

## European Heat Pump Association AISBL

### EHPA Position Paper on the revision of the F-gas Regulation (517/2014)

2022

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## Introduction

On 5 April 2022, the European Commission (EC) made a legislative proposal to update the F-gas Regulation (Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on fluorinated greenhouse gases, amending Directive (EU) 2019/1937 and repealing Regulation (EU) No 517/2014). The proposal is now being negotiated by the European Parliament and the Council, in the framework of an ordinary legislative procedure.

The European Heat Pump Association (EHPA), representing the heat-pump technologies value chain in Europe (heat pump and component manufacturers, research institutes, universities, testing labs and energy agencies) is a **strong supporter of the current F-gas Regulation** which – following a realistic schedule – has contributed to the significant decrease of emissions from fluorinated gases in Europe and has set the right direction to do so effectively in the future.

EHPA is also fully committed to the implementation of the European Commission's **REPowerEU plan** and its targets, which require **around 20 million new heat pumps to be installed in the EU by 2026 and nearly 60 million by 2030**. It also calls for increased efforts to meet the objectives of the European Green Deal and the "Fit for 55" package as soon as possible, especially in the heating and cooling sector.

## Summary

### This position paper presents

- **EHPAs concern about an EC F-gas Regulation proposal that risks jeopardising the EU's overall ambition to achieve its decarbonisation and energy security goals.**
  - o The phase-down trajectory suggested in the F-gas Regulation proposal is incompatible with an accelerated massive deployment of heat pumps (REPowerEU targets).
  - o The F-gas Regulation proposal fails to take into account the decarbonisation impact of massive heat-pump deployment. This latter considerably outweighs any potential benefits from further reducing emissions from refrigerants (energy efficiency first principle).
  - o The F-gas Regulation proposal is based on unrealistic and unproven assumption, that fully switching all application areas to natural refrigerants is possible within the next three to five years. It ignores the wide range of systems and the time needed to adapt the value chain.
  - o The F-gas Regulation proposal suggests a timeline for the phase-down of fluorinated greenhouse gases and new bans on products that is inconsistent with other policy requirements, creating a high level of uncertainty for green industry.
- **Suggestions** on shaping the proposed F-gas Regulation in a way that would still result in higher ambition towards a low emission energy system but which recognises the interplay between REPowerEU, the F-gas and REACH regulations.

**The European Commission should consider treating the heat pump sector as crucial to the success of the decarbonisation of heating and cooling in Europe and should shape the relevant legislation accordingly.**

## 1. The F-gas Regulation proposal risks jeopardising EU's overall ambition on decarbonisation and energy security

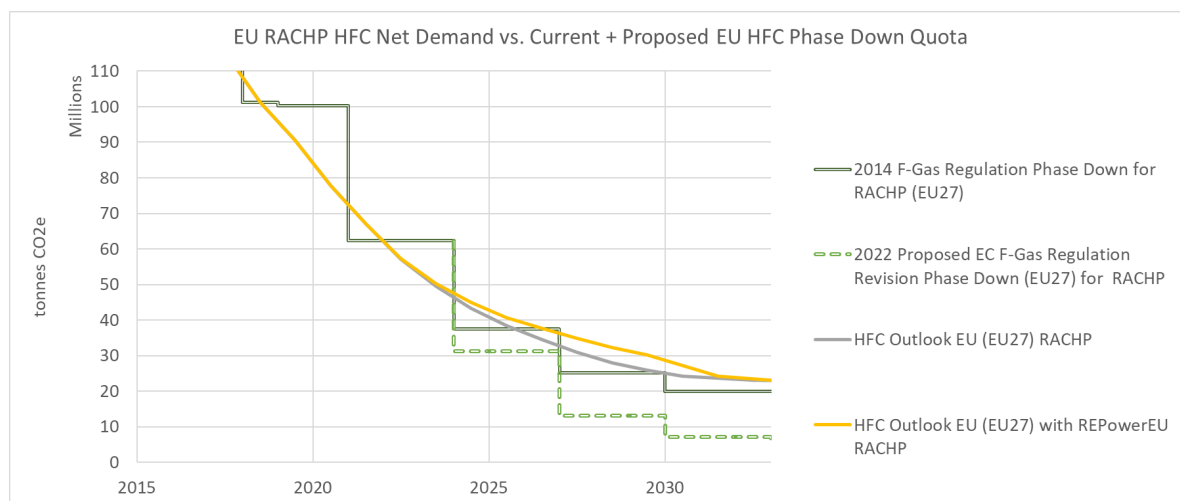
EHPA welcomes certain provisions in the F-gas Regulation proposal which extend requirements on leak checks, containment, reporting, certification, and training. However, we fear that the proposed phase down of fluorinated greenhouse gases (Annex VII) and the additional bans for heat pumps (Annex IV (17 and 18)) will slow down the EU's efforts towards overall better climate change mitigation and more energy security.

