

The upcoming Grids Package: a critical opportunity not to be missed for the deployment of a European hydrogen infrastructure

The cosignatories call for a dedicated Hydrogen Grid Strategy (encompassing the entire hydrogen infrastructures) to be embedded in the upcoming Grids Package. This will be instrumental in realising the full potential of hydrogen in Europe's clean energy future and competitiveness. It will support industrial decarbonisation, enhance energy system efficiency, drive competitiveness and provide the necessary infrastructure network to scale up low-carbon and renewable hydrogen production, use, and trade.

The access to a viable and functioning network for hydrogen and its derivatives¹ is not only essential for the development of a European low-carbon and renewable hydrogen economy — it is also a cornerstone of a more efficient, flexible, sustainable, autonomous, secure, resilient and competitive energy system. Dedicated hydrogen infrastructure will help integrate variable renewable energy sources (VRES),² facilitate sector coupling, provide reliable supply of low-carbon and renewable hydrogen to industry, certainty to existing and new hydrogen projects, optimise energy system assets, and enhance energy security across the continent.

To unlock this potential, the EU urgently needs to broaden its focus towards a more diverse system integration and technology-neutral perspective for infrastructure deployment, and develop, as part of the upcoming Grids Package, a Hydrogen Grid Strategy that takes a forward-looking, and a fully integrated approach to infrastructure planning and financing. A truly multi-modal energy system—combining electricity, natural gas,³ hydrogen, and CO₂ transport, distribution, and storage infrastructures—will complement the expansion and modernisation of the power grid, while increasing the overall efficiency of energy transport and distribution. This cost-effective system, composed of both import sources and domestic productions, will ensure energy security for end users and will enable the optimal deployment of renewable and low-carbon energy across the EU.⁴

Indeed, investments in hydrogen infrastructure are complementary to and would help optimize power grids by providing flexibility to the system. The Grids Action Plan⁵ estimates the need for electricity grid investments to reach 584 bn EUR by 2030, and a recent report from the European Commission estimates 1202 bn EUR at the 2040 horizon. In comparison, the investment needs for the repurposing of gas and development of hydrogen infrastructure in EU27 reach only 170 billion for distribution and transmission pipelines at the 2040 horizon (400 bn also including electrolyzers, storages, and terminals).⁶ The development of a pan-European hydrogen network in a multi-energy model over the 2030-2050 timeframe could save as much as 330 bn EUR compared with a more isolated approach.⁷

¹ According to Article 2, point (2) of Directive (EU) 2024/1788

² As defined by Article 2, point (57) and (58) of Regulation (EU) 2024/1789

³ Including biomethane as defined by Article 2, point (1) of Directive (EU) 2024/1788

⁴ According to the Affordable Energy Action Plan, leveraging grid-enhancing technologies and adopting a more flexible system design could reduce conventional grid expansion costs by up to 35%. Source: European Commission, “Action Plan for Affordable Energy: Unlocking the true value of our Energy Union to secure affordable, efficient and clean energy for all Europeans”, accessible [here](#).

⁵ European Commission, Call for evidence – European Grids Package, accessible [here](#).

⁶ European Commission, “Investment needs of European energy infrastructure to enable a decarbonised economy”, accessible [here](#).

⁷ European Commission, “Hydrogen generation in Europe”, accessible [here](#).

Electrification is expected to keep growing and satisfy about half of the final energy demand in 2050 (from 23% today). To accommodate the new demand and the massive installation of renewables, the electricity grid capacity must increase 47% by 2030 and 144% by 2040 in Europe.⁸ At the same time, by 2050, grids investment needs will more than double,⁹ and the need for flexibility is likely to double by 2030.¹⁰

Recommendation for an integrated Grid Strategy for hydrogen

In order to realise this integrated vision, **we call on the European Commission to develop a top-down integrated Grid Strategy for hydrogen in the forthcoming Grids Package**, with the following key elements:

- **Intersectoral planning is key for a coordinated and integrated energy system:** The strategy must emphasise the need to coordinate the development of hydrogen, natural gas, electricity, and CO₂ infrastructures while efficiently repurposing the relevant methane grid towards a coordinated multi-energy system, both at TSO and DSO-level. A pan-European hydrogen pipeline network developed in parallel to the electric grid efficiently bolsters security of supply, connecting production and demand centers. Hydrogen infrastructure, including storage, energy import terminals, and local and regional networks, bridges the gap between individual companies and the pan-European hydrogen network. This coordinated planning should be grounded in realistic scenarios for expected hydrogen consumption and production to ensure cost-effective and demand-driven infrastructure deployment, including comprehensive information on infrastructure needs to deliver hydrogen to end-users in hard-to-decarbonise sectors, considering their GHG emissions abatement potential - aligning with Art. 55(2)(d), Chapter VIII of the Gas Directive. Additionally, enabling the targeted adaptation and, where appropriate, repurposing the relevant methane grid to renewable and low-carbon hydrogen will help optimising the use of energy infrastructure assets and support a cost-effective energy transition.
- **Facilitating administrative processes:** Hydrogen infrastructure currently faces delays due to permitting processes that can last up to seven years—this must be reduced to ensure timely deployment. Simplification and harmonisation of permitting procedures across Europe is essential to remove such regulatory bottlenecks that slow down hydrogen infrastructure development. The strategy should propose mechanisms to accelerate the development and repurposing of transmission and distribution projects. The Strategy should encourage Member States to implement RED, and NZIA provisions to streamline permitting processes and clarify that these provisions should apply to both renewable and low-carbon hydrogen.
- **Enhanced financial and policy support:** Designated hydrogen infrastructure is particularly capital-intensive, is high risk and needs tailored financing and de-risking tools.¹¹ The strategy should propose strengthening existing instruments like the Connecting Europe Facility (CEF) and the Innovation Fund to better support hydrogen infrastructure. To support the comprehensive development of the hydrogen market, it is

⁸ CAN Europe, EEB, “Wired for Climate Neutrality: A Paris Agreement Compatible (PAC) roadmap for power grids”, accessible [here](#).

⁹ ACER Market Monitoring Report on electricity infrastructure for 2024

¹⁰ ENTSO-E, System Flexibility report 2024, accessible [here](#).

¹¹ European Commission, “Investment needs of European energy infrastructure to enable a decarbonised economy”, accessible [here](#).

crucial that European Union-level funding for infrastructure is spread across the various hydrogen corridors that are currently under development. It should also explore new risk-sharing mechanisms, including the blending of public and private capital (e.g. via the European Investment Bank, or other EU wide financing tools for Union-relevant critical energy infrastructure), and promote the use of derisking mechanisms such as intertemporal cost allocation to fairly distribute costs between early adopters and future users of the network. Finally, it should also recommend adapting the State Aid framework to reflect the importance of infrastructure. The new Clean Industrial State Aid Framework (CISAF) currently remains narrowly confined to project-specific investments for hydrogen infrastructure. To effectively and critically drive down hydrogen costs over the medium to long term, CISAF should consider broader support for hydrogen infrastructure—extending beyond project-specific funding.

The co-signatories stand ready to work with EU institutions and Member States to make this vision a reality.

