

## EHI position on the review of the Renewable Energy Directive

This paper presents the views of the European Heating Industry on the review of the Renewable Energy Directive.

### Key messages

- The share of renewable heating in Europe must increase to achieve the 2030 CO<sub>2</sub> emissions reductions target.
- All energy efficient and renewable-based heating technologies, as well as all energy carriers are needed to achieve system integration and cut emissions in the hard-to-decarbonise buildings sector.
- The directive should establish an EU target for renewable energy of 38 to 40% (art 3). Such target would provide a clear framework for decision makers to increase the share of renewables and is aligned with the goal to reduce CO<sub>2</sub> emissions by 55% by 2030.
- The yearly target to increase the share of renewable heating in the Member States should be raised to at least 2.3 percentage points/ year and made mandatory (art. 23). These targets should be accompanied by adequate measures to support the uptake of renewable heating.
- New buildings and buildings undergoing major renovation should be equipped with a share of renewable energy (art. 15), as these events constitute very good opportunities for installations. Moreover, the replacement rate of old and inefficient heaters should increase in all buildings.
- The use of renewable energy (such as renewable fuels and electricity) in heating energy carriers (art. 23) should count for the renewable heating and cooling target and be promoted to achieve needed CO<sub>2</sub> emissions reductions.
- Account for the renewable energy captured by all heat pumps: acknowledge that there are several heat pump technologies and maintain the successful calculation method for extracted renewable energy (art. 7 and annex IV).
- Ensure coherence across the Fit for 55 package: the review of climate and energy legislation, as well as of the ecodesign and energy label regulations for space and water heaters should contribute to achieving a higher uptake of renewable heating in buildings and cutting CO<sub>2</sub> emissions in the sector.

## **The share of renewable heating in Europe must increase, to achieve our common 2030 CO2 emissions reductions target.**

Increasing the share of renewable heating by 2030 is going to be key to achieve the new CO2 emissions reduction target. Why? Because heating is the single largest source of energy consumption in the EU, representing almost half of the total. <sup>1</sup> With the current renewable energy directive, the share of renewables in heating and cooling would grow to about 33% in 2030, according to modelling done by the European Commission. But this share should increase to around 40%, to achieve the new 2030 target of cutting CO2 emissions by 55% by 2030. <sup>2</sup> The increase in renewable energy, needed for the heating sector should mirror the increase needed for the whole economy. The 2030 renewable energy target is set to 32% and the total share of renewables should grow to 38-40% by 2030. <sup>3</sup>

## **Europe needs all energy efficient and renewable-based heating technologies, as well as decarbonised and renewable energy sources / carriers, to achieve CO2 cuts suitably for users, buildings and the energy system.**

The good news is that modern heating technologies are fully compatible with renewable heating and ready to drive its growth. Electric heat pumps, biomass boilers and solar thermal systems already contribute daily to increasing the share of renewable heating in Europe and are considered as renewable technologies in the current RED. Gas-fuelled space heaters, such as condensing boilers, hybrids, micro-combined heat and power and fuel cells, are also fully compatible with renewable energy sources, as they can work with any share of bio- and synthetic methane and increasingly with hydrogen. The EHI view is that all domestic condensing boilers and thermally driven heat pumps put on the market from 2025 should be able to burn mixtures of methane and up to 20% hydrogen and from 2029 should be 100% hydrogen-ready, meaning able to be converted to 100% hydrogen with a simple kit (EHI Ecodesign proposal). Tests are ongoing also to check the use of heating appliances with renewable liquid fuels. Hot water storage and controls, smart energy managements systems, capable of reacting to fluctuating energy supplies; radiators and underfloor heating dimensioned to achieve low temperature are also important to facilitate the expansion of renewable heating.

This variety of technologies and energy carriers is needed to achieve the EU targets for 2030 and 2050 <sup>4 5</sup> and will provide the best platform to increase the share of renewable energy in heating. The reasons are several:

From a user perspective, a variety of heating technologies (multitechnology) and energy carriers allows to achieve decarbonisation in the most affordable and convenient way for their building and local circumstances. A broad range of heating appliances means that users can select the size, fuels and connection with energy sources and piping that is best

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<sup>1</sup> Fraunhofer et al., Mapping and analyses of the current and future (2020 - 2030) heating/cooling fuel deployment (fossil/renewables), Executive summary, p. 4.

<sup>2</sup> European Commission, Impact Assessment to the 2030 EU climate target plan, p. 57.

