UNITED NATIONS **EP**

United Nations Environment Programme

Distr.
LIMITED

UNEP/OzL.Pro/ExCom/51/Inf.5/Add.1
14 March 2007

ORIGINAL: ENGLISH

EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Fifty-first Meeting
Montreal, 19-23 March 2007

Addendum

PROGRESS OF INFORMAL DISCUSSIONS OF THE STOCKHOLM GROUP TO STRENGTHEN THE MONTREAL PROTOCOL WORLD BANK PROGRAMME FOR 2007

This document is issued to:

- **Replace** the "Stockholm Group 3rd Meeting, 6th February 2007, the Haag Report", and the "Chair's Proposal for Elements of an Adjustment To Strengthen the Montreal Protocol", dated 26 February 2007, with a more updated version of 12 March 2007;

- **Add** the attached additional presentation on "The importance of the Montreal Protocol in protecting climate", at the end of the document.

Version: 12 March 2007

STOCKHOLM GROUP 3RD MEETING, 6TH FEBRUARY 2007. THE HAAG REPORT

THE CHAIR'S SUMMARY (POLE)

The Montreal Protocol is providing dual protection for the ozone layer and the climate. Many ozone-depleting substances (ODSs) are also powerful greenhouse gases (GHGs), and the Montreal Protocol's phase-out of ODSs has already done and has the potential to continue to contribute significantly to reduce green house gas emissions augmenting the spirit of the Kyoto Protocol. By one estimate, the Montreal Protocol's GHG reductions, provided by its phase-out of ODS, by 2010 will be roughly equal to a 10-year delay in climate-related impacts and an avoided rise in global average surface temperature of about [0.1º C].

Significant challenges are ahead, however, and they must be overcome to ensure the ozone layer's recovery and contribute positively to climate change mitigation. The 2006 Science Assessment Report highlighted the phase-out of Hydrochlorofluorocarbons (HCFCs) as an important action to reduce the risk of future ozone depletion, followed by recovery and destruction of halons and chlorofluorocarbon (CFC) banks and the phase-out of methyl bromide (MeBr) and carbon tetrachloride (CTC). The increase in HCFC production and consumption levels over the next decade raise concerns over their potential ozone and climate impacts as well as the capacity of developing countries to comply with the 2016 freeze at the high levels projected for 2015.

The contributions to the Multilateral Fund (MLF) for the implementation of the Montreal Protocol in Article 5 (developing) Parties so far have averaged US$150 million per year. The ozone protection and climate benefits of an eventual accelerated HCFC phase out, as well as other measures to strengthen ozone protection, provide deserving justification for continued financial support of the Multilateral Fund and of the Montreal Protocol in general, especially considering its cost-effectiveness in reducing GHG emissions. An accelerated phase-out, with supportive funding, will result in avoided HCFC production and consumption and benefits of alternative technology and best practices that avoid both ozone and climate impacts. Moreover, it will reduce by-product emissions of the potent GHG HFC-23 as well as by-product emissions of the ozone depleting CTC (from the production of chloroform used to make HCFC-22). It also can help in resolving the "perverse incentives" under the Kyoto Protocol's e.g., by Clean Development or Joint Implementation mechanisms, which potentially subsidize the production of HCFC-22 by generating emissions reduction credits for destruction of HFC-23 by-product emissions in approved projects. An accelerated phase-out would appropriately need to be accompanied by revisions to MLF guidelines that prevent funding of any ODS facility installed after July 1995 or any enterprise that has used the Fund's assistance for transiting to HCFCs from CFCs. Depending on how an accelerated HCFC phase-out is structured, it was roughly estimated to cost between US$ 0.5 to 1.5 billion, which over three replenishments would be roughly equal or less than current annual replenishment levels.

In light of the availability of alternatives, concerns over compliance, risks to the ozone (and climate), and the potentially higher costs of transitioning out of HCFCs under the current schedule, an accelerated phase-out of HCFCs in developed and developing countries is both possible and necessary. As with previous control measures of the Montreal Protocol, accelerated control measures for HCFC, for both production and consumption, need to include provisions for essential use exemption according to agreed criteria. For relevant applications, such criteria could include modality that heeds minimisation of climate-related impact. A timely proposal for an HCFC measure should be considered at the 19th Meeting of the Parties in September 2007. An agreement in 2007 of a HCFC control measure would allow the Parties to request an evaluation of the costs, associated with the commitments of Article 5 (developing) Parties, with the agreed measure as part of the study for MLF replenishment for 2009-2011.

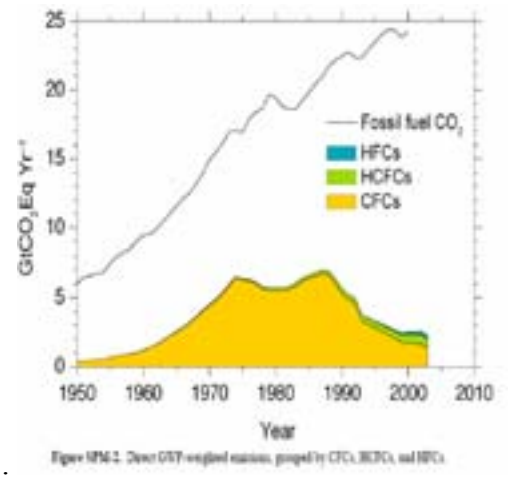
In order to meet the 15 March 2007 deadline for proposals to the Ozone Secretariat for consideration at the 19th Meeting of the Parties, and acknowledging that specific characteristics of an accelerated phase-out were not discussed in detail at the Hague meeting, the Chair proposes in Annex 1 to this Chair's Summary, elements for a broad adjustment framework for further refinement and elaboration. The Chair's Proposal calls for a stepwise reduction in HCFC consumption and production with a complete phase-out by 2040. There would be flexibility for Basic Domestic Needs, exemptions according to agreed criteria and development of constructive incentives.

