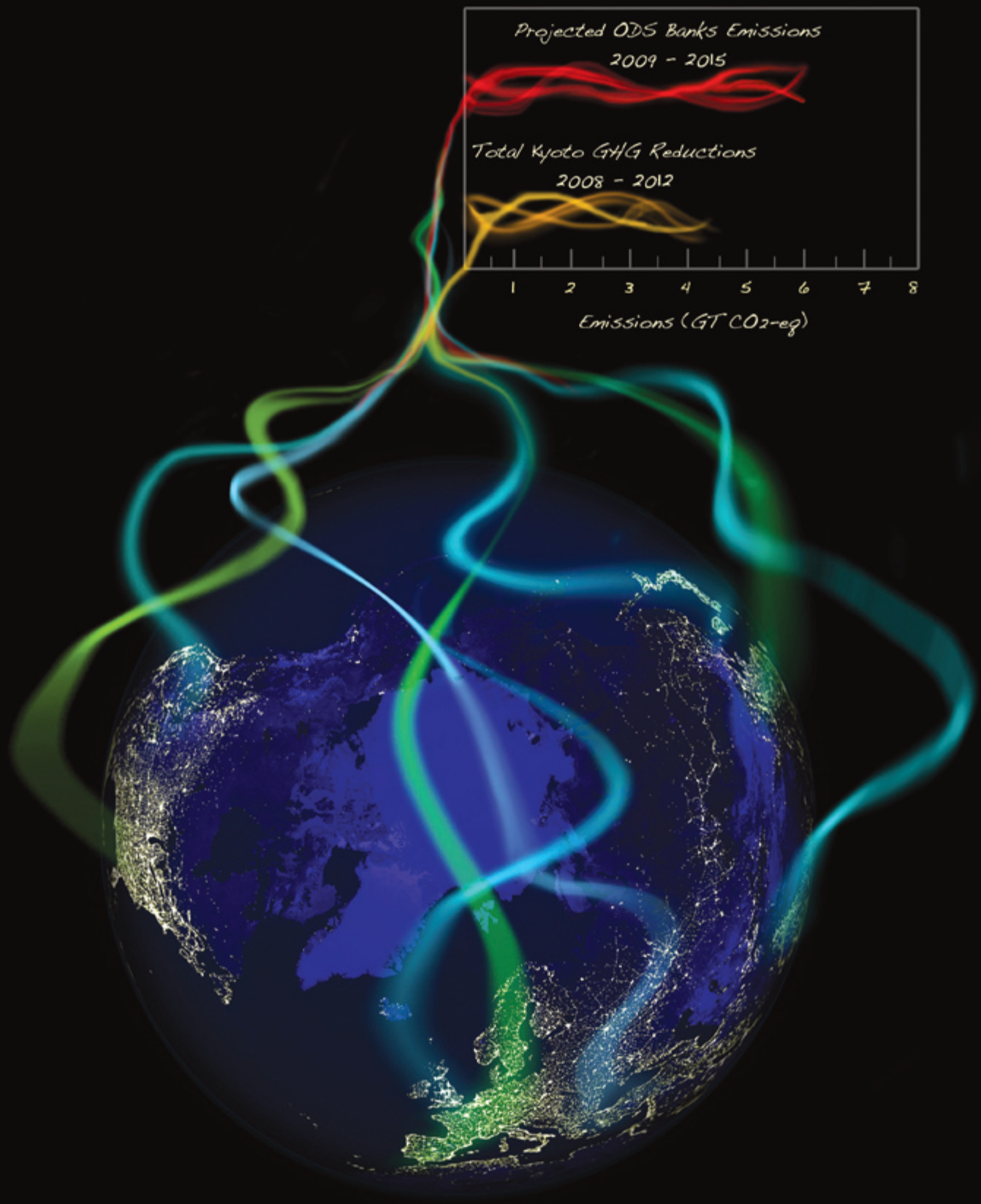
RECOVERY AND DESTRUCTION OF ODS BANKS:
IMMEDIATE ACTION FOR GLOBAL CLIMATE PROTECTION

environmental investigation agency



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MONTREAL PROTOCOL AS A FORCE FOR CLIMATE: RECOVERY AND DESTRUCTION OF ODS BANKS TO PROTECT GREENHOUSE GAS REDUCTIONS UNDER THE KYOTO PROTOCOL

