THE REVISION OF THE F-GAS REGULATION

The climate crisis has been a constant backdrop against which the EU has had to face many other pressing challenges. The Commission and the Council have been busy enacting emergency measures to address high energy prices and security of supply concerns, while the co-legislators have been able to make substantial progress on the EU's plan to slash 55% of its emissions by 2030. However, the EU's efforts to reduce its contribution to climate change do not stop here. In conjunction with its Fit for 55 package, the EU also seeks to update its current rules on the use of environmentally harmful chemicals, such as ozone-depleting substances (ODS) and fluorinated greenhouse gases (F-gases).

WHAT ARE F-GASES?

Fluorinated gases (F-gases) are synthetic, potent greenhouse gases used in a wide range of industrial and consumer applications. They can be used as refrigerants in refrigerators, air conditioners, and heat pumps, as propellants in medical devices and aerosol products, and as blowing agents to make insulation foams and fire suppressants. They are also used as etching gases during the manufacturing of semiconductors and as insulating gases in high-voltage switchgear. They include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF6), and nitrogen trifluoride (NF3).

WHAT ARE OZONE DEPLEATING SUBSTANCES?

Ozone-depleting substances (ODS) are also synthetic chemicals that were widely used in industrial and consumer applications, such as refrigeration, air conditioning, solvents, fire extinguishers, and aerosol propellants. Hiding behind names like chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), they contribute to the destruction of the stratosphere's ozone layer, and some are also very potent greenhouse gases.

CONTEXT

In the 1970s, scientists noticed that the ozone layer was thinning and linked the depletion to the presence of the chemicals, now-referred to as ODS, in the stratosphere. In the 1980s, growing concern among policymakers and the public about the potential serious consequences of ozone depletion on human health and the environment prompted determined international efforts to halt it, culminating in the successful negotiation of the Montreal Protocol to phase out the production and use of these chemicals. The Protocol was signed in 1987 by 197 countries, and the once-threatened ozone layer is now showing signs of recovery.

However, F-gases are frequently used as ODS substitutes in areas where the Montreal Protocol prohibits the use of ODS to protect the ozone layer. As a result, while atmospheric concentrations of the most aggressive types of ODS were decreasing, emissions of F-gas

increased, doubling between 1990 and 2014, while other greenhouse gas emissions decreased. Today, F-gases, the 'go-to' substitute for ODS, account for 2.5% of total greenhouse gas emissions in the EU.

Even if they do not damage the atmospheric ozone layer, F-gases are nonetheless powerful potent greenhouse gases, with an even higher global warming potential (GWP) than the infamous carbon dioxide - up to several thousand times stronger for some. To add further negative elements to the balance, some F-gases can remain in the atmosphere and heat it for tens of thousands of years.

This worrying trend demanded action at both international and EU levels. Internationally, in addition to the 2015 Paris Agreement, the 2019 Kigali Amendment to the Montreal Protocol was negotiated to drive down the production and consumption of HFCs. Domestically, the EU started to regulate certain F-gases, such as HFCs and SF6.

	100-year GWP (carbon dioxide = 1)	Lifetime (years)	Predominant applications
hydrofluorocarbons (HFCs)	Up to 12 400	Up to 220	refrigerants in refrigerators, air conditioners, and heat pumps; propellants in metered-dose inhalers (MDIs)
sulphur hexafluoride (SF6)	23 500	3 200	insulating gas in electrical switchgear; etching gas in the manufacture of semiconductors; inert cover gas during casting in the magnesium factory

EU FRAMEWORK

To control certain F-gases, the EU enacted two proposals: the F-gas Regulation, on which we will focus in this article, and the Mobile Air Conditioning Systems (MAC) Directive, which regulates F-gas used in the air conditioning of cars and vans.

The Commission came up with the F-gas proposal in 2003, and the Regulation was adopted in 2006. It was particularly concerned with preventing leakage during use and with the end-of-life treatment of stationary equipment. The Regulation also contained bans in narrowly defined applications. Seeking increased ambition, the Commission presented in 2012 a proposal to amend the 2006 F-gas Regulation with the goal of reducing F-gas emissions in the EU by two-thirds by 2030 (compared to 2014 levels). Co-legislators adopted the revised F-gas Regulation in 2014, which came into force in 2015 and is still governing F-gas use in the EU today.

