

WindEurope's suggested amendments to the European Parliament's ENVI committee on the proposed F-Gas regulation

Background

The EU has 190 GW of wind energy capacity installed. And wind energy provides for 15% of all the electricity that we consume in Europe. The European Commission want us to expand that to 510 GW in just 8 years by 2030 under the new REPowerEU energy policy to deliver 55% GHG reduction and more energy independence. And by 2050 more than 1,300 GW of wind energy will be installed, providing for 50% of Europe's growing electricity demand.

To deliver on these targets the EU needs to expand and improve its transmission and distribution networks. This will require more investments. Europe currently invests around €40bn a year on grids. By 2025 we will need at least double the amount to expand and optimise our grid infrastructure. ENTSO-E's Ten-Year Development Plan 2022 foresees 43,000 km of new high-voltage transmission lines.

Offshore wind in particular cannot be deployed at scale without parallel development of an interconnected offshore grid. To deliver 55% GHG reduction by 2030 the EU needs 76.4 GW of additional offshore wind capacity (92 GW up from 15.6 GW installed). This requires between 10,000 and 14,000 km of high voltage subsea cables.

Electrical switchgear, circuit breakers, and other gas-insulated equipment and infrastructure play a crucial role in securing the stability and reliability of these transmission and distribution networks. They help to protect and isolate connected equipment from damaging short-circuits and fault currents. They are used across all voltage levels. There are many types of circuit breakers, but most, especially on higher voltage levels, have historically relied on one particular F-gas: sulphur hexafluoride (SF₆) which has a Global Warming Potential (GWP) that is 25,200 times more than that of CO₂.

WindEurope therefore welcomes the Commission's proposal on a new regulation on fluorinated greenhouse gases that will ensure the gradual phase-out of SF₆ in electrical switchgear. This recognises the advances made by the electric equipment manufacturers in developing SF₆-free equipment to help deliver a more sustainable energy system in line with the EU's 2030 and 2050 energy and climate commitments.

Still, we recommend the following amendments to a number of provisions in the proposed F-gas regulation so that it can better support the rapid and massive increase of renewable electricity and the associated transmission and distribution networks required to deliver on the EU's climate and energy commitments.

WindEurope recommendations for a new and fit-for-purpose F-gas regulation

- Set a single and clear threshold of 1,000 Global Warming Potential for high-voltage electrical switchgear to support a competitive market of low impact SF₆-free equipment.
- Adjust the definition of 'placing on the market' to acknowledge the long lead-time of projects in the energy sector, most notably grid development projects.
- Allow exemptions for spare parts and components necessary to maintain existing electrical infrastructure.
- Include technology maturity and market availability as evidence criteria for possible exemptions.

1. Set clear Global Warming Potential thresholds for electrical switchgear

In 2017 emissions from F-gases accounted for about 2.7% of the EU’s total GHG emissions. And SF₆ emissions accounted for less than 0.2% of EU’s emissions (6.7 megatonnes of CO₂eq). SF₆ has a historic widespread use in the energy sector particularly in electrical switchgear, circuit breakers and other gas-insulated equipment and infrastructure.

Electrical equipment manufacturers have made enormous progress in developing reliable SF₆-free solutions for electrical switchgear and circuit breakers. These solutions are now commercially available at medium-voltage levels with the high-voltage levels following soon. All these solutions, even those which rely on F-gas mixtures, provide at least a 95% reduction in GWP at gas mixture level compared to SF₆.

However, the current text of the proposed F-gas regulation Annex IV paragraph 23 would only allow for one specific technology provided by only one company at high-voltage levels to be placed on the market as of 2028. This is a significant shortcoming and puts the energy transition at risk for three reasons.

- 1) It would create significant supply bottlenecks due to the increasingly high demand for grid equipment in line with the expected and necessary electrification of the EU economy and the limited availability of such equipment.
- 2) It would install a single-supplier system when many project developers and network operators are required by law to secure bids from at least two different suppliers in their tendering processes.
- 3) It would lead to unnecessary increases in energy bills for EU citizens and companies. Either directly due to higher costs for network operators or indirectly due to the slowdown of the grid buildout which blocks the deployment of low-cost renewables like wind and solar.

As any delay in grid expansion negatively affects the roll-out of renewable electricity generation and because all SF₆-free solutions provide massive savings at emission and GWP level, WindEurope recommends they should all be eligible to be placed on the market.

Therefore, we recommend the GWP threshold for high-voltage electrical switchgear and circuit breakers is set at 1,000 GWP. For medium-voltage equipment we recommend keeping the lower limit of < 10 GWP and lowering the upper limit to 1,000 GWP.