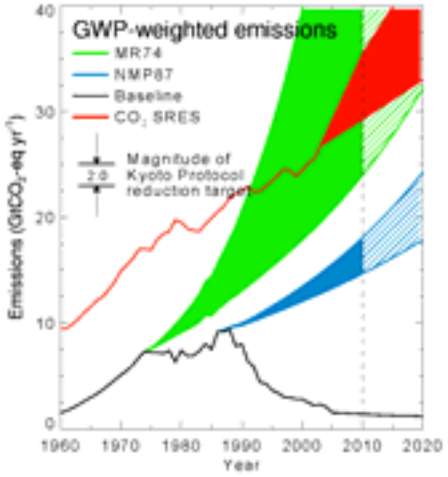
It is envisaged that this proposal, to strengthen the Montreal Protocol by accelerating the phase-out of HCFCs, upon being forwarded in time by interested Party (ies), will enable a complete discussion of all relevant issues by the Parties and the opportunity to adjust the Protocol at the 19th Meeting of the Parties in September 2007 celebrating the 20th Anniversary of the Montreal Protocol.

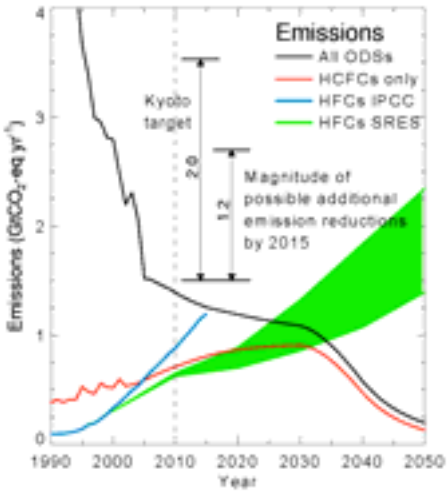
Annex 1: Chair's Proposal for Elements of an Adjustment to Strengthen the Montreal Protocol

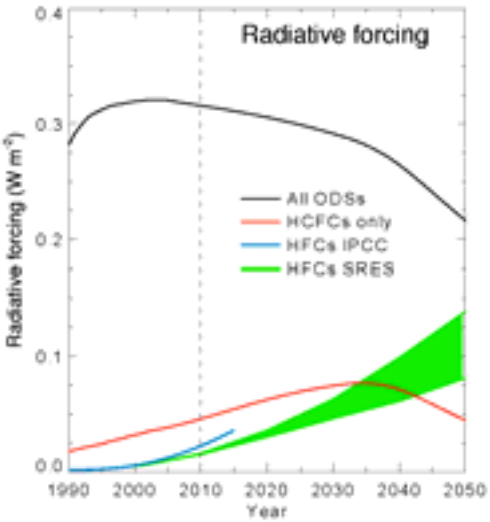
INTRODUCTION

The Montreal Protocol is providing dual protection for the ozone layer and the climate. Because many Ozone Depleting Substances (ODSs) are also greenhouse gases, the Montreal Protocol's phase-out of ODSs has already done and has the potential to continue to contribute significantly to reduce Green House Gas (GHG) emissions by 2010 augmenting the spirit of the Kyoto Protocol. The GHG reductions achieved by the Montreal Protocol are roughly equal to an avoided global average temperature rise of about [0.1° C.] or about 10 years of radiative forcing. This is significant in light of the warning by climate experts that the world has about 10 years remaining before positive feedbacks in the climate system could accelerate global warming beyond the point of no return









Thus the Montreal Protocol can further delay climate change by completing its mission to protect the ozone layer. The Montreal Protocol's success to date is based on its design and structure as well as the energetic commitment of its Parties, scientific and technical experts, and stakeholders (including representatives of environmental, industrial and other non-governmental organisations (NGOs)). But substantial challenges lie ahead that must be overcome to ensure a sustained and

earliest recovery of the ozone layer, requiring continued commitment by the Parties, experts, and NGOs.

The Montreal Protocol's ozone and climate benefits create an opportunity to ensure its continued success in protecting the ozone layer. This is particularly true with regard to the commitment of developed countries to ensure the successful implementation of the Montreal Protocol by providing financial assistance to the developing countries through the Multilateral Fund. It is estimated that the implementation of the Montreal Protocol by Article 5 (developing) Parties has required approximately US$150 million per year, which not only protected the ozone layer but also protected the global climate through reductions in GWP-weighted emissions of ODSs, significantly augmenting the GHG emission reductions required by the Kyoto Protocol. These ozone and climate co-benefits provide an added justification for continued financial support of the Montreal Protocol, especially when considering its cost-effectiveness in reducing GHG emissions. The meeting estimated that the costs of an accelerated phase-out to be US $0.5 billion to US $1.5 billion, depending on the structuring of the control measure, which indicates levels of funding similar to current levels over the next three replenishment cycles.

The protection of the ozone layer offers additional benefits to the climate, particularly if the Parties strengthen the Montreal Protocol. The 2006 Science Assessment highlighted the phase-out of Hydrochlorofluorocarbons (HCFCs) as one of the most important actions the Parties can take to reduce the risk of future ozone depletion, followed by recovery and destruction of halons and chlorofluorocarbons (CFC) banks and the phase-out of methyl bromide (MeBr) and carbon tetrachloride (CTC).

An early analysis, with significant uncertainty, suggests substantial growth in HCFC production and consumption in Article 5 (developing) Parties. Growth has occurred in some developing country production, during recent years, at a rate of 25-35 percent per annum for all relevant HCFCs. This growth rate does not take into account growth in feedstock production estimated at 10 percent per year and which makes up 40 to 50 percent of the HCFC-22 production for emissive uses in Article 5 (developing) Parties. Whether or not it would be possible for production capacity to deliver the HCFC levels predicted by this analysis is unclear.

An estimate of total developing country HCFC production is as follows:

Year	**2000**	**2002**	**2004**	**2006**	**2008**	**2010**
Production for emissive use, kilo tonnes	129	168	271	380?	590?	840?
Production for feedstock, kilo tonnes	45	60	95	135?	200?	300?
Total (kilo tonnes)	174	228	366	515?	790?	1140?

