

EPEE POSITION ON THE REVISION OF THE REGULATION ON CERTAIN FLUORINATED GASES (EU 842/2006)

The European Partnership for Energy and the Environment (EPEE) represents the refrigeration, air-conditioning and heat pump industry (RAC) in Europe and employs over 200,000 people in Europe. EPEE welcomes the European Commission's efforts to revise and improve the current provisions of the F-Gas Regulation.

Fluorinated gases currently contribute 1.1% to global greenhouse gas emissions and in the EU the current provisions of the F-Gas Regulation and the Directive on Mobile Air-Conditioning (MAC) are expected to achieve at least a stabilization of F-gas emissions at today's level over the next 20 years. Nevertheless, along with the roadmap for a low carbon economy, the EU Commission identified potential additional F-Gas emission savings of 70 Mtonnes of CO₂ equivalents in 2030. EPEE estimates that **the heating and cooling industry can make a substantial contribution to achieve this goal** provided that the complexity of the sector and the strong interconnection between refrigerants, energy consumption, uptake of renewable energy technologies and safety are respected.

Cap and Phase-Down: 30 % HFC consumption reduction by 2020

A cap and phase-down scheme which gradually reduces the HFC consumption quantity expressed in CO₂ equivalents provides the required flexibility, allowing for refrigerant choice while driving the market towards better containment, reuse and refrigerants with a lower global warming potential. It provides **the triple benefit of regulatory certainty, room for innovation and time for all users to optimise and validate technological solutions**. According to the latest evidence based on two studies funded by EPEE, one from the French research institutes ARMINES/ERIE and the other from British SKM Enviros, a phase-down could achieve a reduction in HFC consumption by 30% in 2020 (vs. 2010) and substantially more by 2030.

For the RAC sector, the average abatement cost in 2030 is expected to be in the range of €15 to €25/tonne of CO₂ saved, representing a more realistic assessment of the required investment compared to <€20/tonne of CO₂ saved as estimated by Öko-Recherche. A 30% consumption reduction by 2020 and a potential 60 to 65% consumption reduction by 2030 would result in fluorocarbon emission savings of approximately 74 Mtonnes of CO₂ equivalents in the RAC sector alone.

Key benefits of a phase-down scheme:

- **Global environmental benefits: Sets the path for a global phase-down**

A global phase-down is currently proposed under the Montreal Protocol and the EU has a unique chance to provide leadership in global developments. By 2050, developing countries will be responsible for more than three quarters of global F-Gas emissions.

- **Reinforces the F-Gas Regulation: Stimulates leakage prevention and refrigerant recovery**

The share of direct greenhouse gas emissions from leakages and end-of-life losses represents **around 30% of total greenhouse gas emissions in the sector**. By restricting available F-gas quantities, a phase-down enhances the effectiveness of both leakage prevention and recovery efficiency.

- **Saves energy: Permits the use of the most efficient refrigerant**

Across the entire RAC market, indirect CO₂ emissions from energy used represent some **70% of total RAC-related greenhouse gas emissions**. The ability to select the most efficient refrigerant

for a given application and climate zone is therefore indispensable to achieve significant total greenhouse gas emission reductions.

- ***Cost-effective, safe, and timely: Cost can be spread over time, which is needed for additional training, planning and implementation***

Using fluorocarbons with a reduced GWP capitalises on the huge investments made in the past decades for energy efficiency optimisation. It does not require massive additional R&D investment and ensures high energy efficiency and reliability in critical sectors. On the other hand, substantial training efforts are needed for technicians and operators when switching to other technologies. A phase-down schedule offers the major benefit of spreading these significant efforts out over time. This is particularly important given the current economic climate and the fact that installers have just undergone substantial training in application of the F-Gas Regulation. Moreover, local safety regulations often do not permit the use of certain fluids based on their safety class. Therefore the phase-down approach leaves the option of using low toxic, non-flammable fluids wherever necessary.

- ***Ensures the uptake of heat pumps: Saves 155 Mtonnes of CO₂ (net) in 2030***

In order to maximize heat pump benefits it is vital that a cost effective and energy efficient heat pump refrigerant is available. Heat pumps, a technology which mainly requires F-gases to run safely and efficiently, are expected to save around 155 Mtonnes of CO₂ (net) in 2030 compared to fossil fuel fired heating systems. **This is equivalent to nearly twice the total greenhouse gas emissions of Austria and at least two times more than the total amount of direct HFC emissions savings achievable across all RAC sectors.** An appropriate phase-down scheme offers flexibility and the possibility for the heat pump sector to continue its growth and provide these considerable reductions. Equally, other emerging technologies that rely on F-gases such as the geothermal Organic Rankine Cycle can further contribute to energy-related CO₂ emission reduction.