<sup>3</sup> European Commission, Impact Assessment to the 2030 EU climate target plan, SWD(2020) 176 final, p. 49.

<sup>4</sup> In-depth analysis, section 4.3.1

<sup>5</sup> Impact assessment for the EU 2030 climate target plan, Section 2.2.2.

suited for each building. And for each person's investment this means that costs are much varied too – from 2,000 to 44,000 EUR <sup>6</sup>. Moreover, some appliances are better suited to work at higher temperatures, meaning in buildings that are not well insulated. Thanks to the possibility of delivering higher temperature heat and their modularity, these heaters allow for staged renovation, i.e.: they allow a household to progressively insulate their building, when it is affordable for them.

From a building perspective, a multitechnology approach is needed to cope with the fact that buildings are different across Europe and so are heating needs, due to different climates, energy infrastructure, available renewable energy resources at local level, individual preferences and economic resources. There is no one-size-fits-all solution.

From a system perspective, multitechnology is key to cope with the current sizing of grids and local availability of renewable energy sources. It will also reduce the needs of investments in additional energy infrastructure and supply. In this sense, a higher use of renewable electricity with efficient systems like heat pumps and hybrids is fully supported by EHI. And it should be accompanied by the use of heating equipment working with decarbonised and renewable gases and liquid fuels, as well as sustainably sourced biomass and solar energy. This because the electricity grid is not dimensioned to take up a full electrification of heating, especially in view of the seasonal demand and peak needs.

While demand side flexibility and new investments in the electricity grid will be needed, other sources should play an important role. In most parts of Europe, the gas grid can be adapted fairly quickly <sup>7</sup> to accommodate up to 20% hydrogen <sup>8</sup> with very limited costs <sup>9</sup>. The total estimated investment for building a European full-hydrogen network is considered modest <sup>10</sup> in comparison to the foreseen size of the hydrogen market. Finally, the costs of green gases are projected to drop considerably: it is expected that the price of hydrogen will be competitive to that of the natural gas price in Germany and Scandinavia on an energy-equivalent basis before 2050. <sup>11</sup>

### **The targets for renewable energy and heating should set clear goals for decision makers.**

First, it is important that the overall target for the use of renewable energy in the EU be increased to the level needed to achieve the 55% CO<sub>2</sub> reduction goal. This corresponds to a level of 38-40% by 2030 (art. 3).<sup>12</sup>

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<sup>6</sup> Space and combination heaters review study, Task 5 Environment & Economics, VHK (2019), p. 31-32.

<sup>7</sup> In the short term, hydrogen can be blended in most networks at a rate of 6% in terms of volume; by 2030, operators recommend setting a target capacity for integrating blended hydrogen into the networks of 10%, and 20% thereafter; these rates are achievable with limited changes to the infrastructures.

<sup>8</sup> MARCOGAZ, [Overview of test results & regulatory limits for hydrogen](#) admission into existing natural gas infrastructure & end use, October 2019.

<sup>9</sup> French TSOs and DSOs, [Final report](#), Technical and economic conditions for injecting hydrogen into natural gas networks, June 2019.

<sup>10</sup> 27 to 64 billion euros according to the [European Hydrogen Backbone](#) report.

<sup>11</sup> Hydrogen economy outlook, 30 March 2020, Bloomberg NEF.

<sup>12</sup> European Commission, Impact Assessment to the 2030 EU climate target plan, p. 50.

Second, the yearly target to increase the share of renewable heating and cooling in the Member States should be raised and made mandatory (art. 23). This is because the current yearly increase is aimed to achieve an overall renewable energy target of 32%. To achieve a level of renewables in heating and cooling of about 40% in 2030, the yearly target should be increased approximately by 1 percentage point per year and brought to 2.3.<sup>13</sup> The different starting point of the target already allows for considering the different levels of renewable heating and cooling between Member States.

Setting targets is key to establish a clear policy direction, which is the basis for planning by public authorities and industry. In fact, according to the current governance, targets should be coupled with plans by Member States on how to achieve them. Targets will have an influence not only on energy policies, but in all relevant legislation, for example, they may spur further action to train and upskill more installers. An ambitious increase in renewable heating is also a great tool to achieve the 60% reduction in CO2 emissions from buildings, needed by 2030, to attain the 55% greenhouse gas emission reductions target for the whole economy. This is because the installation of new heaters has a very short payback time, compared to other energy efficiency measures for buildings. And it is quick to implement, because the average installation time for a new heating technology is shorter than a day.

