GIE Position Paper on the EU Grids Package

Gas Infrastructure Europe (GIE) represents more than 70 operators of natural gas and hydrogen transmission pipelines, storages and terminal infrastructures. Our members invest in infrastructure to transport and store natural gas, including biomethane and synthetic methane, hydrogen and CO_2. We provide clean, stable and competitive energy supply for EU industries, businesses and households, both in today's and tomorrow's energy system.

Importance of gas/power interactions (Sector-coupling)

In the context of a more volatile renewable energy generation and a growing need for system flexibility and renewable and low carbon base-loaded energy solutions, the role of investments in storable, easily transportable, and more stable renewable and low-carbon gases and their respective infrastructures (especially hydrogen and biomethane) should be better recognised within the European Union energy infrastructure Action Plan for Grids (today mostly focused on one vector –limiting opportunities for enhanced efficiency, synergies, cost savings, and resilience in diversity of the energy mix). This includes the European Resource Adequacy Assessment (ERAA). Energy infrastructure planning in general should follow a more coordinated approach, clearing congestion efficiently across vectors and infrastructures, via sector coupling. In this view, the EU Grids Package should not be overwhelmingly focused on or even limited to electricity infrastructure, but it has to include also hydrogen, CO_2 and natural gas/biomethane assets, as essential and complementary elements for an integrated, secure and affordable future energy system.

A truly multi-modal energy system—combining natural gas, including biomethane and synthetic methane, hydrogen, electricity, and CO_2 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 more 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. Sector coupling is at the basis of energy affordability and is particularly important for industry, commerce, and households in Europe.

Recommendation:

- Strengthen sector-coupling elements within the EU Grids Package to allow for increased energy system efficiency.

Funding, Financing and De-Risking Infrastructure

Financing Opportunities CEF-E budget

EU Funding should support investments in all kinds of future-proof infrastructure to ensure a secure, integrated and affordable energy system. Under the upcoming Multiannual Financial Framework negotiation, more budget should be allocated to energy infrastructure under the Connecting Europe Facility (CEF-E) in order to achieve this. Furthermore, it is essential that an adequate proportion of these resources be specifically allocated to hydrogen infrastructure projects.

To support the comprehensive development of a market for renewable and low-carbon gases and CO2, it is crucial that European Union-level funding for infrastructure is spread across the various Regions and hydrogen corridors currently under development. Funding 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). Finally, the State Aid framework should also be adapted to reflect the importance of infrastructure for renewable and low-carbon gases and CO2. The new Clean Industrial State Aid Framework (CISAF) remains narrowly confined to project-specific investments for renewable and low-carbon gases, CO2 and their infrastructures. To effectively and critically drive down costs for renewable and low-carbon gases over the medium to long term, CISAF should consider broader support for renewable and low-carbon gases infrastructure – extending beyond project-specific funding.

GIE welcomes the intention to speed up the development of industrial decarbonisation technologies. However, the recently adopted CISAF sets the maximum allowed aid intensity for developing hydrogen infrastructure at a level lower than that set out in the existing GBER regulation/CEEAG, which is insufficient to cover the entire funding gap. Furthermore, the maximum aid intensity for CCUS under CISAF is insufficient.

Anticipatory investments, which are becoming more important for the transformations linked to the energy transition, should also play a key role in supporting the hydrogen market ramp-up.

Recommendations:

- Under the upcoming Multiannual Financial Framework negotiation, more budget should be allocated to energy infrastructure with differentiated funding streams for electrons and molecules under the Connecting Europe Facility (CEF-E) to ensure a secure, integrated and affordable energy system.

Financing and De-risking Hydrogen Infrastructure Projects

In the early nascent hydrogen market, future-proof hydrogen pipelines will have few users in the early stages of market development. To avoid high transport fees for initial customers, EU Regulation 2024/1789 Art. 5 permits network operators to use intertemporal cost allocation (ITCA) to charge lower fees in the ramp-up phase in order to attract more users. However, this creates a financing gap between the costs incurred by the network operator and the revenues earned from this reduced tariff. Therefore, a solid financing model needs to be ensured to cover this initial financing gap. The hydrogen market is still in its infancy, and different scenarios exist for its development. Support is justified by the lack of maturity of the sector and by the positive externalities that sector coupling and hydrogen would bring to the system. Introducing adequate de-risking mechanisms, including access to EU-wide and/or State guarantees, in order to unlock private investments, can represent an essential enabler, especially for infrastructure development.

Investors in hydrogen infrastructure need support and incentives derived from clear energy policy guidance to minimise their investment risks and enable them to take final investment decisions. This is happening in other regions, notably in Asia, and the European Union risks losing its leadership in the hydrogen sector if it fails to act now. Therefore, the EU Grids Package should provide further infrastructure promotion, a more robust action plan for their grids, and clear policy support.