Suggested formulation for the F-gas regulation

<p>Annex IV §23 Installation and replacement of the following electrical switchgear:</p> <ol style="list-style-type: none"> a) medium voltage switchgear for primary and secondary distribution up to 24 kV, with insulating or breaking medium using, or whose functioning relies upon, gases with GWP of 10 or more, or with GWP of 2000 or more, unless evidence is provided that no suitable alternative is available based on technical grounds within the lower GWP ranges referred to above; b) medium voltage switchgear for primary and secondary distribution from more than 24 kV and up to 52 kV, with insulating or breaking medium using, or whose functioning relies upon gases with GWP of 10 or more, or with GWP of more than 2000, unless evidence is 	<p>Annex IV §23 Installation and replacement of the following electrical switchgear:</p> <ol style="list-style-type: none"> a) medium voltage switchgear for primary and secondary distribution up to 24 kV, with insulating or breaking medium using, or whose functioning relies upon, gases gas mixtures with GWP of 10 or more, or with GWP of 2000 1000 or more, unless evidence is provided that no suitable alternative is available based on technical grounds within the lower GWP ranges referred to above; b) medium voltage switchgear for primary and secondary distribution from more than 24 kV and up to 52 kV, with insulating or breaking medium using, or whose functioning relies upon gases gas mixtures with GWP of 10 or more, or with GWP of more than 2000 1000,
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<p>provided that no suitable alternative is available based on technical grounds within the lower GWP ranges referred to above;</p> <p>c) high voltage switchgear from 52 and up to 145 kV and up to 50 kA short circuit current with insulating or breaking medium using, or whose functioning relies upon gases with GWP of 10 or more, or with GWP of more than 2000, unless evidence is provided that no suitable alternative is available based on technical grounds within the lower GWP ranges referred to above;</p> <p>d) high voltage switchgear of more than 145 kV or more than 50 kA short circuit current with insulating or breaking medium using, or whose functioning relies upon gases with GWP of 10 or more, or with GWP of more than 2000 unless evidence is provided that no suitable alternative is available based on technical grounds within the lower GWP ranges referred to above.</p>	<p>unless evidence is provided that no suitable alternative is available based on technical grounds within the lower GWP ranges referred to above;</p> <p>c) high voltage switchgear from 52 and up to 145 kV and up to 50 kA short circuit current with insulating or breaking medium using, or whose functioning relies upon gases gas mixtures with GWP of 10 or more, or with GWP of more than 2000 1000, unless evidence is provided that no suitable alternative is available based on technical grounds within the lower GWP ranges referred to above;</p> <p>d) high voltage switchgear of more than 145 kV or more than 50 kA short circuit current with insulating or breaking medium using, or whose functioning relies upon gases gas mixtures with GWP of 10 or more, or with GWP of more than 2000 1000, unless evidence is provided that no suitable alternative is available based on technical grounds within the lower GWP ranges referred to above.</p>
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2. Adjust the definition of ‘placing on the market’

The current definition of ‘placing on the market’ (POM) as defined in article 3 (6) and more so article 11 (1) does not accommodate for the specific market activities of the energy sector and particularly the Transmission System Operators and Distribution System Operators.

Grid development projects take several years and often face significant additional delays especially as many projects are influencing each other’s development. It can take between four to ten years for a project to go from planning over approval to final operations.

Technology tendering processes typically take place at the start of the project as they are often pre-required for obtaining the necessary permits. This means that for a significant number of grid projects the new POM will enter into force after the technology has been selected, but before the equipment is installed. With the current text those projects will either have to re-open the tender for the equipment and re-apply for permits or stop the project all together. This delays the projects and comes at great costs for both developers and consumers.

As any delay in grid expansion affects the roll-out of renewable electricity generation WindEurope recommends that the POM refers to the more practical contract signing date for manufacturing and delivery.

Suggested formulation for the F-gas regulation

<p>Art. 11 (1): The placing on the market of products and equipment, including parts thereof, listed in Annex IV, with an exemption for military equipment, shall be prohibited from the date specified in that Annex, differentiating, where applicable, according to the type or global warming potential of the gas contained.</p>	<p>Art. 11 (1): The placing on the market of products and equipment, including parts thereof, listed in Annex IV, with an exemption for military equipment, shall be prohibited from the date specified in that Annex, differentiating, where applicable, according to the type or global warming potential of the gas contained. The decisive</p>
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<p>Products and equipment unlawfully placed on the market after the date referred to in the first subparagraph, shall not be subsequently used or supplied, or made available to other persons within the Union for payment or free of charge or exported. Such products and equipment may only be stored or transported for subsequent disposal and for the recovery of the gas prior to the disposal pursuant to Article 8.</p> <p>Two years following the individual dates listed in Annex IV, the subsequent supply or making available to another party in the Union for payment or free of charge of products or equipment lawfully placed on the market prior to the date referred to in the first subparagraph shall be allowed only if evidence is provided that the product or equipment was placed lawfully on the market prior to the date.</p>	<p>date is the contract signing date for equipment manufacturing and delivery</p> <p>Products and equipment unlawfully placed on the market after the date referred to in the first subparagraph, shall not be subsequently used or supplied, or made available to other persons within the Union for payment or free of charge or exported. Such products and equipment may only be stored or transported for subsequent disposal and for the recovery of the gas prior to the disposal pursuant to Article 8.</p> <p>Two years following the individual dates listed in Annex IV, the subsequent supply or making available to another party in the Union for payment or free of charge of products or equipment lawfully placed on the market prior to the date referred to in the first subparagraph shall be allowed only if evidence is provided that the product or equipment was placed lawfully on the market prior to the date.</p>
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3. Allow exemptions for spare parts and components necessary to maintain existing electrical infrastructure.

