

Electricity grids: the backbone of the EU energy system

Priorities for the grid INI of the European Parliament driving the expansion and digitalisation of electricity grids

Eurelectric position paper

Eurelectric represents the interests of the electricity industry in Europe. Our work covers all major issues affecting our sector. Our members represent the electricity industry in over 30 European countries.

We cover the entire industry from electricity generation and markets to distribution networks and customer issues. We also have affiliates active on several other continents and business associates from a wide variety of sectors with a direct interest in the electricity industry.

We stand for

The vision of the European power sector is to enable and sustain:

- A vibrant competitive European economy, reliably powered by clean, carbon-neutral energy
- A smart, energy efficient and truly sustainable society for all citizens of Europe

We are committed to lead a cost-effective energy transition by:

investing in clean power generation and transition-enabling solutions, to reduce emissions and actively pursue efforts to become carbon-neutral well before mid-century, taking into account different starting points and commercial availability of key transition technologies;

transforming the energy system to make it more responsive, resilient and efficient. This includes increased use of renewable energy, digitalisation, demand side response and reinforcement of grids so they can function as platforms and enablers for customers, cities and communities;

accelerating the energy transition in other economic sectors by offering competitive electricity as a transformation tool for transport, heating and industry;

embedding sustainability in all parts of our value chain and take measures to support the transformation of existing assets towards a zero carbon society;

innovating to discover the cutting-edge business models and develop the breakthrough technologies that are indispensable to allow our industry to lead this transition.

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We ask policymakers to: ensure the supporting infrastructures' needs are considered in every new and revised energy-related legislation, and grid expansion and modernisation are implemented in a timely manner. To achieve this, competitive grid investment returns and anticipatory buildout of electricity infrastructure is needed. The distribution grid must be a part of the new EU Clean Industrial Deal and the early involvement of DSOs in the planning processes is paramount for the successful electrification of industry in Europe.

Distribution networks are a critical dimension of the energy transition. Roughly 70% of new renewable assets will be connected at distribution level by 2030 according to our [Connecting the Dots](#) study. If we are to achieve the Fit for 55 and REPowerEU targets, we need to strategically reinforce, upgrade, make more resilient, smarten and digitalise Europe's electricity infrastructure as quickly as possible.

Non-compliance with EU targets and underinvestment come with their own price tag. By 2050 this could result in **missing 190 million heat pumps, 120 million EVs and 1220 GW solar PV with missing 1800–2060 Mton CO₂eq** additional CO₂ emissions (meaning missing decarbonisation targets by **32%–37%**) based on our [Grids for Speed](#). The European Commission's 2040 Impact Assessment estimates €1.7 trillion in electricity infrastructure investment is needed between **2031 and 2050** which will be necessary to hedge against higher costs in the future. This should be addressed in a bold new political project – 'the power infrastructure deal' – that employs innovative regulatory principles to enable faster and more forward-looking anticipatory buildout of electricity infrastructure for a stable and secure power system of the future.

Therefore, we ask policymakers to:

- **Strategically upsize European distribution grids**, including through 'anticipatory investments'. Investing in a forward-looking manner will help manage increased renewable; generation and electricity demand in most geographies.
- **Ensure sufficient capital flows towards strengthening EU electricity networks**, where the demand is expected to almost triple by 2050, from roughly 20 to 60% by:
 - **Establishing new funding tools at EU- (and national) level for distribution system operators (DSOs)** – dedicated to DSO grid build out – **and improve access to different financing instruments and de-risking tools.**
 - **Ensure grid businesses remain attractive on capital markets**, by providing predictable regulatory frameworks and attractive financial returns for investments.
- **Bolster system resilience** in the face of extreme weather events and cybersecurity challenges.
- **Accelerate electrification** as a means to ensure the affordability of grid fees by spreading the development costs across more system users.
- **Streamline permitting for grid build-out.** The inception of such facilitation is in the revised Renewable Energy Directive, but stronger measures are needed to synchronise the generation and grid build-out with increased industrial and household demand.
- **Secure access to critical materials and reduce lengthy delivery times of network assets for the power system** through standardisation and reasonable regulation based on robust risk assessments and addressing the risk of bottlenecks on the procurement side.
- **Ensure a skilled workforce by launching new initiatives to streamline education certificates.** Distribution networks will require massive recruitment in the coming years.

