



HFCs, the Montreal Protocol and the UNFCCC: Eliminating 1 of the 6 Kyoto gases

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Brief introduction to the Montreal Protocol

Widely hailed as the “world’s most successful environmental treaty”, the Montreal Protocol was adopted in 1987, entering into force two years later and achieving universal participation in 2009. Its objective was to reduce the production and consumption of ozone depleting substances (ODS), following the discovery that the use of chlorofluorocarbons (CFCs) and other man-made chemicals was leading to the destruction of the ozone layer.

As of 2011, the 197 Parties to the Montreal Protocol have reduced their consumption of ODS by a staggering 98 per cent¹ in accordance with strict and binding schedules in both developed countries (“non-Article 5 Parties”) and developing countries (“Article 5 Parties”). With the elimination of CFCs virtually complete, the Montreal Protocol is now phasing out the remaining class of ODS, HCFCs. There are also proposals on the table to phase out ‘third generation’ fluorinated gases – HFCs - a move supported by a growing number of countries.

Under the Montreal Protocol all Parties have accepted firm reduction commitments. These commitments are based upon the legal principle of common but differentiated responsibilities that incorporates a grace period for Article 5 countries allowing them to implement mandated phase-out schedules after non-Article 5 countries, in recognition of developed countries’ larger historical contribution to ozone depletion and developing countries’ right to continued growth and development. In addition, the Montreal Protocol has financially supported the phase-out of ODS in developing countries through developed country contributions administered by the Multilateral Fund.

Because most ozone destroying chemicals are also powerful greenhouse gases, the Montreal Protocol has also made an invaluable contribution to the fight against climate change, leading to emission reductions of over 10 gigatonnes of CO₂-equivalent per year, five times larger than the annual emissions reductions expected under the Kyoto Protocol between 2008-2012. Enacting a phase out of HFCs under the Montreal Protocol would ensure that this positive legacy is not cancelled out over the coming decades as HFC use dramatically rises.

¹¹ *Montreal Protocol on Substances that Deplete the Ozone Layer - 2012: A Success in the Making*, UNEP, 2012

CFCs, HCFCs and... HFCs

Hydrofluorocarbons (HFCs) are man-made gases developed and commercialized to replace CFCs, HCFCs and other chemicals that deplete the ozone layer. Unlike CFCs and HCFCs, HFCs do not destroy ozone. However, they are powerful greenhouse gases (GHGs), with global warming potentials (GWP) hundreds or thousands of times more powerful than carbon dioxide (CO₂). HFCs are primarily used in refrigeration, air conditioning, foam blowing, aerosols, fire protection and solvents. Alternatives that do not impact the climate are available, and are being developed, which would allow the Montreal Protocol to phase out HFCs. Unless action is taken, global HFC emissions are projected to increase to 5.5–8.8 gigatonnes (Gts) of CO₂-equivalent emissions (GtCO₂e) per year in 2050, equivalent to 9–19% of projected global CO₂ emissions under a business-as-usual scenario. This percentage increases to 28–45% compared with projected CO₂ emissions in a 450 ppm CO₂ stabilization scenario. Developing country emissions are projected to be as much as 800% greater than developed countries emissions by 2050².

Phasing out HFCs - The Montreal Protocol Amendment Proposals

Two separate proposals to amend the Montreal Protocol to regulate production and use of HFCs have been tabled every year since 2009 by Micronesia, and by Canada, Mexico and the United States. Since that time, and despite the formal support of over half the Parties for action to regulate HFCs, progress on the Amendment Proposals has been repeatedly blocked.

However, with the potential to avoid 88 to 140 Gts CO₂e emissions by 2050 at a cost of approximately US\$5-11 billion³, there simply is no other near-term strategy for mitigation that could be implemented to achieve a comparable level of GHG mitigation. With anticipated gains in energy efficiency factored in to reflect technological improvements historically associated with the ODS phase-outs, the potential mitigation could increase significantly.

The countries blocking the Amendment Proposals frequently invoke the UNFCCC as the most appropriate forum to discuss an HFC phase out. However, while it is true that HFC *emissions* are included in the Kyoto basket of greenhouse gases, there is a clear legal imperative for their *production and consumption* to be dealt with under the Montreal Protocol. What is more, with the fate of the international climate regime unclear until 2015 at the earliest, the UNFCCC process is clearly not in a position to address HFCs in the near future.

Under the Vienna Convention, the Montreal Protocol has been tasked with responsibility for controlling ODS and dealing with any “adverse effects” arising from their elimination. Without question, the negative impact and contribution to global warming arising from using HFCs as alternatives to ODS qualifies as an “adverse effect” that is a direct result of the ODS phase-outs, and as such it is time for the Montreal Protocol to fully embrace its obligations and act decisively to regulate HFCs. The recovery of the ozone layer will be a hollow victory indeed if it is eclipsed by the multiple, far-reaching and catastrophic impacts of acute climate change. The Montreal Protocol must act.

