs to be done?

Keywords

Clean Industrial Deal – Affordable Energy Act – Electricity Grids – Clean Industrial Deal State aid Framework

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Introduction and summary

In order to achieve any credible EU GHG commitment for 2040, whether it be 90%, 80% or even 75%, the EU's electricity system will need to be quasi completely decarbonised within 15 years, as will a very large part of its ETS industry.

In Member States that have already achieved high levels of renewable electricity ('RES'), including Germany, the Netherlands and Spain, the lack of investment in grids, their sub-optimal operation, and the high levels of taxation levied on users, is causing a 'vicious circle' that is threatening to derail any further rapid growth in RES capacity, undermine the viability of RES power purchase agreements ('PPAs'), and cause a significant increase in electricity costs for citizens and industry, in grid charges, curtailment payments, and the cost of CfDs for new RES investments.

In these countries, in times of high RES production, to a large extent because of grid constraints, power cannot reach customers. Consequently, electricity prices in bidding zones become very low or negative, and generation must be curtailed with payments then made by TSOs to RES generators. This means that it makes no sense to make addition RES investments in these areas, as a significant and growing percentage of the power that they could produce would be curtailed. In Germany, for example, curtailment payments reached €3.13 billion euros in 2023¹.

The effect of creating a break on further RES investment in these circumstances comes from both public and private drivers:

As wholesale electricity prices become very low or negative for increasing periods, industrial companies cannot take the risk of contracting for RES under PPAs based on the long-term cost of RES production due to the risk of 'missing out' from potential future lower cost supplies from depressed wholesale prices.

The electricity generation industry cannot take the risk of investing in new purely merchant RES capacity without financial guarantees from Member States in the form of CfDs, due to the risk of long periods of low wholesale prices.

Member States cannot tender for additional RES capacity under such a situation, as the cost of financing RES CfDs when wholesale prices are low or negative is exorbitant, and curtailment costs must be paid by grid users.

Thus, whilst superficially wholesale electricity prices may be low, the reality of the situation for citizens and industry, in terms of grid charges to pay curtailment fees, taxes to finance RES PPAs/ CfDs, and stalled and more expensive RES generation (to factor in risk premiums), is very different.

Whilst these bottlenecks can be particularly observed in the EU countries that have already achieved high levels of intermittent renewable generation, they are increasingly being seen across the EU. Given that almost all Member States envisage high levels of RES in their electricity mix over the next decade, action across the EU is needed now to resolve these issues and prevent their continued growth.

^{1 &}lt;u>https://www.esforin.com/en/grid-curtailment-in-germany/#:~:text=However%2C%20grid%20congestion%20costed%20Germany.Why</u> %20curtail%20the%20power%3F.

In the Clean Industrial Deal and Affordable Energy Act, the Commission recognises the importance of this issue. It identifies a number of actions to achieve this objective. In addition to investing massively in the grid and flexibility capacity, as well as improving the operation of the electricity market, it underlines the need to accelerate the electrification of the EU's economy and increase electricity demand. The importance of this should not be underestimated on both climate and competitiveness grounds, as the EU is 'slipping behind' here: in the EU² roughly 22% of the final energy services are supplied by electricity of which 36% goes to industry; in China³ this goes up to 28% (and growing fast) and 59% to industry.

The extent to which these priorities will be successful will, however, depend on how, and how quickly, they are implemented in practice. Action to decongest the grids is urgent and cannot wait a decade – otherwise the goals of affordable energy and a decarbonised energy system will not emerge.

This 'vicious circle' and the measures needed to address this challenge, can be illustrated as follows:



The Clean Industrial Deal and Affordable Energy Act identity a package of actions centred around (i) improving grid planning, (ii) eliminating legal constraints and accelerating grid investment, especially at distribution level, (iii) incentivising, de-risking and facilitating massive investments in grids, (iv) rapidly increasing demand for electricity in line with the EU's decarbonisation commitments, especially in 'easy-to abate' energy intensive industry, (vi) upscaling cost-effective flexibility capacity and (vii) improving technical grid rules. In addition to these issues, the importance of the bidding zone review currently underway based on Article 14 of the Electricity Regulation should be underlined. This latter issue will be addressed in a separate FSR policy document.

