

# GIE Narrative on the Hydrogen and Gas Market Decarbonisation Package

## Introduction

GIE shares the European Commission's (EC) objectives of improving the gas market framework and to decarbonise the gas system. The future integrated energy system fulfilling the European Green Deal's objectives will consist of renewable electricity and renewable and low-carbon gases, especially hydrogen, supported by an extensive infrastructure ensuring effective competition and security and diversity of supply.

Replacing natural gas by biomethane or synthetic methane is one of the solutions for the decarbonisation of gas markets as the existing midstream and downstream infrastructure can be used directly without changes. However the uptake of biomethane requires an effective pan-European certification framework in order for customers to fully decarbonise their consumption. The Package proposes certification rules for low-carbon gases, in addition to the rules already proposed for renewable gases in the revised RED II Directive,<sup>1</sup> but some further changes could make them even more effective.

Hydrogen is the key decarbonised energy vector for the future. The current gas infrastructure – long-distance and short-distance transportation, short-term and seasonal storage, import facilities – can be repurposed to transport, store or import hydrogen at a lower cost – and faster – than building a brand-new infrastructure. This is a tremendous opportunity for Europe to accelerate the uptake of hydrogen: as hydrogen markets develop from industrial clusters, natural gas infrastructure could be built or repurposed progressively to transport, store and import hydrogen, converging towards a pan-European hydrogen backbone. The Package proposes a comprehensive framework for hydrogen markets, access to hydrogen infrastructure, and the repurposing of natural gas assets, to ensure a fast deployment. Using its profound experience in natural gas, GIE proposes improvements to the proposed long-term hydrogen framework, taking into account the need to deliver hydrogen markets faster and cheaper, among others by fully using the synergies between natural gas and hydrogen with respect to its infrastructures and the necessary competences.

A strong long-term commitment to large-scale hydrogen infrastructure is needed. Hydrogen storage is crucial for the hydrogen market to ensure that supply and demand match at any time. Therefore, funding for hydrogen infrastructure is key to accelerate market development. In addition, there is need for support programs aimed to scale up and further develop the technology readiness level of hydrogen storage, hydrogen production technologies and hydrogen infrastructure (in line with recently published initiatives such as RE-STREAM<sup>2</sup>, European Hydrogen Backbone 3.0<sup>3</sup>, etc.).

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<sup>1</sup> European Commission, Proposal for a Directive [...] as regards the promotion of energy from renewable sources [...], COM(2021) 557 final, 14 July 2021.

<sup>2</sup> Re-Stream – Study on the reuse of oil and gas infrastructure for hydrogen and CCS in Europe, October 2021, [https://www.gie.eu/wp-content/uploads/filr/5448/Re-stream-key\\_figures-October\\_2021.pdf](https://www.gie.eu/wp-content/uploads/filr/5448/Re-stream-key_figures-October_2021.pdf)

<sup>3</sup> European Hydrogen Backbone, April 2022, [https://gasforclimate2050.eu/?smd\\_process\\_download=1&download\\_id=1038](https://gasforclimate2050.eu/?smd_process_download=1&download_id=1038)



Moreover, there is also a need for substantial investment support for the repurposing of existing natural gas underground storage facilities into hydrogen storage facilities to ensure the rapid implementation of these cost-intensive projects.

Furthermore, the distinction between transmission and distribution level and their established commercial relationships has worked well in the electricity and natural gas market. While acknowledging that the hydrogen market and natural gas market will not completely look identical, this distinction should also be considered for the hydrogen system, especially since a large share of SME industrial customers are connected to the distribution grid.

