Gas Infrastructure Europe (GIE) is the association of the European gas infrastructure operators: gas transmission networks, storages, and LNG terminals. It represents 70 members from 26 European countries. GIE members are committed to help deliver EU's goal in being the first continent achieving climate neutrality by 2050.

GIE welcomes the European Commission consultation on 'Gas networks – revision of EU rules on market access'. GIE agrees that a framework is needed to accelerate the development of renewable and low carbon gases, both in gaseous and liquid form. It will bring huge benefits to the whole energy system: flexibility in time and space thanks to the already existing infrastructure, as well as viable solutions for hard to abate sectors.

In this context, GIE agrees with the European Commission on the important role of hydrogen in our future energy system. The EU hydrogen strategy and the Energy System Integration strategy, published in July 2020, underline the need to scale-up hydrogen rapidly. The strategies acknowledge the paramount role of hydrogen to store renewable electricity and the contribution of hydrogen to decarbonisation across all sectors.

GIE fully supports the development of markets for renewable and low-carbon gases. Nonetheless, it acknowledges also the fact that the natural gas market will continue to be relevant and existing in parallel in the upcoming years. Therefore, we want to raise the awareness that there is a need to significantly amend the current gas legislation to embrace the decarbonisation challenge ahead of us as well as to keep at the same time an integrated and well-functioning natural gas market. An appropriate framework for decarbonised and low carbon gases, especially hydrogen, should be developed.

GIE believes that it is important to present the general rules and guidelines recommended by GIE to be implemented within the upcoming revisions of energy infrastructure regulation. In this context, GIE appreciates the opportunity to contribute to this development by providing proposals to be included within any updates of the third energy package regulations.

Promoting energy system integration

GIE believes that the most optimal way to achieve the carbon-neutrality goal by 2050 is a holistic approach to the energy system including electricity and renewable and low-carbon gases, relying in the developing phase on a mostly well-developed infrastructure of pipelines, storage sites and LNG terminals.

As outlined in the EU Energy System Integration Strategy, molecules and electrons should complement each other In an integrated energy system, based on a level-playing-field approach to decarbonise the different sectors. Molecules are the only cost-effective option for decarbonisation in hard-to-abate sectors like industry and heavy-duty transport, but also contribute significantly to decarbonisation across other sectors. Therefore, it is of utmost importance to implement the principle of technology-neutrality across all sectors – only this will enable the usage of different technologies, based on what fits best in a specific sector and region. In some regions, such as Central and Eastern EU countries and Energy Community

members, natural gas will continue to play a crucial role for quick decarbonisation wins in the upcoming years. In these regions, an immediate coal- and oil-to-gas switch and gas-to-power will be key components in the pathway for decarbonising the power and heat generation in a cost-effective manner, while preparing at the same time the energy system for the transition to renewable and low-carbon gases within the next decades.

GIE would also like to point the European Commission´s attention to the fact that the market for renewable and low-carbon gases should be based on the developments and achievements of the natural gas market regulations. Moreover, the development of a market for new gases will be done in parallel with the continuously working natural gas market. In this context, we believe that the upcoming legislation should be screened in two ways: enhancing the current natural gas market functioning and preparing it at the same time for renewable and low-carbon gases.

Infrastructure companies are well positioned to be central actors in the energy transition process. In fulfilling the current EU legislation, it is crucial that infrastructure companies, including TSOs, will be allowed to invest in decarbonisation activities, supporting the development of innovative technology facilities (including power-to-gas-facilities), thereby enabling their scaling-up as well as the transport, storage and import of different types of gases (e.g. pure hydrogen, hydrogen blended with natural gas, biomethane, synthetic methane).

The revised legislation should allow for the implementation of national regulatory sandboxes establishing a level-playing field for the participation of TSOs in pilot projects. Regulatory sandboxes could serve as a way, by means of using a technology-neutral approach, to enable all infrastructure companies including TSOs to operate power-to-gas-facilities, if the market then requires.

Benefits of the existing gas infrastructure

The introduction of renewable and low-carbon gases will need a well-developed infrastructure. In particular for hydrogen, the gradual hydrogen market ramp-up will lead to an increasing need for hydrogen infrastructure to transport, store and import hydrogen or hydrogen carrier volumes at large scale, which requires a flexible and open regulatory framework for hydrogen infrastructure from the beginning. Additionally, there should be a positive framework to ensure the development of small-scale infrastructure for terminals for further deployment of carbon neutral biomethane and synthetic methane.

