

EERA Position on the EU Grids Package and the revision of the TEN-E Regulation

The [European Energy Research Alliance](#) brings together around **250 research organisations and universities across more than 30 countries**. Our activities are structured through 18 pan-European Joint Programmes that provide world-leading scientific expertise on three pillars: **system-level challenges, low-carbon technologies and materials**. Our vision is to put research and innovation at the heart of a sustainable and resilient European energy system, and our mission is to catalyse Europe's low-carbon energy research to shape science-based policies and advance world-class innovation. Here are a few reflections from EERA's perspective on the revision of the Trans-European Networks for Energy (TEN-E) regulation, part of the EU Grids Package.

1) Ensuring that permitting, innovation and skills investments jointly enable timely and efficient grid deployment

While transparency must remain a central concern, **accelerating permitting for cross-border energy infrastructure – in particular grids – is clearly essential**. Besides, permitting and planning processes should **explicitly account for energy security and resilience considerations**, ensuring that critical grid investments are not delayed in situations where timely deployment is essential for system stability and security of supply.

However, permitting will not be sufficient on its own, and needs to go hand in hand with **targeted investment in research and innovation to reduce deployment times and optimise the use of existing infrastructure** – for instance through **improved grid components, advanced monitoring and digital solutions to unlock capacity in existing grids and avoid unnecessary over-dimensioning of infrastructure**. This is also critical from a **climate and environmental perspective**, as it allows minimising land use, reducing environmental impacts and ensuring that infrastructure development is aligned with the EU's climate neutrality objectives.

In that regard, it is also **important to invest in the upskilling and reskilling of the workforce with future-ready skills**, particularly in cybersecurity and system operation under stress. **Strengthened RD&I efforts reinforce both innovation capacity and research-based education**, helping to reduce the skills gap in the electricity sector.

2) Advancing a system-level approach to infrastructure planning aligned with climate and energy security objectives

Second, there is a clear **need to move beyond a project-by-project logic towards a more strategic and system-level approach to infrastructure planning**. Recent events, such as the Iberian blackout, have shown how local disruptions can have system-wide impacts, highlighting the need for stronger alignment between local and European planning through:

- **Regulatory and policy system thinking**: fragmentation across regional, national and European levels needs to be addressed in infrastructure planning through more effective streamlining. Notably, EU and national climate targets, including NECPs, should be aligned.
- **System thinking in relation to energy carriers**: the increasingly interconnected nature of energy systems across carriers (AC and DC electricity, hydrogen and gas) needs to be fully reflected, as the current planning



framework remains overly bottom-up and focused on individual infrastructures, rather than on system integration.

Specifically, there is a need for **improving integration, standardisation and interoperability at the EU level**, starting from the design and planning phases, in a manner which recognises the growing exposure of grids to physical, cyber and hybrid threats. Additionally, **such a system-level approach must be supported by RD&I targeting grid components, digital monitoring, advanced modelling and grid-enhancing technologies** that enable smarter utilisation of existing assets and faster deployment.

Moreover, **grid stabilisation and resilience** should be seen as a **core dimension of the climate and environmental sustainability of infrastructure**, as **resilient and reliable** systems are a **prerequisite for integrating renewable energy and ensuring the stability of a decarbonised energy system**. In this context, it is important to **ensure sufficient grid capacity**, as the lack of an **adequate cross-border cost-sharing methodology** continues to hinder the development of European energy networks.

However, this is not only about physical and cybersecurity aspects of infrastructure, but also about the **robustness of supply chains, access to critical components and manufacturing capacity: vulnerabilities in supply chains, long lead times and dependence on scarce or imported materials directly affect security of supply and crisis preparedness**. Here, **DSOs have an important role to play** and should adopt long-term sustainable plans that reflect the requirements of the future grid, including resilience-by-design principles to develop the capacity to operate securely under adverse and uncertain conditions.

3) Strengthening flexibility as a key enabler of resilient and decarbonised energy systems

Flexibility should be seen as a **tool for efficiency and decarbonisation, supporting the integration of renewable energy and the achievement of EU climate objectives, but also as a key enabler of resilience**. It allows systems to absorb shocks, manage variability, and operate securely under stress.

