BRIEFING

May 2026

CLOSING THE GAP ON SUPER POLLUTANTS

Priorities for UK climate policy

The Environment Agency projects a 90% increase in properties at highest risk from river and coastal flooding, and a 200% increase in surface water flood risk, by the 2080. The extent to which these projections are realised will depend significantly on global progress in reducing global greenhouse gas emissions in the years ahead.

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]

Meeting this target will require substantial reductions in global carbon dioxide (CO_2) emissions, including a rapid phase-out of the production and consumption of fossil fuels. However, several other greenhouse gases contribute significantly to climate change and must be addressed alongside CO_2 if climate goals are to remain within reach.

Methane (CH_4), nitrous oxide (N_2O), fluorinated gases (F-gases)[2] and ozone-depleting substances (ODS),[3] often referred to collectively as super pollutants, together make up more than a quarter of our annual greenhouse gas emissions globally.[4] Many of these gases are short-lived climate pollutants with a disproportionate impact on warming in the near term. Rapid reductions in these emissions therefore offer immediate opportunities to slow warming and should form a central pillar of the UK's climate policy.

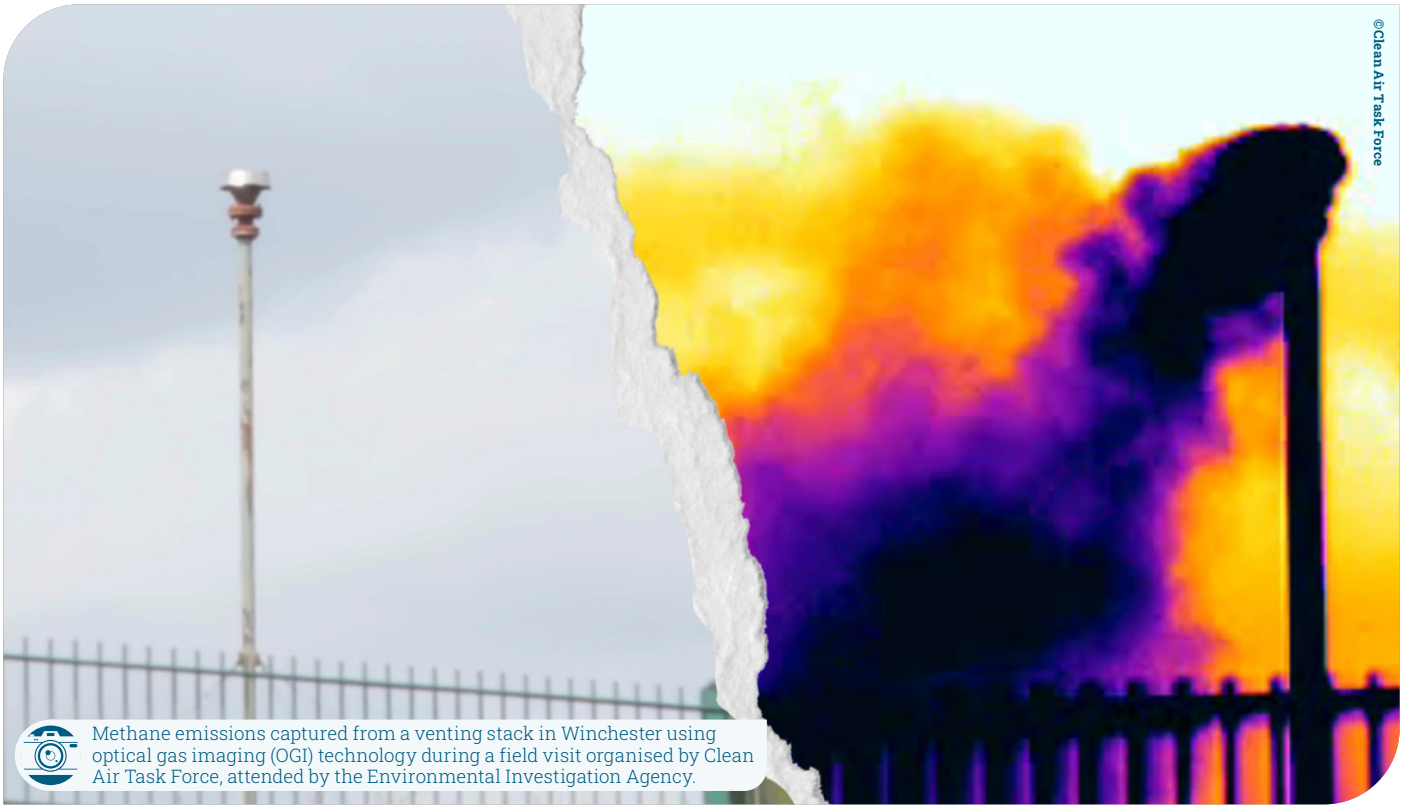
The Secretary of State for Energy Security and Net Zero, Ed Miliband, has stated that the UK is "back in the business of climate leadership."[5] Delivering on this ambition will require attention to the full range of climate pollutants driving global heating.