Besides newly-built infrastructure for hydrogen, the existing gas infrastructure is very well-suited to integrate hydrogen by retrofitting and repurposing pipelines, storage facilities and LNG terminals. It also enables hydrogen to be blended into natural gas flows, which provides quick decarbonisation wins in some countries. Retrofitting[1] as well as repurposing[2] of existing gas infrastructure is in some cases possible at lower costs (10-30 % of newly-built pipelines), and hence, socially acceptable (cost savings for society). Moreover, retrofitting and repurposing have other social acceptance benefits, e.g. avoiding the construction of new types

[1] Retrofitting: enables the blending of hydrogen into natural gas and biomethane and subsequently deblending
[2] Repurposing: switching from natural gas pipelines to pure hydrogen pipelines

of energy infrastructure[3], since it is already in place. A cost-effective transition could be secured while at the same time upholding security of supply.

Therefore, infrastructure companies, including TSOs, gas storage operators and LNG Terminal operators must be allowed to retrofit and repurpose their infrastructure, giving them the flexibility to own and operate infrastructure for all gases, dependent on national circumstances. This would facilitate the efficient planning, financing, operation and maintenance of the infrastructure and ensures that the technical expertise of the gas infrastructure companies regarding a reliable and secure operation of the infrastructure can be effectively used for the transportation and storage of renewable and low-carbon gases.

GIE highlights the importance of recognising the value and costs of existing system components by the National Regulatory Authorities. In this context, GIE believes that TSOs already have the tool in hand which enables them to provide integrated energy system planning including for hydrogen, based on emerging supply and demand routes. The existing ENTSOG-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 decarbonised and low-carbon gases (in particular hydrogen) are done within a long-term perspective in terms of future demand (sizing/dimensioning, location, and timing). Scenario planning for hydrogen infrastructure should therefore be integrated into the TYNDP-process, based on the different maturity levels of the natural gas and hydrogen markets. This ensures the most cost- and time-efficient planning, as gas infrastructure companies are best-positioned to determine which existing gas infrastructure has to be repurposed/retrofitted and where new, dedicated infrastructure has to be built.

GIE supports the European Commission's view on the importance of the existing gas infrastructure for the proper development of the decarbonised market. As mentioned above, in order to achieve this goal, all technologies should be considered (both low-carbon and renewable gases). A legislative framework for hydrogen is one of the components of the entire energy system and should be interoperable with other systems.

The development and regulation of hydrogen infrastructure

Especially during the transition phase, hydrogen demand should be developed and supported as fast as possible to realise emissions savings quickly and to create a competitive internal market in Europe. Since renewable hydrogen is currently not yet competitive and the conversion capacities will still be limited in the coming years, we recommend supporting all forms of hydrogen.

Technologies to produce (renewable) hydrogen are currently not yet cost-competitive compared to fossil gases. Incentive mechanisms that enable the production of large amounts of (renewable) hydrogen despite higher costs in the early phase could be an efficient means to develop technologies to scale within a short period of time and thereby to reduce the production costs in the medium and long run in the entire energy system.

[3] Avoidance of the Not-in-my-backyard phenomenon

Furthermore, supporting the development of a downstream market would help the infrastructure companies to better anticipate where the demand would be. Clusters need to emerge, creating local demand which will lead to the development of a dedicated European core hydrogen network (backbone) that will facilitate the connection between supply, storage and demand. It will also enable the import of hydrogen via pipelines and terminals that can receive different hydrogen carriers. Therefore, hydrogen-ready infrastructure will emerge in parallel with increasing supply and demand.

The future hydrogen regulatory framework, being inspired itself from the principles underpinning the Internal Energy Market for gas and electricity, while taking into account the particularities of the hydrogen market. This includes the application of regulatory principles such as Third-Party Access, as well as non-discriminatory and transparency rules on access to the gas infrastructure systems. A system of regulated tariffs should develop according to hydrogen market developments, i.e. when a more liquid market has developed.