In this document, GIE proposes several measures to make the Hydrogen and Gas Market Decarbonisation Package more effective, using its long experience in developing natural gas markets. It is structured in 5 sections:

1. “Towards an integrated energy system” proposes improvements to the energy framework across sectors, including horizontal and vertical unbundling, in order to achieve a more efficient energy system in the long term;
2. “Improving the existing gas market framework” focuses on the existing framework for natural gas, especially on gas quality management;
3. “Fostering renewable and low-carbon gases and hydrogen in infrastructure and markets” analyses the critical issue of the certification of renewable and low-carbon gases and hydrogen and proposes solutions for a more rapid uptake of domestic production;
4. “Delivering hydrogen infrastructure and markets” deals with the key objective of deploying hydrogen as a decarbonised energy vector in the EU: market organisation, open-access infrastructure, tariff principles, evolution of the regulatory framework towards a pan-European hydrogen market;
5. “Improving security of gas supply and gas storage” shortly analyses the proposals at the light of the recent war on Ukraine that caused the EC’s proposal to amend the Security of gas Supply Regulation of 23 March 2022. More details are provided in GIE’s response to the REPowerEU communication.<sup>4</sup>

GIE remains committed to working together with all stakeholders to improve the Hydrogen and Gas Market Decarbonisation Package in order to better fulfil the European Union’s objectives.

In this document, “Dir.” refers to the “Proposal for a Directive [...] on common rules for the internal markets in renewable and natural gases and in hydrogen [recast]” (COM(2021) 803 final, 15.12.2021) and “Reg.” refers to the “Proposal for a Regulation on the internal markets for renewable and natural gases and for hydrogen (recast)” (COM(2021) 804 final, 15.12.2021).

## 1. Towards an integrated energy system

As stated in the “EU strategy on energy system integration” published by the EC in July 2020, **sector integration** will make it easier to optimise and modernise the EU’s energy system as a whole. The Package states that “the joint operation of hydrogen networks and gas or electricity grids can create synergies and should thus be allowed” (Dir. recital 68). Although the Package contains several measures that promote synergies, other provisions could make them more effective.

<sup>4</sup> [Making REpowerEU successful with gas infrastructure](#), GIE, May 2022.



GIE welcomes the proposal on **common methodology scenarios for the Ten-Year Network Development Plans (TYNDPs)** of gas, electricity and hydrogen, in line with the Green Deal objectives at European level, and in line with the National Climate Plans at Member State level. The wide consultation of stakeholders in the drafting process will also improve the consistency of the TYNDPs, leading to a more optimised energy system.

However, the Package should acknowledge that the existing ENTSO-led TYNDP process has proven to be efficient and contributed to the development of the internal gas market and will be needed to ensure that investments in hydrogen are done within a long-term perspective in terms of future demand (sizing/dimensioning, location, timing). Such an exercise should be carried out in coordination with ENTSO-E to ensure maximum energy system benefits. Scenario planning for hydrogen transmission and storage infrastructure should therefore be integrated into the ENTSO TYNDP process, building on national and/or regional plans and based on the different maturity levels of hydrogen markets (Dir. art. 52). Hereby, Storage System Operators, Transmission System Operators (TSOs) and LNG system operators should become obligatory participants in this planning process. In addition, the obligation for LNG and storage system operators to make a market assessment for renewable and low-carbon gases is counter-productive as gas TSOs will anyway take storage and LNG terminals into account for their analysis of the relevant gas markets (Reg. art. 8).

Numerous studies and initiatives of gas infrastructure operators in the last few years have demonstrated that **natural gas infrastructure could be repurposed to hydrogen** at a lower cost than building brand-new infrastructure. Steps are being made by gas TSOs to develop hydrogen transport.<sup>5</sup> Indeed, in ENTSO's TYNDP 2022, promoters have already submitted 88 projects in the hydrogen infrastructure category and 73 further transmission projects for the safe, secure and efficient transport of up to 100% hydrogen and/or contributing to fuel switch. It would be efficient to recognize that the activities of gas TSOs and HNOs are very similar and that synergies should be used to the full extent possible. Therefore, the provision on **horizontal unbundling** preventing gas TSOs to become HNOs within one single legal company should be removed. The unbundling of accounts ensures sufficient transparency between the regulatory asset bases for natural gas and hydrogen (Dir. art. 63).

Furthermore, the concept of **combined operator** should allow one single entity to carry out several natural gas and hydrogen activities: gas transmission, gas distribution, LNG regasification, gas storage, hydrogen network activities, hydrogen terminal and hydrogen storage (Dir. art. 45).

