

## How the heating sector can REPower the EU: our policy proposals

*This paper is an initiative of the European Heating Industry. It brings together the EU policy proposals which we know are needed in order **to deliver the REPowerEU political objectives**, particularly in relation to the use of **energy for buildings: doubling heat pumps deployment and increasing renewable gas production**.*

The REPowerEU Commission communication has reminded Europe of the importance of completing quickly the clean energy transition. Cutting energy consumption and the use of Russian gas are fundamental steps to achieve not only needed CO2 emissions reductions, but also energy security and lower energy bills.

The way we source and use energy to heat buildings is highly relevant. Buildings represent about 40% of the energy consumption of Europe. Most of it comes from heating and hot water needs. A large part of the heating appliances installed in Europe's buildings today are natural-gas-based and, crucially, also old and inefficient (almost 60% of the stock). As such, the potential to strongly reduce energy consumption from buildings is indeed great.

How can we cut our energy dependence and make our homes ready for the next winters? Certainly, a fundamental measure to quickly achieve these goals will be to accelerate the phase-in of efficient and renewable-based heating systems.

The communication calls for tangible results and shows a clear way forward for all energy-using sectors. Two sets of objectives are directly related to heating and buildings:

1. Doubling the yearly deployment of heat pumps, with 10 million heat pumps installed in the next five years and 30 million by 2030;
2. Producing and therefore using in the European economy a higher amount of renewable gases: 35 billion cubic meters of biomethane and 20 million tonnes of hydrogen.

As heating systems' manufacturers, we fully support these objectives.

**Concerning heat pumps**, we have already installed one million heat pumps in 2021, already showing a spectacular market growth compared to 2020.

### What types of heat pumps?

**Hydronic heat pumps**, based on water circulation via radiators or underfloor heating, are highly efficient and have the potential to be very quickly installed in many buildings of Europe, because they are already equipped with fast-to-adapt water-based systems. Among heat pump technologies, **hybrid heat pumps** are witnessing a strong growth in several countries. They are ready-made by manufacturers as a single solution. Alongside hybrid heat pumps, 'hybridisation' made of a heat pump installed on top of an existing modern condensing boiler, as a first step, is another possible solution. They both quickly reduce gas consumption, while allowing the continued, safe operation of the power system at peak times, reducing the need to carry out extensive and costly generation and/or grid reinforcement. Moreover, they are compatible with green gases.

However, a faster phase-in of hydronic heat pump technologies – **electric, hybrid and thermally-driven** – can happen only if some important barriers are tackled <sup>1</sup>, by means of:

- Acceleration of electricity grid reinforcement to support increased electricity load from new uses and products in buildings (heat pumps, air conditioning, e-vehicles charging etc);
- EU-funding geared towards national subsidy and scrappage schemes as well as investments for replacement of old and inefficient systems and the uptake of efficient heating, including heat pump technologies;
- Ensuring integration of a training on heat pump technologies in programs of educational systems from early on to increase the number of upskilled installers;
- Innovative solutions to minimise the physical constraints in installing heat pump technologies and reducing their sound;
- When reviewing the legislation on F-gases and considering a possible PFAS restriction in REACH, ensuring that the industry has the necessary refrigerants available to speed up the roll out of heat pumps.

**We also have proposals on green gases**, because we know that electrification alone will not do it all.<sup>2</sup> Other technologies will be needed, to ferry the whole European building sector to decarbonisation. Differences in building types and insulation levels, readiness of energy grids, generation capacities, availability of various energy sources as well as different financial availabilities among households, call for a significant role of other fuels and efficient solutions.

The use of renewable and decarbonised gaseous fuels for heating will play an important part. Already today, the roll-out of modern technologies is cutting natural gas consumption. Moreover, the heating sector is ready to immediately act as a driving force for the strong ramp-up of green gases' production <sup>3</sup>. Our heating appliances <sup>4</sup> can use biomethane without any need for adaptation and modern heaters can consume up to 20% hydrogen, mixed with natural gas or biomethane. Likewise, we have developed new technologies which will soon become market-ready and are able to use 100% hydrogen, immediately or thanks to a kit to be installed where and when hydrogen becomes available for consumers. To further reduce consumption, existing or new gas installations can be coupled with solar thermal.

Crucially, by using green gases, the heating sector can significantly contribute to maximising energy efficiency and cost-effectiveness on a system level. The available gas infrastructure and large seasonal storage capacity can balance limitations of the electricity system during winter electricity demand peaks. Hence, they support electrification of heating and transport. A multi-technology, multi-vector approach is thus key to decarbonise buildings in a fast, sustainable and affordable way and to support our objective of cutting energy dependence.

