



Climate

Climate Super Pollutants

How the UK can lead the world in cutting emissions

October 2024

Introduction

The global call to action on climate change is clear – to have any chance of limiting warming to 1.5°C, we must reduce global greenhouse gas emissions to at least 43 per cent below 2019 levels by 2030.¹

For this to happen, immediate action has to ensure that global emissions peak before 2025 and are then rapidly and permanently reduced for the rest of the decade.² Meeting this target will require substantial reductions in global carbon dioxide (CO₂) emissions, but there are a number of other greenhouse gases that contribute significantly to climate change and these must also be addressed.

Together, methane (CH₄), nitrous oxide (N₂O), F-gases³ and ozone-depleting substances (ODS)⁴ make up more than one-quarter of our annual greenhouse gas emissions globally.⁵ To avoid catastrophic climate change, rapid and sustained reductions are also required in emissions of these gases, many of which are short-lived climate pollutants (SLCP) that have a disproportionate impact on warming in the near term.

If the UK intends to uphold its commitment to achieve net zero emissions by 2050 and demonstrate climate leadership, fast action on climate super-pollutants must be prioritised.

Methane (CH₄)



Methane is the second most important greenhouse gas after CO₂, responsible for nearly one-third of current warming.⁶ The agriculture, energy, and waste sectors are the largest emitters.

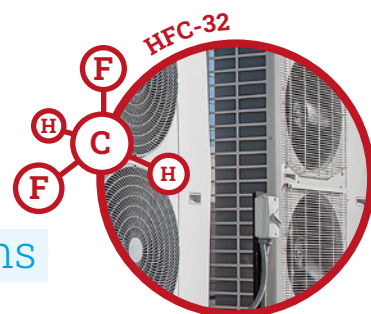
Methane emissions have increased by 29 per cent since 1990 and already contribute to about 0.5°C of warming.⁷ To stay aligned with the 1.5°C pathway, global methane emissions must be reduced by 34 per cent below 2019 levels by 2030.⁸

At CoP26 in Glasgow, the launch of the Global Methane Pledge (GMP) represented a significant milestone. The GMP is a collective commitment to reduce methane emissions by 30 per cent by 2030. As a GMP signatory and CoP26 host, the UK has a privileged position to showcase leadership on methane mitigation and to pave the way for ambitious regulations, by:

- setting a methane reduction target, to be integrated in its next Nationally Determined Contribution (NDC), accompanied by a methane action plan, implemented through regulations with a priority on the energy sector
- strengthening methane monitoring, reporting and verification (MRV) across all sectors through a regulatory framework
- championing international action on methane emission reductions. In particular, the UK should seek to prioritise support for developing countries, ensuring they have access to stable and predictable funding for all enabling activities. This can be facilitated through the creation of a methane fund based on contributions by donor countries, with well-defined timelines extending through 2030, and further supported by philanthropies and multilateral development banks.

F-gases

F-gases are a broad group of man-made fluorinated greenhouse gases used in applications ranging from cooling and heating equipment to insulation foams and electrical switchgear.



Hydrofluorocarbons (HFCs) are a common type of F-gas, many of which have high global warming potentials (GWPs) and cause significant climate damage. HFC emissions have contributed to 0.1°C to global warming so far, accounting for about two per cent of today's total greenhouse gas emissions.⁹

Internationally, the production and consumption of HFCs is being phased down under the Kigali Amendment to the Montreal Protocol. However, scientific studies clearly show that the phase-down schedule is not ambitious enough to align with a 1.5°C consistent pathway.¹⁰

Domestically, F-gases are controlled via the F-Gas Regulation. The European Union (EU) has already revised its F-Gas Regulation ((EU) No 517/2014), which was retained in UK law, to include a forward-looking and comprehensive package of policies to transition the EU economy away from F-gases. These included an accelerated HFC phase-down with a 2050 phase-out and additional bans on new HFC-based equipment in key sectors. These measures are expected to have negative abatement costs across the economy of €36.3 per CO₂-equivalent tonne (tCO₂-e), which equates to cost savings of approximately £31 per tCO₂-e.¹¹

Aligning Britain's F-Gas Regulation with that of the EU's supports clean energy goals and enable British manufacturers at the forefront of clean technologies to export to key markets, in line with the Labour Government's stated desire to align chemical regulations to support trade.¹²

A demonstration of domestic climate ambition on F-gases would also pave the way for the UK to forge a new post-Brexit role as a global leader at the international level, especially in the context of a potential acceleration of the international HFC phase-down under the Kigali Amendment to the Montreal Protocol.

Ozone-depleting substances

The term ozone-depleting substances covers a broad range of gases that deplete ozone, including chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs). They are well known for their impact on the ozone layer, but also contribute to climate change.



Other, non-fluorinated ODS include substances such as methyl bromide and nitrous oxide (N₂O). The Montreal Protocol, adopted in 1987, places controls on many – but not all – of the most powerful F-gases and ODS. Emissions of CFCs and HCFCs have contributed almost 10 per cent of global warming to date.¹³

The phase-out of ODS under the Montreal Protocol will avoid an estimated 0.5-1°C in additional global warming by 2050, with additional warming avoided thanks to a healthier ozone layer protecting plants, soils and other natural carbon sinks from damaging ultraviolet (UV) radiation.¹⁴

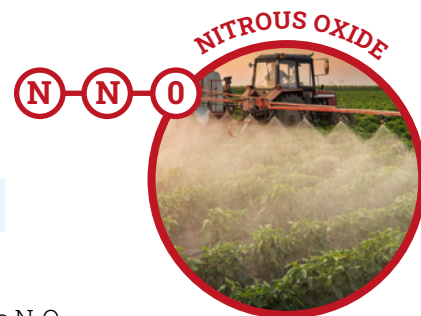
Nevertheless, ongoing emissions from existing products and equipment ('banks') are still contributing to warming and annual emissions of some CFCs and HCFCs from fluorochemical production processes increasing.¹⁵ The EU has recently revised its ODS Regulation to further reduce ongoing emissions.¹⁶

The UK should align its domestic ODS Regulation with Europe's and work closely with Parties to the Montreal Protocol to strengthen the treaty and close the current gaps that allow CFC and HCFC emissions to persist. The current exemptions under the Protocol allowing the use of controlled substances for production purposes must be limited. Meanwhile, support must be provided to Article 5 (developing) countries to support their management of ODS banks.

Ultimately, the UK should coordinate with other Parties to review and strengthen the treaty's institutional mechanisms to better address persistent challenges of verification, enforcement and compliance.

Nitrous oxide (N₂O)

Nitrous oxide is the third most significant greenhouse gas and the biggest contributor to ozone-depletion in the world today.



Having already contributed 0.1°C of warming to date, the increase in anthropogenic N₂O emissions is now outpacing all previous projections. Since 1980, emissions have risen by 40 per cent, with agriculture as the largest source. Other significant sources include chemical industrial processes, fossil fuel power generation and biomass burning.

To safeguard the recovery of the ozone layer and keep the goal of limiting warming to 1.5°C alive, emissions of N₂O must be reduced by an ambitious but feasible 40 per cent from 2020 levels by 2050.

As well as working with expert groups to develop a domestic National Action Plan on Nitrogen, the UK should collaborate with likeminded Parties to the Montreal Protocol to seek controls on industrial emissions of N₂O under the treaty.

The technology to abate almost all industrial emissions – the low-hanging fruit of N₂O emissions – already exists. This is a clear, cost-effective and immediate opportunity to prevent a substantial quantity of unnecessary greenhouse gas emissions.¹⁷

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