Outcomes:

- EU F-gas emissions fell for the first time in 2015, and this downward trend has continued steadily.
- Even though demand for refrigerants remains high, EU demand for HFCs is decreasing as EU industries shift to non-HFC alternatives with lower GWP.

Despite these trends, the Commission predicts that the EU will fall short of its 2030 goal. Furthermore, the EU's greater domestic climate ambition under the EU Climate Law and its increased international obligations necessitate significant additional reduction efforts. In this context, the Commission decided to review the F-gas Regulation in April 2022, proposing a more ambitious schedule for phasing down F-gas.

The Parliament and the Council have approved their respective negotiating mandates, and interinstitutional talks known as trilogues kicked off with an initial round on 25 April 2023.

Commission's Proposal	Council of the EU	European Parliament
The Commission's proposal **prolongs** and **tightens the quota system** for the placement of HFCs in the market. The Commission does not propose a complete phase-out, but instead caps quotas beginning in 2048 at 4 200 133 (Annex VII).	The Council's negotiating mandate **increases the quotas** for 2024–2026 and 2027–2029, and maintains the Commission's proposal to cap quotas from 2048 onwards at 4 200 133.	MEPs advocate for a **greater phase-out of HFCs in the EU market from 2039**, with a **complete phase-out by 2048**.
The Commission proposes limiting the production rights of HFC. • **60%** of annual average production from 2011 to 2013 from 1 January 2024 to 31 December 2028 (a) • **30%** from 1 January 2029 to 31 December 2033: (b) • **20%** from 1 January 2034 to 31 December 2035 (c) • **15%** from 1 January 2036 and thereafter (d) (Annex V)	The Council's position maintains all of the Commission's proposed targets.	The Parliament proposes that the 15% cap (d) remain in effect until 31 December 2049, after which it will be reduced to **0%**, effectively prohibiting production beginning in **2050**.
The Commission recommends that Member States **promote the creation of producer responsibility schemes** for the recovery, recycling, reclamation, and destruction of fluorinated greenhouse gases listed in Annexes I and II (Art. 9).	The Council **narrows the scope** of producer responsibility schemes to only include the substances listed in Annex I and Annex II, **Section 1**. Nitrogen trifluoride, sulfuryl fluoride and substances used as inhalation anaesthetics listed in Section 2 and 3 of Annex II are thus excluded.	The position of the Parliament amends the title of the article from "Producer Responsibility Schemes" to "**Extended** Producer Responsibility Schemes." MEPs recommend that Member States **mandate the establishment of extended producer responsibility schemes** for the recovery, recycling, reclamation, or destruction of F-gases listed in Annexes I and II **no later than 31 December 2027**. MEPs also propose that the Commission be tasked with adopting **delegated acts to establish minimum requirements** for producer responsibility schemes by 31 December 2025.