Reflecting on this, we have developed policy suggestions on how REPowerEU can be made a reality. They refer to the EU legislative proposals aimed at achieving the climate and energy targets. You will find them in the Annex, with a brief explanation on how they contribute to

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<sup>1</sup> For a more detailed analysis, please see: [Rolling out heat pumps in support of the decarbonisation of heating](#), EHI 2021.

<sup>2</sup> Climate target plan [impact assessment](#), p. 68-70, European Commission 2020.

<sup>3</sup> For reference on the readiness of heating and other sectors to use hydrogen please see: [Decarbonising the gas value chain: challenges, solutions and recommendations](#), Prime movers' group on gas quality and H2 handling, 2021.

<sup>4</sup> Hybrid heaters, condensing boilers, micro-cogeneration units including fuel cells, thermally driven heat pumps. Technological difference will be key to adapt to existing circumstances in member states (grids, buildings, climate zones) and ensure quick consumption cuts.

accelerating the deployment of all types of heat pumps and creating a market for renewable gases.

## Annex: EHI policy proposals

**REPowerEU goal: accelerate the deployment of heat pumps: 30 million newly installed heat pumps by 2030; 10 million installed in the next 5 years.**

**REPowerEU goal: more renewable gas – 35 bcm biomethane and 20 Mt hydrogen.**

### **Energy efficiency directive (EED)**

**Proposal:** ensure eligibility of savings from efficient heating technologies ready to use renewables.

**Why:** the current proposal does not allow to account as from 2024, for the purposes of the energy savings obligation, energy efficiency gains coming from key heat pump technologies, i.e.: hybrid heaters and thermally driven heat pumps. These are extremely important for fast penetration of heat pumps in existing buildings and to make use of existing or upgraded energy grids. The proposal would leave out also savings from boilers and micro-cogeneration appliances (like fuel cells). These technologies, like the heat pumps mentioned above, can lead to full decarbonisation of buildings, as they immediately cut gas consumption and are compatible with the use of renewable and decarbonised gaseous fuels.

**How:** modify relevant provision in annex V of the EED proposal.

**Proposal:** support the public sector in the purchase of all efficient heating technologies ready to use renewables.

**Why:** the proposed provisions on public procurement require public authorities to purchase only products that comply with the criterion laid down in Art. 7.2 of the Energy Labelling Regulation – i.e.: falling within the highest two significantly populated classes of the energy label. However, this means strongly limiting the choice of Member States about the best decarbonisation option for their buildings, when it comes to switching heating systems. It is thus important that requirements for public authorities and incentive schemes are reviewed to consider feasibility and support the uptake of all efficient products ready to work with renewable and decarbonised energy sources, such as all types of heat pumps and other technologies (e.g.: boilers, micro-CHP, solar thermal) compatible with renewable and decarbonised energies, including green gases. This would ensure public authorities can lead by example, while considering the heterogeneous conditions and usage patterns of their buildings.

**How:** review relevant provisions in annex IV of the EED proposal.

### **Renewable Energy Directive (RED)**

**Proposal:** support of efficient hydronic heat pumps, including explicitly hybrids.

**Why:** at present, electrification of heating and heat pumps are widely promoted inside the RED. However, considering the recent Ecodesign proposal to set a specific category of products for hybrids, to be distinguished from heat pumps, it is important that the directive keeps promoting these technologies, which are particularly relevant for buildings' decarbonisation. Moreover, it is key that the RED promotes the development of training and qualification schemes for installers and installation companies.

**How:** mention together 'heat pumps and hybrids' across the directive; hybrids must fully contribute to achieving targets for buildings and heating and cooling (art. 15a, 23). Include reference to installation companies as recipients of training and qualification schemes (art. 18, annex IV).

**Proposal:** support the use of renewable gases and fuels, including Renewable Fuels of Non-Biological Origin (RFNBOs), in buildings and heating.

**Why:** the current proposal allows RFNBOs to contribute to all targets in the directive; however, these are explicitly promoted only in the industry and transport sectors. In our view, their deployment (and that of all renewable gases and fuels) should be supported across sectors, including in heating and buildings, as a necessary complement to renewable electrification. Indeed, all renewable and decarbonised solutions, as well as energy carriers, are needed to reduce our energy dependence and to effectively deal with the decarbonisation of an extremely diverse building stock.

**How:** Integrate provisions in article 15a and 23 of the directive, to ensure the use of green gases and fuels is one of the options clearly available to Member States to achieve their targets for renewables in buildings and heating and cooling.

