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## **HYDROGEN AND DECARBONISED GAS PACKAGE: GAS NETWORKS CONSULTATION**

In view of Europe's energy transition as means to achieve climate neutrality, the discussions on the role of renewable and low carbon gases in an integrated energy mix are extremely important and timely. BusinessEurope welcomes the revision of the Gas Directive and Gas Regulation as they will need to align with upcoming legislative changes that will be introduced in accordance with the climate objectives. Notably the Smart sector integration strategy, the Hydrogen strategy, and the Fit-for-55 package.

For the successful implementation of the Green Deal the development of an internal hydrogen market is of vital importance. The existing regulatory framework for gas should be made fit for purpose and should help to integrate renewable and low-carbon gases into the system. A smart strategy for the European gas market design should both optimize the design currently in place and respond to the challenges of the commodity gas in the future (e. g. adaptation to a more volatile electricity system, sector coupling, integration of renewable and low-carbon gases in the infrastructure and market system).

The way forward to GHG emission reductions must be technology neutral, without preference for specific production methodologies. The presence of both renewable and low carbon gases should serve as a steppingstone, enabling emission reductions in the short and medium term, given that the roll-out of generation/production of renewable gases has a longer-term perspective. The decarbonisation of gases will heavily rely on continuous investments in renewable and low carbon sources, which will also need to be addressed as part of the energy system integration efforts. Their integration should be done in a way that does not lead to a fragmentation of the European gas market, or to the wider and integrated energy networks.

The core elements of the pending reform should therefore be on integrating renewable and low-carbon gases into the existing EU gas framework and providing a fit-for-purpose regulatory framework with harmonised rules for:

- market access, transmission, distribution, and storage of these gases.
- integrated infrastructure and capacity planning.
- repurposing/retrofitting of existing infrastructures where possible.
- unhindered cross-border trade of renewable and low-carbon gases and
- gas qualities, governance, and fair cost allocation.



## GAS MARKET

The deeper integration of all the different economic sectors to achieve an efficient use of the energy, will require the presence of low-carbon and renewable gaseous energy. It provides the flexibility to complement intermittent renewable energy, as well as large-scale seasonal storage to complement the electrification of our energy systems. The regulatory framework should foster the development of commercially non-mature technologies, as the decarbonisation of gases will be a necessary step to achieve the decarbonisation of numerous industrial sectors, as well as the energy and transport sectors.

The completion of the internal European gas market is crucial to strengthen the competitiveness of the European Union and to ensure security of supply. For this, existing regulatory, operational, and commercial barriers need to be removed. A proper implementation of the third Energy Package and its related Network Codes and Guidelines across all EU Member States, as well as Member States of the Energy Community is important.

The following elements should be considered:

- **Certification and verification systems for renewable and low-carbon gases:** Ensuring consistency of other energy/climate legislation with the upcoming classification system of renewable and low carbon gases will be key. A European-wide standardised classification for renewable and low-carbon gases that takes into consideration their net CO<sub>2</sub> emission, should be the basis for any future classification. It will be important that legislation remains flexible enough to ensure that new technologies are not excluded from the definitions, and that positive externalities are also accounted for.

Complementary to the classification, we support the introduction of an EU-wide tradeable Guarantees of Origin (GO) scheme, as it would allow buyers and consumers to know the emission levels linked to the gas they are purchasing. Energy disclosure information using the GOs present a market incentive to decarbonised products by increasing consumer awareness and willingness to demand these products. Beyond their functionality as a transparency label, GOs based on the harmonised classification should also be tradable across borders as a certificate. This is an essential building block for the ramp-up of a functioning internal hydrogen market. As a next step, considering the latest trends on imported renewable or low-carbon gas into Europe, GOs could therefore present a way to certify the quality standards from imported low carbon and renewable gases coming into the EU. Finally, GOs should be accountable to the different energy targets for end consumers.