² https://www.iea.org/regions/europe/electricity.

³ https://www.iea.org/countries/china/electricity.

The purpose of this article is to review the measures and proposals put forward to address these challenges and consider how these might be implemented in a manner that will make a real and rapid difference in addressing these problems, and what additional measures/changes will be required.

The following key areas are identified where particular focus, or additional action compared to that identified by the Commission in the Clean Industrial Deal/Affordable Energy Communications merits attention:

- Modifying the draft Clean Deal State aid Framework that has been published by the Commission⁴ on 11 March 2025, and scheduled for adoption by the end of June, which, as currently drafted, does not enable Member States to implement effective and efficient support mechanisms for industrial electrification under the Framework.
- Structuring the Industrial Decarbonisation Bank in a manner so that tenders can ensure an efficient and cost-effective support mechanism for the electrification of energy intensive industry is possible.
- A more urgent and ambitious approach regarding grid planning and investment, with a rapid reform of the TEN-E and Governance Regulation and a Commission Recommendation on Grid Planning and Investment already in 2025.
- A more ambitious approach to ensuring that Member States eliminate legal barriers to increased
- · investment in transmission and especially distribution grids, and
- Reviewing the appropriateness of the draft Clean Deal State aid Framework regarding Member State
- support to grids, which is currently drafted in a restrictive manner.
- A more ambitious approach to catalysing the reduction of taxes on electricity at Member State level.

1. Rapidly increasing electricity demand through industrial electrification

A rapid increase in electricity demand – in line with ethe EU's decarbonisation commitment – is key to removing the bottlenecks developing in the EU's grids. This is recognised in the Clean Industrial Deal; in addition to continued action to accelerate the roll-out of electrification in transport and buildings, there is considerable focus on the uptake of electricity in the EU's energy intensive industry.

The "easy-to-abate" part of the EU's ETS industry, notably the food and beverage, pulp and paper, wood, textiles, chemicals, transport, equipment, and machinery sectors, which require heat below 500°C, will need to be largely or completely decarbonised by 2040 if the EU is to meet its climate commitments. To achieve this, action needs to start today. The main decarbonisation challenge for these sectors relates to their heat production. The most cost-efficient and competitive way to reduce greenhouse gas emissions in these sectors is generally speaking via electrification, using a combination of heat pumps, e-boilers and thermal storage.

^{4 &}lt;u>https://competition-policy.ec.europa.eu/document/download/45b532ce-53fb-4907-975c-79edaa31a166_en?filename=2025_CISAF_draft_EC_communication.pdf.</u>

Studies demonstrate that more than 62%⁵ of the process heat demand in these sectors could be electrified using existing and mature technologies⁶. An ambitious programme to progressively electrify the production of heat in these sectors would provide an important contribution to the Clean Industrial Deal:

- It would rapidly increase demand for renewable electricity and PPAs, as well as contribute to energy storage capacities, thus enhancing grid flexibility. It could increase the electricity consumption of the EU's "easy-to-abate" sectors, adding demand for renewable electricity of up to 600 TWh/year.
- The rapid increase in demand would be focused on periods when electricity prices are low, reducing grid congestion and curtailment costs: the combination of a heat pump and thermal storage enables companies to maximise the efficient use of electricity from renewable sources, improving overall system efficiency.
- It would constitute an important growth driver for electrical equipment manufacturers in the EU, where the EU has a strong manufacturing presence, especially if combined with the announced revision of the public procurement rules in the Clean Industrial Deal, scheduled for Q4 2026.
- The Commission has signalled its intention to table a legislative proposal to extend the scope of CBAM in Q1 2026. The sectors presently on the Carbon Leakage List⁷ that are likely to be candidates for inclusion in this extended CBAM scope include the 'easy to abate' sectors mentioned above. Developing an ambitious electrification programme will enable them to prepare for the removal of free ETS allowances and provide them with a competitive edge over imports – it will be a ''competitive insurance programme' for the future.