## 1.1. The proposal does not support the ‘REPowerEU’ plan

The European Commission’s REPowerEU plan published on 18 May 2022 calls for accelerated heat pump deployment to help the EU reduce its dependency on Russian gas for heating in homes, buildings and industry. This requires the doubling of annual heat-pump sales, adding 10 million hydronic heat pumps by 2026, and reaching a total of 30 million hydronic heat pumps by 2030. As all heat pump technologies contribute to the EU’s energy security, EHPA calculates that this means a total of around 20 million heat pumps by 2026 and nearly 60 million installed units by 2030. This mass deployment of heat pumps must be considered in the current F-gas Regulation review and should lead to precautions that ensure the supply of sufficient amounts of refrigerants until the 2030s.

Yet, instead of taking the “REPowerEU” package into consideration, the F-gas proposal limits the use of F-gases by heat pumps and puts the two initiatives into conflict with one another.

Recent modelling carried out by the European Partnership for Energy and the Environment (EPEE)<sup>1</sup>, **shows how the F-gas Regulation proposal leaves no HFC<sup>2</sup> quota available for new RACHP<sup>3</sup> equipment from 2027 onwards, significantly limiting the growth opportunity of this crucial industry.**



However, the current F-gas Regulation, when applied to the REPowerEU targets, already means that the current F-gas quotas will have to be used for a far larger number of heat pumps. Roughly estimated, it means that a heat pump in 2030 will only be able to use 15% of the CO<sub>2</sub> equivalent used by a heat pump in 2021 – in other words, an overall reduction of 85%. Whether the industry will be able to meet these requirements across the full range of desired heat pump applications is by no means certain.

Instead of limiting heat pump deployment, European policy should provide **an unprecedented level of support for massive and accelerated technology deployment** based on both, the “Energy Efficiency First Principle” (see below) and the new geopolitical priorities of the EU.

## 1.2. The proposal disregards the ‘Energy Efficiency First’ principle (and the broader scope of the ‘Fit for 55’ package)

In its Energy Efficiency First Guidelines, the Commission states that “[...] the [Energy Efficiency First] principle requires consideration of potential negative impacts on energy efficiency of specific decisions [...] that could prevent energy efficiency in the long run.”<sup>4</sup> This assessment has not been properly carried out in the impact assessment of the F-gas Regulation proposal<sup>5</sup> and, in EHPA’s view, the proposal would clearly have a negative impact on energy efficiency.