According to the Commission's proposal, each tonne of CO2 equivalent quota should cost **€3** (Art. 17).	The Council recommends lowering the price to **€2**.	MEPs propose raising the price to **€5** in 2024–2026, with subsequent **increases every three years**.
The Commission proposes that it be given the authority to **amend the amount of quota and allocation of remaining ones through delegated acts** when doing so is necessary to avoid significant disruptions in the HFC market or when the mechanism is not achieving its goals and causing unintended consequences (Art. 17).	The Council specifies that delegated acts changing the amount of quotas could be adopted to **compensate for inflation**, and the allocation of remaining quotas where necessary to prevent major disruption. The Council adds a provision focusing on heat pumps, which requires the Commission to **assess the impact of the phase-down of HFC quotas on the EU heat pump market**. If the assessment concludes that the phase-down creates "verified cases" of HFC shortages for specific uses, which may jeopardise meeting the REPowerEU Communication's heat pump deployment rate target, the Commission should adopt delegated acts allowing the market placement of higher amounts in 2024-2026 and 2027-2029. The Council **restricts the additional quotas to 4 410 247 tonnes for the first period and 1 425 536 tonnes for the second one**.	In the provision empowering the Commission to adopt delegated acts to amend the amount of quotas in order to prevent major disruption of the HFC market or undesirable or unintended effects, the Parliament specifies that this includes **adverse impacts on public health and users of MDIs**. Similar to the Council, MEPs propose that the Commission conduct an **annual** assessment of the impact of the HFC quota phase-down on the EU's heat pump market and report to the Parliament and the Council. If the assessment concludes that the phase-down of the HFC quota creates disruptions that endanger the achievement of the REPowerEU heat pump deployment targets, the Commission should adopt delegated acts providing additional quotas to the heat pump industry **until 2029**. In contrast with the Council, which imposes a cap on the amount of quota that can be added, the Parliament **doesn't specify a limit**.
The Commission proposes authorising **exemptions** to exclude from the quota requirements the placement on the market of a product for which **alternatives are either unavailable or cannot be used for technical or safety reasons, or where such alternatives would incur disproportionate costs**. The exemption would be valid for a **maximum of four years** and could be extended if the assessment determined that the alternatives were still unavailable (Art. 16).	The Council's position maintains the exemptions laid down in the Commission's proposal.	MEPs **add** to the provision empowering the Commission to adopt delegated acts authorising an exemption from quota requirements that this also applies in cases where **alternatives cannot be used due to public health risks**.
The Commission's proposal does not include any specific language dealing with per- and polyfluoroalkyl substances (PFAS) or the revision of the REACH Regulation.	The Council's amendments do not mention PFAS or the revision of the REACH Regulation.	The position of the Parliament **includes PFAS**, recognising that the majority of F-gases with lower global warming potential are PFAS, also known as "forever chemicals". MEPs warn that, despite their minor impact on global warming, they pose serious risks to people and the environment. The Parliament emphasises the importance of **ensuring that the new rules don't encourage replacing HFCs with F-gases with lower GWP that are or degrade into PFAS** (Recital 13).

The review clause in the Commission's proposal requires the Commission to publish a **report on the implementation** of the Regulation by **1 January 2033**. Moreover, the Commission's proposal foresees the possibility of **adjusting the GWP values** assigned to F-gases whenever the **IPCC issues new assessment reports** (Art. 35).	Member States recommend bringing forward the **deadline for the implementation report to January 2030**. They also specify that the report should in particular **evaluate the risk of excessive market competition related to high voltage switchgear with more than 145 kV or more than 50 kA short circuit current**. The Council's position foresees that, if necessary, a legislative proposal should be included with the report.	The Parliament's position moves the **deadline for the publication of the report forward to January 2027** and directs the Commission to **closely and continuously monitor technological and market developments in relation to the use of F-gases and their natural alternatives** in the EU. It suggests empowering the Commission to adopt delegated acts to **strengthen prohibitions on the placement on the market** of F-gases with high GWP in products or equipment if evidence of the emergence or accelerated use of alternatives is found. MEPs **link** the F-gas Regulation to the **upcoming revision of the REACH Regulation**, which addresses PFAS, in the review clause. The Parliament proposes that the Commission **evaluate the need to amend the F-gas Regulation to ensure coherence** between the two texts **no later than three months after** the proposed REACH Regulation revision is adopted. MEPs also propose mandating that the Commission publish a **report on the impact of the Regulation on the health sector**, specifically the availability of **MDIs** for the delivery of pharmaceutical ingredients, as well as the **market impact of cooling equipment used in conjunction with batteries**, by 1 January 2027, as part of the review process.
The Commission's proposal encourages the **development or adaptation of certification programmes and training on skills and knowledge** for F-gases listed in Annex I and Annex II Section 1, as well as other relevant alternatives to F-gases (Art. 10).	The Council upholds this provision, expanding it to include **Annex III F-gases used in electrical switchgear** in certification and training on skills and knowledge, and noting that **natural refrigerants** were among the relevant alternatives to F-gases mentioned by the Commission.	The Parliament's position goes even further, introducing a new provision requiring certification programmes and skill and knowledge training to **cover natural alternatives, including their characteristics and advantages over the use of F-gases, as well as their safe handling during installation, servicing, maintenance, repair, and decommissioning**.