These targets should be accompanied by adequate measures to support people in their uptake of renewable heating technologies. A key barrier to be overcome is financial: while the payback time of a new heating technology is extremely short, compared to other energy efficiency measures for buildings, heaters still have a relevant upfront cost. The experience at national level has demonstrated that incentive schemes can be very effective in promoting renewable heating technologies. For example, the German incentive scheme *Heizen mit Erneuerbaren Energien* was a major factor leading to a double-digit growth in the installation of renewable-based heating technologies in 2020.<sup>14</sup> Moreover, incentive schemes for heating can be designed to have a low- or even net-zero impact on public budgets, thanks to the short pay-back time of heating compared to other energy efficiency measures for buildings and to heating being a European industry with a European supply chain.<sup>15</sup>

### **New buildings and buildings undergoing major renovations should be equipped with a share of renewable energy; the replacement rate of old and inefficient heaters should be increased in all buildings.**

The construction of a new building and the major renovation of an existing one are very good opportunities to equip them with a minimum share of renewable energy; the requirement should be mentioned unequivocally in the directive (art. 15.4).

The reason is that such large interventions on buildings usually mean a high degree of planning beforehand. For example, a household undertaking an activity of major renovation

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<sup>13</sup> Reasoning: current target 1.3 pp / year leads to 33% renewables in heating in 2030 according to EC modelling. To get to 40% (European Commission, Impact Assessment to the 2030 EU climate target plan, p. 54), we need 7 pp. To be attained in 7 years (2023 to 2030) = 1 pp / year. Total = 2.3 pp / year.

<sup>14</sup> Source: BDH – Federation of the German Heating Industry.

<sup>15</sup> Il recupero e la riqualificazione energetica del patrimonio edilizio: una stima dell'impatto delle misure di incentivazione', Servizi studi dipartimento ambientale e dipartimento finanze, Camera dei Deputati, Italy, December 2019.

will in many cases take a loan or a similar financial tool. This increases the spending capacity, to purchase heating systems that – like renewable-based ones – usually have an important investment cost, but provide fuel savings.

Moreover, a major renovation will most likely reduce the energy demand of the building by, for example, increasing insulation on the roof or walls, changing windows. This kind of intervention on a building provides a great opportunity to re-think its heating system and introduce a share of renewable energy.

As it is currently the case, Member States should determine the share of renewable energy in new buildings and major renovations to be attained; however, the level chosen should be geared to attain the country targets for renewables in heating and cooling. This would allow to account for local building conditions and financial availability.

Such measures should be complemented by a stronger push for the replacement of old and inefficient heating equipment with state-of-the-art technologies in all buildings. This is an important step forward for the use of renewables, because all modern heating technologies are fully compatible with renewable energy sources and drive their increase. Moreover, the bulk of the installation of heating systems does not take place in new buildings and major renovation: each will account for about 6% of the building stock between 2020 and 2030.<sup>16</sup> Therefore, the current provision of art. 15.6 which asks for a promotion of an increased replacement rate of old heating systems should be adequately followed up in the EPBD, with:

- The re-introduction of periodic checks of heating equipment also below 70 kW and of an energy label for the installed stock of heaters.
- The introduction of a replacement obligation for old and inefficient heating equipment and a scrappage scheme to cover for the upfront costs of end users for the installation of a new renewable energy generator and for the hybridisation of existing efficient heating systems with additional renewable energy technologies.

A faster replacement rate of old and inefficient heaters will have positive economic consequences across Europe. Heating is a European industry: most of the production of heaters and 90% of the components is produced by European companies, for a total of about 120,000 jobs in the industry. And it has a large value chain, estimated at about 1,7 million installers and wholesalers of heaters, with local jobs all over Europe.

### **Promote the use of renewable energy in heating energy carriers.**

An increasing use of decarbonised and renewable energy carriers in heating will be key to achieve higher penetration of renewables in this sector and to decarbonise it.

This is because energy demand for heating will remain significant in the future under all the European Commission scenarios for 2030 and 2050, despite being set to decrease.<sup>17</sup> But how can the share of renewables in gaseous, liquid and solid fuels, as well as electricity be increased?

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<sup>16</sup> European Commission, Impact assessment 2016 renewable directive recast proposal, p. 100.

<sup>17</sup> European Commission, in-depth analysis supporting the A Clean Planet for all Communication, p. 101.