<sup>1</sup> <https://epeeglobal.org/hfc-outlook-eu/>

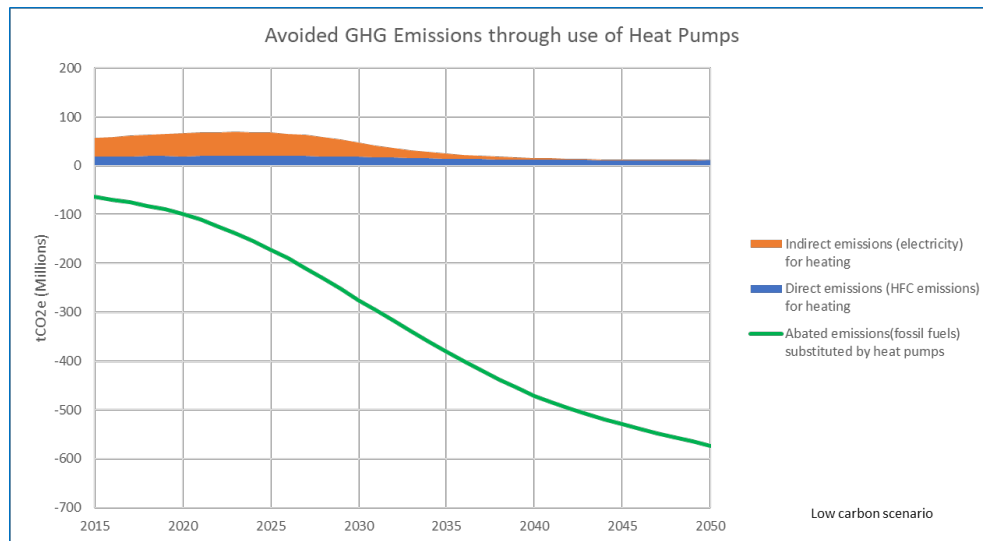
<sup>2</sup> HFC : hydrofluocarbons

<sup>3</sup> RACP : refrigeration, air-conditioning and heat pump

<sup>4</sup> ANNEX to the COMMISSION RECOMMENDATION on Energy Efficiency First: from principles to practice. Guidelines and examples for its implementation in decision-making in the energy sector and beyond (C(2021) 714 final), p. 7.

<sup>5</sup> In the Explanatory Memorandum of the F-gas Regulation proposal it is stated that “[s]pecial attention has also been paid to the fact that the decarbonisation of the energy system will require high growth rates for heat pumps that currently are

The EPEE model<sup>6</sup>, previously referred to concludes that “*abated fossil fuel CO<sub>2</sub> emissions in 2050 from heat pumps systems will be 47 times greater than their direct (i.e. refrigerant) and indirect (i.e. electricity) greenhouse gas emissions.*”



We fail to see in the impact assessment and the supporting study any in-depth analysis on the energy efficiencies, safety, technological and economical feasibility of the alternatives considered in order to build the proposal. The consequence of its incomplete assessment of the “Energy Efficiency First” principle is that the proposal fails to take into account **the decarbonisation impact of a massive heat-pump deployment. Yet this deployment will considerably outweigh any potential benefits from further reducing emissions from refrigerants.** Given the importance of the heating and cooling sector (responsible for 50% of EU final energy demand, which in turn is mostly met from burning fossil fuels), **the “silo approach” on HFC reduction in the proposed F-gas Regulation actually risks reducing the EU’s ambition level on decarbonisation as it will obstruct and slow down the needed massive deployment of heat pumps.**

This slow-down also **puts other targets of the European Green Deal and the “Fit for 55” package at risk**, namely a higher share of renewable energy, a smarter and more circular energy system and better air quality<sup>7</sup>.

### 1.3. The proposal ignores the high variety of heat pump systems and the time needed to change the value chain

Heat pump technologies are based on different thermodynamic principles, use different energy sources (air, water and ground, waste heat) and heat distribution systems (hydronic such as underfloor heating and radiators or air based such as convectors). What’s more, they provide useful heat at different temperature levels and can be installed indoors or outdoors (which brings different safety requirements). The space available, building traditions and skills as well as safety/fire regulations and building codes limit the use of certain technologies and explain the wide variety of solutions deployed. **While progress has been made in reducing average GWP values significantly, there is no one size fits all solution for all heat pumps for buildings and industry.**

**The F-gas Regulation proposal is based on the unrealistic and unproven assumption, that fully switching all heat pump application areas to natural refrigerants is possible within the next three to five years.** Concretely speaking, today there are a very limited number of hydronic and air to air heat pumps of rated capacity up to 12kW using natural refrigerants such as propane on the market. So the F-gas Regulation proposal ignores the current variety of solutions, and the time needed to change the full value chain – from design to production to certification to installation, safety regulations, maintenance, dismantling and recycling. Based on Eurovent and Keymark data, this would require more than 30,000 different types of heat pumps to be redesigned (about 8 to 10 years are usually needed to redesign a whole product portfolio).

