EHPA – Amendments EPBD recast proposal
March 2022

About EHPA

The European Heat Pump Association (EHPA) promotes awareness and deployment of heat pump technology in Europe. All activities aim at creating a market environment that facilitates a faster deployment of heat pump technology to unleash its benefits on a European level: efficient heating and cooling using renewable energy. EHPA also coordinates the Heat Pump Keymark – a European certification scheme for all heat pumps, combination heat pumps and hot water heater.

Introduction

The fit for 55 package is an important opportunity to further expand the energy efficiency benefits and renewable energy contribution of heat pump technologies, as well as to support their large-scale deployment following the EU Strategy for Energy System Integration. Most recently, the REPowerEU communication includes a fast forward target of 10 million hydronic heat pumps to be installed by 2026 aiming at doubling the installation rate, and a total of 30 million newly installed hydronic units by 2030/31. Extrapolating this to all heat pump technologies covered in EHPA statistics, would represent more than 18 million heat pumps by 2026 and 53 million heat pumps by 2031.

An ambitious Energy Performance of Building Directive is important for decarbonizing our heating sector by fully unlocking the potential for heat pump deployment in the EU. Heating still accounts for 28% of all energy used in the EU, this also represents 12% of EU GHG emissions, so shifting to renewables in this sector is very important. Recognizing the full potential of heat pump technologies enables the fit for 55% package to be ambitious and to increase ambition in the future, as heat pump technology is once available and will become more impactful with the decarbonisation of the electricity mix.
Summary – EHPA Position

Giving visibility to heat pumps and the role they play in decarbonization processes:

- **Art. 2 – Definition of Heat Pump**: Reintroduce the definition of heat pump

- **Art. 2 (40) – Definition of heat generator**: Add a definition that focuses on the process used in a heat pump but does not limit the sources and sinks to allow for possible future technological developments

- **ANNEX I**: Remove the weighting factors to improve consistency in the article and avoid misleading interpretations of PEFs

Highlighting the role of heat pumps in zero emissions buildings:

- **Art. 2 (2) – Definition of zero emission buildings**: Insert the renewable sources from the grid among the listed energy sources to fully unlock the heat pump potential

- **ANNEX III and Article 7 (2) – GWP**: Replace the GWP with the calculation of the life-cycle greenhouse gas emissions expressed in CO2 equivalent, as it is considered a more appropriate calculation method for buildings

- **ANNEX III and article 7 (2)**: Apply an incremental approach on the whole life carbon calculation, focusing first on those construction materials and technical equipment with the highest carbon intensity to avoid disruption which may delay the needed acceleration

EHPA PROPOSAL

<table>
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### Art 2 – old definition 18

| 18. ‘heat pump’ means a machine, a device or installation that transfers heat from natural surroundings such as air, water or ground to buildings or industrial applications by reversing the natural flow of heat such that it flows from a lower to a higher temperature. For reversible heat pumps, it may also move heat from the building to the natural surroundings; | 18. ‘heat pump’ means a machine, a device or installation that transfers heat from natural surroundings such as air, water or ground to buildings or industrial applications by reversing the natural flow of heat such that it flows from a lower to a higher temperature. For reversible heat pumps, it may also move heat from the building to the natural surroundings; | 18. ‘heat pump’ means a machine, a device or installation that transfers heat from/to sources/sinks such as air, water or ground to or from buildings, for the purpose of providing heating, cooling or domestic hot water. |

### Comment

In the EPBD Recast Proposal, the definition of ‘heat pump’ has been deleted but the definitions of boiler, district heating, heating system and heat generator have not been adapted or deleted. Heat pumps deserve their proper definition in this Directive because they have been recognized as essential to achieving climate targets and developing efficient energy systems. The role that has been conferred to heat pumps by the System Integration Strategy and the very recent REPowerEU communication demonstrates their importance.

In 2020, the EU Strategy for Energy System Integration suggested the need for electrifying heat of a large part of Europe's residential and commercial buildings, leading to a target of around 50 million heat pumps installed by 2030 (and requiring an annual growth of about 16% throughout this decade). With the REPowerEU Communication, the doubled down its ambition level by communicating the need to increase annual heat pump sales by a factor of 2 over the next 5 years.

