

EHI position on the hydrogen and decarbonised gas market package

This paper presents the views of the European Heating Industry on the hydrogen and decarbonised gas market package.

Key messages

- Cutting emissions from buildings is one of the most important challenges of decarbonisation. This sector represents 40% of Europe's final energy consumption and 36% of CO2 emissions.
- Overcoming this challenge will require a mix of solutions. Alongside increased electrification and improved energy efficiency measures, the legislative framework has to ensure the fast scale up of renewable and low-carbon gas (bio and synthetic methane and including hydrogen) and access to these gases for end users in buildings. Why? Such approach is key to help keep the cost of the energy transition in check for consumers and society at large.
 - First, renewable and decarbonised gases can cater for heating seasonal fluctuations. They can smooth peak electricity load over the winter, thanks to a smart coupling of sectors. Moreover, they can make use of an existing infrastructure (updated where needed), already dimensioned for heating peaks.
 - Second, using these gases in heating provide options to manage the vast heterogeneity of Europe's buildings. We should not leave anybody behind on the road to decarbonisation and offer affordable additional options for CO2-neutrality.
- Concretely, the hydrogen and decarbonised gas market package should help attain these goals by:
 - Enabling the use of renewable and decarbonised gases in buildings to achieve economies of scale and the market ramp up of hydrogen in Europe ("pull measures"). Heating technologies are ready (appliances able to work with blends and 100% use) and the sector can provide reliable demand.
 - Setting EU-wide binding targets to lower the GHG intensity of gas consumed and increase the share of renewable gases by 2030 ("push measure").
 - Promoting transparency and information on renewable and decarbonised gases across the value chain and to end-users.
 - Providing appropriate flexibility for Member States, regional and local public authorities.
- Finally, coherence should be ensured across EU legislation: appropriate ecodesign and energy labelling regulations should be set, as well as rules defining the interaction between new gases and heaters.

The new gas regulatory framework must promote the use of renewable and decarbonised gases, including hydrogen, for heating, as a key enabler to achieve a carbon-neutral building stock by 2050

Buildings are hard-to-decarbonise; a faster replacement of old heaters is essential

Buildings are a hard-to-decarbonise sector. It is the single largest source of energy consumption in the EU, representing 40% of final energy consumption and 36% of CO₂ emissions.¹ Moreover, heating and hot water production takes up the largest share (about 80%) of a building's total energy consumption. But most of the heating systems installed in Europe today – that is almost 60% of the total – are old and inefficient. Appliances are on average 25 years old; if they were labelled today, most of them would end up in class C, D or below. And such heating systems are replaced with modern, efficient and renewable-based ones too slowly.

The result? CO₂ emissions from buildings have been declining at a rate of only 1% per year between 1990 and 2017, which proves the difficulty of decarbonising this sector². The real challenge is cutting emissions from the existing stock. Between 85% and 95% of today's buildings will still be standing in 2050 and making all of them carbon-neutral by 2050 is the biggest effort in terms of CO₂ reduction per sector.

The question is: how do we make buildings carbon neutral by 2050? The answer must necessarily involve heating and in particular the replacement of old and inefficient systems. Today, such systems represent the bulk of heat emissions from buildings; replacing them with modern, efficient, renewable-based and future-proof appliances would pave the way for their full decarbonisation.

A multi-technology, multi-carrier approach, including the efficient use of renewable and decarbonised gases for heating, is key to deliver decarbonisation in the context of Europe's diverse building stock and existing energy networks

If replacement is the key, what should be the new technologies and energy carriers used for replacement? A multi-technology, multi-carrier approach is needed, to keep the cost of the energy transition in check for consumers and society at large, leaving nobody behind. Such approach must include the use of renewable and decarbonised electricity and gaseous fuels, alongside energy efficiency measures.

Why is that? First, because buildings are different across Europe and so are heating needs, due to different climates, energy infrastructure, available renewable energy sources at local level, individual preferences and financial resources. Most buildings in Europe are inefficient, meaning they have higher heating needs (heating maximum load per building). In Germany, 67% of dwellings were built before the energy efficiency of buildings law be implemented in 1977. Depending on these characteristics, member states and people should be able to choose the most cost-effective measure to achieve the decarbonisation of their buildings.