Several means of promotion could be considered as viable support:

As outlined above, the use of an ITCA model for cross-border investments enables customer-friendly network fees in the ramp-up phase. This model should include appropriate long-term guarantees by Member States or by from the European Union and support from a European public financial institution (such as the European Investment Bank) to ensure short-term liquidity (for example in the form of loans).

Another de-risking option would be guaranteed capacity bookings for infrastructure operators. This would ensure a minimum amount of capacity bookings over the lifetime of the asset. These bookings would be sufficient to enable a feasible long-term return on investment and provide the necessary certainty for investors. As with the ITCA model, such guaranteed bookings could be backed up by public guarantees. A prominent example of such capacity remuneration models is the Hydrogen Storage Business Model proposed in the UK[1]. However, this model could be applied across all forms of hydrogen infrastructure, ensuring long-term binding commitments based on identified cross-border needs that can be undertaken by either users or financial institutions or public bodies.

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[1] Hydrogen Storage Business Model: Market Engagement on the First Allocation Round

The current Cross-Border Cost Allocation (CBCA) mechanism, as outlined in the TEN-E Regulation Article 16, has been designed to resolve issues of compensation between different project partners in the already mature natural gas and electricity markets. In these markets, cross-border natural gas and electricity infrastructure projects represent incremental expansions, whereas the first cross-border hydrogen infrastructure projects will have a profound impact on the long-term development of the European hydrogen economy. The current CBCA mechanism is unable to effectively reflect this profound impact. As a result, the use of this mechanism alone to allocate costs for Europe's hydrogen corridors would likely create prohibitively high levels of investor risk and jeopardise necessary investments. To this end, the EU Grids Package should augment the TEN-E Regulation to include the possibility of utilising alternative de-risking models alongside the CBCA.

<u>Recommendations:</u>

- Review the current CBCA framework considering the unique challenges of an early H2 market to allow for needed flexibility in order for CBCA to contribute effectively to the development of cross-border H2 infrastructure.
- The Grids Package should introduce adequate de-risking mechanisms to unlock private investments.
- The deployment of ITCA and guaranteed capacity bookings for infrastructure operators must be strengthened to de-risk hydrogen infrastructure investments.
- In order to reflect the early stage of hydrogen infrastructure projects, the EU Grids Package should augment the TEN-E Regulation to include the possibility of utilising alternative de-risking models alongside the CBCA.

<u>Financing and De-risking CO2 infrastructure projects</u>

As with hydrogen infrastructure, the development of CO2 infrastructure is also in its nascent phase and will require dedicated financing and de-risking mechanisms to incentivise initial investments.

Financial support via the Connecting Europe Facility (CEF-E) has already proven effective in supporting infrastructure development, but its constrained budget may limit its impact. As with hydrogen, an adequate proportion of the CEF-E budget should be determined for CO2 infrastructure projects.

To ensure the long-term financial viability of investments made by CO2 network operators in agreed infrastructure, Member States could provide guarantees, similar to those proposed for hydrogen. Alternatively, governments could offer grants to support the early stages of grid development, tax incentives, or support through IPCEI funding.

However, one of the most critical drivers of investment in industrial decarbonisation is carbon pricing under the ETS. Currently, this mechanism has a limited effect on CCUS due to persistently low carbon prices and high volatility, which prevents emitters from making final investment decisions. Even if carbon pricing becomes sufficient to make CCUS economically viable, the ability of European industry to absorb and pass on the significant additional costs remains uncertain in a highly competitive global market. Therefore, support mechanisms such as contracts for difference, targeting both capital and operational expenditures, will be essential to initiate industrial-scale CCUS deployment.

Recommendations:

- As with hydrogen, a significant share of the CEF-E budget should be allocated to CO2 infrastructure projects.
- Member States guarantees, government grants, tax incentives, or support through IPCEI need to be fostered to support early CO2 infrastructure projects.

Financing biomethane infrastructure projects

Compared to hydrogen and CO2 infrastructure projects, the existing infrastructure for natural gas can also be used for the transport and storage of biomethane, without any adjustments or repurposing. It requires relatively modest new investments. Some €2.5 billion will be needed annually by 2040 for gas grid investments to support the integration of large volumes of biomethane. This comes with significant affordability and decarbonisation advantages, which should also be recognised in financing schemes proposed under the EU Grids Package.

Recommendation:

- Biomethane infrastructure projects should also be recognised in financing schemes proposed under the EU Grids Package.

