

ENTSOG's Input to the EU Strategy on Energy Sector Integration

The European Network of Transmission System Operators for Gas (ENTSOG) is a European Association established to enhance cooperation among gas Transmission System Operators (TSOs) at the European level. Starting in 2009, when ENTSOG was established by the Third Energy Package, it has contributed to the development and liberalisation of the EU Internal Energy Market.

Seen from the perspective of the gas market, ENTSOG finds that linking gas and electricity markets is a central element of energy sector integration (taking account of their externalities), whilst at the same time keeping the benefits of the Internal Energy Market achieved for both electricity and natural gas. In order to enable such integration, hydrogen and biomethane markets need to be kickstarted.

Gas TSOs are now focused on the decarbonisation of the gas industry and networks, and their role and contribution to the overall decarbonisation of the EU energy mix (including heating, transport and industry in general). The gas TSOs are committed to be both drivers and enablers of this change.

We hope that the European Commission will find this initial contribution useful while drafting the Strategy for Energy Sector Integration. ENTSOG would be pleased to discuss it in more detail.

1. What would be the main features of a truly integrated energy system to enable a climate neutral future? Where do you see benefits or synergies? Where do you see the biggest energy efficiency and cost-efficiency potential through system integration?

Energy Sector Integration should be focussed on establishing a mechanism whereby all sources and energy carriers are able to compete with one another on a level playing field, taking account of their externalities. All costs and charges should be allocated appropriately for an efficient energy system and to avoid market distortion.

ENTSOG believes that the core of a future EU energy system should build on a hybrid energy system – an interlinkage between the gas and electricity systems based on synergies between these two cross-border energy carriers.

One of the most important aims of the Energy Sector Integration initiative should be to achieve decarbonisation at the lowest possible cost. One of the main tools for this will be a system of Guarantees of Origin (GOs) fully recognized in the EU ETS.

This recognition will provide a climate value for all renewable, decarbonised and low-carbon energy carriers (e.g. gas, including hydrogen, and electricity).

2. What are the main barriers to energy system integration that would require to be addressed in your view?

There are a number of important barriers that need to be addressed to enable energy system integration, as covered in other answers to this consultation. However, the crucial issue for energy system integration, as generally happens with new developments, is that currently there is no business case to invest in renewable, decarbonised and low carbon gas production, or energy conversion from electricity to hydrogen, at scale, without some form of support. Such investments are needed to kick-start energy sector integration between gas and electricity.

Gas TSOs can play a positive, cost-effective and essential role kick-starting the necessary developments by being able to perform R&D, to invest in pilot projects and also by being part of the scaling-up and maturity phase, on a case by-case basis.

- **Pilot project phase:** A regulatory sandbox framework approach would promote innovation, system adaptation and optimisation for technologies at an early stage of development. This can play an important role in encouraging R&D and pilot projects by TSOs, among others.
- **Scaling-up phase:** Where there is currently limited commercial development of a technology, such as Power to Gas, TSOs should be allowed to invest in a way that complies with the applicable regulatory framework. A regulated business allows for a low-risk and cost-efficient development of the relevant economic activities and energy transition facilities, creating new services open to all market participants in a non-discriminatory way, being under NRAs oversight.
- **Mature phase:** Once the new sector is sufficiently developed/profitable and the risk/reward is well established, there should be the opportunity for regulation to be reduced to a minimum, allowing for a competitive market to develop via a smooth transition to fully commercial operations, which TSOs under certain conditions could also be part of.

3. More specifically:

- **What role should renewable gases play in the integrated energy system?**

Hydrogen and biomethane will play vitally important roles in the decarbonising and integrated energy system.

- in particular, the Power to Gas concept alleviates local/regional congestion in electricity infrastructure and can contribute towards the avoidance of the curtailment of otherwise non-dispatchable renewable electricity;

- it would contribute towards solving challenges in relation to balancing the power grid;
- it would enable greater penetration of renewable electricity and allows large quantities of energy to be stored for long periods of time by using the flexibility of the gas system;
- biomethane and hydrogen can play an important role in greening economic sectors that might be particularly difficult to decarbonise, such as industry, buildings, agriculture and transport;
- from a security of supply point of view, large quantities of biomethane can be produced within Europe reducing the import dependency of the European energy system;
- biomethane will significantly contribute to the circular economy (please see more details in our answer to the question on waste resources, below).

- **What measures should be taken to promote decarbonised gases?**

TSOs stand prepared and are already making preparations to progressively adapt the gas system in order to promote all renewable, decarbonised and low carbon gases such as biomethane, hydrogen produced from (renewable) electricity or from natural gas associated with Carbon Capture Utilisation or Storage (CCUS), or other means (i.e. methane pyrolysis).

Incentives and enablers could also be put in place to promote renewable, decarbonised and low carbon gases, such as:

- the possibility to apply for European investment funding and fast-track development, for example through the TEN-E regulation, would be particularly important. In this respect, ENTSOG is including in its new TYNDP Energy Transition Related projects;
- establish a clear classification (terminology) and recognition of renewable, decarbonised and low carbon gases;
- a suitable design of Guarantees of Origin for renewable, decarbonised and low carbon hydrogen (cross-energy carrier from electricity to gas and cross-border to get a pan European market – see next sections);
- ensuring that no disproportionate taxes and levies are applied to Power to Gas, especially avoiding double charges;
- there could be appropriate incentives applied to electricity exit tariffs and gas entry tariffs to promote sector coupling.

- **What role should hydrogen play and how its development and deployment could be supported by the EU?**

According to the ENTSO-E/ENTSOG TYNDP 2020 Scenario Report published in November 2019, hydrogen can be ca. 1000TWh of the gas composition in 2050 (COP21 scenarios). Thus, renewable and decarbonised hydrogen, whether from indigenous sources or imports, will play an important role in the decarbonised energy system with up to 14% share in Final Energy Demand in 2050¹.