Considering current ETS prices, some support for the companies in the industrial sectors seeking to undertake electrification efforts is required, given the unpredictable cost dynamics between electricity and natural gas. During periods of low gas prices, companies that have invested in electrification may experience competitive disadvantages compared to their competitors who have not implemented electrification measures.

A major initiative, combining action at EU and national level can therefore make a huge difference in decarbonising this industry in line with the Clean Industrial Deal and the EU's climate commitments. It can contribute to removing bottlenecks on EU electricity grids thus reducing network costs, secure the competitiveness of EU industry and even give it an advantage over imports and global competitors, and make a major contribution to achieving the EU's GHG reduction commitments.

In addition, the question of how to incentivise industry to use RES for its existing electricity use needs to be considered, which is absent from the Clean Industrial Deal/Affordable Energy Act and the Draft State aid Framework. One may argue that the ETS will push companies to change to RES contracts over time as ETS prices increase. However, due to the unforeseeable cost of balancing 'pay as produced' RES PPAs, currently make them a risky instrument, particularly given the 'fear of missing out' from persistent low wholesale prices during increasingly significant periods. This is certainly the case for electro-intensive industry such as aluminium, which does not have direct GHG emissions and thus only indirectly bears the ETS costs via electricity purchases. To-date the EU has not found the policy or mechanism to help these sectors to decarbonise their electricity use – switching to RES PPAs - but facing this in the Framework and the PPA/CfD Guidelines, in a way that does not distort the operation of the electricity market, would be an important step forwards.

⁵ The CO 2 reduction potential for the European industry via direct electrification of heat supply (power-to-heat), Silvia Madeddu et al; https://www.researchgate.net/publication/347483563_The_CO_2_reduction_potential_for_the_European_industry_via_direct_electrification_of_heat_supply_power-to-heat.

⁶ Fraunhofer ISI (2024): Direct electrification of industrial process heat. An assessment of technologies, potentials and future prospects for the EU. Study on behalf of Agora Industry, available here.

⁷ Sectors and subsectors deemed to be at risk for leakage for the period 2021 to 2030 were established in the Commission delegated decision EU 2019/708 of 15 February 2019, which is available <u>here</u>.

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The Industrial Decarbonisation Bank

The Commission has committed to a major first step here, by committing to "propose an Industrial Decarbonisation Bank aiming for EUR 100 billion in funding based on funds in the Innovation Fund, additional revenues resulting from parts of the ETS as well as the revision of InvestEU Q2 2026. To ensure that the Union invests in the innovation and technologies that will shape our economy and drive our transitions the Bank will be placed within the governance of the future Competitiveness Fund. Prior to the revision of the ETS Directive in 2026, the Commission will launch in 2025 a pilot with a EUR 1 billion auction 2025 on the decarbonisation of key industrial processes across various sectors supporting industrial decarbonisation and electrification, using a combination of existing resources under the Innovation Fund and auctions-as-a-service."

To ensure that the Industrial Decarbonisation Bank delivers results in terms of industrial electrification in a cost-effective and efficient manner, it is important that tenders will be designed in a manner that takes account of the particular challenges in supporting industrial electrification. This is not apparent from the above wording of the Clean Industrial Deal Communication.

At present, the cost of electricity for industrial heat production is not competitive with the cost of natural gas for numerous hours in the year, not least due to tax reasons. Many companies that could decarbonise using electrification receive free ETS allowances, which disincentivises them from undertaking electrification efforts.

A support mechanism is therefore required that takes a progressive approach to decarbonise these sectors, combined with a rethink on tax. This involves investing in e-boilers and appropriate storage today, producing heat based on electricity when electricity wholesale prices are low (helping to reduce grid congestion and curtailment) but using gas when electricity prices are higher. As ETS prices rise and the effects of the Affordable Energy Action Plan translate into lower electricity prices, and electricity therefore becomes comparatively more competitive for an increasing number of hours, the use of electrification will continually increase.