The current text of article 11 implies that all components of switchgear that do not meet the criteria set out in Annex IV § 23 would be prohibited from being placed on the market. This in effect constitutes a ban on spare parts needed for maintenance and repair. This is a shortcoming.

As grid infrastructure equipment has expected lifetimes of 50 years or more a ban on SF₆-containing components would render the existing grid liable to equipment failures. These failures could damage the entire electricity network and hamper the energy transition.

The article however does allow for the purchase of F-gases for “the purpose of carrying out the installation, servicing, maintenance, or repair of the equipment containing those gases, or whose functioning relies upon those gases (...)”. The same should apply to F-gas containing components.

In addition, the text does not allow for replacements after a total failure mode in the switchgear. This is particularly relevant for wind turbines where switchgears are customised to fit inside the narrow tower. SF₆-free solutions are less compact than current switchgear and often cannot be installed inside existing turbine towers.

We therefore recommend that components used for replacements or as spare parts to maintain the existing electrical infrastructure are exempted from the current POM restrictions.

Suggested formulation for the F-gas regulation

<p>Art. 11 (5): Only undertakings that hold a certificate required under Article 10(1), point (a) or the training attestation required under Article 10(2), or undertakings that employ persons holding such a certificate or a training attestation shall be allowed to purchase fluorinated greenhouse gases listed in Annex</p>	<p>Art. 11 (5): Only undertakings that hold a certificate required under Article 10(1), point (a) or the training attestation required under Article 10(2), or undertakings that employ persons holding such a certificate or a training attestation shall be allowed to purchase fluorinated greenhouse gases listed in Annex</p>
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<p>I or Annex II, Section 1, for the purpose of carrying out the installation, servicing, maintenance or repair of the equipment containing those gases, or whose functioning relies upon those gases, referred to in Article 5(2), points (a) to (g), and Article 10(2).</p> <p>This paragraph shall not prevent non-certified undertakings, who do not carry out such activities, from collecting, transporting or delivering fluorinated greenhouse gases listed in Annex I and Annex II, Section 1.</p>	<p>I or Annex II, Section 1, and replacement equipment and spare parts for the purpose of carrying out the installation, servicing, maintenance or repair of the equipment containing those gases, or whose functioning relies upon those gases, referred to in Article 5(2), points (a) to (g), and Article 10(2).</p> <p>This paragraph shall not prevent non-certified undertakings, who do not carry out such activities, from collecting, transporting or delivering fluorinated greenhouse gases listed in Annex I and Annex II, Section 1.</p>
	<p>Annex IV (3)(new) 3. The prohibitions on placing on the market set out in point 23 do not apply to replacement equipment and spare parts necessary for the maintenance and repair of equipment already installed and to the extensions of already installed GIS.</p>

4. Include technology maturity and market availability as criteria for possible exemptions.

The current text allows for exemptions to the POM restrictions based on technical ground only. However, it is not clearly defined what constitutes as technical grounds.

In line with our first suggested amendment, we recommend that proven technology maturity and market availability of the electrical equipment should be included in or added to the technical grounds.

This would also support current practices as most network operators are required by law to secure bids from at least two different suppliers in their tendering processes.

Suggested formulation for the F-gas regulation

<p>Annex IV (2) The evidence referred to in point 23, shall include documentation establishing that following an open call for tender no suitable alternative on technical grounds, given the demonstrated specificities of the application, was available that could meet the conditions set out in point 23. The documentation shall be kept by the operator for at least five years and shall be made available to the competent authority of the Member State and to the Commission, upon request</p>	<p>Annex IV (2) 2. The evidence referred to in point 23, shall include documentation establishing that following an open call for tender no suitable alternative on technical grounds (i.e., equipment under real operation conditions for at least 3 years), given the demonstrated specificities of the application, was available that could meet the conditions set out in point 23 or that there were not at least two suppliers that could provide such suitable alternatives. The documentation shall be kept by the operator for at least five years and shall be made available to the competent authority of the Member State and to the Commission, upon request.</p>
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