The Package proposes two separate **market organisations for hydrogen and natural gas, reflecting their different maturity levels**. GIE is of the opinion that many elements of the natural gas framework serve as a good basis, after 20 years of improvements towards an efficient liberalised pan-European gas market. Moreover, the hydrogen network operator has similar roles and responsibilities as the gas transmission system operator. In the short term however, the rapid build-up of hydrogen markets should be the main driver for a simple and effective framework.

Both the EC and EU regulators have confirmed that the current unbundling models for energy infrastructure have proven to function well. Therefore, **all three vertical unbundling models** (ownership unbundling, independent system operator and independent transmission operator)

<sup>5</sup> Please find a list of innovative projects here: [GIE – The European gas infrastructure can help deliver the EU Hydrogen Strategy](#)

Please find also some concrete steps by EU Member States and/or our members below:

- [Dutch Hydrogen Backbone](#) and [HyWay27 study](#)
- [German H2 Start Net 2030](#)
- [HyDeal España](#)



should be extended to hydrogen network operators, guaranteeing a level-playing field across Member States. The restriction to ownership unbundling would prevent gas TSOs under the ITO model in numerous Member States from owning and operating a hydrogen network after 2030. This would have the immediate practical effect of disincentivising their investments into hydrogen and undermine the creation of a pan-European hydrogen backbone. GIE therefore proposes to remove the 2030 time-limit applicable to the ITO model for HNOs and to allow it after 2030 (Dir. art. 62).

**Confidentiality provisions** should be aligned with the vertical unbundling models (Dir. art. 50(1)). It would make sense that the single European transparency platform covers all non-network activities: LNG terminal, hydrogen terminal, natural gas storage and hydrogen storage (Reg. art. 31(4); Reg. art. 31(6)).

To enable and foster decarbonisation, **infrastructure operators, including gas TSOs, should be allowed to invest in decarbonisation technologies and innovative projects enabling sectoral integration**, such as the operation of power-to-gas facilities, hydrogen blending/deblending and gas quality management, independently from their unbundling model.

GIE proposes to introduce the concept of a **“Regulatory sandbox for innovative infrastructure projects”**, that is also in line with the REPowerEU communication brought forward by the European Commission to allow innovative business models along the whole infrastructure value chain for a certain time frame under regulatory supervision. The aim of the regulatory sandbox is to ensure legal and financial security for innovative projects during a limited period of time, in order to bring down the cost of innovation, reduce barriers to entry, and allow regulators to collect important insights before taking further regulatory actions.

GIE welcomes the option that Member States may allow **financial transfers between regulated services for gas and hydrogen**. Due to the significant investment needs into the hydrogen network and the (likely low) utilisation rate during the early stages of hydrogen market development, a transparent (albeit limited) mutualisation of costs between gas and hydrogen infrastructure will stabilise and align the unitary costs and tariffs for the benefit of users of both systems. The separation of regulatory asset bases (RABs) – “accounting unbundling” – for natural gas and hydrogen networks ensures sufficient transparency to trace any financial transfer between natural gas and hydrogen under the close scrutiny of regulatory authorities. An additional legal separation between HNOs and TSOs is therefore not proportionate and would only lead to slower developments, unnecessary costs and administrative burden (Reg. art. 4).

In addition, the rules regarding **disclosure of commercially-sensitive information** and operation of joint services could result in a situation where some synergies between TSOs and HNOs could be prevented. Limitations on information exchange and cooperation that could jeopardise effective infrastructure planning should be amended (Dir. art. 36(1); Dir. art. 50; Dir. art. 57).

Hydrogen markets should be generally designed on the basis of the current gas market, in order to maximise efficiency and synergies. However, the creation of a European Network of Network Operators for Hydrogen (“ENNOH”), separate from the ENTSO for gas (“ENTSOG”), would not foster efficiency and synergies, but increase administrative costs and burden instead. GIE calls for the **full integration of the hydrogen activities of ENNOH within ENTSOG**, such as network code design and monitoring, network planning and security of supply, in order to provide a sound framework for hydrogen market growth, especially while the hydrogen market remains immature. ENTSOG has developed the necessary expertise and experience – including effective cooperation with ENTSO-E – to fulfill the foreseen hydrogen activities as well as the TYNDP for Gas 2022 is already designed to



assess hydrogen infrastructure in line with the future TEN-E Regulation (Reg. art. 21-23 ; Reg. art. 27-29; Reg. art. 34; Reg. art. 38; Reg. art. 40-47; Reg. art. 52-54).