- ***Paves the way for 2050: Potential F-Gas consumption cut by up to 80% by 2050***

The use of mildly flammable refrigerants will be important to achieve deep F-Gas consumption cuts as they offer low global warming potential combined with good performance. However, barriers related to codes of practice, national safety regulations as well as currently limited training and qualified personnel restrict their enhanced usage in the short term. A phase-down will allow for the necessary adaptation time for Member States, users and industry. A review clause is recommended after 2020 to update phase down targets towards 2030 based on the progress made.

Conclusion:

EPEE's three key recommendations to achieve an emission reduction of 70 Mtonnes of CO₂ equivalents by 2030

1. Maintain and strengthen the existing F-Gas Regulation (see Annex A)
2. Establish a 30% total HFC consumption reduction by 2020 (see Annex B)
3. Introduce a re-assessment clause in view of the feasibility of a 65% HFC consumption reduction by 2030.

In Annex:

A: Detailed comments on the F-gas Regulation

B: Detailed comments on a phase-down scheme

C: Detailed explanation of the heat pump emission savings

ANNEX A: DETAILED COMMENTS ON THE F-GAS REGULATION

Full implementation and possible improvement of the existing F-Gas Regulation must be ensured as leakage prevention is critical for achieving maximum energy efficiency, fulfilling safety requirements (especially for flammable and/ or toxic refrigerants) and reducing direct emissions. In addition to the already existing provisions, EPEE recommends:

- **Internal Market Legal Basis:**

The choice of the legal basis is key to avoiding market fragmentation by ensuring uniform product rules across the EU. Retaining an internal market legal basis in the revised proposal will ensure uniform product rules for equipment using F-gases and a harmonised approach towards the control of F-gases in a phase down framework. Differing national product rules can only result in market fragmentation and reduced competitiveness in the EU.

- **A broadened scope:**

All road and rail transport refrigeration and all types of air-conditioning should be included. Refrigerated road transport includes vans (<3.5 t), trucks (>3.5 t) and refrigerated trailers, whereas rail transport includes trains, metro, trams.

- **Measures targeted at operators:**

Information campaign should be continued to ensure that operators understand their obligations.

- **Measures targeted at installers, distributors or wholesalers of refrigerants:**

Extend liability should be in place for companies/personnel who interfere with or break into the refrigerant circuit: If they are not duly certified they shall be liable to penalties, as is already the case in some Member States. Distributors or wholesalers should only be allowed to sell refrigerants to certified companies entitled to break into a circuit, as already implemented in France.

- **Measures targeted at companies who assign work on a refrigerant circuit to a contractor:**

Any company or person (not only operators) who assigns work to a third party on a refrigerant circuit shall make sure that this third party is properly certified.

- **Measures targeted at Member States:**

Priority should be given to systematic controls by assigned market surveillance authorities in the Member States. The European Commission should continue with its infringement procedures for Member States which are not yet compliant with the existing F-Gas rules. The European Commission could do more to favour the exchange of information and best practices on implementation and market surveillance by setting up a system similar to the Administrative Co-operation Groups.

- **Spreading best practices - promotion of EU standards:**

Standards play a useful role in sharing best practices in the HVAC industry to improve tightness of refrigerant circuits or qualification of people handling such circuits. For example: Reduction of emission rates (EN 378 (systems) and EN 16084 (components and joints); Qualification of people handling refrigerant circuits (standard EN 13313)).

- **Ensure higher efficiency of end of life recovery:**

Recovery and reuse of refrigerants need to be improved by incentivizing installers and operators (deposit and fee schemes) and reducing administrative burden related to cross-border transportation of recovered refrigerants. More specifically, we urge the Commission to propose

removing F-gas materials from the scope of the Basel Convention, which will allow for increased recovery/reclaim practices throughout the EU, thereby facilitating the markets' ability to meet a cap & phase-down approach.

- ***Introduce a EU central electronic register for certified companies and staff:***

An EU central electronic register for certified companies and staff will facilitate the proper implementation of the F-gas Regulation and ensure that all relevant information on f-gases is available.

- ***Non-discrimination:***

Fluids with a GWP similar to that of “natural fluids” should be treated in a non-discriminatory way. Therefore new generation fluorocarbons should remain excluded from Annex I of the revised Regulation. However, EPEE emphasises that the standards EN 378 and EN 13313 apply to all refrigerants used in stationary RAC systems to ensure safe and energy efficient operation. This is particularly important considering that the provisions of the current F-Gas Regulation related to regular leakage checks and training/ certification requirements only apply to refrigerants listed in Annex I of the regulation.

- ***Re-assessment in 2020:***

Including a review clause after 2020 will allow re-assessing technological and feasibility progress, which is particularly important for emerging markets such as the heat pump sector and for the use of mildly flammable, flammable and toxic refrigerants in view of building codes, standards and competent personnel.

