Environmental Investigation Agency submission on non-market-based mechanisms to enhance the cost-effectiveness of, and to promote, mitigation actions

The case for phasing out HFCs

The best available prospect for achieving significant near-term climate mitigation is a phase-out of production and consumption of HFCs under the Montreal Protocol. An HFC phase-out is far and away the most cost-effective mechanism for reducing greenhouse gas (GHG) emissions and would prevent 120-170 GtsCO_2e by 2050 - 8% of the amount required to limit temperature change to 2ºC[1].

As the entity responsible for the successful phase-outs of ozone depleting substances (ODS), the precursors to HFCs, the Montreal Protocol is well positioned and qualified to implement a phase-out of HFCs, The Montreal Protocol limits its activity to regulating production and use (front-end), and the UNFCCC focuses exclusively on emissions (back-end). Having the Montreal Protocol act on HFCs as it has historically on ODS would ensure that HFCs remain within the UNFCCC purview and that efforts to control HFC emissions benefit from a unique and potent two-pronged approach.

With global warming potentials (GWP) hundreds to thousands of times greater than CO_2, HFCs are often referred to as 'super' greenhouse gases and are primarily produced for use in refrigeration, air-conditioning, and foam-blowing.[2] Along with the other fluorocarbons, PFCs and SF6, HFCs are the only GHGs intentionally produced rather than being a by-product of commerce. As was and is the case with the ODS phase-outs, this circumstance affords the potential for an orderly and inexpensive schedule for eliminating one of the six GHGs in the Kyoto basket

Recent estimates project that under a business as usual (BAU) scenario HFC emissions will increase to between 3.6 and 8.8 GtCO2eq. per year by 2050. The higher end of these projections means that HFC emissions will equal 19% of all predicted CO_2 emissions in 2050 in the absence of a CO_2 stabilization target.[3] Under a 450 ppm CO_2 stabilization scenario, this BAU estimate for HFC use increases to as much as 45% of the contribution from CO_2, effectively negating other efforts for GHG mitigation.[4]

These dramatic projections are due to the enormous growth in demand for HFCs in developing countries (increased demand for refrigerators, air conditioners and cars coupled with huge building expansion), and the imminent reductions in permitted levels of ODS use brought about by the accelerated HCFC phase-out agreed by Parties to the Montreal Protocol in 2007. As HFCs have been used to replace almost 80% of the HCFCs in developed countries,[5] it is likely that, without intervention, HFCs will also replace most HCFC uses in developing countries.

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[1] England, et al., PNAS 2009 106 (39), Constraining future greenhouse gas emissions by a cumulative target; and, Meinshausen et al. 2009, NATURE 458, Greenhouse-gas emission targets for limiting global warming to 2°C

[2] Excepting HFC-23 which is a by-product of HCFC 22 manufacture.

[3] Velders G., D. Fahey, J. Daniel, M. McFarland and S. Anderson. (2009) "The large contribution of projected HFC emissions to future climate forcing" PROC. NAT'L. ACAD. SCI. Early Edition (22 June 2009) and Gschrey, B. and Schwarz, W. 2009. Global projection of F-gas emissions shows high increase until 2050. Oko- Recherche, available at www.umweltbundesamt.de/produkte-e/index.htm

[4] Velders G., D. Fahey, J. Daniel, M. McFarland and S. Anderson. (2009) "The large contribution of projected HFC emissions to future climate forcing" PROC. NAT'L. ACAD. SCI. Early Edition (22 June 2009) and Gschrey, B. and Schwarz, W. 2009. Global projection of F-gas emissions shows high increase until 2050. Oko- Recherche, available at www.umweltbundesamt.de/produkte-e/index.htm

[5] Velders (2000) ibid

Low-GWP alternatives to HFC-based technologies are increasingly available. However, lower initial costs and convenience presently favor HFCs as "drop-in" replacements for HCFCs because low-GWP technologies often require new equipment or retrofitting. This makes it likely that without regulatory controls and capacity building, HFCs will become the dominate technologies used by developing countries, creating unsustainable development and offsetting most of the reductions in CO_2 and the other greenhouse gases. In order to promote clean technology transfer and sustainable lifestyles in both Annex 1 and non-Annex 1 countries it is essential that immediate action be taken to address HFCs.

The most viable way to tackle this time-sensitive issue is to undertake the controls in collaboration with the Montreal Protocol, which has been considering proposals to phase down HFCs since 2009. The technical and scientific expertise, experience with the industrial sectors now transitioning to HFCs, and a funding mechanism are already in place at the Montreal Protocol so action could begin virtually immediately upon a decision to act. The Montreal Protocol would work on phasing out production and consumption of HFCs, while the UNFCCC continued efforts to mitigate HFC emissions. At COP 17 the UNFCCC must urge Parties, without prejudice to the scope of the Convention and its related instruments, to pursue the adoption of appropriate measures to progressively reduce the production and consumption of hydrofluorocarbons under the Montreal Protocol on Substances that Deplete the Ozone Layer.