Companies that invest in industrial heat electrification are typically in highly competitive industries operating with low margins. If they invest in the electrical solution without a derisking instrument, they face the risk that a lower natural gas price may provide a competitive advantage to rivals. The cost of converting to electrification is not simply the capital cost of the investment but is also its operational costs driven by the relative price of electricity compared to natural gas. Even if an industrial company would win a tender for the Industrial Decarbonisation Bank based on the GHG cost of abatement, it may become uncompetitive if the gas price falls.

Consequently, either the industrial company would choose not to bid because of the risk, or it would need to include an important risk premium in its bid to cover the potential future fall in the price of gas. Such a "standard" approach would therefore be inefficient from a climate perspective (companies being disincentivised to bid under the Industrial Decarbonisation Bank or similar national schemes), and/or from a budgetary/subsidy design perspective (as a company would need to bid in a high premium to cover the risk of falls in the gas price).

Thus, to catalyse the decarbonisation of this industrial sector, a somewhat refined subsidy design is required, that will take account of varying electricity and gas prices. This could involve, for example, a specific tender mechanism within the context of the Industrial Decarbonisation Bank that would cover part of the capital cost of electrification (taking into account ETS costs), and a variable amount of operational cost based on changes to the relative electricity and gas prices. This would involve a mechanism that would avoid excessive or unpredictable costs for governments and disincentivise the use of electricity when this would not be economically sensible.

Examples of such subsidy schemes are already in place and are functioning effectively. For example, the Commission has approved a Dutch state aid scheme⁸, as well as a German mechanism⁹, in which the industrial company that wants to electrify receives part of the CAPEX cost, combined with an insurance against the volatility of their OPEX (gas and CO2 price) by way of a CCfD (i.e. Carbon Contract for Difference with adjustments for the gas price). The mechanisms are therefore based on the "levelized cost of heat"¹⁰ compared to the electrification cost. This means that OPEX payments only take place when gas prices are low. The OPEX element is therefore a guarantee or derisking mechanism rather than a subsidy for the industry. In addition, there are mechanisms built into the scheme so that production based on electricity takes place when it is rational to do so – during periods when electricity is cheap. They also provide mechanisms that limit the maximum exposure of Member States to OPEX payments.

The schemes therefore provide mechanisms (i) to ensure that electrification is used when efficient from an economic/climate perspective, and (ii) to limit the potential exposure of the Member State to the total aid that will be paid under the variable amount of the support¹¹. This will therefore need to be reflected in the detailed implementation of the Industrial Decarbonisation Bank, if necessary, with specific windows and tender design for industrial electrification.

The Clean Deal State aid Framework

The same issues arise under the draft Clean Industrial Deal State aid Framework published by the Commission, under which, it appears, such schemes would not be covered.

With respect to aid to industrial decarbonisation, the Commission's draft Framework states, at paragraph 73 "Investments aiming at the decarbonisation of industrial heat will prioritise (nonbiomassbased) renewable heat, flexible direct electrification and the reuse of wasteheat, in particular below 400°C. Nevertheless, in duly justified cases, the use of other technologies can also be accepted but natural gas must deliver energy savings of at least [30]% or greenhouse gas emission savings of at least [60]%."

Paragraph 76 identifies conditions/qualifications that must be met when designing aid schemes compatible with this framework: "Aid under this section will be granted on the basis of a scheme with an estimated budget. Member States must provide an estimate of the total direct greenhouse gas emissions to be saved, or of the total energy savings to be achieved through the scheme. Aid under this section can only be granted in the form of direct grants, repayable advances, loans, guarantees or tax advantages⁴⁷."

⁸ Case number SA.112112, Commission's decision not to raise objections of 25 July 2024 is available here.

⁹ Case number SA.104880, Commission's decision not to raise objections of 16 February 2024 is available here.

¹⁰ I.e., the bid-in price for decarbonised heat per EUR/MWh under an electrification model, compared to the cost of natural gas and ETS costs.

¹¹ For example, in the Dutch mechanism, the "safety valve" mechanism works as follows:

Technology-specific base amount – it acts as a price cap in EUR/tCO2 equivalent in the bidding process and is specific to each technology. It is calculated by considering the emissions linked to each technology. "The technology-specific base amount for electric boilers assumes an electricity price corresponding to the average electricity price in the 2,000 hours during which electricity prices would be the lowest in each year between 2020 and 2034 (0.036 EUR/kWhe), which is expected to correspond to the electricity price at times when the electricity would be low carbon".