Developed (nA5) Parties' HCFC production, developing (A5) Parties' HCFC consumption, together with global consumption of HCFC for the period 2000-2004 is as follows (kilo tonnes):

Year	**2000**	**2002**	**2004**
Production, nA5	393	330	211
Consumption, A5	195	196	280
Consumption, global	517	481	459

MODIFICATIONS TO HCFC CONTROL MEASURES

An accelerated phase-out of HCFCs would avoid projected increases in production and consumption by 2015, where about 70 percent will come from HCFC-22 and 30 percent from HCFC-141b and 142b. In addition to depleting the ozone layer (and possessing a global warming potential of 1,780), HCFC-22 production can result in by-product emissions of hydrofluorocarbon HFC-23 (GWP, = 11,700) and CTC from the production of chloroform used to make HCFC-22 (CTC have an ODP of 1.1 (Ozone Handbook 6th Ed. 2006) and a GWP of 1,400). Additional measures, such as pursing energy efficiency advances and Life Cycle Analysis (LCA) and Life Cycle Climate Performance (LCCP) criteria, can help guide the Parties on how to quantify the additional benefits of a control measure to the climate.

Many participants stated that there is need to consider adjusting the current control measures for HCFC production as soon as possible for both developed and developing countries and for HCFC consumption for developing countries. It was noted that accelerated HCFC production measures exist in some non-A5 Parties. Some participants urged prompt action in order to meet the 15 March 2007 deadline for circulation of proposals to the Ozone Secretariat for consideration at the 19th Meeting of the Parties.

An accelerated phase-out of HCFCs is both possible and necessary, in light of the availability of alternatives, concerns over compliance, and the costs of late transitioning out of HCFCs.

Alternatives to HCFCs are available for all applications where they are used, which include commercial and industrial refrigeration as well as stationary air conditioning. Maximising benefits to the climate as well as ozone layer will depend on both the type refrigerant used as well as improvements in design and energy efficiency of the technology, practice and incentives in which the refrigerants are being used. Promising techniques, e.g. based on natural refrigerants, that maximise advantages from both ozone and climate perspectives may merit additional consideration for further support and incentives, including economic and legislative.

Current projections for production and consumption of HCFCs raised concerns over the potential impacts to the ozone layer and the climate as well as whether developing countries will have difficulties complying with the 2016 consumption freeze, given the projected increase in HCFC production and consumption by 2015. There also was concern over the costs of a transition out of HCFCs at the production and consumption levels projected for 2015, especially when compared to the smaller costs of a transition at current production and consumption levels. In the context, it may be worth noting that the growth in HCFCs has to take into account the case where CFCs were replaced by HCFCs (in particular for HCFC-141b replacing CFC-11; not so much in the case for HCFC-22), and the increase in consumption due to population and economic growth where the HCFCs did not replace CFCs.

Proposal(s) to strengthen the Montreal Protocol by accelerating the phase-out of HCFCs will enable a complete discussion of all relevant issues by the Parties and the opportunity to adjust the Protocol at the 19th Meeting of the Parties in September 2007 celebrating the 20th Anniversary of the ozone regime.

POSSIBLE FURTHER CONTROL SCENARIOS/ADJUSTMENTS

Proposed adjustments will need to consider the freeze date and possible step-wise reductions of both production and consumption of HCFCs in both developed and developing countries.

Given the concerns over projected HCFC production and consumption levels by 2015 as well as compliance with the 2016 freeze date by developing countries, an earlier freeze date should be considered to avoid increased production of HCFCs. An earlier freeze date could also avoid increases in capacity and demand projected over the next decade.

In addition, it was discussed that, for developing countries, a step-wise schedule, possibly modelled after the step-wise schedule for developed countries, could be implemented after the freeze date. A step-wise schedule for the production sector, in developed countries, could possibly be modelled after the production sector phase down of the European Community with a delay in the production phase down in developing countries.

TECHNICAL AND ECONOMIC FEASIBILITY OF ADEQUATE ALTERNATIVES

Alternatives exist for HCFCs in all applications.

To capture climate benefits in transitioning out of HCFCs, alternatives should be evaluated in terms of their cumulative environmental impacts, such as under Life Cycle Analysis and Life Cycle Climate Performance, which would consider both direct impacts based on a substance's GWP and indirect impacts such as by-product emissions and GHG emissions from energy consumption. Some alternatives, such as ammonia, CO2, and hydrocarbons, have lower (or negligible) GWPs compared to HFCs. Their use depends on applicable incentives and regulations, including safety. The transition from HCFCs will result in the application of state-of-the-art technology and best-practice in equipment design and performance, including improvements resulting in small charge size, reduced leakage, enhanced recovery and destruction during servicing and equipment end-of-life, and increases in energy efficiency.

HCFC-22
Chemical substitutes are available with comparable (or higher) GWP. The LCCP and energy efficiency of products using substitute refrigerants can be significantly better with design, containment, recycling during service and at end-of-life, together with destruction when no longer needed. Investment costs for products dependent on application, regional features etc. Redesign to avoid HCFCs is more cost-effective than retrofitting later. Compressor development for HFCs has been achieved to a large extent. In some cases changes, such as in piping and heat exchanger design that can only be done for new systems could possibly lead to cost reduction. Conversion of HCFC-22 to propane is possible without major modifications, with comparable or better energy efficiency. Modifications for safety will be necessary, however, particularly for larger systems with large refrigerant charge inventories, which have impacts on the energy efficiency. Costs for R-410A are expected to be comparable to HCFC-22 once R-410A dominates market share. Costs for hydrocarbon-based equipment are 5 to 25 percent higher

depending on specific safety measures and size of equipment. An accelerated HCFC-22 phase-out is technically and economically feasible.

HCFC 141b
Substitute chemicals are available for all uses, especially where HCFC-141b is used as solvents or propellants. The LCCP for Hydrocarbon (HC) blown foams is superior to HCFC-141b foams without end-of-life measures and HC foam is likely to be cost effective when greenhouse gas emissions were quantified. Emissions of HCFC-141b from insulating foam depend on end-of-life treatment.

HCFC-225
Substitute chemicals are available. Minor exceptions exist in technical applications, e.g. cleaning of oxygen systems that have complex geometry. An earlier HCFC phase-out could be considered with exemptions for minor HCFC-225 solvent uses, possibly under the existing exemption criteria and process, or if the Montreal Protocol allowed production to be offset by destruction of ODSs.

