EU STRATEGY FOR ENERGY SYSTEM INTEGRATION

Our vision for an integrated energy system.

Eurogas is committed to achieving the objectives of the Paris Agreement and supports the European Commission's long-term vision of a carbon neutral economy by 2050. It is apparent that gaseous energy will have to play an important, long-term role in Europe's climate neutral economy. The direction of the upcoming EU energy policy framework will be decisive in providing the right framework conditions for the decarbonisation of the gas sector.

The EU Strategy for Energy System Integration should:

- Provide the right framework conditions for the most cost-effective path to decarbonisation. To do this policy choices must be based on a holistic assessment of system costs and consider all externalities, rather than promoting specific technology solutions for specific sectors as a means to an end.
- Provide investor confidence to scale renewable and decarbonised gas technologies, through a binding EU-level target for renewable and decarbonised gas, a harmonized framework for Guarantees of Origin and targeted support to help commercially immature technologies to reach maturity.
- Build on the benefits of the existing gas infrastructure to support a just transition in all sectors. Clear rules are needed to facilitate the integration of renewable and decarbonised gas into the gas infrastructure, particularly hydrogen. To increase market uptake and maintain the interoperability of the EU gas infrastructure, technical rules should enable and foster the blending of hydrogen and methane.
- Ensure tradability of renewable & decarbonised gas in a competitive market. A competitive and liquid gas market will remain critical for EU industry competitiveness and to deliver affordability for EU consumers, but no longer enough. Effective market design is required to facilitate the integration and tradability of renewable and decarbonised gases to achieve climate objectives alongside competitiveness and affordability.

Energy system integration is about cost-effective decarbonisation.

What energy system integration should be about. The EU Strategy for Energy System Integration should promote a coherent policy and support framework that enables the most cost-effective pathway to a climate neutral economy.

- A more "circular" energy system can also create positive externalities, which should be recognised. Biomethane for instance reduces methane emissions from agriculture, while generating additional income for farmers.
- Direct electrification of end-use sectors will play a crucial role in the transition, but it cannot on its own enable a decarbonised economy in a timely, just, and cost-effective manner or ensure the reliability and security of energy supply.
- Rather than promoting electrification as a means to an end the strategy should enable the most cost-effective solutions by creating a level playing field between technologies, allowing mature technologies to compete, while enabling the development of commercially immature technologies, which are not yet at a stage where they are cost effective, but would enable substantial cost-effective decarbonisation once scaled.

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Energy system integration can bring major benefits to the EU. Energy system integration will be crucial to facilitate full decarbonisation while ensuring security of supply and limiting the costs of the clean energy transition for the benefit of European citizens and businesses.

- Reduce primary energy demand is important, but energy efficiency measure should always be based on a cost-benefit analysis, to ensure they deliver the most cost-effective path to decarbonisation.
- Measures to strengthen the competitiveness of the European economy, should build on technologies where Europe is leading and which have a strong domestic-based value chain, such as electrolysers, anaerobic digestors, pyrolysis, carbon capture and storage, and LNG engines and turbines.
- The integration of variable renewables will require a more flexible energy system. Among others, electrolysers can provide this flexibility, while being capable in parallel to provide long-term seasonal storage of renewable electrons as hydrogen in the gas grid. Gas fuelled generation (renewable and decarbonised gas fuelled) CCGT, biogas fuelled CHP and hybrid heating solutions are other examples on how gas energy carriers can cost-effectively provide flexibility.
- The decarbonisation of difficult to decarbonise sectors, such as energy intensive industry and heavy transport, will require all forms of renewable and decarbonised gases, including carbon capture use and storage.
- Positive externalities, flexibility characteristics and the potential for urgently needed carbon negative emissions of gaseous energy carriers shall be duly considered and valorised by policy choices.
- System integration should enable the maximisation of use of the existing gas infrastructure, which can deliver a cost-effective transition throughout all sectors, including power, heat, mobility, and industry.
- It would therefore be a mistake to rely on renewable and decarbonised gas only as a measure of last resort 'in the right place, at the right time'.

Energy system integration will be a gradual process. It is important to rapidly provide the right framework conditions to enable a cost-effective transition that is in line with investment cycles as well as the replacement rates of appliances.

- It should be underlined that it is essential that Member States start with energy system integration as soon as possible to lower the long-term costs of the transition.
- EU Member States are pursuing different approaches in their national strategies to promote the uptake of hydrogen and biomethane and that a coordinated effort, for instance through NECPs will be beneficial.
- Renewable and decarbonised gases should be recognised as an option for decarbonisation throughout all sectors, without discrimination.

Eurogas recommendations for an action plan that delivers cost-effective decarbonisation

Energy-efficiency must go hand in hand with cost-effectiveness. The role of gas, natural, renewable and decarbonised, in heating is one such example of where the strategy must recognise the most cost-effective and least resistant path to deliver on the target of climate neutrality in 2050. Seeking a one-size fits all technology solution for heating is not likely to succeed given the technical limitations of electrifying heating and especially due to the enormous system costs that such a choice would imply. In addition to that, consideration should be given to the Commission's own assessment that 80% of buildings today will still stand in 2050.

Key actions should include:

- The 'Renovation Wave' should address to the necessary adaptation of existing appliances accompanied by a system wide long-term cost-benefit analysis of energy infrastructure requirements rather than pursuing direct electrification alone.
- Urgent identification of additional incentives to accelerate decarbonisation of the heating sector through the increasing and cost-effective deployment of renewable and decarbonised energy carriers.