²⁾ Second, the Netherlands will limit the support that can be granted to "flexible" technologies (such as e-boilers) based on electrification to a maximum number of hours per year corresponding to the hours in which renewable electricity sources are expected to be the marginal option (and therefore hours in which the electricity supply in the Netherlands is expected to be low carbon) over the subsidy lifetime.

³⁾ There is also a floor price, which limits the revenues that beneficiaries can receive and thereby provides a cap on the maximum possible expenditure under the scheme. This is because, if the correction amount ever falls below the floor price, beneficiaries will be paid the difference between the floor price and the price offered in the competitive process.

problem

Footnote 47 to this paragraph states as follows: "Other forms of aid, namely direct carbon abatement support such as aid in the form of (Carbon) Contracts for Difference and feed-in premia, as well as tradable certificates are excluded under this section. Aid in those forms or other forms of direct carbon abatement support can be assessed under the CEEAG."

However, it is uncertain to which extent that the CEEAG would cover such schemes. Indeed, the abovementioned Dutch scheme fell under the CEEAG but took a lot of time and effort to gain approval for a limited mechanism.

One of the key deliverables of the Clean Industrial Deal Strate aid framework is to 'fast-track' support schemes that fall under it. Even if Member States could seek approval under the CEEAG, in reality they will instead focus on other priorities that do fall under the Guidelines, due to cost, uncertainty and time considerations. If, therefore the Clean Deal Framework - supposed to be the 'fast-track' mechanism for financing cost-effective industrial decarbonisation - does not cover the main obstacle to unblock the electrification of industrial heat (OPEX risk due to the volatility of gas/ ETS and electricity prices), it is unlikely to serve its purpose and it will not fast-track anything nor lead to Member States prioritising the funding of the electrification of industrial heat.

Based on the Dutch and German examples above, if the reason for this restrictive approach by the Commission in the draft Framework is that it may lead to unlimited budget exposure by Member States, appropriate safeguards based on the Dutch and German already approved schemes can be specified in the Guidelines to ensure that any compensation is tender-based, efficient, cost-effective and limits the exposure of Member States for the variable (OPEX) part of the support mechanism.

Thus, the final version of the Framework needs to ensure that 'made to measure' support schemes covering CAPEX and OPEX CCfDs are covered in the forthcoming Clean Industrial Deal State Aid Framework (Q2 2025) and the announced Commission Guidance on CfD design (Q4 2025). Without this, national support to electrification of industry risks being severely reduced, if not effectively eliminated in favour of other areas actually covered under the Framework.

2. A massive upscaling in investment in transmission and distribution grids

In the Affordable Energy Action Plan, the Commission states that "EUR 584 billion is necessary for investments in the electricity grids this decade." On the benefits of this investment, the Commission notes that "Investing EUR 2 billion per year in cross-border networks provide EUR 5 bn in benefits for citizens yearly. Anticipatory investments, asset performance excellence and grid-friendly flexibility, could reduce investment needs related to distribution grids by EUR 12 bn annually, representing 18% of the total investment needs."

To achieve this, the Commission commits to tabling a European Grid Package in Q1 2026, "consisting of legislative proposals and nonlegislative measures to, among others, simplify the trans-European energy networks (TEN-E Regulation), ensure cross-border integrated planning and delivery of projects, especially on interconnectors, streamline permitting, enhance distribution grid planning, boost digitalisation and innovation as well as increase visibility of manufacturing supply needs. It will follow a top-down planning approach, integrating regional and EU interests and develop effective cost sharing mechanism (e.g. for cross-border projects), for an optimised energy system. The EIB will also introduce a 'grids manufacturing package' for the European supply chain, modelled on the Wind Package, to provide counter-guarantees to manufacturers of grid components, with an indicative amount of at least EUR 1.5 billion."