HCFC 123
Substitute chemicals are available for solvent uses. Substitute chemicals are not available with equivalent environmental performance for some air conditioning applications. Some HCFC-123 uses in centrifugal chillers achieve an energy efficiency advantage of 10 percent or higher than existing alternatives. HCFC 123 use applies only to centrifugal chillers. There are other alternatives (HCFCs and HFCs) for scroll or screw compressors where design and mode of operations also yield energy efficiency benefits. With near-zero chiller emissions with incentives (for this refrigerant), an earlier HCFC phase-out could take place with highly contained HCFC-123 centrifugal chiller uses possibly allowed by an agreed to essential use exemption or otherwise, with offsets by ODS destruction.

Costs
In terms of costs, HFC alternatives to HCFCs are more expensive. However, this will not significantly affect the cost of equipment. Other alternatives, such as hydrocarbons and ammonia, are less expensive, and equipment costs are a function of regional incentives and regulations, including safety. For example, safety regulations could require changes in equipment design.

TECHNICAL ASPECTS OF FUNDING ISSUES: MLF, GEF, AND POSSIBILITY OF INVOLVING OTHER FUNDING, INCLUDING CLIMATE FUNDING, CDM/JI, BILATERAL FUNDING, PUBLIC-PRIVATE ACTIVITIES, ETC.

The ozone and climate benefits of the Montreal Protocol can provide an additional incentive to donor countries to replenish the Multilateral Fund to ensure compliance with an accelerated phase-out of HCFCs. These climate benefits should be clearly communicated to the climate change community and to the appropriate offices and officials in donor countries as additional justification for maintaining the continuity of the financial support of the Montreal Protocol and protection of the ozone layer.

The climate benefits of an accelerated phase-out include replacing HCFCs with alternatives that have lower GWPs (considering both direct and by-product emissions). In addition, the transition to state-of-the-art technology and best practices will yield increased energy efficiency and lower leak rates. In particular, it was emphasized that increases in energy efficiency offers both environmental and economic benefits.

Furthermore, these climate benefits can be leveraged to provide additional support measures, including public-private partnerships, alternative financial mechanisms such as the Kyoto mechanisms (including the Clean Development Mechanism and Joint Implementation), revolving funds, equity partnerships. They also can spur cleaner production, advances in energy efficiency, streamlined administration, greater transparency, and additional opportunities with other implementing agencies.

Most participants expressed preference for a sectoral approach (currently a key MLF approach) to funding an accelerated phase-out, due to its greater flexibility. Some participants expressed concern over linking the Montreal Protocol with the Kyoto Protocol's flexible market-based instruments, stating that it could jeopardize the authenticity of the political and technical capital of the Montreal Protocol. Importantly, emissions reduction credits for 'avoided emissions', due to elimination of all or part of the future HCFC production, could provide additional financial support for the protection of the ozone layer and the climate.

Participants discussed options for funding an accelerated phase-out of HCFCs through the Multilateral Fund and noted that Parties could authorise a change to the eligibility criteria of the MLF Executive Committee's Guidelines to better meet the financial requirements of an accelerated phase-out of HCFCs. The current MLF Guidelines do not allow funding of facilities installed July 1995 or any enterprise that has used the Fund's assistance for transitioning to HCFCs from CFCs. These guidelines may need to be amended appropriately. In addition, participants discussed opportunities for the MLF and Global Environment Facility to finance an accelerated HCFC phase out, bearing in mind their current project eligibility criteria for funding.

It was also noted that some developing countries are in a different position now than they were 20 years ago when the decision was made to phase-out CFCs, enabling them to play a different role in the further implementation of the Montreal Protocol and helping to create a new paradigm for protection of the ozone layer.

Agreement by the Parties at their Nineteenth Meeting in 2007 on an Adjustment to a control measure on production and consumption of HCFCs would allow a study to consider this control measure in the evaluation in 2008 of the cost of the Replenishment of the Multilateral Fund for the period 2009-2011. Furthermore, the accelerated phase-out of HCFCs creates an additional justification for donors to continue to support the Multilateral Fund at current levels.

FURTHER WORK

Participants recognized that agreement on an Adjustment to the control measure on HCFCs could be accomplished this year at the 19th Meeting of the Parties. The new control measure

would provide the basis for a (TEAP) study in 2008 on the level of replenishment necessary for the next period. Participants were made aware of Decision IX/5 which made acceptance of a new control measure conditional on funding. Such a precedent may be useful in 2007 for facilitating an agreement for an Adjustment.

COMPLIANCE TOWARD EXISTING MEASURES

CTC

An update was provided on the current applications of CTC, the global production and feedstock uses of CTC, linkage between HCFC and CTC production, and challenges from potential emissions from projected gross production of CTC.

CTC and HCFC-22 are linked. Measures addressing HCFC and ozone-climate therefore would benefit from a packaged approach. Production of HCFC-22 uses chloroform as feedstock, and the production of chloroform generates CTC as a by-product. Based on an industrial estimate, 40 percent of the total production of HCFC-22 is used for production of Polyterafluoroethylene (PTFE).

Some CTC can be used as feedstock through contained re-use and recycling. With regard to current applications, CTC is used as feedstock for production of CFCs and other chemicals and as a solvent and process agent. Its use for DVAC (divinyl acid chloride) is increasing. Demand for PTFE is estimated to grow at about the same rate as the demand for HCFC for emissive uses (10 percent per year). In 2003, the global production capacity of HCFC-22 was estimated at 803,500 tonnes per year. In 2005, the total feedstock use of CTC was 175,000 tonnes. With the projected increases in chloroform use to produce HCFC-22, by-product production of CTC is expected to increase to 260,000 tonnes by 2015 if measures are not taken to ensure its destruction and/or use as a feedstock.

With HCFC-22 production capacity of 803,500 tonnes in 2003 and increasing demand for PTFE products etc. could increase production capacity to more than 1 million tonnes. There will be, thus, more than 150,000 tonnes of CTC that will need to be taken care of. For example bys use as feedstock, either as a result of increased demand for current feedstock uses or in new feedstock uses, or destroyed. Additionally, new chloromethane processes could be used that re-use the CTC by-product for production of methyl chloride.

The technical assessments, both by IPCC/TEAP (Intergovernmental Panel on Climate Change / Technical and Economic Assessment Panel) Special Report from 2005 have not taken into account the issues regarding increasing by-product CTC production and associated emissions. One of uncertainties of the 2006 TEAP report on CTC emissions was based on the fact that there may be emissions from landfills since it was used as a solvent for such a long time; these emissions have not been clearly defined although a number of papers exist.