The UK has already taken important steps to elevate the issue of super pollutants on the political agenda. The UK currently co-chairs the Climate and Clean Air Coalition (CCAC), a UNEP-convened partnership of governments, intergovernmental organisations and NGOs working to reduce super pollutants. Domestically, the Government has developed a Methane Action Plan and committed to revising its F-gas Regulation.

Internationally, the UK led a statement at the 30th Conference of the Parties (CoP30) to the United Nations Framework Convention on Climate Change (UNFCCC) on reducing methane emissions in the global fossil fuel sector, calling for the creation of a panel of governments to work towards the development of a near-zero methane intensity marketplace.[6] At CoP30, the UK and Brazil co-launched the Belém Declaration on Fertilisers, urging improvements in nutrient use efficiency (essential to limiting emissions of nitrous oxide (N_2O) and the reduction of emissions from fertiliser production.[7]

These initiatives signal growing political attention to super pollutants. However, underpinning this political momentum with strengthened national regulatory frameworks and sustained policy action is essential for the UK to demonstrate credible leadership. Successful leadership at the international level ultimately depends on the ability to show that ambitious policies can be implemented in practice. By strengthening domestic measures to reduce super pollutant emissions, the UK can both deliver immediate climate benefits and provide a concrete example of how rapid mitigation can be achieved.

This briefing sets out key measures the UK should adopt to strengthen domestic action on super pollutants and demonstrate credible leadership internationally.



Methane emissions captured from a venting stack in Winchester using optical gas imaging (OGI) technology during a field visit organised by Clean Air Task Force, attended by the Environmental Investigation Agency.

METHANE (CH_4)

Methane is the second largest contributor to radiative forcing after CO_2, responsible for nearly a third of current warming.[8] The agriculture, energy and waste sectors are the largest emitters.

Methane emissions have increased by 29 per cent since 1990 and have already contributed about 0.5°C of warming.[9] To stay aligned with the 1.5°C pathway, global methane emissions must be reduced by 34 per cent below 2019 levels by 2030. Methane also plays a major role in air pollution. It is a key precursor to tropospheric ozone, a harmful pollutant which contributes to respiratory disease, premature deaths and crop losses. Reducing methane emissions therefore delivers air quality and public health benefits as well as immediate climate action.[10]

The UK has achieved substantial reductions in methane emissions over past decades, although progress has slowed in recent years.[11] The recently launched Methane Action Plan is welcome, but full implementation is expected to deliver only a 22 per cent reduction by 2030 from a 2020 baseline.[12] This falls short of the global target under the Global Methane Pledge (GMP), which calls for a reduction of at least 30 per cent by 2030.