### **Energy Performance of Buildings Directive (EPBD)**

**Proposal:** ensure renewable energy supplied via the grids, including green gases, is supported in buildings, including Zero-Emission Buildings (ZEBs).

**Why:** while it is positive to promote on-site production/use of renewable energy, and the deployment of local renewable resources in ZEBs, the use of renewable and decarbonised energy supplied via the energy grids in efficient heating systems should be equally promoted in order to optimally leverage all available centralised and decentralised, renewable and decarbonised, energy sources. This can be the case for renewable electricity used in heat pumps, but also for biomethane and renewable hydrogen used in efficient combustion technologies. Besides balancing renewable self-production, this would also ensure broader decarbonisation of the energy grids, thus providing more options for the uptake of green energy in buildings and reducing our energy dependence.

**How:** review definition and relevant criteria for ZEBs in article 2.2 and annex III of the proposal; include all renewable gases and fuels in the definition of renewable energy (article 2.13).

**Proposal:** make incentives available for the installation of all efficient heating technologies which are ready to use renewable and decarbonised energy.

**Why:** the EPBD proposal removes incentives for the installation of boilers powered by fossil fuels from 2027. Yet, while accelerating fuel switching in buildings is essential, all technologies which cut gas consumption today and are ready to use renewable and decarbonised energies should be able to contribute to buildings' decarbonisation. It is critical to distinguish between technologies and fuels: boilers on the market today can already use 100% renewables (biomethane) and variable shares of hydrogen up to 20%. They will be able to use 100% H2 by the end of the decade, where this is available.

**How:** ensure technologies ready for renewable and decarbonised energies remain eligible for incentives (article 15.10). Incentives should be available for boilers that can work in combination with renewable-based technologies, e.g.: H2 boilers, hybrids and solar thermal systems.

**Proposal:** accelerate the modernisation of the inefficient heating stock.

**Why:** buildings are responsible for 40% of energy consumption and 36% of greenhouse gas emissions in the EU. At the same time, space and water heating account for almost 80% of energy use in residential buildings, where about 60% of heaters today are old and inefficient. It is therefore urgent to address the 'heating dimension of buildings', by accelerating the installation of efficient technologies (e.g.: all heat pumps technologies) and switching to renewable and decarbonised energies like renewable power, biomethane and hydrogen.

**How:** require national building renovation plans to support the replacement of old and inefficient appliances with more efficient alternatives, based on renewables or ready to run on renewables, including all types of heat pumps (article 3, annex II). Indicate the installation of new heaters as one of the most cost-effective options to achieve new minimum energy performance standards (article 9); recommended it, where relevant, within energy performance certificates (article 16).

### **F-gases in the F-gas regulation and PFAS restriction under REACH**

**Proposal:** guarantee that the industry can deliver on the REPowerEU and decarbonisation ambitions by ensuring the availability of refrigerants needed to exponentially increase heat pump production

**Why:** Heat pumps need refrigerants to function. However, most of those used today are under scrutiny either by the F-gas regulation to reduce emissions or by an upcoming proposal from some Member States to restrict PFAS to reduce their persistency in the environment. Unfortunately, the other alternative, natural refrigerants, is not a suitable solution for all applications. As such, we need to make sure that sufficient non-natural refrigerants are available to support the roll out of heat pumps.

**How:**

- By coordinating the work on the F-gas regulation and the PFAS restriction under REACH and ensuring that the right mix of refrigerants can be used to reach the RepowerEU and the EU climate targets;

- By maintaining the current ambitious speed and pace of the phase down of hydrofluorocarbons - this would prove challenging due to the increasing number of overall heat pumps being sold on the market but would nevertheless be more feasible.
- By not introducing new bans on the use of refrigerants for heat pump applications.

### **Ecodesign and energy labelling**

**Proposal:** raise awareness and promote the use of green gases in ecodesign and energy labelling.

**Why:** Consumers are not aware that combustion appliances can use renewable fuels. In addition, the current proposal downgrades heating appliances that can convert to green hydrogen on the energy label. To facilitate the uptake of appliances that can convert fully to renewable fuels, awareness needs to be created and downgrading needs to be avoided.

**How:**

- By introducing an icon on the energy label for appliances that can use renewable fuels
- By removing the primary energy factor (PEF) for hydrogen, this PEF is based on hydrogen production from natural gas not green gas

**Proposal:** ensure that hybrids are presented as an efficient and financially attractive solution for the decarbonisation of buildings.

**Why:** Hybrids are key technologies to achieve carbon neutrality in buildings by 2050, starting with the 2030 targets. Hybrids have many advantages, for example, they can be installed without any prior adaptation of the building envelope and allow for a staged renovation. In addition, they help to use both green electricity and green gases, by being able to switch between the two energy carriers to alleviate stress on the electricity grid and reduce infrastructure and system costs.