Second, to make cost-efficient use of Europe's energy system and networks. Today the gas grid is dimensioned to cope with the strong seasonal fluctuation of heating. For example, the German gas grid can provide 230 GW of maximum load for heating, while the historical electricity peak load in the country is 80 GW. While more investments in the electricity systems will be needed, making use of the existing gas network and of its storage capacity is also a no-regret policy. Today, the gas storage capacity in Germany is over 6000 times higher than the power storage capacity.

¹ A Renovation Wave for Europe, European Commission, 2020, p. 23.

² How the European Union could achieve net-zero emissions at net-zero cost, McKinsey, 2020.

The European Commission modelling results, as well, underline the importance of decarbonizing buildings, with a multi-technology, multi-carrier approach. The 2050 carbon-neutral scenarios show that gases will complement electrification and the use of other energy vectors in buildings. Electricity will provide at most 34% of residential heating needs. Gaseous fuels, including renewable and decarbonised ones, will constitute the bulk of the energy supply for the remaining 66% of heating demand.

Free market and flexibility

The regulatory framework must be updated to allow and promote a rapid decarbonisation of gas and the growth of its use in all sectors of the economy. In terms of allocation, both the European Commission and Member States should opt for a free market approach, whereby procurement of renewable and decarbonised gases are available to all sectors which fit into their own decarbonisation strategies.

Renewable and decarbonised gases are fundamental, to quickly achieve the decarbonisation of buildings. In this sense, their use in full (e.g.: 100% biomethane, synthetic methane, renewable hydrogen or a mix) should be the preferred option. Until we get there and to favour a quick uptake of these new gases, flexibility must be provided in the regulatory framework for Member States, regional and local public authorities particularly to help a switch away from more polluting and inefficient heating solutions. National hydrogen blending levels should be set by Member States in a standardised and transparent way, based on EU rules, so they can develop scenarios for gas decarbonisation based on their needs and their resources.

Enabling the use of renewable and decarbonised gases in buildings is key for the market ramp up of hydrogen in Europe

A key factor to drive adequate supply of renewable and decarbonised gases is a steady and large demand. In this sense, it is important that all economic sectors – including buildings – can access the market for these gases, including for hydrogen. Limiting the market or prioritising access to some sectors only will hamper market signals and stop economic actors from ramping up production.

Indeed, large-scale investments will be needed, to produce renewable and decarbonised gases. Economies of scale and benefit all end-use sectors while in parallel ensure that infrastructure operators receive the necessary signals to ensure their grids are fit for purpose.

Opening the use of these new gases for buildings is important, because heating is ready to take them up today.

- All heating appliances can already work with bio- and synthetic methane; boilers installed from 1995 onward can take up admixtures between methane and up to 10% hydrogen.
- Moreover, many boilers on the market are able to deal with up to 20% hydrogen blends. EHI supports an ecodesign requirement for all space heating appliances under energy label, to be able to certify their use with fluctuating admixtures with up to 20% hydrogen, from 2025.
- Appliances working with 100% hydrogen exist (hydrogen islands).
- Heating manufacturers have also developed 'hydrogen ready' products, i.e.: working with methane-based gases today, but convertible into 100% hydrogen thanks to an easy to install kit. We support an ecodesign requirement, that all the appliances sold on the market from 2029 onward should be hydrogen ready, to avoid any risk of stranded assets for end user, when and where grids will distribute 100% hydrogen.

The use of renewable and decarbonised gases (also for heating) means making good use of an existing infrastructure: the EU gas grid. While upgrades will be needed to make it compatible with a fully

decarbonised future, this energy network is an important asset: it is dimensioned to cope with the peak heating needs of Europe's coldest days, either directly (direct gas use in boilers) or indirectly (indirect gas use in power generation). In this sense, the gas grid is a very good complement to the electricity grid and to electrification. The gas infrastructure potential for storage means the possibility of easy peak shifting towards a different energy carrier from electricity, when needed. It means a higher use of renewable electricity and an enhanced security of supply.

An integrated planning between the gas and electricity grid is therefore necessary to optimise the use of renewable solutions to decarbonise buildings. This would ensure a proper energy-mix based on diversification of energy sources. Complementarity is key for system integration.

Introduce EU-wide binding targets to lower the GHG intensity of gas consumed and increase the share of renewable gases

The introduction of targets is a key measure to provide a predictable and stable framework, for the decarbonisation of the gas system. EHI supports a reduction by 2030 of the greenhouse gas intensity of the gaseous energy consumed in the EU by at least 20% compared to 2018, through the use of renewable and decarbonised gases.