Accelerating methane mitigation is therefore essential for the UK to demonstrate credible leadership and keep pace with other jurisdictions.[13] The European Union (EU) has adopted an ambitious regulation addressing methane emissions in the energy sector, including provisions covering imported fossil fuels. Other countries, including Canada, Nigeria and Denmark, are also advancing significant methane mitigation policies.[14] The UK has the opportunity to build on its existing commitments by strengthening action in four key areas:

Oil and gas methane emissions: In 2024, the House of Lords Environment and Climate Change Committee concluded that the UK's methane regulatory framework is "piecemeal and disjointed", relying heavily on voluntary best practices rather than binding regulatory measures.[15] The upcoming Energy Independence Bill provides an opportunity to address these gaps by introducing a more comprehensive regulatory framework for methane emissions in the oil and gas sector. Key measures should include:

- the establishment of a comprehensive and harmonised monitoring, reporting and verification (MRV) framework
- mandatory leak detection and repair obligations across the value chain
- a legal ban on routine venting and flaring by 2030
- technology standards mandating the use of low- or zero-emission equipment.

Fossil fuels imports: The UK's leadership in launching the international statement on drastically reducing methane emissions in the fossil fuel sector, as well as the creation of a panel of governments to advance a near-zero methane intensity marketplace, represents an important step forward. Following the example set by the EU, the UK should put in place strong measures on its supply chain and extend MRV and mitigation requirements to imported fossil fuels. These measures should be included in the upcoming Energy Independence Bill.

Agriculture: Agriculture remains one of the largest sources of methane emissions globally and represents a sector where progress has been limited. A proposal under the UK's 2025 Carbon Budget and Growth Delivery Plan exploring the possibility of introducing a specific methane target for the agriculture sector should be seriously considered.[16] A target would accelerate action, strengthen accountability and signal that the UK is prepared to address methane emissions across all major sectors. Any target should be accompanied by a clear action plan and supporting legislation outlining how reductions will be achieved.

International support: The UK has an important role to play in supporting methane mitigation efforts internationally. Many countries require technical assistance, institutional capacity and financial support to develop and implement methane reduction policies. In addition to facilitating technology transfer, the UK should increase support for enabling activities that help governments design and implement methane strategies. Initiatives such as the Super Pollutant Country Action Accelerator (SPCAA) provide a strong model. The programme funds dedicated teams within governments for three years to focus specifically on super pollutant mitigation, supporting the development of action plans, regulations and cross-ministerial coordination.[17] The UK should make a financial commitment to support the expansion of the SPCAA, allowing more countries to benefit from long-term and stable institutional support.

The phase-out of controlled ODS under the Montreal Protocol has already avoided an estimate 2.5°C in global warming by 2100. Although the HFC phase-down under the Kigali Amendment is projected to avoid a further 0.3-0.5°C this century, the current schedule is insufficient to align with the Paris Agreement's 1.5°C target and greater ambition is needed.

F-GASES AND OZONE-DEPLETING SUBSTANCES

F-gases refers to a broad group of synthetic fluorinated greenhouse gases, many with high global warming potentials (GWP), used in a diverse range of applications including cooling and heating equipment, foams, aerosols and electrical switchgear.

The term "ozone-depleting substances" covers a broad range of halogenated gases that deplete the stratospheric ozone layer, including fluorinated substances such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) and non-fluorinated substances such methyl bromide and nitrous oxide (N_2O). They are well known for their impact on the ozone layer, but also contribute to climate change. Emissions of CFCs and HCFCs have contributed almost 10 per cent of global warming to date, while emissions of hydrofluorocarbons (HFCs), common replacements for CFCs and HCFCs and the fastest growing greenhouse gases, account for around two per cent of current greenhouse gas emissions.[18]