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marketed with F-gases in the Union” and that “*the proposed review of the quota system, following the preferred option of the impact assessment, has sufficient buffer to allow for such growth in heat pump deployment*”. However, the impact assessment fails to properly weight the consequences of a potential slow-down of heat-pump deployment against expected gains from HFC emission reductions, nor does it even consider potential gains arising from an accelerated heat-pump deployment due to reduced constraints on refrigerants.

<sup>6</sup> <https://epeeglobal.org/hfc-outlook-eu/>

<sup>7</sup> It is important to note that heat pumps provide decarbonised, efficient, renewable and smart solutions needed for residential, commercial and industrial applications across all sectors of Europe’s economy.

**A rushed approach would not accelerate, but reduce the speed of heat-pump deployment as it would ignore the time needed to change the full value chain at different levels:**

- Product development cycles take about three to four years if all goes well. However many different aspects of the value chain are involved. Products and components -including their safety concepts- would have to be researched and developed. And switching from high pressure refrigerants to medium pressure refrigerants requires significant design changes.
- Working with new types of (flammable) refrigerants requires trained installers. Installers need to be trained and certified, similar to the process taken for F-gases, and that takes time.
- Building codes and standards on safety and fire regulations need to be adapted to allow for natural refrigerants that are flammable to be used in among others wall-mounted heat pumps inside residential buildings. This includes flats in multi-family dwellings and commercial buildings. Adjustment of national and regional legislation and standards also takes additional time.

#### 1.4. The proposal suggests a timeline that is inconsistent with other policy requirements

**The F-gas Regulation proposal suggests a timeline for the HFC phase-down and new bans on products that does not match with other requirements. This creates a high level of uncertainty for green industry:**

- The heat-pump industry may face potential new restrictions on the use of refrigerants under the REACH/PFAS framework (these will not be known before 2026)<sup>8</sup>.
- The heat pump industry is expected to comply with safety standard EN IEC60335-2-40<sup>9</sup>. This safety standard was recently revised (May 2022) but still needs to be harmonised at European level with the Low Voltage Directive<sup>10</sup>. In addition, it does not allow for a fast and full transition to flammable refrigerants in all applications and cases, which is nonetheless what the European Commission assumes in its F-gas proposal. This standard only deals with the use of R290 during the use phase of the product, but does not fully address the question of the safety of equipment during the transport, maintenance or end-of-life phases of the products – most notably for the recovery phase.
- Heat pumps will need to meet new efficiency criteria under Ecodesign lots 1,2,10 and 21<sup>11</sup>.
- Heat pumps will require retesting due to the introduction of new testing methods<sup>12</sup>.
- Heat pumps will face restrictions on hazardous substances due to the RoHS directive<sup>13</sup>.

**This multi-dimensional set of requirements puts a burden on existing resources and unsettles the industry in carrying out sufficient R&D activities to support the new, higher EU climate and energy goals.** The use of imprecise terminology and unclear scope found in the F-gas Regulation proposal creates **additional uncertainty**. **EHPA urges the EC to implement clear, unambiguous definitions which avoid misunderstandings or circumvention.**

## 2. The need for an ambitious but consistent and realistic new F-gas Regulation

EHPA has been a **strong supporter of the F-gas Regulation framework from the start**. EHPA recognises the Regulation's contribution to a significant decrease in emissions from fluorinated gases in Europe and the deployment of refrigerants with lower GWP, while ensuring a steady growth of the heat-pump market. However, as explained above, the proposed HFC phase down (Annex V) and the additional bans for heat pumps (Annex IV (17 and 18)) will jeopardise EU's ambition level on decarbonisation and energy security. Consequently,

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<sup>8</sup> The Netherlands, Germany, Norway, Denmark and Sweden are preparing a restriction proposal to cover a wide range of PFAS uses under the REACH Regulation. They are expected to submit the proposal to ECHA in January 2023.

