

## European Heat Pump Association AISBL

### **EHPA Response on the Consultation regarding the Draft Commission Delegated Regulation establishing the technical screening criteria for which economic activity qualifies as sustainable & Annexes on climate change mitigation & climate change adaptation<sup>1</sup>**

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#### Introduction

EHPA welcomes the taxonomy initiative that aims at steering investments towards economic activities that are sustainable, including activities in renewable energy. The taxonomy initiative could be an opportunity for greening our economy and for increasing competitiveness of sustainable economic activities towards climate neutrality in the EU. In order to do so, the potential of heat pump technologies should be fully unlocked by taking into account all technical aspects and benefits. It is therefore essential that the technical screening criteria are well designed, consistent in the different sections, valorise the benefits of heat pump technologies in comparison to traditional heating technologies and that they are in line with other EU legislation.

**Achieving carbon neutrality by 2050 as laid down in the European Green Deal is the overall target. This should not be compromised by adding technical screening criteria in the annexes of the Delegated Regulation which limit the availability and potential of efficient heating and cooling technologies supplied by renewable energies that are key to achieve carbon neutrality. When in some sections very strict screening criteria are applied (in this case on the GWP) that artificially limit the heat pump market while at the same time traditional heating systems using fossil fuel qualify as environmentally sustainable in other sections, this could negatively impact the energy and climate targets. Due to the resulting limited availability of heat pumps on the market, more investors will invest in traditional heating systems using fossil fuel, creating a contradictory effect on the energy and climate targets. Over its use phase, emissions from a heat pump, even containing refrigerants with a certain GWP, are much lower than emissions from any traditional heating system using fossil fuel.<sup>2</sup> A heat pump replacing a traditional heating system using fossil fuel saves at least 50% of CO<sub>2</sub> emissions.<sup>3</sup>**

#### **1. Need for alignment across the sections that address heat pump technologies**

Both the annex on climate change mitigation and the annex on climate change adaptation are inconsistent as regards to heat pump technologies. These technologies fall under six different sections<sup>4</sup>. In each of these sections, different technical screening criteria are applied. As a consequence, depending on the section, a different range of heat pump technologies (and even fossil-based space heating and water heating systems) can qualify as environmentally sustainable (see annex for a detailed overview of all the sections that refer to heat pump technologies):

- Section 4.16 *Installation of electric heat pumps*, covers detailed technical screening criteria on Ecodesign and GWP but only for the installation of electric heat pumps, meaning that only the electric heat pumps that meet these criteria qualify as environmentally sustainable according to the Taxonomy Regulation.
- In section 3.4. *Manufacture of energy efficiency equipment for buildings*, both heat pumps that comply with the detailed technical screening criteria of section 4.16<sup>5</sup> and also space heating and domestic hot

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<sup>1</sup> COMMISSION DELEGATED REGULATION (EU) .../... of XXX supplementing Regulation (EU) 2020/852 of the European Parliament and of the Council by establishing the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation or climate change adaptation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives

- Annex I Technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives
- Annex II Technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change adaptation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives

<sup>2</sup> See point 3 of this paper and Annex 1 for more details

<sup>3</sup> Even in the case of a direct boiler replacement. If the building is renovated at the same time, the emission savings are higher.

<sup>4</sup> See Annex 2

<sup>5</sup> « (j) heat pumps compliant with the technical screening criteria set out in Section 4.16 of this Annex; »

water systems rated in the top energy labelling class in accordance with Regulation (EU) 2017/1369 qualify as environmentally sustainable. As a consequence, in this section more heating technologies would qualify as environmentally sustainable than in section 4.16.

- In section 7.3 *Installation, maintenance and repair of energy efficiency equipment*, much more heating and water heating systems qualify as environmentally sustainable. In this section, the environmentally sustainable heating and water heating systems are not restricted to heat pump technologies, but the only requirement is that they are “highly efficient”.<sup>6</sup> In contradiction to section 3.4, this efficiency is not linked to a Regulation such as the energy labelling Regulation. This opens the door for a very free interpretation and for any heating or water heating system, also traditional heating technologies using fossil fuel, to qualify as environmentally sustainable according to the Taxonomy Regulation.
- In Section 7.6 *Installation, maintenance and repair of renewable energy technologies*, the technical screening criteria are defined in yet another way. Only “heat pumps contributing to the targets for renewable energy in heating and cooling in accordance with Directive (EU) 2018/2001” qualify as environmentally sustainable. Here the detailed technical screening criteria of section 4.16 do not apply and also efficiency is not taken up as a screening criterion for an environmentally sustainable investment.
- In Section 7.7: *acquisition and ownership of buildings*, the technical screening criteria do not refer to the energy efficiency or the renewable aspect of the space heating system. But instead the criteria require that it is operated through energy monitoring and assessment.<sup>7</sup>
- In Section 8.1: *Data processing, hosting and related activities*, the cooling system only qualifies as environmentally sustainable if it has a max of 10 GWP for the mixture of the used refrigerants. No technical screening criteria on efficiency and the renewable aspect of the heat pump system are mentioned even though the heat pump system can be used both for heating and cooling and the waste heat can be recovered.