The Montreal Protocol on Substances that Deplete the Ozone Layer, adopted in 1987, places controls on many, but not all, of the most powerful ODS. Initially, the Protocol focused on fluorinated and brominated ODS, notably CFCs, methyl bromide and later HCFCs. By 2050, the phase-out of ODS which are controlled under the Montreal Protocol will have avoided an estimated 0.5-1°C in additional global warming, with further warming avoided thanks to a healthier ozone layer protecting plants, soils and other natural carbon sinks from damaging ultraviolet (UV) radiation.[19] Nonetheless, significant emissions of controlled ODS continue. Ongoing emissions occur, for example, through leakage from existing products, equipment and stockpiles (referred to as 'banks' of ODS), as well as from fluorochemical production processes, which are exempt from Montreal Protocol controls.[20]

As the use of controlled ODS was phased out, they were replaced in many applications by climate-damaging HFCs. Due to their significant climate impacts, the parties to the Montreal Protocol agreed the historic Kigali Amendment in 2016, under which the production and consumption of HFCs will be gradually phased down over the next two decades. However, scientific studies clearly show that the phase-down schedule is not ambitious enough to align with a 1.5°C consistent pathway.[21]

Alongside their climate impacts, F-gases are also a significant source of PFAS (per- and poly-fluoroalkyl substances) pollution.[22] The amount of PFAS entering the environment due to F-gases is further increasing due to uptake of a new generation of fluorochemicals, hydrofluoroolefins (HFOs), which are being used as low-GWP replacements for HFCs.[23] To avoid repeating the pattern of burden shifting – replacing one generation of F-gases with another – the transition to non-fluorinated (i.e, non-PFAS) alternatives should be prioritised and encouraged. In most applications, these non-fluorinated, non-patented cost-effective alternatives are already widely available.

The UK has an opportunity to forge a role as a global leader on F-gases and ODS through ambitious action at the Montreal Protocol. The UK should work closely with parties to the Montreal Protocol to strengthen the treaty, implement and accelerate the HFC phase-down and close the gaps that allow CFC and HCFC emissions to persist.

The exemptions under the Protocol allowing the continued production of controlled substances for feedstock must be limited. Meanwhile, additional support must be provided to Article 5 (developing) countries to support their management of ODS banks. The UK should also coordinate with other parties to review and strengthen the Treaty's institutional mechanisms to address persistent challenges of verification, enforcement and compliance.

A demonstration of domestic ambition would pave the way for the UK to be a climate leader in this space. The UK F-gas and ODS Regulation was retained in UK law following the country's exit from the EU and has not been updated since. In 2024, the EU revised its ODS regulation to further reduce ongoing ODS emissions.[24] It also revised its F-Gas Regulation to include a forward-looking and comprehensive package of policies to transition the EU economy away from F-gases.[25] This included an accelerated HFC phase-down with a 2050 phase-out and demand reduction measures such as bans on new HFC-based equipment in key sectors.[26] These measures are expected to have negative abatement costs across the economy of €36.30 per CO_2-equivalent tonne (tCO_2e).[27]

The UK should revise both its ODS and F-gas regulations to better align with the EU. The revision of the domestic F-Gas Regulation is critical to support clean energy goals by facilitating a rapid transition to switchgear alternatives and energy efficient, F-gas-free heat pumps. Aligning the UK's F-Gas Regulation with that of the EU would also place British manufacturers at the forefront of clean technologies to export to key markets.

The accelerated HFC phase-down schedule proposed by Defra in 2025 is a welcome step towards more ambitious UK F-Gas Regulation but should be strengthened in several ways:

- a more rapid phase-down and eventual phase-out, in line with the EU
- a comprehensive package of regulatory measures designed to ensure an effective and just transition from HFCs to non-fluorinated alternatives, including:
  - early bans on the use of HFC in key equipment types in order to signpost the direction of travel the industry must take. These bans should take into account PFAS concerns by banning the use of all F-gases in new equipment from the earliest dates possible
  - training and certification of technicians in natural refrigerant alternative technologies and enhancing the recovery of refrigerants
  - measures to address the significant risk of illegal HFC trade, which could otherwise significantly undermine the HFC phase-down.
  - reconsideration of the exemption from the phase-down of metered dose inhalers (MDIs), given that given that inhaler emissions account for three per cent of the NHS's carbon footprint, mostly attributed to the HFC propellant, and that HFC-free alternatives exist.