CFC MDIs

Many Article 5 parties use CFC Metered-dose Inhalers (MDIs) with a belief that essential use process would be applicable to them even before 2010. These Article 5 Parties left this sector to be dealt with at a later stage and concentrated on other sectors. But the Montreal Protocol allows essential use exemptions only after the final phase-out in 2010. This misunderstanding resulted in some countries excluding ODS consumption data for MDIs in their reporting to the Ozone Secretariat. This led to difficulties and uncertainties in data collection and analysis of their needs, which has not been reflected until recently. As the 2010 phase-out date approaches, countries are giving priority to the phase out of CFCs for MDIs, due to concern over the potential non-availability of pharmaceutical grade CFCs.

Countries using CFC MDIs may be grouped into two categories: those which import, but do not manufacture CFC MDIs and those which manufacture CFC MDIs.

Import-only countries have been encouraged by the Parties through Decision XXII/2(6a) to develop a transition strategy and seek review by the TEAP. Further, the Executive Committee of the MLF has been requested to consider approving technical, financial, and other forms of assistance to develop transition strategies. But the recent ExCom decision stating that transition strategies will only be approved for assistance if countries can demonstrate they need such assistance has created a "Catch-22" situation, since many of these countries need assistance first in order to assess the problem before they can determine if they need assistance.

About 12 Article 5 Parties produce MDIs. Their technology transfer needs are being addressed fully or partially, through MLF assistance, ongoing project preparation or technology conversion on their own. Some have had difficulties to convert all their formulations; others mention delays in finalizing the process, registration etc. For ongoing projects funded by the MLF, project implementation takes longer than other sectors, registration and formulations testing cause delays and transition strategies can only be finalized once technology assistance and conversion occurs.

With the 2010 phase-out date approaching MDI manufacturing countries which have not received technical assistance and have not changed to non-CFC MDIs or alternative drugs for asthma treatment, will need to give priority to MDIs for their remaining CFC consumption. This may increase the price of CFCs and help spur a transition to ODS substitutes in the non-MDI sectors such as in the refrigeration sector. It was also commented that replacement technology could be developed in Article 5 countries, although at present there is not enough capacity for HFC-134a alternatives.

Methyl Bromide

The discussion on methyl bromide focused on technology, trade, and transparency issues.

Technology issues with methyl bromide mainly involve the transfer of best practices, including Integrated Pest Management. It was noted that U.N. agencies that have greater access to farming communities can help disseminate information, such as the Food and Agriculture Organisation of the United Nations (FAO). Farmers Associations and NGOs can also help reach farmers and

fumigators at the grass roots. Additionally, it was commented that by licensing fumigators, the size of the regulated community can be reduced from thousands of farmers to a much more manageable number of fumigators. It also makes monitoring and control of imports more manageable.

Regarding trade issues, Quarantine and Pre-shipment (QPS) requirements are determined by the importing country, which can require the exporting country to use methyl bromide for fumigating wood packaging and other commodities, or heat treatment, which is also an option. Illegal trade in methyl bromide also is a key issue.

Transparency issues relate to compliance, as a large amount of methyl bromide use is for Quarantine and Pre-shipment applications not subject to control measures. As a result, it is important to monitor its import, export, and use to ensure that methyl bromide imported or exported for QPS purposes is not used as a fumigant. In addition, there are instances where methyl bromide is not labelled properly, and farmers using it as a fumigant do not know to take proper precautions.

A ban on the use of cans by unlicensed farmers has been shown to significantly reduce the use of methyl bromide as it would restrict methyl bromide fumigation to only licensed operators.

Another issue regarding methyl bromide is its increased use, by a factor of 4-5, to fumigate wood packaging, due to the ISPM15 requirement originating from the International Plant Protection Convention (IPPC), which applies to nearly all wood used for shipping and packaging in containers in international trade. Dealing with this issue requires greater communication between environment and agriculture ministries as well as greater collaboration with the IPPC to reduce or eliminate methyl bromide or wood packaging and to develop alternatives where heat treatment is not feasible or too expensive.

Future actions include focusing on best practices for use of methyl bromide for fumigation. Collaboration with farmer associations was one effective way of information exchange. For QPS, it was suggested it would be useful to seek explore the possibility of placing control measures on some uses of methyl bromide for QPS, in terms of minimizing its use across the board and forbidding its use where there are technologically and economically feasible substitutes.

Conclusion and Next Steps

The next meeting of the Stockholm Group could take place immediately before the special two-day dialogue scheduled for June 2007, prior to the Open-Ended Working Group. Tentative date for the Meeting: 31 May 2007.

At the next meeting, key issues still outstanding for discussion include ODS banks and stocks and available options to reduce their impacts on both the ozone and the climate, including the possibility of developing methodologies that could benefit from flexible mechanisms (Clean Development Mechanism, Joint Implementation etc.) that provide Certified Emission Reductions (CERs), Emission Reduction Units (ERUs) etc, for the recovery and destruction of banks. In addition, it was suggested that it would be useful to invite someone from the Basel Convention to

discuss the issues involving the transport of equipment and vessels containing ODS for destruction.

ATTACHMENTS

Annex 1: Chair's Proposal for Elements of an Adjustment to Strengthen the Montreal Protocol

(Separate e-mail dispatch)

Presentations at the 6th February 2007, The Haag Meeting, of the Stockholm Group.

- Chairs Presentations (3)
- Scientific Assessment (1): Ozone-Climate, Dr. Guus Velders
- TEAP Co-chair Presentations (2)
- World Bank Presentation (CTC) (1)
- UNDP Observations (1): Extract from HCFC Surveys
- Value of HFC-23 Destroyed (1): DuPont. Mack MacFarland

CHAIR'S PROPOSAL FOR ELEMENTS OF AN ADJUSTMENT TO STRENGTHEN THE MONTREAL PROTOCOL

Ideas for Preamble

Recalling the global spirit of cooperation in protecting the stratospheric ozone layer and the commitment of developed countries to finance the incremental costs of the phase-out of ozone-depleting substances in developing countries,

Recognizing the climate benefits of the Montreal Protocol's phase-out of ODSs, and that measures to strengthen the Montreal Protocol will produce additional benefits for both ozone and climate,

Acknowledging the significant challenges still facing the Montreal Protocol to ensure the recovery of the ozone layer to pre-1980 levels,

Mindful that environmentally superior alternatives and substitutes are available for all but some specialized HCFC applications, and that without an accelerated HCFC phase-out production and consumption may increase to levels that will be increasingly difficult and costly for the Parties to finance costs of future phase out,

Noting that both the ozone layer and the climate will benefit from prompt action by the Parties, and that this proposal is designed to ensure a complete and thorough discussion of challenges facing the Montreal Protocol and to preserve the opportunity for action at the 19th Meeting of the Parties in September 2007.