In approaching this Grids package, a major change to the status quo needs to be made, and the scale and urgency of the challenge recognised. The following elements are identified:

2.1 Planning: the current EU approach on grid planning and development is not delivering the level of transparency and investment, and above all follow up – implementing the identified grid investments - needed for the next stage of the EU's electricity transition. In certain Member States such as France, an integrated network planning model, involving transmission and distribution, and taking a realistic and forward-looking approach based on rapidly increasing electrification of the economy is in place, which is delivering anticipatory investments. This should be a model for all Member States, with full transparency of where investments are required, and the actions taken (or not taken) to deliver them. Whilst such issues raise important issues of subsidiarity especially when this concerns the distribution level, the failure to invest in grids is of high relevance to the ability to achieve agreed, legally binding EU climate commitments. This should be at the centre of reforms of the TEN-E and in particular the Governance Regulation, and already be the subject of Commission Guidance in 2025 in the form of a Recommendation to Member States.

2.2 Financing, State aid, and effect on prices. The Commission acknowledges that almost €600 billion will need to be invested in grids this decade, but it does not indicate how this will be financed. Unlike, for example, hydrogen and CO2 grids, new investment in electricity networks will generally not exhibit the same strongly 'anticipatory' nature regarding new investments – they will be used immediately and generate revenues for TSOs and DSOs. Exceptions to this generalisation, however, includes offshore and certain DSO investments, where grids will need to be built or upgraded to deal with future and increasing demand. However, given the need to upscale the use of electricity in the EU's energy economy over the next three decades, the grid investments will need to be 'future proofed' if not always or necessarily being anticipatory in nature. This can have consequences of increased tariffs in the short-to-medium term. A package of measures needs to be taken to taken to deal with this proactively, including:

- Increased EU level funding for interconnectors under the next TEN-E budget and in the context
 of the future Competitiveness Fund. Whilst EU level funding will not be a stand-alone solution to
 this challenge the investment will need to come from TSOs and DSOs with, where necessary,
 support at national level through a series of actions underlined below funding under the TENE's Connecting Europe Fund can be important for certain investments which are cross-border
 in nature. For example, the Biscay Bay link between Spain and France would never have
 happened without EU support. Thus, the TEN-E budget for the next EU Multiannual Financial
 Framework, plus any supporting actions through other EU programmes (Competitiveness
 Fund, cohesion funding...) will be vital to contribute to removing cross-border bottlenecks.
- Financing the network investments. Of course, the challenge is not just related to planning new investment needs but also committing the funds to realise them. This requires above all, actions by TSOs and DSOs, with the necessary support at Member State level. As in many Member States, some or all the grid TSO/DSO) is government/municipal owned, massive borrowing by such companies has consequences for the state. It is easier to say 'the Commission should do something' in this respect than to identify exactly what action it should take whilst respecting the subsidiarity principal. Nonetheless, through the European Grid Package to be put forward by Q1 2026, and a reform of the TEN-E and Governance Regulations, greater transparency and pressure can be put on Member States to take a positive and active role in delivering the necessary investment. Clearly, the key challenge is how to unlock massively increased finding by TSOs and DSOs, and the issues of State guarantees, and removing any unnecessary limits on investments by TSOs and DSOs as identified by the Commission, will be important. It is vital that Member States act quickly on this.

The Challenge of grids in the Clean Industrial Deal and Affordable Energy Action Plan: an incomplete answer to a key problem