We would also note that connecting a rapidly increasing number of renewables represents a significant increase in network connections. Today's non-discriminatory approach which assigns the connection on a first-come-first-served basis may not be suitable in the future. Therefore, **regulatory guidance is needed** on how to prioritise the connections, which supports the policy goals of access to competitive, secure, and affordable electricity for all grid users.

Ensure Competitive returns and tailored funding for DSOs

- Strategically upsize distribution grids to deliver RePower EU and Fit for 55 packages
- Ensure competitive returns for grids in line with international financial markets.
- Ensure investment recognition in tariffs in a timely fashion.
- Apply regulatory incentives for grid buildout, including anticipatory investments, overcome the CAPEX bias and incentivise the uptake of optimising technologies.
- Unlock targeted capital for DSO network buildout. Ensure EU funds for network renewal, upgrade, resiliency and security in addition to current smart grids programme.

Electrification is the key instrument of both the energy sovereignty and the decarbonisation of Europe. To deliver RePowerEU and Fit for 55 targets, strengthened and amplified, secure and resilient distribution and transmission electricity networks are needed. To boost network investments of the distribution (DSO) and transmission (TSO) system operators, competitive returns are needed for grid investments. Grid investments are financed by network tariffs, set or approved by national regulatory authorities (since network operators are monopolies).

To achieve this, the **regulatory return must be competitive on the international financial markets** to attract the adequate amount of capital where the network investments are competing with the investment in other industries.

Another main point is the need for **investments to be recognised in tariffs in a consistent and timely manner**. This is important, as the regulatory periods are usually 4–5 years long in Europe. Network operators are short on free cash flow (FCF) and cannot finance major investment booms for 4–5 years. Therefore, investments must be acknowledged within tariffs each year of the regulatory cycle (as an intra-regulatory cycle correction).

To promote Europe's industrial competitiveness, swift network connection of small to large industrial entities are needed. Therefore, we suggest promoting the **timely network connection of industrial and renewable hubs** (thus, **connection investments done before the arrival of the users** by applying regulatory incentives for timely connection grid buildout, including **anticipatory investments**) to support the competitiveness of Europe.

Since network investments are not only physical, but also digital, it is advisable to overcome the so called 'CAPEX bias' (meaning that capital investments are more incentivised by certain national regulation) and **incentivise the uptake of optimising digital technologies** increasing the efficiency of the existing network, as well as cybersecurity and other IT solutions.

Based on estimations that close to double the current investment is needed in the next 25 years for distribution grids around Europe, the network tariff alone (paid by end-users) may not be enough to cover the cost. We suggest allocating **dedicated EU funds for electricity distribution network investments** in the upcoming Multiannual Financial Framework (MFF) focusing on the following priorities to improve the competitiveness of European industry

and to keep the prices affordable for all grid users: **i) renewal of aged grid assets, ii) strengthening the existing grid, iii) amplifying the grid where needed, iv) increasing physical and cyber resiliency, and v) smartification and automation of electricity grids in a secure way.**

Streamlined permitting and public procurement processes, with long-term planning

- TEN-E regulation permitting process timeline cap works well for TSOs and shortens the permitting time of transmission PCI projects significantly. Therefore we suggest, to give guidance on European level to the national legislators that: i) the PCI status automatically translates into the national importance state; ii) national legislation sets a cap of **6 months** for each permit granting process needed for **DSO PCI project components** (e.g. environmental, zoning or building permits, etc).
- Establish DSO priority infrastructures. Ease DSO permitting (e.g., right-of-way) in existing and future DSO priority infrastructures, especially for grid capacity additions/upgrades, and security of supply or resiliency investments. As in the TEN-E regulation, priority infrastructures could be set up in line with the DNDPs with eased environmental impact assessments (connect TEN-E corridor example with RED III grid acceleration areas).
- We also suggest a set of guiding principles on permitting be developed and apply a 6-month cap of DSO permit granting processes. We recommend a 6-month cap for land use and conversion of agricultural fields to industrial use.
- Guide national regulators to incentivise utilities to allow anticipatory network investments in grid connection of industrial clusters to boost Europe's industrial competitiveness.
- Streamline and cap maximum time of public procurements to 6 months for DSO projects.
- Long-term network planning and better coordination with stakeholders should be incentivized, particularly by mandating that TSOs include DSO interests in their development plans.
- Secure access to critical materials and network assets and help to reduce delivery times. Securing robust supply chains of raw materials and key components of net-zero and digital technologies.