When it comes to heating, it will be important to acknowledge that renewable fuels and electricity do contribute to achieving the heating and cooling target and should therefore be accounted for it (art. 23). Indeed, electricity is projected to account for 34% of the heating demand for buildings in a 2050 net-zero carbon future, and the rest of the energy used for heating will have to come from other sources, including decarbonised and renewable fuels. Gaseous fuels will play an important role, as they should represent the bulk of the remaining consumption.<sup>18</sup>

### **Account for the renewable energy captured by all heat pumps and hybrid appliances.**

Heat pumps are crucial technologies to decarbonise buildings and the renewable energy directive should keep promoting them. In this sense, it is important that the existing calculation method for heating be maintained, as it has proven to be successful so far (art. 7 and Annex VII).<sup>19</sup>

Moreover, the directive should acknowledge in art. 7 that there are several heat pumps technologies: electric, thermally driven, as well as hybrid appliances. This would reflect the situation in ecodesign, where electric and thermally driven heat pumps are already considered as specific technologies, and it has been proposed that hybrids should be, too.

Electric heat pumps are the most efficient technology to use electricity for heating. They reach their highest efficiency levels when used in new and renovated well-insulated buildings, equipped with low temperature radiators / underfloor heating.

Hybrid appliances (an electric heat pump combined with a condensing boiler) are excellent technologies for existing buildings. They can be installed without any prior adaptation of the building envelope and they facilitate staged renovation, i.e. to progressively add insulation. By switching to other energy carriers when needed, hybrid heat pumps alleviate stress on the electricity grid and reduce infrastructure costs. They provide flexibility and support resource adequacy in an integrated gas-electricity system.

Thermally-driven heat pumps use gas extremely efficiently. They are well-suited for existing buildings, allowing for replacement without further adaptation costs on the building envelope. Gas heat pumps make use of the existing gas infrastructure and can already be used with renewable gases like biomethane.

### **Ensure coherence across the ‘Fit for 55’ package.**

The provisions envisaged for the renewable energy directive should be complemented by coherent proposals across the ‘fit for 55 package’.

- The new gas package should:

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<sup>18</sup> European Commission, in-depth analysis supporting the A Clean Planet for all Communication, p. 104-105.

<sup>19</sup> While this provision is not the only reason for the success of heat pumps, sales of hydronic electric heat pumps have more than doubled between 2011 and 2019 (source EHI figures, 11 markets across Europe).

- Enable the use of renewable and decarbonised gases in buildings, because demand from all economic sectors (i.e.: not only heavy-industry and transport) is a key driver for supply.
- EU-wide targets should be introduced for the production and distribution of decarbonised and renewable gases.
- Encourage the greening of gas with a flexible regulatory framework for Member States, regional and local public authorities.
- Introduce fair technical rules defining the interaction between new gases and heaters.
- Ecodesign and energy label should support the installation of technologies working with new gases, to ensure that the roll-out of appliances working with green gases be synchronised with the production and distribution of these gases in the grid.
- The heating industry is committed to play its part in creating a hydrogen value chain and will continue so via the European Clean Hydrogen Alliance's Round Table on Buildings.
- The directives for energy efficiency and for the energy performance of buildings should push for a faster replacement of old and inefficient heating equipment; this will be a key driver for the growth of renewable heating.
  - 40% target for energy efficiency
  - 6% annual target to replace old and inefficient heaters.
  - The scope of renovation requirements in public buildings should be extended to all public buildings.
  - The PEF revision in the Energy Efficiency Directive should reflect the increasing share of renewable gases in the EU mix.
  - Introduce a 60% greenhouse gas emissions reduction target in 2030 (in line with the need to achieve 55% emissions cuts by 2030), with an adequate governance to uphold it.
  - Acknowledge hybrid appliances explicitly in the directive.
  - Reintroduce systematic checks of heating equipment and introduce an energy label for the installed stock, to raise awareness on need to replace old and inefficient heaters.
  - Introduce a replacement obligation for old and inefficient heating equipment and a scrappage scheme to overcome the financial barrier of upfront costs.
  - Assess the creation of an indication of CO2 performance for buildings in the use phase.
  - Train enough installers to handle the 'Renovation Wave': upskilling installers and increasing their number will be essential to deliver faster replacement with new heating equipment.
  - Replacement of heaters should be considered as an example of deep renovation, due to high energy savings and CO2 cuts.

#### **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](http://www.ehi.eu)*