- Reduced taxation on electricity. The Commission has highlighted the very high taxes placed on electricity, which are often even higher than those placed on natural gas: "Member States could make use of their public budget to lower network charges to cover the additional costs resulting from measures to accelerate decarbonisation and market integration, notably such as interconnectors, major network upgrades or offshore grid connection infrastructure, in compliance with State aid rules and competition law. For example, State budget can thereby enable faster depreciation for grid investors while avoiding price spikes for consumers; - put forward guidance on anticipatory investments for electricity grids while ensuring affordability for consumers to further support system operators, regulatory authorities and Member States."
- Member States therefore have the possibility of reducing or eliminating these taxes to reduce the cost of electricity, and in particular to offset the potential cost to consumers of the needed investment in grids. The Commission highlights two actions in the context of the Clean Industrial Deal/Affordable Energy Act: (i) the need to agree the proposed revision of the Energy Tax Directive, which will be important, but far from determinative, and (ii) Guidance regarding the use of public budgets to lower network charges in Q4 2025.
- Whilst acknowledging that the room for manoeuvre of the Commission here is again constrained by subsidiarity and the need for unanimity on tax regulation at EU level, this is an area where the Commission needs to be highly proactive, highlighting the benefits of reducing taxes to offset potential increases in grid fees due to the increased 'future proof' investment needs especially where tax on electricity is higher than tax on fossil fuels - and the benefits that this can give to accelerating electrification and reducing energy costs.
- The draft Framework for State Aid measures to support the Clean Industrial Deal covers, inter alia, aid to grids. However, the conditions envisaged for the grant of this aid are very restrictive, taking the "form of equity, loans (including subordinated loans) and/or guarantees provided to a dedicated fund or special purpose vehicle (SPV) that will hold the portfolio of eligible projects. The aid will aim to achieve risk and/or return incentives for private investors to invest in that fund or SPV, such as in the form of guarantees with a first-loss (counter) guarantee or equity investments with different share classes where investment returns are first allocated to private investors' share class and, above a defined return level, also to the Member State's share class. The duration of a loan or a guarantee on debt instruments must not exceed [ten] years in total and in the case of guarantees must in any event not exceed the maturity of the underlying debt instrument. The mobilisation of the guarantee is contractually linked to specific conditions which can go as far as the compulsory declaration of bankruptcy of the beneficiary undertaking, or any similar procedure. These conditions must be agreed between the parties when the guarantee is initially granted. In case of guarantees provided for a portfolio's equity and/or quasi-equity investments, eligible losses can only be covered by the guarantee at the moment when the fund or SPV is dissolved and all portfolio investments have been divested on market terms."

The text is clearly inspired by the German State aid scheme that has been implemented to enable the financing of the German core hydrogen grid. Under this mechanism, the TSO designs the core grid which is then validated by the NRA, and the government then agrees to guarantee the building and operation of that grid over its lifetime - the investment will receive an agreed return on investment ('ROI'). An SPV is created which is financed by a state bank (in this case the KfW), and this SPV pays to the TSOs the difference between the agreed ROI and the transmission fees received. The concept is that during the early years of operation, the SPV will support net losses by the TSO, but in later years the network will become profitable – above the agreed ROI – and the TSO will then repay 'excess profits' to the SPV, making the operation cost-neutral for the government. Thus, assuming that the envisaged long-term profitability is realised, the government does not pay; only in the event that revenues fall below expectations the government bears financing costs. On the other hand, if

revenues exceed expectations, the government makes a 'profit'. The following chart illustrates well how the German model' works¹²:



Financing Mechanism of the Germany Hydrogen Core Network

This is a welcome addition to State aid guidelines regarding grids. However, there are two areas where the current draft Framework merits attention:

- Where aid is granted otherwise than through a tender which is likely to always be the case for investments for transmission or distribution networks which generally speaking, operate as a legal monopoly the aid must be limited to a low level of total potential losses, and
- The permitted aid does not cover capital grants, which may be the most simple and sensible
 manner to support network development. This must be assessed under the Guidelines on
 State aid for climate, environmental protection and energy¹³, which increases complexity and
 uncertainty. This restrictive approach regarding grids merits reconsidering and providing a
 separate and complete regime regarding grids in the Clean Deal Framework, commensurate
 with the scale of the challenge faced.

3. Regulatory actions to improve the operation of the grid and electricity markets

The Clean Industrial Deal and Affordable Energy Action Plan point to a number of areas where improved functioning of the Internal Energy Market can contribute to improving efficiency of electricity markets and reducing electricity costs. Much can be done in this area, and these reforms need to be accelerated. However, achieving them is not without challenges. Increasing the availability of flexible balancing power, to store electricity when production is abundant and provide clean power when climatic conditions are unfavourable, is highlighted by the Commission as particular priority, where it proposes three key actions.

¹² Thanks to Christoph von dem Bussche from GASCADE Gastransport GmbH for his agreement to use his slide from his presentation during the FSR Executive Course to Master Hydrogen Legislation.