<sup>9</sup> The IEC 60335-2-40 revision 7.0 from May 2022 applies to Household and similar electrical appliances – safety – part 2-40: particular requirements for electrical heat pumps, air-conditioners and dehumidifiers.

<sup>10</sup> [The low voltage directive \(LVD\) \(2014/35/EU\)](#) ensures that electrical equipment within certain voltage limits provides a high level of protection for European citizens, and benefits fully from the single market. It has been applicable since 20 April 2016.

<sup>11</sup> Ecodesign lot 10 is expected to kick in from 2025 with possibly new test methods from 2027. Lots 1 and 2 will have new energy efficiency thresholds and test methods by 2025, and lot 21 probably by 2030.

<sup>12</sup> Ecodesign lot 10 is expected to kick in from 2025 with possibly new test methods from 2027. Lots 1 and 2 will have new energy efficiency thresholds and test methods by 2025, and lot 21 probably by 2030.

<sup>13</sup> [Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment](#)

EHPA makes the following suggestion to make the new F-gas Regulation more ambitious in respect to EU's overall climate and energy security goals.

## 2.1. Ensure the growth potential for heat pumps when setting for the phase-down trajectory

The phase-down trajectory suggested in the F-gas Regulation proposal is incompatible with an accelerated massive deployment of heat pumps.

**For this reason, EHPA proposes:**

- **Principally, to keep the current phase-down trajectory until 2034 (and re-examine the trajectory in the subsequent revision of the F-gas Regulation) and consider further reduction steps thereafter.**
- **The amended Regulation should ensure that all the following conditions are taken into account:**
  - The phase-down trajectory must take into account the interplay with potential restrictions arising from other policies (such as arising from REACH/PFAS framework, the IEC60335-2-40 standard, the Ecodesign lots 1,2,10 and 21, the Sustainable product initiative, RoHS directive, as well as national building codes and legislation) ensuring that the “legislative cocktail” will under no circumstance hinder the required massive and accelerated deployment of heat pumps;
  - The phase-down trajectory must take into account the massive ramp up of the number of sales and that the industry needs up to 10 years after the entry into force of a piece of legislation to redesign its whole product portfolio;
  - An explicit reference to the REPowerEU Action Plan must be added, requiring the EC to assess the impact of the F-gas Regulation on the deployment of heat pumps;
  - A realistic transition scenario in line with market reality, and safety considerations, based on a thorough and scientific analysis;
  - A “heat-pump safeguard” mechanism must be added in the F-gas Regulation (exemption, specific allocation of quotas for all types of heat pumps or other) to ensure upfront that the REPowerEU Action and the “Energy Efficiency First” principles shall be implemented, and that no obstruction will be brought to the required accelerated heat-pump growth.

## 2.2. Reconsider or remove points 17 and 18 in Annex IV

The bans on heat pumps suggested in the F-gas Regulation proposal are unclear, inconsistent and unrealistic.

**For this reason, EHPA proposes:**

- **Principally, to delete all new bans for heat pumps (and re-examine potential new bans in the subsequent revision of the F-gas Regulation).**
- **The amended Regulation should ensure that all the following conditions are taken into account:**
  - Ambiguity in scope (capacities and type of equipment) must be avoided and definitions must be crystal clear;
  - The “Energy Efficiency First” principle must apply and consistency with the REPowerEU Action Plan and the Renewable Energy Directive must be ensured, meaning that the required accelerated heat-pump growth will not be obstructed;
  - The interplay with potential restrictions arising from other policies must be taken into account. These include the REACH/PFAS framework, the IEC60335-2-40 standard, the Ecodesign lots 1,2,10 and 21, the Sustainable product initiative, the RoHS directive, as well as national building codes and legislation. The “legislative energy cocktail” must under no circumstance hinder the required massive and accelerated deployment of heat pumps;
  - A comprehensive safety analysis must be conducted;
  - Industry needs up to 10 years after the entry into force of the legislation to redesign its whole product portfolio;
  - The Regulation must provide clarity on how the bans will operate in practice, how they can be enforced and how the functioning of the European single market can be ensured with these bans.