TYNDP and PCI/PMI selection processes

The TEN-E Regulation forms the cornerstone for the planning of hydrogen, natural gas and electricity infrastructure at an EU, national and cross-border level. It determines the key processes for the development of long-term Union-wide energy system scenarios, the identification of infrastructure gaps and the modelling of potential infrastructure solutions. However, there is a clear need to revise certain elements of these processes to ensure that all is planned and developed in the most cost-efficient manner.

There is no doubt that sector coupling can lead to diverse, more resilient, and more cost-efficient infrastructure development. It is therefore imperative that EU-level infrastructure modelling includes a well-developed tool to coherently and transparently analyse whether proposed projects recommend the most economically and environmentally efficient solutions for the identified infrastructure gaps. The Interlinked Model (TEN-E Art. 11.10) is intended to achieve this purpose. However, in recent years, too few resources and too little focus has been dedicated to the development and implementation of this model. A holistic assessment of projects based on the needs of the integrated energy system across all the carriers is not yet possible. This provokes certain questions and concerns about the overall PCI and PMI process, which the upcoming revision should aim to address. Storage projects offer different and specific types of system values across the sectors compared to other asset classes. This must be better reflected in the assessment of projects. Going forwards the Interlinked Model should be a pre-requisite in the evaluation of every infrastructure project applying for PCI status. The model needs to include an adequate representation of physics and of market coupling processes to prevent perceived advantages being generated by omission of constraints and costs that will be present later in real-life development and operation. The timeline for TYNDP development, as outlined in the TEN-E Regulation, should be amended accordingly to ensure this.

The long-term scenario planning undertaken by gas, electricity and, in the future, hydrogen TSOs is a fundamental element of the TYNDP process. It is imperative that these scenarios be developed in a transparent manner to create confidence in the process. The following amendments should be undertaken to strengthen transparency:

- In future, all the datasets, any further modelling, all assumptions, and all the models used for natural gas, hydrogen and electricity should be published, so as to make the TYNDP scenarios replicable by any third party.
- Scenario modelling is based on both the latest EC data and the results of the National Energy and Climate Plans (NECPs). However, these data sets are not aligned, forcing TSOs to make data adjustments to ensure consistency. When there is a need to align for some countries, the responsibilities, the role of the EC and national authorities in the amendment of the NECP data should be stated more clearly in the TEN-E regulation.
- Once a project has been selected to the PCI/PMI list and no significant context changes occurred, its subsequent PCI/PMI renewal process should follow a “fast-track” scrutiny procedure. This simplification on one side guarantees that cross-border energy projects with EU relevance undergo a full scrutiny (to get the initial PCI/PMI status or in case major context changes happened), while on the other side it can result in considerable costs and effort savings both for

promoters and other involved subjects (EC, ACER, ENTSOs, Member States representatives etc).

Storage infrastructure, most often located in a single Member State, has a profound cross-border impact on energy systems. This is due to the large amounts of energy (whether as natural gas or hydrogen) that such facilities can store and the corresponding effect that these storages can have on security of supply, market integration and sector coupling. To this end, such storage facilities should be modelled in detail within the TYNDP modelling processes.

The role of storage facilities highlights a greater issue within the selection of PCI projects: That PCI candidates from all energy carriers are currently assessed based on their contribution to energy-only markets rather than their contribution to the enabling of a cost-optimal operation of integrated energy systems.

In future PCI/PMI cycles, the cost-benefit methodology must be revised to capture the entire set of benefits of hydrogen infra projects, recognizing the strategic and operational interlinkages between the electricity, natural gas and hydrogen systems.

Capturing these benefits requires adopting a cross-sectoral perspective, with an explicit representation of the electricity, gas, and hydrogen systems, to capture the following benefits:

- <u>Strategic benefits, related to investments</u>
    - By investing in hydrogen infrastructure, one can avoid investments in alternative more costly flexibility solutions. In the evaluation, this benefit is not captured by the methodology used in the first and second PCI/PMI processes.
    - Furthermore, as investing in hydrogen infrastructure has impacts on price signals, it can lead to projects becoming bankable (e.g., RES, uptake of hydrogen use), dynamic indicators could be integrated within the CBA methodology. In the evaluation, this benefit is not captured by the methodology used in the first and second PCI/PMI processes.
    - Finally, the interplay between gas and hydrogen needs to be considered to ensure that the repurposing of hydrogen assets does not endanger security of gas and electricity supply. In the evaluation, this benefit is not captured by the methodology used in the first and second PCI/PMI processes.
- <u>Operational benefits, related to the optimal management of the entire energy system</u>

- The operational benefits include the lowering of total operational costs to deliver energy services, the reduction of GHG emissions, the reduction of RES curtailment, etc.
- Crucially, the evaluation of the impacts of hydrogen infrastructure projects on security of energy supply needs to be strengthened in future editions of the CBA methodology. Such evaluations require the redefinition of the shocks to which the system needs to be resilient, which can be expected to evolve as hydrogen takes on different roles across the transition (first focusing on continuity of hydrogen delivery to industry; then considering its role in fueling electricity-generation technologies).
- The quantification of all operational benefits requires modelling able to fully capture the flexibility services provided by the hydrogen infrastructure (e.g., enabling the flexibility of electrolysers, delivering hydrogen to turbines, etc.)