^{13 &}lt;u>https://competition-policy.ec.europa.eu/sectors/energy-environment/legislation_en</u>.

problem

First, in Q2 2025 it will put "forward a design of tariff methodologies for network charges to incentivise the use of flexibility and investments in electrification, while maintaining the incentive to invest in the grid and ensuring a level playing field. This will enable users of the grids to adjust their energy use or shift it towards times and places where the cheapest energy sources are available and when it is the most cost efficient for the overall system; - if necessary, put forward a legislative proposal to make it legally binding."

Second it will take a number of actions to promoting the uptake of PPAs. The Commission has already launched "with the European Investment Bank (EIB), a pilot programme for corporate Power Purchase Agreements (PPAs) for an indicative amount of EUR 500 million. Under this pilot, the EIB will counter-guarantee part of the PPAs undertaken by companies, preferably SMEs and midcaps as well as energy intensive industries, for the long-term purchase of electricity generation. In line with the approach in the Electricity Market Design, the Commission will engage with the EIB to promote PPAs in a technologically neutral way." In addition, it will, by Q4 2025, "provide guidance to Member States on the design of effective contracts for difference, including their combination with PPAs."

Third, accelerated planning provisions. It is no secret that getting planning for a new overhead line is a sysphian task. In the RED III, the EU has for years provided obligations on Member Sattes regarding accelerated/simplified plannig mechanisms for new RES capacity. The Commission intends to build on this exeperience and propose similar measures regarding grids, together with the Grids Package in Q1 2026.

Comments and recommendations. These measures will all be useful. They represent small evolutions rather than any revolution, but that is because the fundamental problem for grids and electricity markets is not the regulatory framework, which is generally speaking fit for purpose, but the fundamental lack of forward investment due to a combination of (i) inadequate coordinated and forward-looking planning and the commitment to build the identified missing infrastructure, (ii) cost and risk, (iii) fear of borrowing costs adding to countries indebtedness levels, (iv) the fear of increasing grid tariffs due to the need for anticipatory investments, and (v) the difficulty in approving overhead lines.

Thus, these regulatory measures are helpful, but one should be under no illusions that they will really shift the needle in either resolving these grid issues, or delivering more affordable, or cheaper, electricity any time soon.

Conclusion

The Clean Industrial Deal marks a change in direction by the Commission in a number of respects, notably being far more industry focused and more (if not completely) technology neutral – focusing on cost effective decarbonisation solutions rather than 'cherry picking' specific technological solutions.

Another innovation is providing a number of Key Performance Indicators – KPIs – to measure the EU's success in achieving the Clean Industrial Deal's goals. These include "*Increase economy-wide electrification rate from 21.3% today to 32% in 2030*", and "*Annually install 100 GW of renewable electricity capacity up to 2030*." It is clear that the actions contained in the Communications will not, on their own, achieve these KPIs. This is normal – the Communications set the framework for the measures to come, not the actions and legislation, and much is in the hands of the Member States. But the conclusion is clear, it will all about implementation.

In summary, therefore, we welcome the Clean Industrial Deal and Affordable Energy Communications, and have identified a number of identified several additional actions that merit the attention by the European Commission:

- Modifying the draft Clean Deal State aid Framework to enable Member States to implement effective and efficient support mechanisms for industrial electrification under the Framework.
- A more ambitious approach to ensuring that Member States eliminate legal barriers to increased investment in transmission and especially distribution grids and reviewing the draft Clean Deal State aid Framework regarding Member State support to grids, which is currently drafted in a restrictive manner.
- Structuring the Industrial Decarbonisation Bank so that tenders can ensure an efficient and cost-effective support mechanism for the electrification of energy intensive industry is possible.
- A more urgent and ambitious approach regarding grid planning and investment, with a rapid reform of the TEN-E and Governance Regulation and a Commission Recommendation on Grid Planning and Investment already in 2025, and
- A more ambitious approach to catalysing the reduction of taxes on electricity at Member State level.

The Challenge of grids in the Clean Industrial Deal and Affordable Energy Action Plan: an incomplete answer to a key problem

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