From this overview it is clear that depending on the sections, the technical screening criteria for heating and water heating systems to qualify as environmentally sustainable are more or less strict. In section 7.3 also traditional heating systems using fossil fuels would comply without any detailed criteria whereas in section 4.16 very detailed criteria are applied but only on electric heat pumps. The draft Delegated Act states that “the analysis retained criteria that were considered to be consistent with EU legislation, reflect a high level of environmental ambition, promote a level playing field, and be easy for economic operators and investors to use.”<sup>8</sup> The inconsistent way in which heat pump technologies are addressed in the different sections makes it difficult for economic operators and investors to use and it is not contributing to the promotion of a level playing field.

To provide clarity for the economic operators and investors that will be using this document and to contribute to the promotion of a level playing field, alignment is needed. In the second part of this paper, we propose to align the criteria by requiring the heating system to be highly efficient and supplied by renewable energies in order to qualify as environmentally sustainable.

**Alignment is needed to make the document easy to use and to promote a level playing field. The technical screening criteria for all heat pump technologies should only be addressed in one section, for example in section 4.16 *heat pump technologies*. Other sections should refer to that section, so when speaking about heat pump technologies, the same criteria apply throughout the whole document.**

## **2. The efficient and renewable character of heating and cooling technologies such as heat pumps should be pointed out as environmentally sustainable**

Heat pump technologies are both energy efficient solutions according to Ecodesign and Energy labelling and they are renewable energy solutions under REDII. In the draft annexes on climate change mitigation and climate change adaptation, these benefits are addressed in different sections:

- *Energy efficiency:*
  - 3.4 g: *space heating and domestic hot water systems rated in the top energy labelling class in accordance with Regulation (EU) 2017/1369:*
  - 4.16 b: *energy efficiency requirements laid down in the implementing regulations under Directive 2009/125/EC are met*

<sup>6</sup> « (d) installation and replacement of heating, ventilation and air-conditioning (HVAC) and water heating systems, including equipment related to district heating services, with highly efficient technologies;”

<sup>7</sup> where the building is a large non-residential building (with an effective rated output for heating systems, systems for combined space heating and ventilation, air-conditioning systems or systems for combined air-conditioning and ventilation of over 290 kW), it is efficiently operated through energy monitoring and assessment

<sup>8</sup> Draft Delegated Regulation supplementing Regulation (EU) 2020/852 of the European Parliament and of the Council by establishing the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation or climate change adaptation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives ; p. 4.

- *Renewable energy: 7.6 c: installation, maintenance, repair and upgrade of heat pumps contributing to the targets for renewable energy in heating and cooling in accordance with Directive (EU) 2018/2001 and the ancillary technical equipment*

As a consequence, under section 3.4. also space heating and domestic hot water systems that are not supplied by renewable energies but that are in the top energy labelling class, qualify as environmentally sustainable. And under section 7.6 only the renewable character of heat pump technologies is highlighted without reference to the efficient character of this technology.

To have the highest impact on climate change mitigation and adaptation, space heating and domestic hot water systems should only qualify as environmentally sustainable if

- they fall under Ecodesign or can prove their efficiency by mean of appropriate standards or methods and where applicable under the highest class that is populated in the Energy Labelling Regulation AND
- they contribute to the targets for renewable energy in heating and cooling by using renewable or waste heat and cold.