- **Gas quality:** The roll-out of low-carbon and renewable gases will require sufficient regulatory predictability for the next decades, and therefore an evaluation of any modification should be considered in advance. Prior to any change of gas specifications at grid entry points, the consequences at any grid exit point shall be carefully assessed, also considering its effect on the security of supply. In case of changes to gas quality at an exit point, compared to the



current standard, the technical and financial consequences for the final industrial consumers connected to the network shall be evaluated. This assessment shall be performed in relation with stakeholders.

- **Outstanding issues on gas legislation:** Discussions on remaining issues in the gas market to achieve a full market integration should be considered in parallel to regulatory changes aiming at integrating these gases, or to achieve sector integration. The completion of the internal European gas market is crucial to strengthen the competitiveness of the European Union and to increase security of supply. For this, existing regulatory, operational, and commercial barriers need to be removed. In places where the entry-exit zones are relatively small and the transits crosses several borders, gas flows are being charged exit and entry fees each time, leading to a pancaking effect for users.
- **Access tariff design:** A lot has still to be done to achieve the Gas Target Model objectives. Spreads among hubs are still critical between North-West and southern Europe, mainly because of transportation tariffs along gas routes (pancaking effect). Different solutions could be effective to obtain a single gas market, the Commission should look into the different alternatives to tackle this issue.

Existing market rules and third energy package need to be implemented and consistently applied. Tariff harmonisation is showing positive effects in some areas of Europe, which have reached high price convergence, and such an integration should be extended to the whole EU gas system. Finally, for making the current market design more fit and responsive for “sector coupling”, a more flexible market design including more short-term capacities should be introduced.

## HYDROGEN

Hydrogen should be considered as one of the key drivers for achieving the Commission’s objective of climate neutrality by 2050. The role of hydrogen is not only relevant as a key piece contributing to sector integration, but also as a key element to build strong industrial value-chains in Europe. In the future, both renewable and low carbon hydrogen will be essential to allow for the scale to build such a market while minimizing the carbon footprint. The development of an EU renewable and low-carbon hydrogen production must be supported vis-à-vis the deployment of the whole renewable capacity.

- **Regulation of hydrogen in legislation:** the regulation of hydrogen should be based on the already existing regulatory framework for the internal gas market (e.g., the Gas Directive, Gas Infrastructure Regulation, SOS Regulation, Gas Regulation) to integrate renewable and low-carbon gases into the existing legal framework. A well-functioning hydrogen market should be aligned with the EU Hydrogen strategy, as well as the Climate law and several laws included in the “Fit-for-55” package, understanding the need for investment and planning security. It should also account for the need for infrastructure development of hydrogen networks and storage, and potential future imports at the EU level.



A prudent, dynamic regulatory framework for hydrogen should be the starting base. The gas legislation should of course, consider maintaining the EU principles and legislation we already have such as Third-Party Access, unbundling, cost-efficient non-discriminatory tariffs, transparency, etc. Nonetheless, overregulating from the onset may be killing innovation for a nascent market. As it is currently unclear when and in which form hydrogen will become part of the energy system, and in which sectors it will be used, we need a step-by-step approach, from clusters to an integrated EU market. This means we need a step-by-step development of the regulatory framework following the needs of the market as it develops.

The hydrogen grid must be developed out of the existing gas grid step by step, whilst maintaining required infrastructure for remaining methane customers. This would apply when a technology-neutral definition of hydrogen would be integrated in the existing EU regulatory framework. This approach would also imply that the hydrogen grid would be financed through the gas grid tariffs, as hydrogen consumers will prospectively become the new gas consumers. This approach has not only the advantage that it would prevent stranded assets, but also avoid the high costs of building pure hydrogen networks out of a strictly separate regulatory framework. This would especially be true for “first movers” in the hydrogen market as there would be only very few hydrogen consumers at the beginning to split the costs. For this reason, we see a risk of a high-cost barrier for market entry on the pure hydrogen regulation approach.