ANNEX B: DETAILED COMMENTS ON A PHASE-DOWN

- ***The importance of the baseline:***

Existing phase-down proposals such as the North American proposal (NA) and the RED A and RED B proposals in the Öko-Recherche Report are referenced to baselines that are related to consumption between 2004 and 2009. However, consumption in the refrigeration, air-conditioning and heat pump sector has grown considerably since these baseline periods. This makes it difficult to achieve any of the proposed phase-down profiles in the early years.

⇒ **EPEE recommendation:**

- Use a baseline that reflects actual consumption, for example by referencing the year 2010.

- ***The importance of including HFCs, HCFCs and CFCs in consumption and emission savings:***

The Commission report does not include HCFCs and CFCs when indicating potential emission savings. However, existing phase-down proposals such as the North American proposal (NA) and the RED A and RED B proposals include these refrigerant gases. Moreover, in 2010 the existing “bank of refrigerants” (refrigerants contained in equipment) in the EU still included approximately 20% of these fluids.

⇒ **EPEE recommendation:**

- In addition to HFCs, include HCFCs and CFCs when calculating consumption reductions and emission savings, taking into account that since 2010 no ozone-depleting substances can be placed on the market in the EU.

- ***Avoiding loopholes: Consumption should take into account refrigerants contained in imported and exported products:***

“Consumption” as defined under the Montreal Protocol does not include refrigerant quantities contained in products that are imported into or exported from the EU. To avoid possible loopholes and the specific impact on EU export, quantities inside products need to be addressed. This is essential if the European Union decides for a unilateral phase-down policy. The quantities inside products are not reported for the moment under the provisions of the current F gas regulation. **For the RAC market as a whole, SKM Enviros estimates that such quantities lead to a 2010 value around 15% higher than consumption** (as defined under the Montreal Protocol). In the stationary air-conditioning and heat pump sector, however, the difference amounts to approx. 40%.

⇒ **EPEE recommendation:**

- Add a 15% margin on top of the 2010 consumption baseline when calculating phase-down scenarios
- Revise the Reporting Article 6 of the current F-gas Regulation to include quantities imported and exported inside products.
- Define a gradual phase down regime that appropriately accounts for HFCs in imported and exported products.

- ***The potential for addressing very high GWP¹ refrigerants:***

In 2010, widely used refrigerants with GWPs >3000 represented 45% of GWP weighted consumption in certain RAC applications. Avoiding the use of these refrigerants in those applications, where there are proven efficient commercially available replacements meeting the

¹ “Very high GWP” according to TEAP definition

same safety criteria, would have the benefit of reducing direct emissions in these RAC applications by between 50% and 70%.

⇒ **EPEE recommendation:**

- Keep the option open to target very high GWP fluids under the F-gas regulation to ensure the conversion to lower GWP refrigerants.

- ***The sensitivity of abatement costs in € per tonne of CO₂:***

The economic analysis is very sensitive to input assumptions related to the extra capital cost in view of using alternative refrigerants, the extra maintenance cost and the difference in energy efficiency. Whilst a cost in the region of €15 to €25 per tonne of CO₂ saved seems realistic on a total base, there is a wide variation between sectors and there remains great uncertainty as abatement costs can swing from negative values to nearly €100 per tonne CO₂. This is for example related to the fact that some of the refrigerant alternatives are only due to enter the market from around 2015 and that performance of RAC systems using these refrigerants is difficult to predict. Other alternative technologies using CO₂ as a refrigerant are only in the early stages of their deployment- making it difficult to predict cost and performance.

⇒ **EPEE recommendation:**

- Target cost-effective measures first such as leakage prevention as stipulated by the existing F-Gas Regulation.
- Propose incentives for reclaiming refrigerants for regeneration or destruction purposes.
- Include a review clause after 2020 to reassess the technological and feasibility progress.

**ANNEX C:
DETAILED EXPLANATION OF THE HEAT PUMP EMISSION SAVINGS**

Based on findings from SKM Enviros Study, page 53

- The emission savings of heat pumps result from the type of primary energy used.
- Emissions are likely to decrease even further due to:
 - Improved grid emissions factor (kg CO₂/kWh)
 - Reduced direct refrigerant emissions
 - Increased efficiency (ecodesign measures)

| | 2010 | 2030 | 2040 |
|--|------|-------|-------|
| Heat Supplied by heat pumps TWh | 600 | 1,300 | 1,500 |
| Gas use avoided TWh | 700 | 1,600 | 1,900 |
| Electricity used by heat pumps TWh | 230 | 530 | 600 |
| Grid emissions factor kg CO ₂ / kWh | 0.41 | 0.23 | 0.14 |
| Energy CO ₂ reducti Mtonnes CO ₂ | 30 | 170 | 260 |
| Annual direct refrigerant emission Mtonnes CO ₂ | 22 | 49 | 43 |
| Allocation of direct emission to HPs Mtonnes CO ₂ | 5 | 15 | 12 |
| Net benefit of heat pumps Mtonnes CO ₂ | 25 | 155 | 248 |