In order to develop a sustainable gas sector, the new gas framework should also introduce a binding 2030 EU target on demand for renewable gases of at least 11% in terms of energy content of gas consumed.³ Such a commitment would send a clear message to industry and consumers that renewable gases will replace – and are already replacing – fossil fuels. Such targets for renewable gases will also help kick-start a European industry in the field of synthetic methane and hydrogen production (e.g.: electrolyzers) and foster a circular and sustainable agriculture and farming by spurring investment in biogas and bio-methane. As mentioned, heating appliances are ready to do their part, as they can already work with renewable and decarbonised gases, up to 100%.

Promote transparency and information on renewable and decarbonised gases across the value chain and to end-users

It is important to establish guarantees of origin for all decarbonised and renewable gases with international quality standards. Information contained within the Guarantee of Origin system shall allow end-users to clearly identify the renewable and decarbonised origin of the gas.

Indeed, consumers as well as public authorities are increasingly interested in knowing more about their carbon footprint. End-users must be able to use decarbonised and renewable gases to heat buildings and be informed of the fuels they are using: natural gas, bio or synthetic methane, and hydrogen. To this aim, appliances or gas meters should be able to deal with an evolving gas quality, so that grid operators and consumers can monitor the gas mix injected in their heating systems. This is important for billing purposes too as consumers must be able to know at what costs are the gas used by their heating systems.

Moreover, real-time information on gas quality (e.g.: in case of blending) and fair technical rules defining the interaction between new gases and heaters are also relevant for the appliances, the grid or supply communication. This is essential, as heating appliances cannot run on mixtures of gases for which they

³ Figures based on the [joint position paper](#): *Proposal for binding 2030 EU-level targets to lower the greenhouse gas intensity of gas consumed in Europe and increase the demand for renewable gas*.

have not been certified; on the contrary, it is important that there is a common understanding across the value chain of the attainable gas qualities. The role of the regulation should therefore be to establish a technical framework that is fair for the entire gas value chain, from distribution to end-use applications.

Ensure coherence across the 'Fit for 55' package.

- The ecodesign and energy label rules for space and water heaters must allow and promote the ability of energy efficient appliances to use renewable and decarbonised gaseous fuels – alongside electricity-based ones. This means setting requirements for new gas appliances to be able to use up to 20% hydrogen by 2025 and be ready to use up to 100% hydrogen (with a kit) by 2029 (see p. 4 for more details). It also means establishing an energy label with a double scale, where the efficiency of appliances for each energy carrier is adequately represented, alongside a multi-energy scale. And to promote on the label appliances using renewable and decarbonised gases. Finally, incentives rules must be updated to support the increased heating replacement needs, following from the new decarbonisation targets.
- The EED and the EPBD must help replacing faster old and inefficient heaters with new appliances compatible with decarbonised and renewable energy vectors, including gaseous fuels. In this sense, we believe that member states should be able to fulfill their energy savings obligations in the EED with efficient systems using any energy carrier; in particular, heaters that are compatible with the use of renewable and decarbonised gases should be eligible under the energy savings obligation.
- The RED should promote the efficient use of all renewable heating sources, including renewable and decarbonised gases to heat building . As set in the Commission proposal, green gases should contribute to all targets in the Directive, depending on where their energy is consumed. It is important that renewable gases count to achieve the annual target for renewable heating and cooling, set at Member State level. Along with electric heat pumps and hybrid technology, efficient heaters using renewable gases are key to making buildings carbon-neutral by 2050 in Europe.
- If the emission trading system (ETS) is extended to the building sector, a CO2 price in buildings must be coupled with support for replacement with efficient heating technologies, by earmarking ETS revenues to this purpose (alongside other measures). Together with low investment cost on the heaters, the use of renewable and decarbonised gases is possible in most gas appliances, bringing immediate CO2 cuts. Moreover, using renewable gases for heating will create a large market, enable economies of scale and lower new gases' price.

About EHI, the Association of the European Heating Industry

EHI represents 90% of the European market for heat and hot water generation, heating controls and heat emitters, 75% of the hydronic heat pump market, 80% of the biomass central heating market (pellets, wood) and 70% of the solar thermal market. EHI Members produce advanced technologies for heating in buildings, including: heating systems, burners, boilers, heat pumps, components and system integrators, radiators, surface heating & cooling and renewable energy systems. In doing so, they employ about 120,000 people in Europe and invest over a billion Euros per year in energy efficiency. www.ehi.eu