*Article 11 of the proposal prohibits the placing of several pieces of equipment listed in **Annex IV** on the market.*

NB: When alternatives are either unavailable or cannot be used for technical or safety reasons, or where such alternatives would incur disproportionate cost, for a specific product or piece of equipment, or for a specific category of products or equipment, the Commission proposes authorising an exemption for up to four years to allow the placement on the market of products and equipment listed in Annex IV containing F-gases or whose functionality is dependent on those. This provision remains in the positions of both the Council and the Parliament (Art. 11).

Article 3 of the proposal defines "placing on the market" as "the supplying or making available to another person within the Union, for the first time, for payment or free of charge, the customs release for free circulation in the Union, and the use of substances produced or the use of products or equipment manufactured for own use".

N/A	N/A	The Parliament introduces a new ban on the placement of **domestic refrigerators and freezers that contain F-gases** on the market starting in **2025** (10a).
The Commission proposes a ban on the placement on the market, **from 2024**, of **new self-contained commercial refrigerators and freezers that contain F-gases with a GWP of 150 or more** (11).	No changes are made to the Commission's proposal by the Council.	The Parliament suggests a **complete phase-out of F-gases in stationary refrigerators and freezers for commercial use** (self-contained equipment), starting in **2024**.
The Commission proposes prohibiting the placement on the market of new **self-contained refrigeration equipment that contains f-gases with a GWP of 150 or more** from **2025** (12).	The Council largely reiterates the Commission's proposal, but with an added **caveat for times when it's necessary to do so for safety reasons**.	The Parliament takes a stronger stance by **covering all self-contained stationary refrigeration equipment that contains f-gases**. For those, MEPs maintain the 2025 deadline but did not follow the Council on the exemption for safety requirements.
The Commission proposes to prohibit the placement on the market of new **stationary refrigeration equipment that contains, or whose functioning relies upon, F-gases with a GWP of 2500 or more**, except equipment to cool products to temperatures below -50°C from **2024** (14).	The Council has not made any changes to the Commission's proposal.	The Parliament **expands the ban to all F-gases while postponing it to 2025**. Moreover, MEPs introduce a **new ban for all stationary refrigeration equipment containing or relying on F-gases for their functionality from 2027** (14a).
N/A	N/A	The Parliament's position **adds** a ban on the use of **F-gases in new transport refrigeration systems that contain, or whose functioning relies upon, F-gases from 2027 for vans and ships and from 2029 for trucks, trailers, and reefer containers**. In addition, MEPs **introduce** a ban on **all F-gases used in new mobile air-conditioning in passenger and cargo ships, buses, trams, and trains from 2029** (23a) **and on new mini, displacement, and centrifugal chillers that contain, or whose functioning relies upon, F-gases from 2027** (23b).

The Commission is prohibiting, starting in **2025**, the placement on the market of **plug-in rooms and other self-contained air-conditioning and heat pump equipment that contain F-gases with a GWP of 150 or more** (17).	The Council adds further details to the ban. **Plug-in rooms and other self-contained air-conditioning and heat pumps (including monobloc) with a maximum rated capacity of 50 kW that contain F-gases with a GWP of 150 or more** would be prohibited beginning in **2027**, with the exception of those used for safety purposes. The threshold would be raised to 750 in cases where using F-gases with a GWP of 150 or less violates safety Regulations. The ban for **other new self-contained air-conditioning and heat pumps that contain F-gases with a GWP of 150 or more**, with the exception of those used to meet safety standards, would be in **2030**. The GWP cap would increase to 750 under the same precautionary conditions.	The Parliament recommends a **complete phase-out of F-gas in all plug-in rooms, monoblocks, and other self-contained air-conditioning and heat pump equipment from 2026**.
The Commission's proposal establishes two distinct dates for the prohibition of the placement of **stationary split air-conditioning and split heat pump equipment** on the market. **2025** for new single-split systems **containing less than 3 kg of F-gases listed in Annex I that contain, or whose functioning relies upon, F-gases listed in Annex I with a GWP of 750 or more**. **2027** for (1) new split systems of a **rated capacity of up to and including 12 kW** containing or relying upon F-gases with a **GWP of 150 or more** and (2) new split systems of a **rated capacity of more than 12 kW** containing or relying upon F-gases with a **GWP of 750 or more**. The Commission includes a precautionary clause for both (18).	While largely repeating the provision, the Council suggests **postponing to 2029 the ban for new split systems of a rated capacity of up to and including 12 kW containing, or whose functioning relies upon, F-gases with a GWP of 150 or more**. Moreover, in their amendments, Member States specify additional banning dates for certain split systems. They proposed a 2027 deadline for air-to-water heat pumps, a 2029 deadline for air-to-air systems, as well as a 2033 deadline for new split systems of a rated capacity of more than 12 kW containing, or whose functioning relies upon, F-gases listed in Annex I with a GWP of 150 or more, except when required to meet safety requirements.	For stationary split air-conditioning and split heat pump equipment, the Parliament suggests banning the placing on the market of new equipment from **2028**, specifying that this would apply to (1) **single split systems**, including fixed double duct systems, **containing less than 3kg of F-gases listed in Annex I**; (2) **split systems of a rated capacity of up to and including 12 kW**, except when required to meet safety standards; (3) **split systems of a rated capacity of more than 12 kW and up to 200 kW containing or whose functioning relies upon F-gases with a GWP above 750**; (4) as well as **split systems of a rated capacity of more than 200 kW containing, or whose functioning relies upon, F-gases**.
N/A	N/A	The Parliament introduces a **ban on all foams containing F-gases from 2030**, unless required to meet national safety standards (19a).
N/A	N/A	MEPs suggest banning, starting in **2030, all technical aerosols that contain F-gases**, except when required to meet national safety standards or when used for **medical applications**.