As **electrification increases and the share of variable renewable energy grows**, this will become even more important, which suggests the **need to further support the development and deployment of flexibility solutions as part of cross-border infrastructure planning**.

4) Reinforcing multi-level governance to ensure effective implementation and societal acceptance

Effective **multi-level governance** will also be essential. **Cross-border infrastructure creates interdependencies across European, national, regional and local levels**. **Strong coordination, together with meaningful stakeholder engagement**, will therefore be key to translating planning into implementation, ensuring timely deployment, and securing societal acceptance. It is important to **address societal resistance and public opposition** to cross-border energy infrastructure projects via **social campaigns and specific tools to better involve citizens**. Demonstrating how RD&I can reduce environmental impacts, shorten construction times and improve security of supply will be essential for building societal acceptance of cross-border grid projects.

Concrete examples of **strengthening multi-level governance** might include:

- Having **TEN-E Regional Groups** supporting the selection and monitoring of PCIs and PMIs, structured public consultations on cross-border infrastructure projects,
- Improved coordination between **transmission system operators (TSOs) and distribution system operators (DSOs) in network planning**, including the consideration of flexibility and non-wire solutions,
- The **involvement of Energy Communities as territorial actors**, and the alignment between National Energy and Climate Plans (NECPs), regional energy plans, Sustainable Energy and Climate Action Plans (SECAPs), and network development plans, including Ten-Year Network Development Plans (TYNDPs).

Within this framework, a **TSO-DSO-Regions-Cities-Local Authorities-Energy Communities interface** could represent an **innovative component**, helping to connect cross-border infrastructure with territorial energy systems. **Regions and cities would thus become not only consultees, but implementation partners, while research organisations could act as knowledge brokers**, supporting scenario-building, impact assessment, comparative analysis and replicability.

A possible way to map such a system would be to structure it around **four interacting layers** and to create **structured feedback loops between European infrastructure priorities and territorial implementation**:

- **A European strategic and regulatory layer**, involving the EU Commission, Parliament ACER, and European network planning bodies;
- **A cross-border/regional cooperation layer**, including TEN-E Regional Groups, Member States, regulators and project promoters;
- **A national and system implementation layer**, involving ministries, national authorities, NRAs, TSOs and DSOs;
- **A territorial/community layer**, involving regions, cities, local authorities, citizens, energy communities and affected stakeholders.
- **A cross-cutting research and knowledge interface**, involving **research alliances** and organisations and scientific networks, supporting evidence-based scenario-building, impact assessment, the identification, measurement and monitoring of indicators, comparative learning, and replicability across governance levels, scalability of governance and implementation models.

5) Ensuring coherence with the broader EU policy and funding framework to support grid development

Several related pieces of legislation on energy and innovation can also be leveraged, and support the development of the EU's energy networks. Therefore, ensuring alignment appears essential. In this context, **grid planning must absolutely respect the "energy efficiency first" principle** as established in the Energy Efficiency Directive, currently under revision.

EERA also welcomes the Industrial Accelerator Act (IAA), and calls to establish a strong connection with the Grids Package and TEN-E regulation when appropriate, in order to ensure the integration of cross-border infrastructure. The IAA notably recognises net-zero technologies as enabling the needed expansion and digitalisation of electricity grids and the energy system as a whole, and introduces **"Industrial Acceleration Areas"** with streamlined permitting. Subject to Member States' analyses, these areas are set to inform grid planning, and contribute to anticipatory grid investments and faster energy connections.



Lastly, the necessity of investment in research and innovation to reduce deployment times and optimise the use of existing infrastructure, and develop advanced modelling technologies must be recognised, and **therefore fully integrated in Framework Programme 10, currently under negotiations, through appropriate calls and budget.**

In conclusion, **a resilient and secure European energy system will not be achieved through infrastructure alone, but through how we design, connect and optimise the system as a whole** – with low-carbon energy research and innovation at its core, and with climate neutrality and environmental sustainability as guiding principles.