In order to ensure efficient long-term network planning and efficient operation of a hydrogen network, the responsibilities and the tasks must be clearly defined. There will be some Member States with more than one designated hydrogen network operator. For some of these countries, it might be more efficient to transfer certain tasks from a regional operator to a national or cross-border operator. Therefore, GIE proposes to give Member States the possibility to transfer one or more of the tasks to one of the other designated hydrogen network operators if they consider it relevant and appropriate to ensure efficient long-term cross-sectoral planning and operation (Dir. art. 46(4)).

## 2. Improving the existing gas market framework

GIE welcomes the EC's proposals to improve the existing gas market framework, in order to better achieve the objectives of the Green Deal. In particular, the removal of the Gas Regional Investment Plans, that partly duplicates ENTSOG's TYNDP, is a good and efficient initiative.

GIE agrees with the proposals to improve the cooperation between storage and LNG terminals operators towards a more **efficient use of all infrastructure** within one Member State or regionally; gas TSOs should cooperate as well (Dir. art. 35(9)).

As in the current regulated framework, gas TSOs should continue to have **access to the network of other gas TSOs**, in order to ensure that TSOs are able to perform their transmission services properly. This holds especially for cross-border transmission services but can also be important on a national level if multiple TSOs are present within a country (Dir. art.27(2)).

The possibility for Member States to **assign one or several TSO responsibilities to another TSO than the owner** of the transmission system does not require to be introduced with an EU provision (Dir. art. 35(7)).

When cross-border interconnection points between adjacent TSOs are merged into a **virtual interconnection point (VIP)**, TSOs that have chosen the dual model should not be obliged to transfer it to the VIP as in the current gas market design (Reg. art. 5(3)).

In line with the measure put forward by the EC in its communication "REPowerEU", GIE proposes a **discount of 100% of TSOs' regulated tariffs at entry points from and exit points to storage facilities as well as at all entry points from LNG terminals** to incentivize suppliers to store gas before the winter season and to incentivize suppliers to import LNG now as well as renewable and low-carbon gases in the future. Where appropriate, national regulatory authorities may set lower discount tariffs, taking into account the need for stable financial frameworks for existing investments (Reg. art. 16).

GIE welcomes the inclusion of provisions on **gas quality handling**, which allow gas TSOs to ensure the smooth functioning of gas and hydrogen networks, in line with applicable gas quality standards, provided the investments and related costs are recognised by the regulatory framework (Reg. art. 19; Reg. art. 20).

Regarding **hydrogen blends**, GIE supports the introduction of the obligation for TSOs to accept gas flows with a hydrogen content of **up to 5% by volume at Interconnection Points**. However, gas TSOs and storage system operators need the possibility to assess the stability of gas quality parameters for new connections to their facilities. Underground gas storages will continue to provide flexibility and play a role in facilitating hydrogen blending. The consequences of hydrogen admixtures, especially on



the integrity of the storage facility, are to be carefully assessed case by case before handling mixtures with more than 2% (volume) of hydrogen. The additional costs for the respective gas infrastructure operators shall be recognised subject to the approval by the relevant national regulatory authorities (Reg. art. 20).

GIE supports the process of **dispute settlement on gas quality at interconnection points**. Beyond the process already described in the Commission proposal, exemptions should be possible, with the approval of the concerned regulatory authorities at both sides of the interconnection point and the European Commission, in duly justified cases (e.g. Wobbe Index, O<sub>2</sub> content, H<sub>2</sub> content, etc.) (Reg. art. 19).

### 3. Fostering renewable and low-carbon gases and hydrogen in infrastructure and markets

GIE welcomes the inclusion of low-carbon gases and low-carbon hydrogen within the future gas and hydrogen market framework. However the methodology to calculate the 70% greenhouse gas saving threshold would not be determined before the end of 2024. This uncertainty would prevent gas TSOs and market players to deploy technologies that decarbonise gases or hydrogen, because they are not certain they would qualify as “low-carbon” gases or hydrogen. GIE asks to **clarify as soon as possible the methodology to calculate the 70% greenhouse gas saving threshold** in the Directive (Dir. art. 2(10-12)).