In discussions EHPA had with the EC, the EC was positive on reintroducing the definition of “heat pump”. The proposed heat pump definition is at the same time precise and does not limit the sources and sinks to allow for possible future technological developments.

### Art 2 definition 2 zero emission buildings

| 2. ‘zero-emission building’ means a building with a very high energy performance, as determined in accordance with Annex I, where the very low amount of energy still required is fully covered by energy from renewable sources generated on-site, renewable sources from the grid, from a renewable energy community within the | 2. ‘zero-emission building’ means a building with a very high energy performance, as determined in accordance with Annex I, where the very low amount of energy still required is fully covered by energy from renewable sources generated on-site, renewable sources from the grid, from a renewable energy community within the |
Heat pumps are one of the key elements in achieving zero emission targets in the building sector. The definition provides a clear and ambitious perspective in achieving this goal. However, it is appropriate to consider the geophysical diversity of the EU territories and the difficulties that in-situ renewable energy production might encounter. Therefore, we believe that it is appropriate that renewable sources from the grid are also included in this list.

A building could still be “zero-emission” and have a very high energy performance if it uses a heat pump that extracts on-site renewable energy from the environment and uses renewable energy from the grid as driving energy. Therefore, **renewable sources from the grid** should be included among the listed energy sources.

### Art. 2 – Definition 40 ‘heat generator’

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<th>40. ‘heat generator’</th>
<th>means the part of a heating system that generates useful heat for uses identified in Annex I, using one or more of the following processes:</th>
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<td>(a) the combustion of fuels in, for example, a boiler;</td>
<td>(b) the Joule effect, taking place in the heating elements of an electric resistance heating system;</td>
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<td>(c) the vapor compression cycle or a sorption cycle of a heat pump;</td>
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</table>
(c) capturing heat from ambient air, ventilation exhaust air, or a water or ground heat source using a heat pump;

Comment

The reintroduction of the definition of heat pumps (see amendment on article 2 old definition 18) leads to the adaptation of the definition of heat pumps under the macro area of heat generator. The proposal is to add a definition that focuses on the process used in a heat pump to be in line with the different processes listed but does not limit the sources and sinks to allow for possible future technological developments.

Art 7 – replacing Art 6

2. Member States shall ensure that, before construction of new buildings starts, the technical, environmental and economic feasibility of high-efficiency alternative systems, if available, is taken into account.

2. Member States shall ensure that the life-cycle Global Warming Potential (GWP) is calculated in accordance with ANNEX III and disclosed through the Energy Performance certificate of the building:

   (a) as of 1 January 2027, for all new buildings with a useful floor area larger than 2000 square meters; and
   (b) as of 1 January 2030, for all new buildings.

Comment

The heat pump industry is fully aware and open to a whole-life carbon assessment, however the metric and terminology currently proposed by the EC could be misleading. “Global warming potential (GWP)” is known as a metric expressing the potential of different gases as an absolute
value. As currently written in the EC EPBD recast proposal Annex III “the GWP is communicated as a numeric indicator for each life-cycle stage expressed as kgCO2e/m² (of useful floor area)”, it is very clear that the intention of the Commission is to calculate the life-cycle greenhouse gas emissions expressed in CO₂ equivalent. This is also in line with the statement made by the EC itself in its explanatory memorandum to the EPBD Recast Proposal: “The proposal will support the replacement of inefficient fossil-fuel boilers by systems with no direct GHG emissions, such as heat pumps and other renewable based technologies.” In addition it is the metric that is currently used at large scale in every area that concerns the buildings sector. Therefore, it is appropriate to replace the “life-cycle global warming potential (GWP)” by “greenhouse gas emissions expressed in CO₂ equivalent”.


2. The energy needs for space heating, space cooling, domestic hot water, ventilation, lighting and other technical building systems shall be calculated in order to optimise health, indoor air quality and comfort levels defined by Member States at national or regional level.