There needs to be a flexible regulatory framework in the beginning and overregulation should be avoided, otherwise market ramp-up will stall or fail to materialise. Setting the appropriate level of regulation in order to ensure investor confidence and to support the market ramp-up is needed. As the gradual hydrogen market ramp-up will lead to an increasing need for hydrogen infrastructure to transport, store and import large-scale hydrogen volumes, this regulatory flexibility for hydrogen infrastructure is required, especially within the years up to 2030. This also allows to take hydrogen specificities of EU member states into consideration, which are also addressed in national hydrogen strategies and priorities. The long-term vision of hydrogen being a widely traded commodity is clear and once this status has been reached, a market analysis is necessary in order to avoid monopolistic behaviour as it was the case for the natural gas market before regulations were put in place through the Third Energy Package.

In order to support the establishment of an internal market for hydrogen, an appropriate investment framework for infrastructure companies is needed. Securing the investments is crucial for the infrastructure owners and operators. Especially for initial hydrogen projects, network and storage charges may either be prohibitively high for consumers, thus imposing a barrier from the consumption and production side, or the revenues realised by hydrogen system operators could be too low to recover the investment costs, thus imposing a barrier from the transport and storage side. Governmental support mechanisms via European or national funds can mitigate the resulting gap in financing, however they can hardly bridge it completely. Infrastructure investments are usually depreciated within the Regulatory Asset Base over a period of 15-55 years and entail high operational costs. Therefore, it is essential that appropriate financing and tariffication arrangements are established for infrastructure operators that ensure the guaranteed recovery of investment costs within a regulatory framework.

Offshore hydrogen pipelines connecting offshore electrolysers to the onshore hydrogen network should be considered as integral part of the European-wide hydrogen network and subject to the same regulatory and legislative framework.

Further means to accelerate the decarbonisation of our energy system

Building the new, decarbonised economy opens new possibilities, but poses challenges from the perspective of security of supply as well as security of systems functioning. Domestic conversion facilities for low-carbon and renewable gases create the opportunity for the EU to reinforce its energy independence based on internal resources, conversion and technologies, with positive outcomes also for the connected sectors, but we also see that hydrogen imports will become increasingly important, as the size of internal resources is regionally different and limited To reach the EU's decarbonisation target, it will be key to incentivise renewable and low-carbon gases conversion In order to stimulate investments in decarbonisation technologies, Carbon Contracts for Difference (CCfD) can be a supportive tool. We must also be aware that the increasing uptake of renewable and low-carbon gases into the existing infrastructure as well as the ongoing system integration will create challenges with regards to gas quality, providing systems stability and reliability and might require further specification of the rules.

The increase in local production and the appearing on the scene of local energy communities can help speed up decarbonisation on the one hand, but the consequences of possible serious disruptions caused by this development must not be ignored. Therefore, the development of the future infrastructure should be done in a smart manner in terms of sizing, location and timing, enabling its operators to act on the needs of the future systems. GIE is of the opinion that any EU technical rules to be created should take into consideration regional differences and should be flexible enough to enable efficient system operation. The same goal should be applied when designing incentive schemes with regards to the uptake of renewable and low-carbon gases into the networks. Decentralized production of renewable and low-carbon gases and the necessity of long-range gas transportation from within and from outside of the EU must be considered. Hence, a European-wide certification system that can be built on the principles of the current Guarantees of Origin scheme is necessary covering all molecules. It is essential that certificates purchased in one Member State can be redeemed in another Member State, thereby facilitating the cross-border trade of renewable and low-carbon gases and international competition.

Concerning sustainability certification, a book and claim system, instead of a system requiring tracing of direct physical flows between producers and consumers, should be retained. Such a principle allows the optimisation of the logistics, thus reducing unnecessary emissions, costs and complexity. This is particularly key for the development of liquefied gases, that need to be smoothly integrated in small scale LNG infrastructure. For certain applications (biofuels, ETS, bio-LNG) Guarantees of Origin should also be traded in mass balance. This is already possible via ERGAR system or other EU voluntary schemes (e.g. ISCC, RedCert) and is thus not an additional burden.

Such certification schemes require a common terminology via clear, accurate and science-based definitions of renewable and low-carbon gases, based on LCA assessment. The definition of clean hydrogen should be clarified likewise.