**The technical screening criteria should point out the double advantage of heating and cooling technologies that show high efficiency and are supplied by renewable energies. Both the efficiency and the renewable criteria should apply throughout the annexes as the technical screening criteria for all space heating and domestic hot water systems to qualify as environmentally sustainable.**

**Therefore, the following technical screening criteria should apply throughout both annexes when referring to space heating or domestic hot water systems:**

- **Energy efficiency:** energy efficiency requirements laid down in the implementing regulations under Directive 2009/125/EC are met and where applicable, the space heating and domestic hot water systems are rated in the top energy labelling class in accordance with Regulation (EU) 2017/1369;
- **Renewable energy:** installation, maintenance, repair and upgrade of heating and cooling technologies contributing to the targets for renewable energy in heating and cooling in accordance with Directive (EU) 2018/2001 and the ancillary technical equipment

### **3. Criteria in section 4.16.: reference to specific GWP criterion has a contradictory effect on the EU's energy and climate targets**

In section 4.16 of the annex on climate change mitigation, the installation and operation of electric heat pumps qualifies as environmentally sustainable if it complies with both of the following criteria:

- “(a) refrigerant threshold: Global Warming Potential does not exceed 675;
- (b) energy efficiency requirements laid down in the implementing regulations under Directive 2009/125/EC are met”

For the technical selection criterion on energy efficiency, this section refers to the dynamic Ecodesign framework. Instead of referring in a similar way to the F-gas regulation, a detailed max GWP criterion of < or = 675 is introduced. Adding a specific GWP value (such as <=675) significantly increases the threshold for heat pump technologies to qualify as environmentally sustainable. This will de facto slow down the deployment of heat pump technologies even though the massive heat pump deployment is crucial to achieve the EU's energy and climate targets. In its EU Strategy for Energy System Integration, the EC aims at a 40% electrification of heating in residential buildings and 65% electrification of heating in the service sector by 2030. Assuming that the “energy efficiency first” principle is applied, most of these buildings should be equipped with one or several heat pumps. This implies a quadrupling of the current amount of heat pumps by 2030 to achieve our energy and climate targets.<sup>9</sup>

- Introducing a specific GWP threshold will put an unnecessary and potentially harmful burden on the development and market penetration of heat pump technologies. Out of 1.45 million heat pumps sold in 2019, 830.601 (57,3%) were air-water and geothermal heat pumps still using mostly refrigerants with a GWP above the 675. Introducing the threshold of GWP 675 would artificially limit this existing product portfolio. Due to the limited available heat pump products, an investor will be more likely to choose an alternative heating solution such as traditional heating systems using fossil fuel, which in other sections of the annexes still qualify as environmentally sustainable. This creates **a contradictory effect with regards to the EU's energy and climate targets since over its use phase, emissions from a heat**

<sup>9</sup> With an estimated building stock of 120 million buildings, the number of needed appliances will be around 48 million units, higher, if the deployment of more than one unit in multi-family and commercial buildings is considered. The installed base in heating heat pumps is estimated to reach about 13,5 million units at the end of 2020.

**pump, even containing refrigerants with a certain GWP, are much lower than emissions from any traditional heating system using fossil fuel.<sup>10</sup> A heat pump replacing a traditional heating system supplied by fossil fuel saves at least 50% of CO2 emissions.<sup>11</sup> (see Annex 1).**

- Adding this criterion might limit heat pump deployment to “unusable solutions” - since building codes in some Member States do not allow flammable refrigerants in public buildings. This would slow down the decarbonisation of many public buildings, hospitals, schools, etc.<sup>12</sup>

The heat-pump industry is ready and willing to follow many of the (already dynamic) EU regulations that contribute to improving the quality of the product at the right pace and has already taken all the steps necessary. Regarding the GWP value of refrigerants, the F-gas Regulation is already taking care of a phase down of GWP while at the same time obtaining the energy and climate targets. The F-gas regulation ensures that the market as a whole is moving towards lower GWP refrigerants by limiting the total amount of the F-gases that can be sold in the EU from 2015 onwards and by phasing them down in steps to one-fifth of 2014 sales in 2030.