Streamlining permitting processes is vital for accelerating grid development. While Article 10 of the TEN-E Regulation (EU/2022/869) caps the permit-granting process at 3.5 years for transmission-level projects, this timeline is excessive for distribution grid projects, which are less complex. TSO projects usually comprise one or a few large investments (such as a cross-border connection). However, DSO projects have different characteristics: they comprise dozens of investments (e.g. several lines, substations, thousands of smart devices) with dozens of permits needed. Therefore, the existing TEN-E regulation does not shorten the series of a few months long DSO permit granting processes within a 5±2 years long DSO project. In certain Member States, the 'Project of Common Interest (PCI) status' does not mean an automatic status of 'national importance'. Therefore we suggest, to give guidance on European level to the national legislators that: i) where not applied already, the **PCI status should automatically translate into the national importance status**; ii) national legislation sets a **cap of 6 months for each permit granting process** needed for investment of **DSO PCI projects** or in **DSO priority infrastructures** (e.g. environmental-, zoning-, building permits, etc.). A reduced **cap of 6 months for DSO permit granting processes** would better incentivise national competent authorities to expedite approvals, therefore we suggest amending Article 10 (1) and (2) of the TEN-E Regulation (EU/2022/869) for DSOs and leave the existing time caps of 42 (=24+18) months for TSOs. To broaden the scope of projects eligible for this reduced timeline,

distribution priority infrastructures could be introduced based on Distribution Network Development Plans (DNDPs), complementing the DSO priority infrastructures outlined in Annex 1 of the TEN-E regulation. **Aligning these distribution priority infrastructures with the grid acceleration areas** described in Article 15(e) of the revised Renewable Energy Directive (EU/2023/2413) would further enhance efficiency, as such projects would be exempt from case-specific environmental impact assessments. Network Development Plans (NDPs) are essential for allocating distribution grid priority infrastructures effectively. The engagement of DSOs in pan-European reporting efforts, overseen by the EU DSO Entity, establishes a robust framework for strategically identifying and designating these priority infrastructures.

At the same time, the timely (pre-)connection of **industrial hubs** and **renewable generation hubs** identified in NDPs shall also be incentivised by national regulators through anticipatory investments.

In certain Member States, **public procurements** can take up to 2.5 years, which slows down implementation. Therefore, we suggest simplifying the process and **cap** the maximum length of public procurements at **6 months**. Due to inflation, we also recommend indexing the public procurement **thresholds by industrial inflation annually**.

The coordination of the EU DSO Entity on the network development plans also supports the development of **robust supply chains for critical raw materials** and key components of net-zero and digital technologies by offering **manufacturers** greater **clarity on the long-term demand forecasts of European DSOs' demand**. This way the manufacturers can also better plan their capacities and workforce. However, it is essential to ensure that the implementation of measures does not increase the cost of investments in the distribution grid. Instead, these initiatives should aim to enhance the competitiveness of European net-zero industries, fostering cost-effective and sustainable growth.

Increased threats call for increased resilience

- The national regulatory frameworks should recognise climate adaptation measures in order to lower costs in the long-term.
- The NECPs should introduce a dimension of grid resilience (both physical and cyber) and climate adaptation measures.
- Ensure interoperability and implementation of cyber legislation to enhance cooperation within the EU. On digital legislation, there is a need to ensure the cohesiveness of digital regulations.