Global emissions of N_2O are driven by the over-application of synthetic fertilisers and manure. Existing technologies, practices and system changes could cut these emissions by about 40 per cent by 2050, while still meeting future food demand and remaining consistent with existing food security goals.

NITROUS OXIDE (N_2O)

Nitrous oxide (N_2O) is long-lived super pollutant that has been overlooked in environmental policy for decades. As a potent greenhouse gas (GWP 273) and ODS, emissions of N_2O both accelerate climate change and threaten the recovery of the ozone layer.

Globally, anthropogenic emissions of N_2O have increased by 40 per cent since 1980, directly contributing about 10 per cent of the global warming experienced to date (~0.1°C).[28] In terms of impact to the ozone layer, annual emissions of N_2O now cause more ozone depletion than the emissions of all other ODS combined and they continue to increase at an accelerating rate.[29] N_2O is also frequently emitted with harmful co-pollutants that degrade air quality, notably ammonia and NOx, contributing to respiratory diseases and premature deaths.

The majority of anthropogenic N_2O emissions are agricultural in origin, although industrial chemical production, fossil fuel use, biomass burning and wastewater also contribute significantly.[30] To safeguard the ozone layer and keep the Paris Agreement's 1.5°C target alive, emissions of N_2O must be reduced by 40 per cent from their 2020 levels by 2050. Globally, abatement in line with this goal could avoid 235 billion tonnes of CO_2e by the end of the century, prevent a reversal in the recovery of the ozone layer and provide concurrent air quality benefits, avoiding 20 million premature deaths by 2050.[31]

While the UK has been successful in reducing its chemical industrial emissions (in part due to the cessation of adipic acid production in 2009, but also due to the inclusion of nitric acid production in the EU and subsequent UK Emissions Trading Schemes), overall emissions remain high, with approximately 21 million tonnes of CO_2e reported in 2024.[32] These emissions are primarily agricultural in origin, with the majority attributable to the overuse of (especially synthetic) fertilisers.

Reducing the UK's reliance on synthetic nitrogen fertilisers is the single most effective way to reduce the country's N_2O emissions and there is significant scope to do this. As much as 45 per cent of fertiliser applied to land in the UK is lost to the environment rather than taken up by crops.[33] This represents not just a significant source of emissions (and

other forms of environmental damage, including eutrophication), but also an enormous quantity of wasted resource, a pressing concern given the volatility in fertiliser prices, which have been destabilised by the ongoing conflicts in the Middle East and Ukraine.[34]

In Europe, Denmark offers a model which the UK could replicate in seeking to control its agricultural N_2O emissions. In 2024, the Danish government announced a "Green Tripartite Agreement" between itself, the environmental community and the agriculture industry, which included a suite of incentives and tax measures to encourage farmers to reduce their greenhouse emissions, including from the use of fertilisers.[35]

With this in mind, and conscious of its role as co-chair of the CCAC, the UK Government should:

- implement the recommendations of the 2025 House of Lords' Environment and Climate Change Committee's report *Nitrogen: Time to Reduce, Recycle and Reuse* by developing a UK nitrogen balance sheet and establishing a comprehensive National Nitrogen Strategy
- engage bilaterally to expand the list of signatories to the Belém Declaration on Fertilisers, working closely with those signatories to see its commitments implemented
- leverage its success in phasing out industrial emissions to champion industrial byproduct controls under the Montreal Protocol, capitalising on a known, cost-effective and immediate opportunity to prevent a substantial quantity of unnecessary greenhouse gas and ozone-destroying emissions.[36]

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