During the past 20 years, the Montreal Protocol has implemented the type of multifaceted and comprehensive technology transfer envisioned by the UN to effectively assist developing economies to achieve dramatically lower GHG emissions with the phase-out of ozone depleting substances. Capacity building, policy and regulatory reforms, demonstration of alternative technologies, as well as full incremental funding are all essential parts of the Montreal Protocol's approach to technology transfer.[6]

The Montreal Protocol's robust and equitable technical and financial mechanisms have already been proven in precisely the same industrial sectors that now use HFCs, as evidenced by the successful phase-out of more than 95% of 97 chemicals in developed countries and 50-75% in developing countries.[7] With these institutions in place, and the widespread availability of low-GWP alternatives, the Montreal Protocol stands ready to replicate this success with the phase-out of HFCs and demonstrate the transfer of clean technologies to developing countries.

Cost-Effective and Equitable Solution to HFCs

The Montreal Protocol pays for the incremental costs incurred by developing countries when phasing out chemicals through an established and proven fund, known as the Multilateral Fund (MLF). Payments into the MLF by industrialized countries are mandatory and based upon the UN scale of assessment. This funding for transition costs is distributed through the MLF's Executive Committee, within which voting power is equally shared between developed and developing countries. The Montreal Protocol's Multilateral Fund is generally viewed positively by developing countries and has served as a basis for the G-77 and China's submissions within the climate negotiations regarding the establishment of a new financial mechanism.[8]

From 1990-2010, Montreal Protocol actions will have avoided net GHG emissions of approximately 134 Gt CO_2eq. delaying climate change by up to 12 years at a cost of less than $0.02 per tonne of CO_2 equivalent.[9] Although phasing out consumption and production of

[6] United Nations Institute for Technology and Research (UNITAR) publications by Dr. Suresh Raj, Capacity Building Manager, UNEP DTIE available at http:// www2.unitar.org/cwm/publications/cbl/synergy/pdf/cat1/statements/
[7] Kaniaru, D. et al. 2007, Strengthening the Montreal Protocol: The Montreal Protocol: celebrating 20 years of environmental progress.
[8] See UNFCCC, Proposal on a Financial Mechanism for Meeting Financial Commitments Under the Convention (submitted by the Philippines on behalf of the G-77 and China), http://unfccc.int/files/kyoto_protocol/ application/pdf/g77_china_financing_1.pdf.
[9] See Velders, et al. 2007. The importance of the Montreal Protocol in protecting climate. PNAS vol 104:12. (estimating reductions of 8 Gt CO2-eq. per year 1990-2010). The 20% offset due to the cooling effect of the improved

HFCs may be more expensive (€5-€11 billion euros over 30 years)[10] than past phase-outs of ODS, it will provide climate mitigation at a fraction of the cost of other measures and will be far more cost-effective than attempting to regulate HFC solely on the basis of emissions.

Based on current proposals to the Montreal Protocol, phasing down HFCs could prevent emissions of more than 140 Gt CO_2eq. between 2013 and 2050, equivalent to almost five years of current global CO_2 emissions.[11]

Parties to the UNFCCC cannot afford to miss this window of opportunity to address HFCs in a timely and cost-effective manner. Further delays will increase the damaging impacts of HFCs and cause an HFC 'phase-in' within developing countries that at a minimum will be hugely expensive to overcome at a later date, and at worst fatal to global efforts to address climate change.

About EIA

The Environmental Investigation Agency (EIA) is a UK and US-based international non-governmental campaigning organisation committed to bringing about change that protects the natural world from environmental crime and abuse. EIA plays a unique role, undertaking in-depth investigations and documenting activities responsible for the destruction of our natural environment and the loss of biodiversity. By identifying gaps in policy and enforcement, and offering intelligent solutions, EIA seeks positive change around the world.

EIA has supported efforts in the Montreal Protocol to phase out industrial gases that deplete the ozone layer and act as powerful global warming agents. Following the historic agreement to accelerate the phase-out of hydrochlorofluorocarbons (HCFCs) by Parties to the Montreal Protocol, EIA has become increasingly active in attempting to limit projected increases in hydrofluorocarbon (HFC) emissions, the most common HCFC substitutes. EIA has been calling for a global HFC phase-out since 2007 and is the leading NGO stakeholder in this policy area.

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ozone layer reduces the cumulative reductions from 168 Gt CO2-eq. to 134.4 Gt CO2-eq. Total MLF allocations and provisions in USD up to July 2009 were over $2.5 billion ref: http:// www.multilateralfund.org

[10] Oko Recherche (2010) "Preparatory study for the Review of Regulation (EC) No 842/2006 on certain fluorinated greenhouse gases" Working Document 1

[11] http://en.wikipedia.org/wiki/List_of_countries_by_carbon_dioxide_emissions 2006 global CO2 emissions were 28.4 billion tones.