Ideas for HCFC Phase-Out Schedules

The current phase-out schedule for HCFCs in Article 5(1) countries requires a freeze in consumption in 2016 at 2015 levels and a complete phase-out by 2040.

The HCFC production control requires a freeze, with respect to the base level, in 2004 for non-Article 5(1) and in 2016 for Article 5(1) with a 15 % (of base level) provision for Basic Domestic Needs (BDN).

An accelerated phase-out could be based on the following:

- Establish [2006] production and consumption levels as the baseline.
- Freeze production and consumption levels in [2015] at either [__ %] of the baseline or the production and consumption levels in [2015], whichever is less.
- Implement a stepwise reduction schedule, with a complete phase-out by 2040
- Allow essential use exemptions according to agreed criteria
- Allow a small percentage of production to satisfy basic domestic needs
- Advance HCFC phase-out in the production and consumption sectors for non-Article 5 Parties to the maximum extent feasible.

[The phase-out schedule for HCFC consumption would thus be (new controls in bold):

Control measure	CURRENT Non-article 5 (1)	CURRENT Article 5 (1)	**PROPOSED** Article 5 (1)
Freeze	1996 (on 1989 HCFC consumption + 2,8% of 1989 CFC consumption	2016 (on 2015 HCFC consumption)	**[2015] (on [2006] HCFC consumption)**
-35 %	2004		**2014**
-65%	2010		**2020**
-90%	2015		**2025**
-99.5%	2020		**2030**
Phase-out	2030	2040	**2040**

The phase-out schedule for HCFC production would thus be (new controls in bold):]

Control measure	CURRENT Non-article 5 (1)	CURRENT Article 5 (1)	**PROPOSED** Non-article 5 (1)	**PROPOSED** Article 5 (1)
Freeze	2004 (on 1989 HCFC production + 2,8% of 1989 CFC production and 1989 HCFC consumption + 2.8% of 1989 CFC consumption)	2016 (on 2015 average of production and consumption)	**[current]**	**2016 (on 2006 average of production and consumption)**
-35 %				
-65%			**2008**	**2018**
-90%			**2015**	**2025**
-99.5%			**2020**	**2030**
Phase-out			**2030**	**2040**
BDN	2004 - 15% of base	2016- 15% of base	**X% base**	**X% base**

BDN = Basic Domestic Need

Ideas for Financial Assistance

The Parties should enable the Multilateral Fund and possibly other relevant financial mechanism, such as the Global Environment Facility, to provide financial assistance for the incremental costs of control measures for HCFCs on the similar basis as CFCs. Financial assistance can be made conditional, as it was in Decision IX/5: Conditions for control measures on Annex E substance in Article 5 Parties. The Parties should consider providing guidance to the Kyoto Protocol Mechanisms' (such as CDM and JI) projects aimed at moving away from HCFCs to ozone and climate friendly alternatives.

Ideas for ODS Destruction

The Parties could consider creating greater incentives for the recovery and destruction of ODSs currently contained in banks and stockpiles, which are not subject to controls and represent a significant source of emissions in terms of both ODP tonnes and GWP. Such incentives need to be balanced as to not generate perverse incentives.

Guus Velders

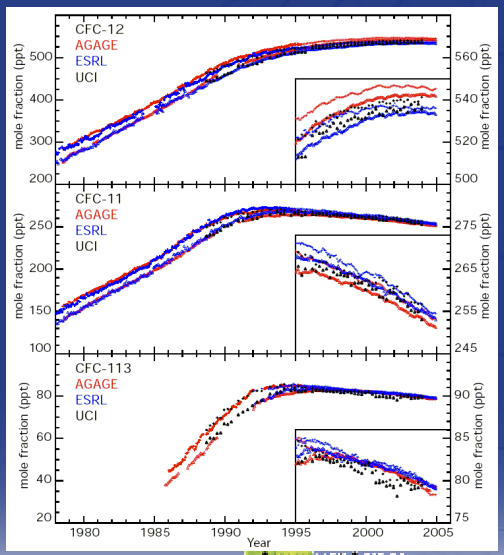
The importance of the Montreal Protocol in protecting climate

Third meeting Stockholm group
February 6, 2007, The Netherlands

Well known benefits Montreal Protocol

- Large decreases in production of CFCs, CCl_4, methyl chloroform, etc.
- Large decreases in emissions
- Major ODSs show decreases in concentrations
- Emerging evidence of ozone layer recovery

WMO (2007)



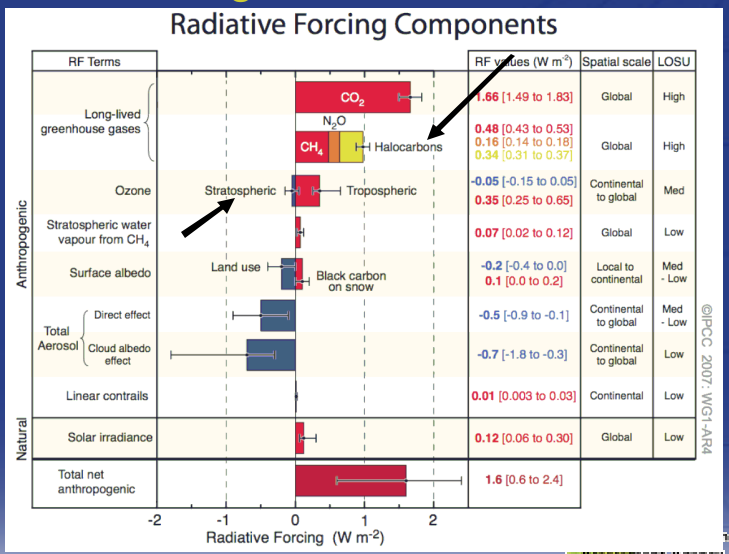
Message here

Montreal Protocol provided dual protection:
to Ozone layer *and* to Climate change