The Commission's proposal gradually prohibits the installation and replacement of electrical switchgears based on voltage levels. After the specified dates, the Commission proposes prohibiting the placement on the market of all switchgear with insulating or breaking medium that uses or whose functions relies on F-gases with a **GWP of 10 or more**, **unless no alternative exists on technical grounds**.
• **2026** for medium voltage switchgear for primary and secondary distribution **up to 24 k** (a).
• **2030** for medium voltage switchgear for primary and secondary distribution **from more than 24 kV and up to 52 kV** (b).
• **2028** for high voltage switchgear **from 52 and up to 145 kV and up to 50 kA short circuit current** (c).
• **2031** for high voltage switchgear of **more than 145 kV or more than 50 kA short circuit current** (d).
(23)
	The Council's position **deletes** the provision entirely. However, Member States **introduce** the ban on the **putting into operation of new or expanded electrical switchgear with F-gases in Article 13 of the Regulation**. The Council largely repeats the provisions of the Commission's proposal except for (d) for which Member States propose keeping the threshold at a GWP of 10 or more but **delaying the ban until 2032**.
	
	Member States also **introduce a series of derogations** applying to all four types of switchgear covered in the Commission's proposal to ensure the functioning of the grids. A derogation would be granted for switchgear with an insulating or breaking medium with **a GWP less than 2000 if, following an open call for tender, only one or no bidder submitted a tender for switchgear with insulating or breaking medium with a GWP of less than 10 within the two years of their respective dates**.
		The Parliament's position amends the Commission's proposal as follows:
		
		for (a), MEPs maintain the **2026** date but expand the provision to also **include 24 kV and to cover all F-gases**.
		
		for (b) MEPs expand the provision to **include 52 kV** and **cover all F-gases,** and bring the date forward to **2028**.
		
		for (c) MEPs maintain the 2028 date, but expand the provision to **include 145 kV and cover all F-gases**. They also specify that, in case no alternative exists, **only F-gases with a GWP of up to 1000 could be used**.
		
		for (d) MEPs maintain the 2031 date, but expand the provision to **include all F-gases**. They also specify that **only F-gases with a GWP of up to 1000 could be used if no other options are available**.