The calculation of primary energy shall be based on primary energy factors or weighting factors per energy carrier, which may be based on national, regional or local annual, and possibly also seasonal or monthly, weighted averages or on more specific information made available for individual district system.

Primary energy factors or weighting factors shall be defined by Member States. In the application of those factors to the calculation of energy performance, Member States shall

2. The calculation of primary energy shall be based on primary energy factors (distinguishing non-renewable, renewable and total) per energy carrier, which have to be recognised by the national authorities and may be based on national, regional or local information.

Primary energy factors can be set on an annual seasonal, monthly, daily or hourly basis or on more specific information made available for individual district systems.

Primary energy factors or weighting factors shall be defined by Member States. The choices made and data sources shall be reported according to EN 17423 or any superseding document. Member States may opt for an average EU primary energy factor for electricity established pursuant to Directive (EU) .../... [recast EED] instead of a primary energy factor reflecting the electricity mix in the country.
ensure that the optimal energy performance of the building envelope is pursued.

In the calculation of the primary energy factors for the purpose of calculating the energy performance of buildings, Member States may take into account renewable energy sources supplied through the energy carrier and renewable energy sources that are generated and used on-site, provided that it applies on a non-discriminatory basis.

| for an average EU primary energy factor for electricity established pursuant to Directive (EU) .../... [recast EED] instead of a primary energy factor reflecting the electricity mix in the country |

Comment

In comparison to the current EPBD, the possibility to use weighting factors instead of primary energy factors has been deleted from the first and second paragraph of annex I art. 2 but not in the third paragraph. In discussions with the EC, it became clear that the intention was to remove weighting factors from the whole article. For reasons of consistency in the whole article, the option to use weighting factors should be deleted from the third paragraph as well. This will also avoid that national authorities would use this as a justification for giving their own interpretation to the scientific PEF.

Annex III: Requirements for new and renovated zero-emission buildings and calculation of life-cycle global warming potential (GWP) referred to in art 2 (2) and art. 7

| EPBD Recast Proposal COM(2021)802 | EHPA Proposal |
*Note: the threshold should be smaller than the threshold for total primary energy use established at the Member State level for nearly zero-energy non-residential buildings type other than offices.

The total annual primary energy use of a new or renovated zero-emission building shall be fully covered, on a net annual basis, by:

- energy from renewable sources generated on-site and fulfilling the criteria of Article 7 of Directive (EU) 2018/2001 [amended RED],
- renewable energy provided from a renewable energy community within the meaning of Article 22 of Directive (EU) 2018/2001 [amended RED], or
- renewable energy and waste heat from an efficient district heating and cooling system in accordance with Article (24(1) of Directive (EU) .../... [recast EED]

### EU climatic zone
- **Mediterranean**
  - Residential building: <60 kWh/(m²·y)
  - Office building: <70 kWh/(m²·y)
  - Other non-residential building: < NZEB total primary energy use defined at national level

- **Oceanic**
  - Residential building: <60 kWh/(m²·y)
  - Office building: <85 kWh/(m²·y)
  - Other non-residential building: < NZEB total primary energy use defined at national level

- **Continental**
  - Residential building: <65 kWh/(m²·y)
  - Office building: <85 kWh/(m²·y)
  - Other non-residential building: < NZEB total primary energy use defined at national level

- **Nordic**
  - Residential building: <75 kWh/(m²·y)
  - Office building: <90 kWh/(m²·y)
  - Other non-residential building: < NZEB total primary energy use defined at national level

### EU climatic zone
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A zero-emission building shall not cause any on-site carbon emissions from fossil fuels.

Only where, due to the nature of the building or lack of access to renewable energy communities or eligible district heating and cooling systems, it is technically not feasible to fulfil the requirements under the first paragraph, the total annual primary energy use may also be covered by energy from the grid complying with criteria established at national level.