Given the nascent nature of the hydrogen systems, it would be beneficial to undertake the CBA for several counterfactuals (e.g. different reference grids; several dozen climatic years; etc.)

Finally, it is also important to ensure a more coordinated and orderly transition in network planning between assets that need to be converted to hydrogen and those that need to be newly built to meet the emerging needs. This also involves maintaining existing capacities to maintain Security of Supply. Both developments should be conducted in parallel to ensure that these two types of investigation are carried out, as one cannot proceed without the other. Given the long lead times required to invest in these facilities, it is urgent to implement a dedicated hydrogen infrastructure roadmap to encourage future investments.

Recommendations:

- More focus needs to be dedicated to the development and implementation of the Interlinked Model, including an adequate representation of physics and of market coupling processes.
- Amendments to the TYNDP scenario process (by publishing all the datasets, aligning the datasets for some countries) and better reflect and recognise the cross-border impact of storages, for example by higher spatial granularity in the TYNDP modelling process.
- Establishing a fast-track procedure for PCI/PMI renewal process.

Offshore Hydrogen grids

Offshore hydrogen networks present an excellent opportunity to maximise the potential of offshore renewable energy generation. Already today a range of large-scale electrolyser projects are being developed in the North Sea, Baltic Sea, Atlantic Ocean and Mediterranean Sea. A clear regulatory basis for the combined development of offshore electricity and hydrogen networks is long overdue. The current TEN-E Regulation ((EU) 2022/869) does not adequately address offshore hydrogen infrastructure development and reduces it to a cursory high-level overview as part of the electricity network development plan conducted by ENTSO-E. This position is now outdated: The Hydrogen and Decarbonised Gas Market Package has since explicitly included offshore hydrogen pipelines within its regulatory scope. An amended TEN-E Regulation should include a functional offshore network plan for hydrogen, to be developed by hydrogen network operators via ENNOH. This network plan should be developed in close cooperation – and on an equal footing – with ENTSO-E's offshore electricity planning to ensure the most effective and cost-efficient integration of renewables. Likewise, the Priority Offshore Grid Corridors listed in Annex 1 of the current TEN-E Regulation should be complemented by equivalent but separate offshore hydrogen corridors.

GIE underscores the vital role of hydrogen and integrated infrastructure in the offshore energy system, aligning with the EU Strategy on Offshore Renewable Energy (2020) and the Ostend Declaration (2023). These frameworks highlight the need for updated regulations to support offshore hydrogen projects, which are essential for improving system efficiency, affordability, and sustainability. Offshore hydrogen production using renewable sources, combined with hydrogen pipelines, offers synergies and cost advantages over single-carrier systems. Repurposing existing offshore natural gas infrastructure further enhances efficiency and sustainability.

Looking beyond the TEN-E Regulation, there is a clear need to implement the most efficient, cost-effective solutions for offshore interconnectors through cross-border grid planning and comprehensive comparisons of energy carriers that also consider market coupling systems impacts on AC safety margins (standard hybrid coupling) and DC capacity (advanced hybrid coupling), since these are very significant (and often omitted from comparisons).

It is also necessary to establish an Offshore Bidding Zone Market Design with offshore self-balancing responsibilities and P2X as a remedial tool (among others), as this arrangement will improve efficiency compared to a Home Market Design.

Finally, we highlight the need to enforce the Clean Energy Package compliance offshore (no derogations), ensuring 70% line capacity is market-accessible, with transparent subsidies and P2X flexibility to liberate this line capacity via remedials, supporting system welfare and efficiency. Derogations from the rule imply fewer remedials offshore, and hidden costs in the form of less efficiency, less welfare, and more subsidies and regulated costs needed.

Recommendations:

- Ensure electricity and hydrogen are planned on equal footing through coordinated ENTSO-E and ENNOH efforts (with ENNOH in charge for the H2 part), requiring TEN-E Regulation amendments.
- Include offshore hydrogen in regional sea-basin coordination among Member States.
- Promote smart combinations of electricity and hydrogen infrastructure to reduce project costs and line congestion (bypass congestion through pipelines and storages).

GIE remains committed to advancing offshore hydrogen grids through integrated planning, pilot projects, and regulatory alignment to build a sustainable and resilient energy future.