The regulatory framework should allow for the establishment and operation of both a pure hydrogen network and for a retrofitting of gas networks into hydrogen networks. When blending-in hydrogen in the grid the maximum level of quality for sensitive end-consumers must be respected.

- **Hydrogen quality:** Missing harmonised technical norms or standards of hydrogen’s quality represent a concern for manufacturing companies. It makes it difficult to predict hydrogen’s impact on the processed materials, even if hydrogen is only used for heating processes. The missing standards do not allow to predict whether gas burners could be compatible to partial hydrogen injections into the gas grid. What upgrades would be necessary for burners, the impact on operational safety and their lifetimes are issues to consider.
- **Alignment of hydrogen in other legislation:** The rules governing hydrogen production in REDII are highly technical, and sometimes unrealistic, seeking to reconcile the provision of support to produce hydrogen from facilities like wind and solar power. These challenges arise, among others, from the limitations on additionality and Power Purchase Agreements. Although ensuring additionality is undoubtedly crucial, a necessary degree of flexibility must foresee that these provisions do not stifle the development of hydrogen, and they ensure GHG emissions reduction.
- **Challenges for a hydrogen market (within EU, and with third countries):** Europe’s domestic hydrogen supplies from renewable and low-carbon hydrogen might not be sufficient to cover the hydrogen demand of the energy intensive



industries and the transport sector<sup>1</sup>. Therefore, Europe might need to import hydrogen the same way we import gas and oil. These strategic relationships, as mentioned in the European Hydrogen strategy, should be mastered at the EU level while leaving the operational business to companies.

- **Incentives for hydrogen:** Hydrogen provides for a viable storage option which is crucial to increasing flexibility of the internal energy market. Setting up a new market, developing new or retrofitted or repurposed gas/hydrogen infrastructure and production plants requires funding and support for R&D. It will be important to ensure a technology-neutral and market-based approach to ensure that the total cost is minimized as much as possible. Building a strategic value chain on hydrogen under IPCEI will be key to support the development of a hydrogen industry in the EU. Europe should support demonstration facilities to drive scalability. For this, IPCEI should look further than infrastructure and also strengthen the technology development and ramp-up.

#### INFRASTRUCTURE AND SECURITY OF SUPPLY

- **Infrastructure planning:** Even though there is already an existing exchange of information between power and gas TSOs on ENTSO level, increased cooperation between ENTSO-E and ENTSO-G to ensure accurate levels of security of supply and other types of planning, including long term scenarios underpinning the Ten-Year Network Development Plan (TYNDP), should be considered. Intensified communication at both EU and national level could help in this regard, considering hydrogen regional plans at EU level and ensure consistency between electrons and molecules through the ENSTOs. Hydrogen is the perfect example on why sector integration is necessary and needs to be considered into the existing regulation.

Usual network infrastructure planning relies on TSOs at national level, as well as ENTSOs at European level, which is normally done for electricity and gas separately. Continuing a reliable joint TYNDP for gas and electricity with realistic assumptions (e.g. Electricity peak demand with increasing electrification, grid projections in line with NECPs, flexibility sources in the electricity system with high levels of electrification, or potential CO<sub>2</sub> transportation) is required. The regulatory framework should foresee an integrated planning that goes beyond a joint common scenario and includes a joint modelling and analysis to take real advantages of sector integration between all energy carriers (electricity, gases, heat, etc).

An integrated, transparent and cost-reflective tariff system, for the use of all (new and existing) gas infrastructure is necessary to provide household and industrial customers with a robust basis for decision-making. Optimal cost-allocation, affordability and security of supply should be leading principles in infrastructural planning.

<sup>1</sup> <https://www.vci.de/vci/downloads-vci/publikation/2019-10-09-studie-roadmap-chemie-2050-treibhausgasneutralitaet-kurzfassung.pdf>



- **Hydrogen infrastructure:** Building a hydrogen infrastructure should be a bottom-up process, closely following the evolution of the demand side: first national and industrial clusters, and then cross-border interconnections should follow. The most cost-efficient way for connecting industrial clusters would be via the creation of a hydrogen grid, which could repurpose existing infrastructure (methane-oriented grid) whenever possible, whilst maintaining the required supply for methane consumers. Fostering initial regional demand, focusing on major industrial energy and hydrogen consumers, such as chemical processing, refining and steel, could help in this regard.