Others (transition, exemptions, and servicing & maintenance considerations)		
The Commission's proposal **calls for a two-year transition period** during which a products or equipment placed on the market prior to the prohibition dates specified in Annex IV could be subsequently supplied or made available to another party in the EU for payment or free of charge (Art. 11).	The Council's position **maintains the two-year period**.	The Parliament **reduces the transition period to six months**.
N/A	The Council adds a definition of '**safety requirements**' (Art. 3), and clarifies the safety requirements that would allow **Annex IV equipment to be exempted from prohibition**, including in cases where the relevant safety requirements at the specific location do not permit the installation of equipment that uses F-gases with GWP values lower than those specified in the respective prohibitions (Art. 13).	N/A
N/A	The Council states that, beginning in 2035, the use of **sulphur hexafluoride for the servicing or maintenance of electrical switchgear equipment** is prohibited unless it is reclaimed or recycled, unless it can be demonstrated that reclaimed or recycled sulphur hexafluoride cannot be used on technical grounds or is not available in an emergency repair situation (Art. 13).	N/A

To enable the grid expansion required to enable the green transition, the Commission suggests **exempting electrical switchgear from leak checks if they meet one of several conditions**, including if they contain less than 6 kilogrammes of F-gases listed in Annex I (Art. 5).	The Council **maintained the list of conditions exempting leak checks for electrical switchgear**.	The Parliament **removed the provision that allowed electrical switchgear to be exempted from leak testing** if it contained less than 6 kilogrammes of F-gases listed in Annex I.
The Commission's proposal suggests a ban, starting in **2024**, on the **use of F-gases listed in Annex I, with a GWP of 2500 or more, for the servicing or maintenance of refrigeration equipment** (Art. 13).	The Council's position **postpones the ban to 2025**.	The Parliament amends the **2024** ban to concern the servicing or maintenance of **air conditioning and heat pump equipment, mobile and stationary refrigeration equipment, and chillers** by F-gases with a GWP of 2500 or more listed in Annex I. MEPs also suggest an additional ban, starting in **2030**, on the use of **F-gases listed in Annex I, with a GWP of 150 or more** for the servicing or maintenance of stationary refrigeration equipment, with the exclusion of chillers.
The Commission suggests prohibiting the use of F-gases listed in Annex I with a GWP of 25000 or more for the **servicing** or **maintenance** of **refrigeration equipment** from **2024** (Art. 13).	Member States suggest **postponing** from 2024 **to 2025** the prohibition date for the use of F-gases with a GWP of 2500 or more to service or maintain refrigeration equipment. The Council's position also specifies that this concerns **equipment with a charge size of 40 tonnes of CO2 equivalent or more** (Art. 13).	MEPs propose prohibiting, from **2024**, the **servicing or maintenance of air conditioning and heat pump equipment, mobile and stationary refrigeration equipment, and chillers** by f- gases listed in Annex I, with a GWP of 2500 or more; and, from **2030**, the servicing or maintenance of **stationary refrigeration equipment, with the exception of chillers**, by F-gases listed in Annex I, with a GWP of 2500 or more (Art. 13).

CONCLUSION

According to their respective positions, the two co-legislators appear to agree that further reductions in the use of F-gases with high GWP are necessary, albeit they disagree on the timeframe for transitioning to more climate-friendly solutions. More broadly, MEPs wish to strengthen the Commission's proposal by pushing for a more rapid phase-out of HFCs in the EU, starting in 2039 and culminating in a total halt to production and consumption by 2050. They also advocate for a complete phase-out of F-gas use in certain products and equipment, like refrigerators and air conditioners, but also heat pumps and electrical switchgear, for which they believe that doing so is feasible from a technological and financial perspective. MEPs also propose a transition period of just 6 months, down from the Commission's proposed 2 years. The Council's position, on the other hand, takes a more cautious approach, largely maintaining the Commission's proposal regarding the phasing out of the production and consumption of HFCs in the EU, as well as the 2-year transition period for products and equipment listed in Annex IV.

Furthermore, even though some of the Commission's proposed prohibition dates have been pushed back and new derogations for electrical switchgear have been introduced, the Council has largely stuck to the original position on the matter.

The co-legislators will now have to work out their differences, but one thing is certain: the fact that these gases are currently essential to many key sectors makes the already challenging task of driving the development and uptake of more climate-friendly solutions for chemical substances used in such a wide range of products even more complicated. This is evidenced by policymakers' special attention paid to particular products and equipment, anticipating the need to keep an eye on the potentially detrimental effects of Regulation on these strategic sectors and to put safeguards in place. These include the energy sector with heat pumps and electrical switchgear, the digital sector with semiconductors, and the health sector with metered dose inhalers (MDIs) as well as inhalation anaesthetics.