**The 675 GWP requirement should be deleted from the technical screening criteria which should instead provide a generic reference to the F-gas regulation (similar to the generic reference to the Ecodesign rules) that foresees a dramatic reduction of GWP from heat pumps over the next 10 years anyhow but at a stable pace. In section 4.16, heat pump technologies should qualify as environmentally sustainable if it complies with all three of the following criteria:**

- ***“(a) refrigerant threshold: ~~Global Warming Potential does not exceed 675~~; requirements laid down in the F-gas Regulation 517/2014 are met***
- ***(b) energy efficiency requirements laid down in the implementing regulations under Directive 2009/125/EC are met***
- ***(c) contributing to the targets for renewable energy in heating and cooling in accordance with Directive (EU) 2018/2001***

#### **4. Criteria in section 8.1: data processing, hosting and related activities - reference to specific GWP criteria has negative effects**

In section 8.1 of the annex on climate change mitigation *data processing, hosting and related activities* qualify as environmentally sustainable if *“the global warming potential (GWP) weighted average for the mixture of refrigerants used in the data centre cooling system does not exceed 10, unless it is proven that such low GWP refrigerants cannot be used for exceptional reasons or would significantly reduce the energy efficiency of the cooling systems. The calculation of the global warming potential weighted average, including the inventory of the refrigerants used at the sites or to provide the services, is consistent with the method described in Annex IV to Regulation (EU) No 517/2014 of the European Parliament and the Council.”*

Just as in section 4.16, also in this section a detailed max GWP criterion is introduced. A similar argumentation as for section 4.16 applies here. Adding a specific GWP value (such as  $\leq 10$ ) significantly increases the threshold for heat pump technologies to qualify as environmentally sustainable which will de facto slow down the much needed deployment of heat pump technologies in these crucial years to achieve the EU’s energy and climate targets. Usually, the equipment needed to cool data centres is quite large and requires higher charges of refrigerants, making it more difficult from a safety point of view to use flammable refrigerants.

Adding this criterion might also limit heat pump deployment to “unusable solutions” - since building codes in some Member States do not allow flammable refrigerants in certain public buildings. This would slow down the decarbonisation of many public buildings, hospitals, schools, etc where data centres are located.<sup>13</sup>

**The 10 GWP requirement should be deleted from the technical screening criteria which should instead provide a generic reference to the F-gas regulation that foresees a dramatic reduction of GWP from heat pumps over the next 10 years anyhow but in a stable an industry-friendly way.**

<sup>10</sup> See point 3 of this paper and Annex 1 for more details

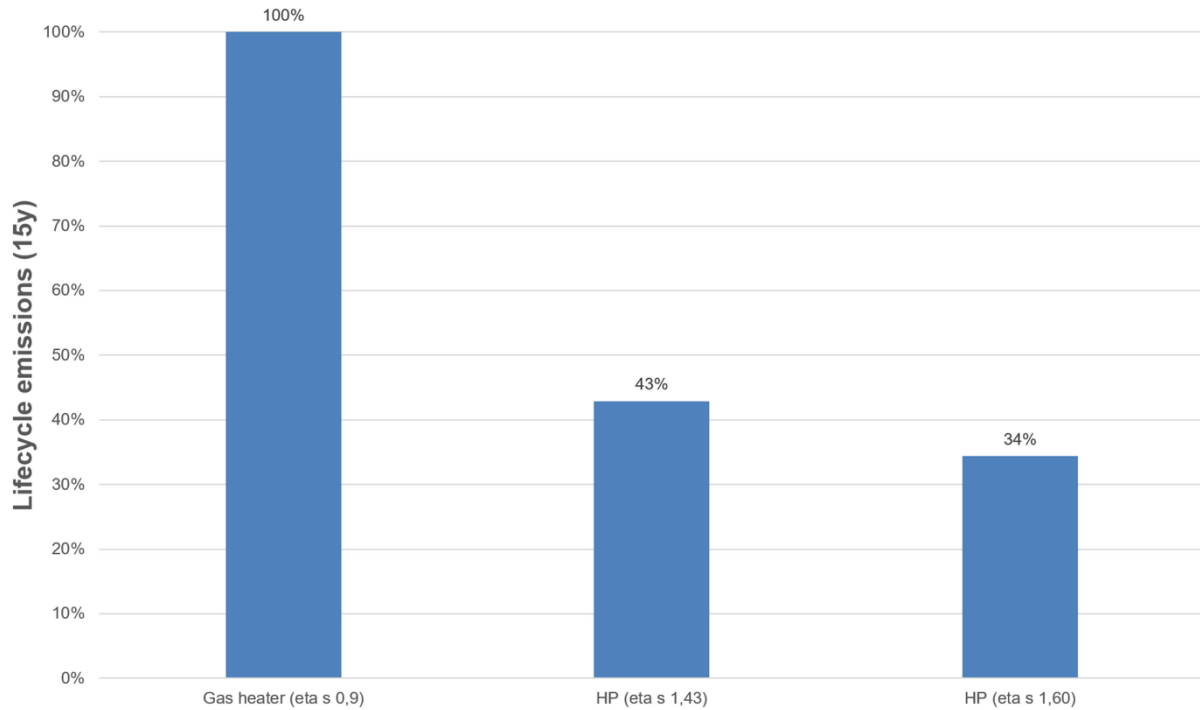
<sup>11</sup> Even in the case of a direct boiler replacement. If the building is renovated at the same time, the emission savings are higher.