The **certification system** should be well-adapted to the functioning of energy markets. For the gas and hydrogen markets, it means that the information on the origin and sustainability characteristics of renewable and low-carbon gases and hydrogen should not be physically assigned to gas mixes flowing in the European gas infrastructure and should be documented in certificates traded separately from the gas commodities. This set-up, called “**book-and-claim**”, is already embedded in the Guarantees of Origin (GO) system – a system of electronic tradable certificates introduced in RED II for key renewable energy carriers, including renewable gases and electricity. The GO system has been in use for more than ten years, which means that its application to low-carbon gases would require minimal administrative or financial resources (Dir. art. 8; Dir. art. 85; Annex I). GOs should be transferable from one sector to another, e.g. from renewable electricity to renewable hydrogen or synthetic methane. Hereby, it is important that the durations of the GOs are taking into account the physical availability of the green energy.

In the context of the introduction of the Union Database, it is important to consider gas infrastructure as a single logistical facility, composed of transmission and distribution networks as well as underground gas storage facilities and LNG terminals.

While renewable and low-carbon gases should be incentivized, the proposal for an **ex-post tariff discount at cross-border interconnection points of the natural gas networks for renewable and low-carbon gases** risks fragmenting the gas market, with adverse impacts to its functioning. It would require operators to separate *ex-post* flows of renewable and low-carbon gases from natural gas, which is too complex to implement and in contradiction with the mandatory entry-exit access regime. The introduction of an **inter-TSO compensation (ITC) mechanism for renewable and low-carbon gases in the gas network**, once the revenue of a TSO is reduced by 10% as a result of applying the discount, would be unnecessarily complex and overly burdensome. Indeed, constant re-design and renegotiation of TSOs’ costs and revenues would be required to take account of:

- any change in the share of renewable and low-carbon gases in the total gas consumption;
- any new connection of renewable or low-carbon gas to a TSO’s gas network; and/or



- any change in flow pattern at interconnection points.

Uncertainties regarding the ITC mechanism and the resulting uncertainties regarding the return on new infrastructure investment is likely to seriously hamper and postpone investments. Furthermore, it is noted in the EC's Explanatory Memorandum that "few stakeholders support the removal of intra-EU cross-border tariffs". Cross-border tariffs for renewable and low-carbon gases should be based on the current gas market arrangements of the Tariff Network Code, that lead to cost-reflective tariffs (Reg. art. 16).

## 4. Delivering hydrogen infrastructure and markets

As hydrogen is becoming a key decarbonised energy carrier of the future EU energy system, the development of hydrogen infrastructure and markets is the cornerstone of the Package. GIE welcomes the measures proposed to incentivize transport, storage and import infrastructure along with market developments, in order to support the growing demand, from unconnected industrial clusters to a full pan-European hydrogen system and market, ensuring effective competition and security and diversity of supply.

Some **definitions** should be clarified to match the exact scope of the Package: "hydrogen storage facility" should refer to large facilities except facilities receiving only minor amounts for hydrogen blending; "hydrogen terminal" and "supply" should include, not only liquefied hydrogen and ammonia but also other hydrogen carriers (such as methanol or LOHC) for the transport and storage of hydrogen over long distances (Dir. art.2(6), art. 2(8), art. 2(23)).

In order to foster the **repurposing of natural gas storage into hydrogen storage facilities, and also LNG terminals into hydrogen import terminals**, as well as the development of new hydrogen storage facilities and hydrogen import terminals, existing authorisation procedures for storage facilities and hydrogen import terminals should also apply to the storage of hydrogen and import of hydrogen, as is proposed for the transport of hydrogen (Dir. art. 7(7-8)).

A **regulated third-party access regime for hydrogen storage** is justified to trigger the necessary investments and provide operators with a stable regulatory environment. At the same time, some deviations from regulated third-party access should be allowed for specific areas and market conditions (Dir. art. 33).