II. Calculation of life-cycle global warming potential (GWP) of new buildings pursuant to Article 7(2).

For the calculation of the life-cycle global warming potential (GWP) of new buildings pursuant to Article 7(2), the GWP is communicated as a numeric indicator for each life-cycle stage expressed as kgCO2e/m2 (of useful floor area) averaged for one year of a reference study period of 50 years. The data selection, scenario definition and calculations shall be carried out in accordance with EN 15978 (EN 15978:2011. Sustainability of construction works. Assessment of environmental performance of buildings. Calculation method). The scope of building elements and technical equipment is as defined in the Level(s) common EU framework for indicator 1.2. Where a national calculation tool exists or is required for making disclosures or for obtaining building permits, that tool may be used to provide the required disclosure. Other calculation tools may be used if they fulfil the minimum criteria laid down by the Level(s) common EU framework. Data regarding specific construction products calculated in accordance with [revised Construction Products Regulation] shall be used when available.
calculated in accordance with [revised Construction Products Regulation] shall be used when available.

**Comment**

The zero-emissions building definition needs to be extended because all energy sources that can be used in a zero-emission building should be put on a level playing field. Therefore, it is essential that there are no carbon emissions from fossil fuels not only on-site, but also in the generation and/or distribution processes of renewable energy communities or district heating and cooling systems.

The heat pump industry is fully aware that whole-life carbon assessments are important in achieving climate neutrality, however the metric and terminology currently proposed by the EC could be confusing. “Global warming potential (GWP)” is known as a metric expressing the potential of different gases as an absolute value. After having discussed with the EC, it is clear that the intention is to calculate the life-cycle greenhouse gas emissions expressed in CO₂ equivalent. That is also the metric that is currently used at large scale in every area that concerns the buildings sector. Therefore, it is appropriate to replace the “life-cycle global warming potential (GWP)” by “greenhouse gas emissions expressed in CO₂ equivalent”.

Annex III refers to the Level(s) common EU framework for indicator 1.2. approach and standard EN 15978:2011. These documents are still very high level, meaning that a detailed methodology and guidance is missing at this moment and should be developed. It is important that such a methodology is harmonized across the EU.

The current proposal seems to envisage a cradle to grave approach for all building elements and technical equipment regardless of the carbon intensity of these elements and equipment. A detailed and harmonised methodology and guidance will have to be developed in general and specifically also for the heat pump industry. This will take time and increase costs for the sector which should be balanced against the carbon intensity of an early and encompassing cradle to grave approach in this sector. The impact of legislation on the whole value chain should be kept in mind and disruption should be avoided even more because of the need to accelerate heat pump deployment as put forward in the recent REPowereu Communication. It includes a fast forward target of 10 million hydronic heat pumps to be installed by 2026 aiming at doubling the installation rate, and a total of 30 million newly installed hydronic units by 2030/31. Extrapolating this to all heat pump technologies covered in EHPA statistics, would represent more than 18 million heat pumps by 2026 and 53 million heat pumps by 2031. In order to prepare the market properly, to not disrupt this acceleration and to allow for the development of a sound and harmonised methodology across the EU, the EC should apply an incremental approach, focusing first on those construction materials and technical equipment with the highest carbon intensity.
<table>
<thead>
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<th>Article 2 – Definition 24</th>
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<tbody>
<tr>
<td>24. ‘Life-cycle Global Warming Potential (GWP)’ means an indicator which quantifies the global warming potential contributions of a building along its full life-cycle;</td>
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Comment

Given the proposed amendments to select the calculation of the life-cycle greenhouse gas emissions expressed in CO$_2$ equivalent as metric instead of GWP, we propose to delete article 2, definition 24 (GWP Definition).

The heat pump industry is fully aware that whole-life carbon assessments are important in achieving climate neutrality, however the metric and terminology currently proposed by the EC could be confusing. “Global warming potential (GWP)” is known as a metric expressing the potential of different gases as an absolute value. After having discussed with the EC, it is clear that the intention is to calculate the life-cycle greenhouse gas emissions expressed in CO$_2$ equivalent. That is also the metric that is currently used at large scale in every area that concerns the buildings sector. Therefore, it is appropriate to replace the “life-cycle global warming potential (GWP)” by “greenhouse gas emissions expressed in CO$_2$ equivalent”.