<sup>12</sup> Arrêté CH35/GH37 in France

<sup>13</sup> Arrêté CH35/GH37 in France

### Annex 1: GHG equivalent lifecycle emissions of different heating systems

GHG equivalent emissions of different heating systems



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This graph shows the comparison of greenhouse gas (GHG) equivalent emissions over a 15 year lifecycle for a fossil gas heater, a heat pump with an efficiency (eta s) of 1.43 and a heat pump with an efficiency (eta s) of 1.6. It is obvious that heat pump technology (even containing refrigerants with a certain GWP) reduces GHG equivalent emissions by more than half compared to a gas heater. The savings will improve with improving efficiency and an increasing share of renewable energy in electricity generation.

<sup>14</sup> Assumptions: Emission factor electricity: 275g/kWh el; Emission factor gas: 242 g/kWh thermal, Primary energy factor 2,1; Thermal capacity: 9kW; operating hours: 2000

## Annex 2: Overview of sections in the Annexes on climate change mitigation and climate change adaptations referring to heat pump technologies

- 3.4 *Manufacture of energy efficiency equipment for buildings* (Annex on climate change mitigation p. 68; Annex on climate change adaptation p. 53)
  - (g) *space heating and domestic hot water systems rated in the top energy labelling class in accordance with Regulation (EU) 2017/1369;*
  - (j) *heat pumps compliant with the technical screening criteria set out in Section 4.16 of this Annex;*
- 4.16 *Installation of electric heat pumps* (Annex on climate change mitigation p. 133)
  - 1) *The installation and operation of electric heat pumps is eligible if it complies with both of the following criteria:*
    - (a) *refrigerant threshold: Global Warming Potential does not exceed 675;*
    - (b) *energy efficiency requirements laid down in the implementing regulations under Directive 2009/125/EC are met*
  - 2) *For air to air heat pumps with rated capacity of 12kW or below, indoor and outdoor sound power levels are below the threshold set out in the implementing regulations under Directive 2009/125/EC.*
  - 3) *Physical climate risks identified by performing an assessment (climate projection & assessment of impacts )*
  - 4) *environmental degradation risks related to water quality and water stress are identified and addressed, in accordance with a water use and protection management plan, developed with stakeholders*
  - 5) *waste management plan is in place and ensures maximal reuse, remanufacturing or recycling at end of life, incl. contractual agreements with waste management partners, financial projections or project documentation*
- 7.3 *Installation, maintenance and repair of energy efficiency equipment* (Annex on climate change mitigation p. 215; Annex on climate change adaptation p. 241)
  - (d) *installation and replacement of heating, ventilation and air-conditioning (HVAC) and water heating systems, including equipment related to district heating services, with highly efficient technologies;*
- 7.6 *Installation, maintenance and repair of renewable energy technologies* (Annex on climate change mitigation p. 220; Annex on climate change adaptation p. 247)
  - (c) *installation, maintenance, repair and upgrade of heat pumps contributing to the targets for renewable energy in heating and cooling in accordance with Directive (EU) 2018/2001 and the ancillary technical equipment;*
- 7.7: *acquisition and ownership of buildings* (Annex on climate change mitigation p. 221; Annex on climate change adaptation p. 250)
  - *where the building is a large non-residential building (with an effective rated output for heating systems, systems for combined space heating and ventilation, air-conditioning systems or systems for combined air-conditioning and ventilation of over 290 kW), it is efficiently operated through energy monitoring and assessment*
- 8.1: *Data processing, hosting and related activities* (Annex on climate change mitigation p. 224)
  - “3. *The global warming potential (GWP) weighted average for the mixture of refrigerants used in the data centre cooling system does not exceed 10, unless it is proven that such low GWP refrigerants cannot be used for exceptional reasons or would significantly reduce the energy efficiency of the cooling systems. The calculation of the global warming potential weighted average, including the inventory of the refrigerants used at the sites or to provide the services, is consistent with the method described in Annex IV to Regulation (EU) No 517/2014 of the European Parliament and the Council.*”