² See Guus J.M.Velders, et al., *The large contribution of projected HFC emissions to future climate forcing*, 106 PROC. NAT'L. ACAD. SCI. 10949, 10952 (2009) available at <http://www.pnas.org/content/early/2009/06/19/0902817106>

³ Reference (OEWG 32 briefing)

The Montreal Protocol & the Kyoto Protocol – linkages and synergies between the climate and ozone regimes

Initiatives to address HFC emissions under the Kyoto Protocol's Clean Development Mechanism (CDM) have largely failed. Since 2005, the world has spent several billion dollars on carbon credits generated under the CDM programme for HFC-23 destruction. Despite this enormous financial outlay, atmospheric concentrations of HFC-23 (14,800 GWP, atmospheric lifetime 270 years⁴) have continued to rise. China is the biggest beneficiary of the CDM HFC-23 methodology and home to 11 of the 19 HFC-23 destruction projects that have accounted for almost half of all certified emissions reductions (CERs) issued by the CDM to date⁵. Despite being paid some two billion dollars for HFC-23 offsets since the beginning of the program, 65% of which is collected by the Chinese government as tax, China has made no effort to address HFC-23 emissions at non-CDM HCFC-22 plants, all seven of which are located within China. These seven HCFC-22 plants are venting HFC-23 directly into the atmosphere despite the extremely low cost of capturing and incinerating the HFC-23 waste stream.

Against this backdrop, and with the fate of the international climate regime hanging in the balance, the Montreal Protocol is the only realistic venue for addressing HFCs. With the yawning gap between existing emissions reductions pledges and what science tells us is necessary to arrest global warming, rapid action on HFC production and consumption by the Montreal Protocol will free climate negotiators up to address CO₂ and other greenhouse gas emissions.

The time has come for every international body and agency to take strong and immediate action to limit greenhouse gas emissions and halt climate change. Global warming is rapidly accelerating beyond our best collective efforts to resist. If there was ever a time for the world's most successful environmental treaty to expand its efforts, that time is now

Groundswell of international support for Montreal Protocol action on HFCs

There is increasing international support for action on HFCs under the Montreal Protocol. For several years, the European Union has promoted the insertion of 'enabling text' within the AWG LCA track of the UNFCCC negotiations to confirm and support action on HFCs under the Montreal Protocol in addition to action under the UNFCCC. In addition to this and the Micronesian and North American Amendment Proposals, support for a global HFC phase down has also been expressed at the Rio+20 conference earlier this year, in the Bali Declaration and by the recently established Climate and Clean Air Coalition.

Rio+20 final document text, adopted by Parties June, 2012

At the Rio+20 Conference earlier this year, the nations of the world agreed on a final document that states: *"We recognize that the phase-out of ozone depleting substances is resulting in a rapid increase in the use and release of high global warming potential hydrofluorocarbons to the environment. We support a gradual phase-down in the consumption and production of hydrofluorocarbons."*

⁴ Forster, p., et al., *Changes in Atmospheric Constituents and in Radiative forcing*, in *Climate Change 2007: the Physical Science Basis*, Contribution of Working group to the Fourth Assessment Report of the IPCC, 129–234 (2007) Cambridge Univ. Press.

⁵ UNEP Risoe CDM/JI Pipeline Analysis and Database available at www.uneprisoe.org

Bali Declaration

In total, 108 countries have signed up to the Bali Declaration, which calls on Parties to the Montreal Protocol to “explore further and pursue under the Montreal Protocol the most effective means of achieving the transition to low-GWP alternatives to ozone depleting substances”⁶.

Climate and Clean Air Coalition - CCAC

The Climate and Clean Air Coalition (CCAC), is an initiative of the governments of Bangladesh, Canada, Ghana, Mexico, Sweden and the United States and the United Nations Environment Programme (UNEP). The Coalition's main focus is on methane, black carbon, and HFCs, or so-called ‘short-lived climate forcers’ (SLCFs). Members of the CCAC acknowledge that action on SLCFs must complement and supplement, not replace, global action to reduce carbon dioxide, in particular efforts under the UNFCCC.⁷ Launched in early 2012 it now counts 18 country members⁸.

Conclusion

The time for action on HFCs has arrived. The Montreal Protocol is the only international body with the experience and expertise to initiate and effectively achieve a timely “HFC phase-down”. In the true spirit of multilateralism, it is time to translate support for an HFC phase-out into the concrete action that has become the hallmark of the Montreal Protocol.

While the Montreal Protocol has made great strides in reducing emissions of the most powerful ozone depleting substances, the global effort to halt climate change is clearly and rapidly being lost, and the greenhouse effect is now exacerbating ozone destruction through stratospheric cooling.

As documented in the recent International Energy Agency Report⁹, the possibility of limiting GHG emissions to levels that avoid runaway and irreversible climate change is almost gone. Should the current opportunity for the international community to assert control over our common future be missed due to political paralysis, then all nations, all peoples and all species will suffer the consequences of the greatest disruption to Earth’s ecological equilibrium in history.

⁶ Bali Declaration http://ozone.unep.org/new_site/en/Treaties/decisions_text.php?dec_id=1114

⁷ <http://www.unep.org/ccac/About/tabid/101649/Default.aspx>

⁸ Bangladesh, Canada, Colombia, Denmark, Finland, France, Germany, Ghana, Italy, Japan, Jordan, Mexico, Nigeria, Norway, Sweden, The United Kingdom, The United States of America, The European Commission

⁹ IEA World Energy Outlook 2011 <http://www.worldenergyoutlook.org/publications/weo-2011/>