➔ Climate benefits already achieved larger than Kyoto Protocol targets for 2008-2012

➔ Potential for additional climate benefits significant compared to Kyoto

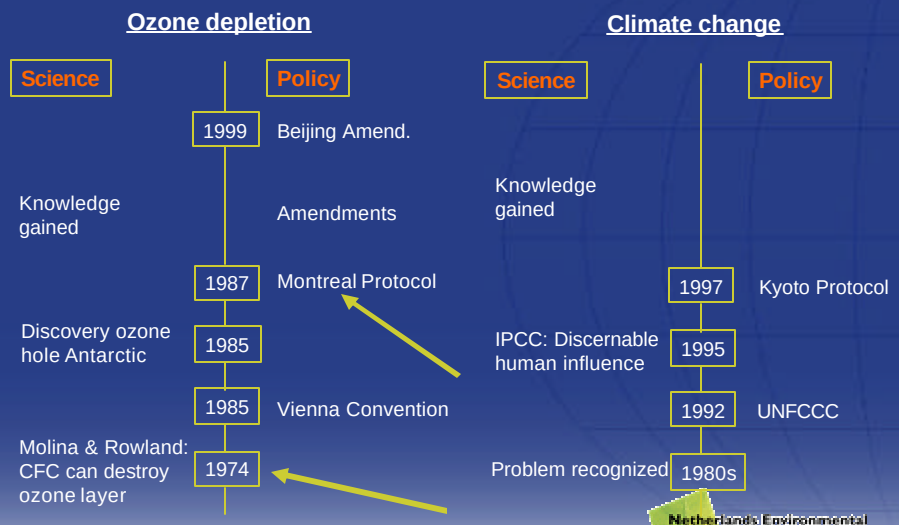
Radiative forcing in 2005



This study

- Scenarios of Ozone Depleting Substances (ODSs)
- Effect Montreal Protocol on emissions, concentrations
- Achieved climate benefits
- Comparison with first targets of Kyoto Protocol
- Offsets
- Potential additional climate benefits

Science and policy



Scenarios

- Baseline:
  - Following latest Amendments and Adjustments
  - In agreement with observed concentrations
  - Based on WMO/UNEP “Scientific assessment of ozone depletion: 2006” (in press)
- MR74: Without Molina and Rowland 1974:
  - Annual growth 3-7% starting in 1975
- NMP87: No Montreal Protocol 1987:
  - Annual growth 2-3% starting in 1987

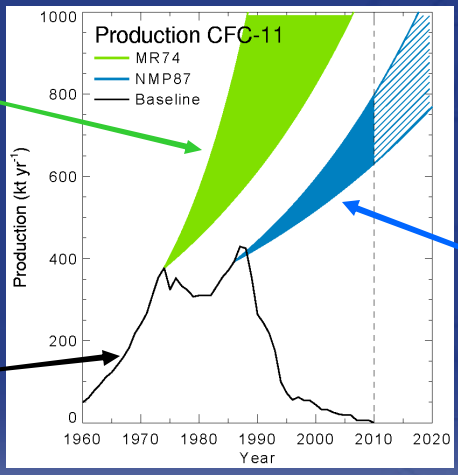
Method

- Production ➔ Emissions ➔ Mixing ratios ODSs
- Ozone layer:
  - ODP-weighted emissions
  - Mixing ratios ➔ effective chlorine in stratosphere
- Climate change:
  - GWP-weighted emissions
  - Mixing ratios ➔ radiative forcing

Production CFC-11

Without 1974 paper Molina and Rowland

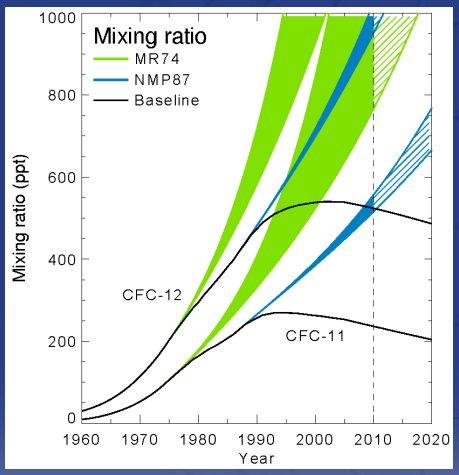
Baseline based on UNEP + scenario



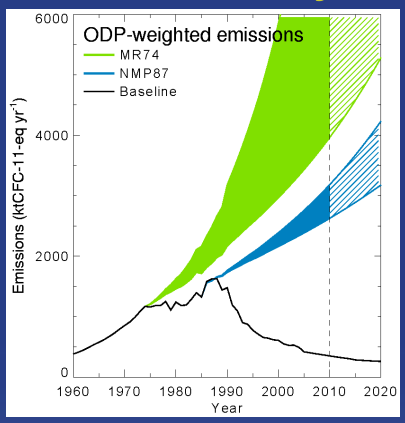
Without 1987 Montreal Protocol

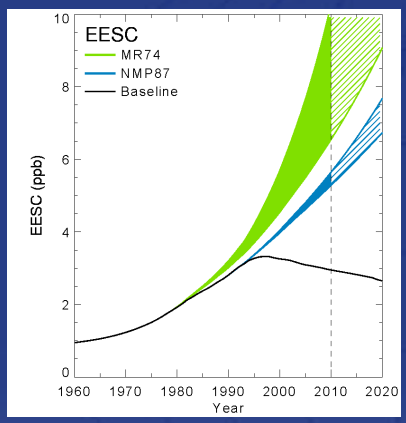
Concentration CFC-11 and CFC-12

- Delays compared to emissions due to long lifetimes:
  - CFC-11: 45 yr
  - CFC-12: 100 yr
- Continued growth without Montreal Protocol