The fundamental role which electricity grids play in society cannot be overstated. The World Economic Forum has predicted the three major global risks for 2025 to be *State-based armed conflict*, *Extreme weather events* and *Goeconomic confrontation*¹ – all of which affects security of grid infrastructure. There is a need to strengthen the physical resilience of distribution grids, as serves as critical infrastructure.

Resilience practices need to be integrated when reinforcing, replacing and expanding the grid. New components which are introduced to the system are usually expected to last for 30–50 years, meaning that the preparation for floods and storms in 2075 begins already today. Therefore, it is key that the **national regulatory authorities incentivise a proactive preparedness**

¹ <https://www.weforum.org/publications/global-risks-report-2025/>

and the potentially increased up-front costs associated with it. The costs for climate adaptation measures should be acknowledged as a measure to lower future unexpected costs in the long-term. In addition, the **National Energy and Climate Plans (NECPs) should introduce a dimension of grid resilience and climate adaptation measures** to further ensure that DSOs are actively and proactively preparing for a changing future with increased risks.

In addition to **physical security** and resilience, **cybersecurity** needs are also increasing. The threats towards energy utilities and towards the EU as a region have increased. States and state-funded hackers are now more often involved in attacks². Adding to this, power utilities are upping their digitalisation to manage a more decentralised and complex energy system. With increasing digitalisation, DSOs also increase their attack surface, which calls for increased cybersecurity measures. In the coming years, many legislative measures are being implemented, such as the NIS2 directive, the Network Code on Cybersecurity, and the Cyber Resilience Act.

It remains vital to **ensure interoperability and implementation of this legislation to enhance cooperation between Member States.** The **costs for implementing cyber measures should also be recognised** as part of the national regulatory frameworks in a timely fashion, not waiting for the next regulatory review period. We also recommend proposing regulatory improvements **only when regulatory action is the sole solution**, after validating there are no overlaps with other current regulation.

Ensure skilled workforce

- Promote the electricity industry and digital skills in secondary and higher education
- Establish EU-wide vocational certificates among Member States to ensure the acknowledgement of certificates of skilled workforce and promote the free movement of skilled workers among different markets.
- Support cooperation of higher/vocational education institutions and the industry to ensure that the knowledge is up-to-date and job specific. **Launch a European Grid Academy** within the framework of the EU's Net-Zero Academies.
- Incentivise re- and upskilling of the workforce of dying industries to the flourishing ones

It is crucial for the delivery of the energy transition to ensure sufficient skilled workforce. Currently direct and indirect jobs in electricity distribution represent around 0.4% of the EU workforce (approximately between 750,000 and 970,000 jobs), however, the workforce is heavily aged: 36% of workers in the sector are more than 50 years old³. The manufacturing industries are also facing bottlenecks in terms of workforce and skills, recent surveys show there are already shortages of electrical mechanics and fitters in 15 EU countries. Distribution network investments will create more than 2 million direct and indirect jobs across Europe through 2050.

One tool is to launch new initiatives to **streamline and establish EU-wide educational certificates** to ensure the acknowledgement of certificates of skilled workforce among Member States. This can ensure the freedom of movement of labour across the European market. Therefore, we suggest policymakers **promote the electricity and manufacturing industries** (in all relevant fields including technical, legal, economics, etc.) and **digital skills in secondary and higher education** in collaboration with educational institutions and the electricity industry. This latter part will contribute significantly to Europe's competitiveness, as in

² Eurelectric, Cyber snapshot, 2024

³ Eurelectric, Grids for Speed, 2024 based on Eurostat figures.

several cases there is a mismatch between education and labour market needs, which serves as a competitive disadvantage for Europe. This gap could be closed by inviting industrial players to participate in secondary- and higher education programme development. Therefore, we suggest **launching a European Grid Academy** within the framework of the EU's Net-Zero Academies to **build and develop the right skills** in the direct and indirect grid value chain to address the labour market shortages and transformation.

Eurelectric pursues in all its activities the application of the following sustainable development values:

Economic Development

- Growth, added-value, efficiency

Environmental Leadership

- Commitment, innovation, pro-activeness

Social Responsibility

- Transparency, ethics, accountability



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