Increasing the speed of the transition to a largely renewables-based power system. Variable renewables are increasingly moving towards zero marginal cost. This undermines the business case for building new capacity. Dispatchable load is needed to absorb "excess" electricity when there is high renewable output and low demand. Technologies able to deliver this, include electrolysers producing hydrogen. They can rapidly modulate their demand whilst using the gas network to cost-efficiently transport the energy over short and long distances where that energy is really needed. This approach also makes an important contribution to the problem of seasonal storage, social opposition to large electricity infrastructure projects, such as building high voltage frequency cables needed to move electrons and reduces the overall costs of the transition. Hydrogen can solve some of the most pressing challenges for renewable power. Hybrid heating solutions are another powerful instrument to cost-efficiently satisfy the growing flexibility needs in Europe. They allow the modulation of the heating demand according to system needs, allowing to switch form electricity to gas in presence of an enabling regulatory framework and price signals, empowering final customers and lowering overall system costs.

Key actions should include:

- An assessment of the role of renewable and decarbonised gases in enabling further integration of variable renewable power. Policies and economic evaluations should integrate the costs and benefits induced on the energy system and other sectors by each decarbonisation option.
- The role of electrolysers and hydrogen as a major large-scale seasonal storage technology should be considered and consequently the role of hydrogen in seasonal demand drivers, such as heating must be given due consideration.
- The role of hybrid heating systems as a major flexibility and sector coupling element shall be acknowledged and supported through an adequate market design and development support.

The promotion of renewable and decarbonised fuels, including biogas and hydrogen, should not be limited to so-called hard to decarbonise sectors. The exclusive focus on end-use applications where direct renewable heating or electrification might not be feasible is misleading. Blending does not reduce the value of these gases but enables an immediate and stepwise approach to decarbonising the gas sector. A narrow approach ignores that fact that electrification of end-uses, especially heating and transport, will significantly increase peak demand and that this will require the massive scaling of a very costly electricity infrastructure (transmission, distribution, and storage) that will not be efficiently utilised outside of peak demand periods. These costs could be avoided by a strategy that promotes decarbonisation instead of electrification alone.

Key actions should include:

- A comprehensive terminology for all renewable and decarbonises gases and liquids, sustainability and greenhouse gas criteria and a robust certification system.
- Providing additional incentives, such as targets/quotas to support renewable and decarbonised gases should not be restricted to specific sectors.
- Clear technical rules to enable the blending of hydrogen in existing grids to enable immediate greenhouse gas reduction across all sectors connected to the gas grid.
- The advantages that gaseous solutions bring to the energy system as well as other sectors must be recognised. Policies and economic evaluations should integrate the costs and benefits induced on the energy system and other sectors by each decarbonisation option and ensure that adequate price signals are visible for end-customers.
- Apply a full life-cycle analysis to all technology options and energy carriers, considering greenhouse gas emission and greenhouse gas avoidance costs: notably for the mobility sector through a well-to-wheel approach; for biogas/biomethane by considering externalities such as reducing agricultural methane emissions; and for different energy storage technologies, including power-to-gas and batteries.

Making energy markets fit for decarbonisation should guide consumers towards the most efficient and cheapest decarbonisation option. The choice of different energy carriers should not be distorted through cross-subsidisation or unjustified 'asymmetries in charges, taxes and levies across energy carriers or sectors. This means that each energy carrier's bill shall integrate only the charges and levies linked to the production (including incentives and subsidies), transport and sales of that specific energy carrier. The high cost associated with electrification and the complexity of integrating variable renewable energy should be not be passed on to other sectors or energy carriers. Cross-subsidisation would lead to inefficient and costly choices, which must be avoided through appropriate economic signals.

Key actions should include:

- Energy system costs, including incentives and subsidies must be allocated to the benefiting part of the system, without cross-subsidisation between energy carriers
- Guidance on charges, taxes and levies should specify that the costs and benefits that individual energy carriers bring to the energy system as well as other sectors must be made visible to end-consumers through cost-reflective price signals, incorporating long-term system costs.

- The revision of the gas legislative framework must encompass renewable and decarbonised gas.

A more integrated energy infrastructure is necessary to enable the integration of a growing share of variable renewable sources in the electricity system and increasing electrification of end-uses. The existing gas network provides ample capacities to integrate not only renewable but also decarbonises gases. Hydrogen produced through electrolysis from renewable electricity or from reformed natural gas combined with carbon capture use and storage has the same physical properties. Moreover, a stepwise approach to the scaling of hydrogen should be promoted. Initially through blending, which would enable hydrogen to be brought to the market and to all sectors that consume gas without delay. As the share of hydrogen in the system increases, the possible conversion of existing grids to dedicated hydrogen grids will have to be assessed. This needs to consider national specificities, end-user preferences, but also technological maturity, notably smart gas grids, sensors, or de-blending filters.

Key actions should include:

- Develop clear blending and technical rules to increase market uptake and maintain the interoperability of the EU gas infrastructure. Technical rules should enable the blending of hydrogen in existing grids. This blending will help to quickly integrate decentralised production while not precluding the possibility for dedicated hydrogen grids to develop, also in the mid-term.

A supportive funding and financing framework. Concentrating our economic recovery efforts on climate technology sectors where Europe is leading, like hydrogen, biomethane and processes such as CCUS, offers Europe the twin benefit of stimulating economic recovery and jobs, as well as contributing to the energy transition. Indeed, these sectors have a predominantly European-based value chain. According to recent studies the gas sector and associated sectors could create up to 5.4 million jobs linked to the production and utilisation of renewable and decarbonised gas by 2050.