When further developing the hydrogen infrastructure, it should be recognised that part of the existing infrastructure has been financed and built by private parties as part of their operations. Possibilities for companies to operate and build own networks and connections within clusters must remain.

Studies<sup>2</sup> have identified that the most cost-effective approach regarding the location of hydrogen production might be close to the energy production centres. But when relevant (and especially in relation to low-carbon hydrogen), it is important to also consider a production of hydrogen close to consumption sites, to avoid expensive long-distance transport and storage. In the context of these transformative changes, a robust cost-benefit analysis considering the potential retrofitting of existing gas infrastructure, imports and local production must be applied to ensure a cost-effective transition. It will be worth to consider in this analysis, the effects that the energy transition could have on the pipeline's transmission tariffs due to the future supply-demand unbalances. Retrofitting and/or repurposing of the gas networks, where possible, for the transmission of low-carbon and renewable gases would help to mitigate this risk.

The surplus heat from electrolyzers can improve the rentability and energy efficiency of hydrogen production and these synergies should be considered in future regulation.

- **Interconnections:** To achieve better price convergence and a level playing field for all users, the Member States might need to review their interconnection targets in view of the future role for decarbonised energy carriers. If Europe's objectives are to have an interconnected, flexible system, we will need to increase our efforts to connect missing links and remove existing market barriers with a rigorous forward-looking cost-benefit analysis considering future projections. We will need to avoid a fragmented market, taking advantage of Europe's purchasing power as a whole.

Some sectors currently use hydrogen and methane as feedstock. Secure access to competitive and highly qualitative hydrogen and methane as feedstock is key for these sectors to remain competitive in a global context, which should not be jeopardized by a lack of development of the energy system. The regulatory framework should clarify the regulation of pipelines coming from third countries and how hydrogen import terminals will be regulated.

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<sup>2</sup> <https://www.netbeheernederland.nl/dossiers/toekomstscenarios-64> ;  
<https://www.gasunie.nl/expertise/systeemintegratie/infrastructure-outlook-2050>





- **Stranded assets:** Consideration should be paid to the role that existing and future gas infrastructure plays in the overall European security of supply and resilience. The transition should aim to integrate decarbonised gases into the existing gas grid (or where more appropriate in developing pure hydrogen networks) and aim to achieve this integration or development at the lowest possible costs. Any stranded assets for the future use of blended gas or pure hydrogen transport should be identified and avoided. The identification of possible stranded investments is also relevant for the supplier / logistics side, who had to make the capacity bookings in advance (long-term contracts and increase in tariffs, etc). Future regulatory framework shall encompass these circumstances.

Europe will be able to capitalise on the existing natural gas infrastructure to develop infrastructure for renewable and low-carbon gases with a minimum reconversion cost. They introduce an element of flexibility as well as back-up of renewable electricity. Studies already prove the possibility for large savings based on the use of gas-based end-user appliances<sup>3</sup>, we therefore support the repurposing of existing gas networks to ensure cost-efficiency and ensure security of supply as well as an effective competition of the market.

The long lifespans of the infrastructure are met with strict climate targets in the next decades, which puts them at risk of becoming stranded assets. On one hand, they will need to take account of the demand for natural gas in the transition phase, as it represents an important step towards decarbonisation of the energy system. On the other hand, these assets will need to be fit to transport renewable and low-carbon gases in the future.

- **Cybersecurity:** It is necessary to establish a comprehensive EU-level legislative framework for cybersecurity for the energy sector (covering the electricity, gas, hydrogen, and heating sectors).

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<sup>3</sup> <https://www.frontier-economics.com/media/3120/value-of-gas-infrastructure-report.pdf>