Effect for Ozone layer

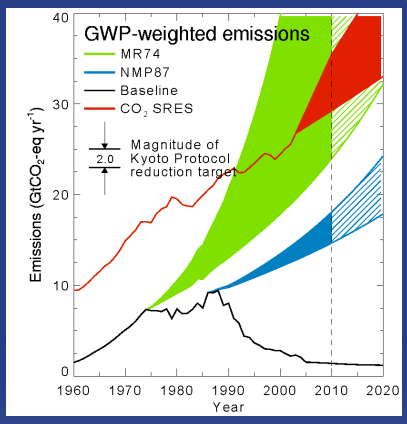


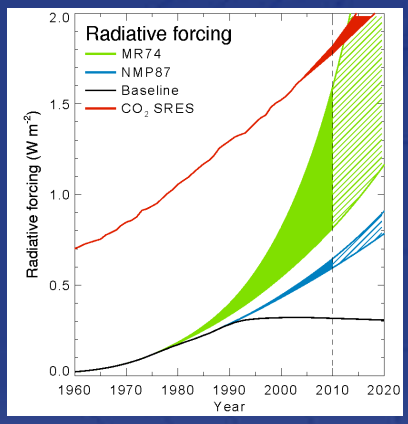


Montreal Protocol strongly reduced emissions

Effective chlorine stratosphere
➔ related to ozone depletion

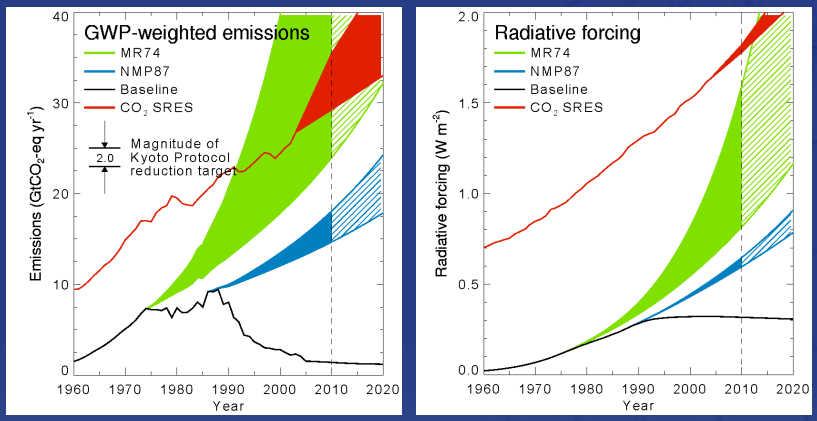
Effect for Climate change





- Without Molina/Rowland: ODS emissions as important as CO_2
- Without Montreal Protocol: ODS emissions half of CO_2

Effect for Climate change



- Large reduction by Montreal Protocol: 9.4 ➔ 1.4 $GtCO_2$-eq/yr
- Forcing: delay of ~10 years cf CO_2 emissions

Kyoto Protocol

- Greenhouse gases: CO_2, CH_4, N_2O, HFCs, PFCs, SF_6
- ODSs explicitly excluded

- First commitment period Kyoto Protocol
- Target Annex-1 parties for 2008-2012 (cf 1990):
  - -0.97 $GtCO_2$-eq/yr about -5.8%
- Projections for 1990-2010 (UNFCCC):
  - +1.06 $GtCO_2$-eq/yr
- Total target: about 2 $GtCO_2$-eq/yr

Offsetting the benefits

- About 80% of ODSs replaced by non-fluorocarbons
- ODS substitute gases
  - HFCs and HCFCs
  - HFC emissions: 0.9 $GtCO_2$-eq/yr by 2010 (IPCC)
- Negative radiative forcing of ozone depletion
  - Now estimated as -0.05 +/- 0.10 W/m^2
- Total offsets about 30% of direct forcing

Overall benefits for 2010

	NMP87-Baseline	Offsets		Net value
		Ozone depletion	HFCs	
GWP-weighted emissions ($GtCO_2$-eq/yr)	13.3-16.7	2.7-3.3	0.9	9.7-12.5
Radiative forcing (W/m^2)	0.28-0.33	0.06	0.02	0.20-0.25

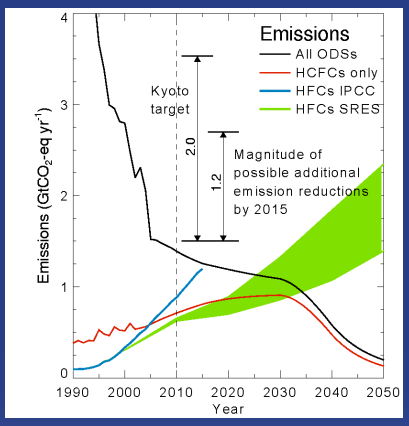
- Kyoto target 2008-2012: ~2 $GtCO_2$-eq/yr

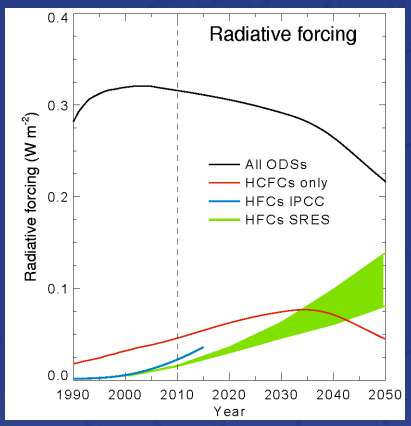
Possible additional benefits

- Acceleration of the phase-out of HCFCs
- Better containment in refrigeration
- Destruction of ODS banks
- Alternatives with lower GWPs

- Potential reductions:
  (in $GtCO_2$-eq/yr by 2015 cf 2002; IPCC/TEAP, 2005)
  - CFCs: 0.12
  - HCFCs: 0.34
  - HFC-23: 0.30 (by-product of HCFC-22 production)
  - HFCs: 0.44 (transition to alternative chemicals)

Potential additional benefits





- Range of future HFC emissions: SRES and IPCC/TEAP

Conclusions

Montreal Protocol provided dual protection:
to Ozone layer *and* to Climate change

- Already achieved climate benefits larger than Kyoto Protocol targets for 2008-2012
- Without Montreal Protocol:
  - GWP-emissions of ODSs could be half of CO_2 emissions
  - Delay in radiative forcing of ~10 years cf CO_2 emissions

Conclusions (2)

- Potential for additional climate benefits significant compared to Kyoto Protocol targets (2008-2012):
  - Acceleration of the phase-out of HCFCs
  - Better containment in refrigeration
  - Destruction of ODS banks
  - Alternatives with lower GWPs

Thank you for your attention