As the current configurations of hydrogen markets in the EU are very heterogeneous, GIE welcomes provisions that allow a **certain level of derogations from default rules** to reflect the various stages of market development. In any case, derogations should end when the relevant infrastructure is connected to a fully-developed, meshed hydrogen network (Dir. art. 48).

Hydrogen terminals can play different roles in different Member States, depending on national circumstances and import/export needs. Therefore Member States should be able to decide on the **third-party access regime for hydrogen terminals** which best fits their respective markets and ensure a swift deployment of the hydrogen market (Dir. art. 32(1)).

The introduction of a system of **financial compensation to ensure financing of cross-border hydrogen infrastructure in the absence of cross-border tariffs** – effectively an ITC mechanism for hydrogen – would seriously deter investors from taking interest in investments into cross-border hydrogen infrastructure and thus hinder a swift development of hydrogen networks in the EU. Investors seek



certainty about future revenues before taking a final investment decision, whereas the envisaged complicated ITC mechanism may rather result in the exact opposite.

In order to incentivize a rapid build-up of hydrogen infrastructure, the Package should provide legal certainty to market participants, in particular to system users and investors. A large extent of legal certainty is preserved if the current well-known and applicable legal regime of incremental capacity along the principles of the Capacity Allocation Mechanisms Network Code for gas would be applied also to hydrogen infrastructure. If cross-border tariffs for hydrogen would be based on similar arrangements as the Tariff Network Code for gas, that should also lead to cost-reflective tariffs. Where desired, voluntary cross-border hydrogen market mergers could take place, as in the natural gas market.

Furthermore, an ITC mechanism would create the following additional issues:

- The primary collection of revenues from domestic end-users would vary each time a hydrogen valley is connected to the hydrogen backbone. This effect on tariff levels would bring a lot of uncertainty for hydrogen end-users and disincentives its usage;
- It would be very difficult to negotiate and agree on the necessary financial transfers at European level when a valley is connected to the hydrogen backbone;
- Large differences in costs between Member States still exist due to external factors such as labour costs, density of population, topography (e.g. mountains). These differences could lead to inequalities in the revenue distribution process.

(Dir. art. 53(5-9); Reg. art. 6(7)).

## 5. Improving security of gas supply and gas storage

GIE appreciates the inclusion of **renewable and low-carbon gases** and the introduction of **new preventive measures** in the current Security of gas Supply (SoS) Regulation, already tested in some Member States, such as **obligations for storage filling** or **strategic stocks** and their possible usage in a security of supply crisis, based on regional risk assessments. A tightening of the supply standards is urgently needed, and there must be an obligation to physically store gas and/or LNG quantities. Procedures for the purchasing and usage of strategic stocks should nevertheless be clarified, including the recognition that the undertakings designated by the Member States (not necessarily the TSOs) are allowed to recover any costs borne and that sufficient storage capacities should be booked to fulfil these obligations (Reg. art. 67 and amendment to art. 2 of Regulation (EU) 2017/1938; new art. 7b; new art. 7d).

The EC's Communication REPowerEU of 8 March 2022<sup>6</sup> and the proposal to amend the Security of gas Supply Regulation of 23 March 2022<sup>7</sup> introduces further measures to the current gas SoS framework, in particular on diversification of gas supplies, the certification of storage system operators, storage filling obligations, strategic stocks and fast permitting for renewable gas and hydrogen projects. GIE has provided<sup>8</sup> separate comments on these new measures, which complement section 5 of this document.

<sup>6</sup> Communication from the Commission [...] REPowerEU: Joint European Action for more affordable, secure and sustainable energy, COM(2022) 108 final, 8 March 2022.

<sup>7</sup> European Commission, Proposal [...] amending Regulation (EU) 2017/1938 of the European Parliament and of the Council concerning measures to safeguard the security of gas supply and Regulation (EC) n°715/2009 [...] on conditions for access to natural gas transmission networks, COM(2022) 135 final, 23.03.2022.

<sup>8</sup> [Making REpowerEU successful with gas infrastructure](#), GIE, May 2022.