**How:**

- By ensuring that hybrids are eligible for incentives
- By ensuring that the classes of the energy label are designed so that hybrids are presented as the energy efficient solution they are

### **Hydrogen and decarbonised gas package**

**Proposal:** guarantee that the buildings sector will be able to access renewable and decarbonised gases.

**Why:** the current proposal focuses on transmission of hydrogen and pure hydrogen infrastructure and not on distribution, which is key for the transition from natural gas to renewable and decarbonised gases in the buildings sector. From a technical point of view, heating appliances are ready to do their part, as they can already work with up to 100% biomethane and modern ones can deal with hydrogen up to 20% blends, making the heating sector the most H2-ready and a key off-taker, even in the short-term. Heating manufacturers have also developed 100% 'hydrogen ready' products which will be rolled out in the coming years. However, it is unclear at this stage how EU citizens will gain access to the hydrogen infrastructure while customer certainty both for the use of blends and pure hydrogen should be a priority. TSOs and DSOs should cooperate in the European Network of Networks Operator for Hydrogen (ENNOH) to ensure the access to

hydrogen in all the relevant sectors while regulators and local authorities should be working closely to ensure planning certainty across different regions and countries to deal with centralised and decentralised productions patterns in an optimal way.

**How:** guarantee in the legislation that the hydrogen will be accessible to customers at the distribution level and include all the relevant stakeholders in the ENNOH while dealing with centralised and decentralised energy production in an optimal way.

**Proposal:** promote the production and use of green gases, including at the decentralised level.

**Why:** the REPowerEU communication increased the EU ambition to produce hydrogen and biomethane and now needs to be translated into the legislation. Stakeholders need a predictable and stable framework to make the decarbonisation of the gas system a success. This could be done via EU-binding targets, to kick-start a European industry in the field of synthetic methane and hydrogen production (e.g.: electrolysers) and foster a circular and sustainable agriculture and farming by spurring investment in biogas and bio-methane. Also, with the development of hydrogen valleys across Europe, some of them being off-grid systems, we know that the bottom-up approach will also play a major role in making this transition a success. In this respect, it is important that 'Citizen Energy Community' have the right to produce hydrogen locally and an access to the infrastructure to export any surplus they may produce as it is the case for methane.

**How:** introduce EU-wide binding targets to lower the GHG intensity of gas consumed and increase the share of renewable gases; modify relevant provisions in art. 14 of the Directive (Citizen Energy Community).

## **EU Clean Hydrogen Alliance**

**Proposal:** develop a clear roadmap for the ramp up of the hydrogen economy and support equally all hydrogen end-use sectors, including buildings.

**Why:** the Alliance worked so far with a silo-based approach, i.e. based on thematic roundtables for all the sectors. This was the right method as there was a need for each sector to better understand its hydrogen-readiness, its needs, its potential and the challenges to overcome. While it is necessary to keep this structure that works well, we now need to develop a cross-sectoral collaboration to address the barriers that have been identified by implementing the supportive measures and the enabling legislative framework that will allow hydrogen to be rolled out across all end-user sector which require cost effective decarbonisation.

**How:** develop synergies between the various roundtables, from the production to end-use sectors, via transmission & distribution. Include projects for the use of *H2 in buildings* in financial support plans, in the programme of the Hydrogen Forum, supporting the opportunity of this end-use to cut fossil fuel consumption in buildings.

## **EU Emission Trading System (ETS)**

**Proposal:** earmark EU ETS revenues for replacement of old and inefficient appliances and the purchase of efficient and renewable-based heating equipment.

**Why:** reducing the upfront costs of acquiring all future-proof, energy-use and CO<sub>2</sub>-emission-cutting heating technologies is fundamental, to accelerate their deployment. This becomes even

more important, in a context of lower disposable income, due to rising inflation and energy prices. All efficient heating technologies, ready to use renewables – including renewable gases – must be eligible for such scheme, to cater for the differences in buildings, climate zones and grid development across Europe. Heat pumps and hybrids heaters will certainly benefit from such a provision, as they are already today the most successful renewable heating technology on the market.

**How:** modify relevant provisions in art. 10.3 and 10d.2 of the EU ETS directive.

### About the European Heating Industry (EHI)

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, hybrids, micro combined heat and power, fuel cells, components and system integrators, radiators, surface heating & cooling.

With an estimated 1.8 million jobs in its value chain, the heating sector is labour-intensive, local and European by nature. Imports in this sector from non-EU countries are estimated to be lower than 10%.