We believe that the measures outlined in this consultation response to support the promotion of renewable, decarbonised and low carbon gases can be applied directly to support the development and deployment of hydrogen.

- **How could circular economy and the use of waste heat and other waste resources play a greater role in the integrated energy system? What concrete actions would you suggest to achieve this?**

Renewable gases such as biomethane will play a key role in the long-term towards the decarbonisation of the energy system, utilising waste resources and contributing to the circular economy. In particular:

- the use of biomethane contributes to the circular economy as millions of tonnes of agricultural and municipal waste in Europe are used as a feedstock to produce biomethane – reusing limited resources and further contributing to reducing emissions;
- the cost of producing biomethane does not take into account the significant positive externalities of the biomethane sector. Ecologically, using the digest, which is a biomethane production by-product, instead of chemical fertilisers, reduces pollution of ground water;
- fast growing energy crops, planted and harvested between two main crops and then used to produce biogas, contribute to carbon storage and do not compete with land for food usage;
- economically, biomethane production creates local jobs and provides an income supplement for farmers that are involved in the process;

¹ <https://www.entsos-tyndp2020-scenarios.eu/>

- in the countries where biomethane production is developing at the fastest rate, incentives and support schemes have played a vital role and the economic feasibility of biomethane depends to a large extent on these measures in the development stage.

- **How can energy markets contribute to a more integrated energy system?**

Decarbonisation of the gas sector will require the gas market design to evolve to ensure the deployment of all promising technologies in the EU in a coordinated manner, taking Member States' specifications into account.

- It will be essential to ensure that the decarbonisation process does not take place in a manner that undermines or even abandons all the benefits that the IEM has delivered.
- ENTSOG stresses the importance of keeping one European gas market. A single EU progressively renewable, decarbonised and low carbon gas market would promote competition/affordability, liquidity, transparency and security of supply across EU to keep the benefits for the end-users.
- The price/value of biomethane, hydrogen and natural gas will need to be based on the energy content of the gas in question, promoting the competition widely achieved in the European gas market.

- **How can cost-efficient use and development of energy infrastructure and digitalisation enable an integration of the energy system?**

European TSOs will accommodate the diversity of technological choices while ensuring that the achievements and overall benefits for the EU economy of the internal energy market are not diminished.

- Besides their expertise in gas transmission, TSOs are already experienced and best placed to provide technical services to face the upcoming challenges such as dealing with gas quality management (of different types of gases), conversion (e.g. from methane to hydrogen) and interoperability of different gases, with the view to preserve and facilitate cross border trade in a single market.
- This will require new services to be offered by gas TSOs to network users to ensure that even if gas quality differs between Member States (for example if Member States have different gas/hydrogen blends), it can still be freely traded, ensuring that the gas market continues to function.

4. Are there any best practices or concrete projects for an integrated energy system you would like to highlight?

Electricity and gas TSOs can be part of the process of setting the optimal geographical locations of Power to Gas units, by providing valuable and transparent information regarding constraints (notably the effects on different location choices on future congestion) and opportunities to the market.

Regarding possible competition between Power to Gas and other kinds of investment, ENTSOG, together with ENTSO-E, has followed ACER's recommendation to further investigate the interaction between gas and electricity projects and infrastructure. It will develop with ENTSO-E a joint assessment allowing for best synergies between the projects.

With regard to specific projects, ENTSOG and its Members (TSOs) have created a **platform** displaying the TSOs efforts to promote or contribute to innovative technologies, regulation, and business models.

These innovative solutions focus on biogas, power to gas, hydrogen, CNG and other innovative applications to support the achievement of the current EU goals of reducing GHG emissions.

The result is the creation of a public platform for communication and exchange of best practises applied at national level. The platform can be found via the following link: <https://www.entsog.eu/ipp>

5. What policy actions and legislative measures could the Commission take to foster an integration of the energy system?

To reach the objective of kick starting the hydrogen market while **keeping the benefits of the Internal Energy Market** achieved for natural gas, in addition to mentioned above, ENTSOG recommends:

- aim for EU gas legislation to be extended to hydrogen networks. Non-discriminatory Third-Party Access to hydrogen networks will be essential to guarantee a level playing field between all producers (incumbents and newcomers), all users (established intensive users or developing users);
- recognise (by regulators) the cost of refurbishment and upgrading of the natural gas networks necessary for a future proof system.

To harness the maximum effects and ensure a level-playing field for energy carriers the Strategy for Energy Sector Integration would benefit from enshrining the following in relation to a **pan-European Guarantee of Origin system**:

- the GO system should cover both renewable decarbonised and low-carbon gases. This will allow energy carriers to be rewarded depending on their carbon content and ensure a level playing field for all decarbonised and low-carbon energy carriers;
- the EU ETS should enable market participants to use the climate value of all renewable, decarbonised and low-carbon gases certified by GOs for compliance with their emission reduction obligations;
- a design of the GO system should facilitate creation of a pan-European market. To maximise this effect, GOs should be recognised across the EU and freely converted between different energy carriers (in case of their physical conversion).

The Commission is also committed to revising the **Energy Tax Directive** to ensure that it is adapted to the EU's future energy market. In this respect, we believe the Energy Sector Integration arrangements should ensure a level playing field between different energy sources and vectors, taking account of their externalities. As such, general taxes such as VAT and other taxes should not discriminate between the types of energy; and all other costs and charges, such as grid costs, or the costs of developing a particular energy/source or vector or supporting its development (such as feed-in tariffs or support based on tenders for renewable electricity) should be allocated appropriately for an efficient energy system and to avoid market distortion.