

# Breaking free from the world's most potent greenhouse gas

NGO recommendations to EU policymakers on SF<sub>6</sub>

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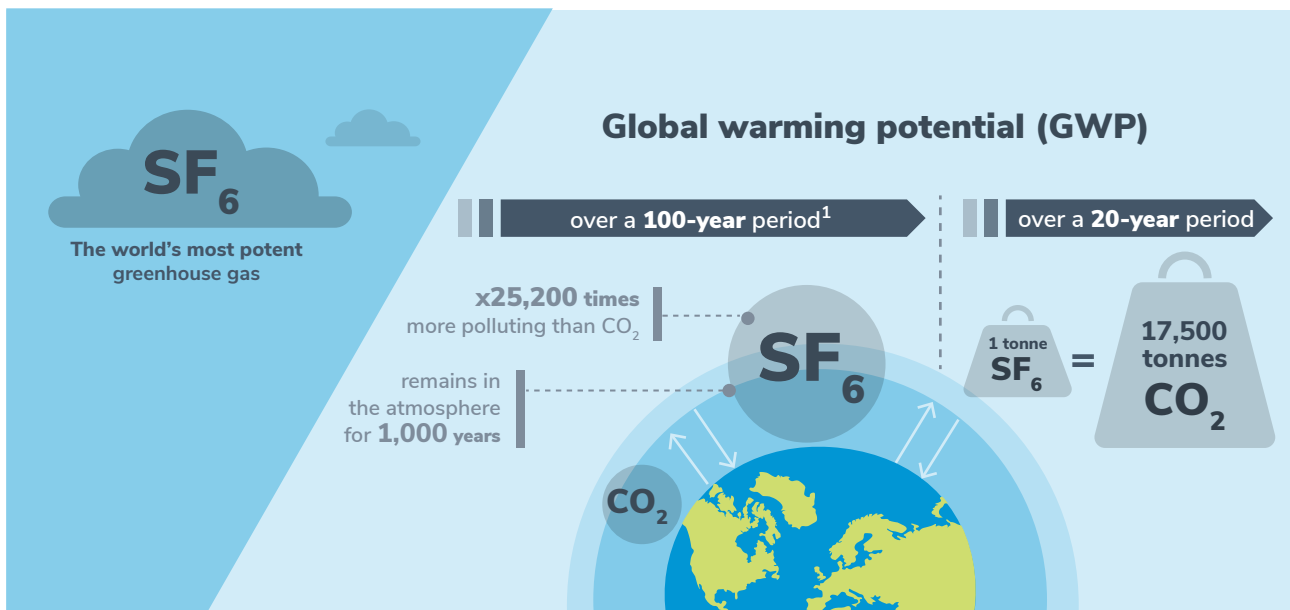
Deutsche Umwelthilfe



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Sulphur hexafluoride ( $\text{SF}_6$ ) is used in electricity grids as an insulating gas in high- and medium-voltage switchgear. **It is the world's most potent greenhouse gas** with a global warming potential (GWP) 25,200 times greater than  $\text{CO}_2$  over a 100-year period.



Despite its potency, the use of  $\text{SF}_6$  continues increasing virtually unabated. Emissions from leakages occur during the installation, maintenance, dismantling, replacement, and operation of electrical switchgear, circuit breakers and transformers.

Demand for  $\text{SF}_6$  in medium- and high-voltage switchgear is on the rise, driven by increasing electricity demand and the urgently-needed switch to decentralised renewable energy sources. The stock of installed medium-voltage switchgear units is expected to increase between 40 and 90 per cent by 2050<sup>2</sup>. However, the electricity grid needs to be truly clean to reach the European Union's climate and energy goals. It is therefore essential to phase out  $\text{SF}_6$ .

Ambitious policies could help significantly reduce the impacts of  $\text{SF}_6$ .



<sup>1</sup> IPCC, 2021: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. B. R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press.

<sup>2</sup> Ibidem



# Our recommendations

Market-ready and reliable alternatives to SF<sub>6</sub> exist and are already being deployed by some switchgear manufacturers. These alternatives should be further promoted to become the norm.

On a regulatory level, the current EU F-gas Regulation (EU) No 517/2014 controls the emissions of fluorinated gases but fails to set specific requirements for SF<sub>6</sub>. The recent European Commission legislative proposal to revise the existing Regulation does mandate an SF<sub>6</sub> phase-out by 2031<sup>3</sup>. While we welcome this improvement, we urge co-legislators to implement this ban as soon as possible and ahead of the 2031 deadline, and significantly strengthen the legislation.

## EU policymakers should:

- **Mandate an early phase-out of SF<sub>6</sub>.** This can be done by implementing 'placing on the market' (POM) prohibitions for switchgear containing SF<sub>6</sub> and other F-gases where F-gas-free alternatives are commercially available. SF<sub>6</sub> switchgear where alternatives exist should not be available for sale;
- Set **ambitious transition times for remaining use cases still relying on SF<sub>6</sub>**;
- **Ensure the Regulation does not contain any loopholes allowing network operators to continue relying on SF<sub>6</sub>.** Exemptions should only be granted based on objective tests, the sole criterion being that there are no SF<sub>6</sub>-free alternatives available on the market;
- **Extend emission containment and reporting obligations to all F-gases used in both existing and new switchgear.** F-gas substitutes in Annex III of the upcoming Regulation should fall under the same obligations as F-gases in Annexes I and II;
- **Address SF<sub>6</sub> leakages through strict labelling, reporting and monitoring.** This should include tracing leakages along the whole value chain, from production or import to end-of-life management. To avoid underreporting, emission standards should account for all technology on the market, not only the latest state of the art. Reporting on exports should be mandatory since much of the SF<sub>6</sub> switchgear produced in Europe is destined for export – with manufacturing emissions in the EU;
- **Incentivise demand for SF<sub>6</sub>-free technologies through Green Public Procurement<sup>4</sup>.** This is particularly important for retrofits, in order to promote SF<sub>6</sub>-free technologies even before POM prohibitions come into action;
- **Demand a transition towards F-gas-free alternatives only.** The Regulation must enable the development of F-gas-free alternatives only. Some SF<sub>6</sub> substitutes, such as fluoronitrile and fluoroketone, belong to the group of per- and polyfluoroalkyl substances (PFAS). PFAS are also known as 'forever chemicals' since their lifetime is around 1,000 years before they degrade. Experts worldwide, including the European Chemicals Agency, have identified PFAS as a global threat to environmental and human health. Following the 'precautionary principle', PFAS substitutes are not viable SF<sub>6</sub> alternatives and must be avoided. Along with air-insulated switchgear (AIS), a true climate-friendly option is the 'dry air' technology, where a mixture of oxygen and nitrogen is used as insulation in gas-insulated switchgear (GIS). As several leading manufacturers are already committed to this F-gas-free approach going forward, there is no need to develop PFAS substitutes further. The Regulation should clearly put an end to any developments in this direction.

<sup>3</sup> European Commission. Green Deal: Phasing down fluorinated greenhouse gases and ozone depleting substances

<sup>4</sup> [https://ec.europa.eu/environment/gpp/index\\_en.htm](https://ec.europa.eu/environment/gpp/index_en.htm)