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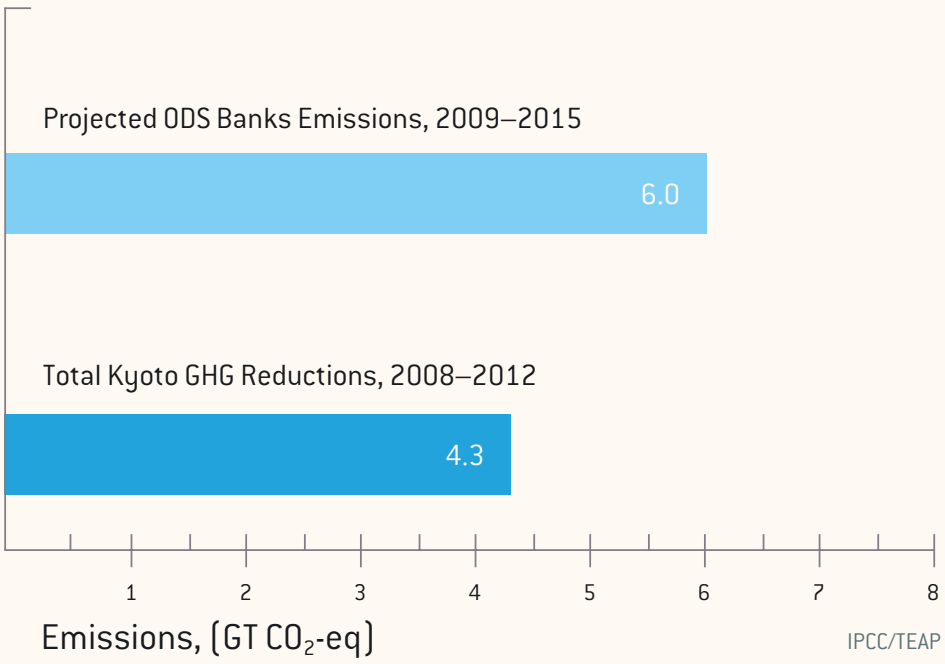
ODS BANKS: PROBLEM AND OPPORTUNITY

The global implementation of Montreal Protocol on Substances that Deplete the Ozone Layer ("Montreal Protocol") over the last 21 years has successfully phased out the consumption and production of ozone-depleting substances ("ODS") by 97%. Since most ODS are "super" greenhouse gases ("GHGs") with global warming potentials ("GWPs") hundreds or thousands of times greater than carbon dioxide ("CO_2"), this phase-out has had dramatic impacts on mitigating climate change. Unfortunately, once ODS are released onto the market, they are no longer regulated under either the Montreal Protocol or the Kyoto Protocol to the United Nations Framework Convention on Climate Change's ("UNFCCC" and "Kyoto Protocol" respectively).

ODS that have been used over the past 50+ years still exist in equipment, such as refrigerators and air conditioners. ODS can also be found in insulating and other foams and in stockpiles of virgin, recovered and contaminated ODS. These ODS are collectively referred to as "Banks". The Intergovernmental Panel on Climate Change ("IPCC") and the Technology and Economic Assessment Panel ("TEAP") estimated in 2002 that Banks contain approximately 20 billion tons ("Gt") of CO_2 equivalents ("CO_2–eq."). [1] They predict that approximately 6 Gt CO_2-eq. will be released into the atmosphere during the period from 2011 to 2015 alone from the most easily accessible and destroyable Banks in refrigeration and air conditioning. Unless immediate action is taken, the IPCC and TEAP also predict that total direct emissions of emitted from Banks will reach 2.3 Gt CO_2-eq. per year by 2015, which would erase all of the reductions in GHG emissions achieved under the Kyoto Protocol. [2]

The nations of the world have a limited opportunity to capture these emissions and prevent a massive release of powerful GHGs that will further exacerbate global climate change. *Aggressive actions must be taken this year.* Immediate and decisive action to manage and destroy these Banks would be much more cost effective than many other climate change mitigation measures. Additionally, expanding and supplementing the Montreal Protocol's previous investments in infrastructure, training, and governance institutions necessary to recover and destroy these "reachable" Banks in the near-term, will achieve the collateral benefit of reducing the costs of recovering and destroying the remaining 14 Gt CO_2-eq. in Banks that will be emitted after 2015. [3]

MAINTENANCE AND DESTRUCTION OF BANKS



ODS Banks emissions from 2011-2015 could erase all of the GHG reductions achieved under the Kyoto Protocol.

Tackling the destruction of Banks will require a multi-faceted approach. In non-Article 5 countries, i.e., developed countries, feasible potential regulatory approaches include requiring producer/retailers to collect and destroy ODS, providing incentives for ODS destruction, and creating industry-led programs for this purpose.[4] Most non-Article 5 countries have available infrastructure and facilities to destroy ODS effectively in a validated and verifiable manner.[5] However, most non-Article 5 countries have not instituted comprehensive Banks maintenance and recovery programs that 1) employ best available technologies 2) receive adequate funding and 3) are supported by effective enforcement.

The Parties have been considering the issue of maintenance and destruction of Banks for years. They have passed numerous decisions concerning approved destruction technologies (decisions IV/11, V/26, VII/35, XIV/6 and XV/9) and good housekeeping procedures for destruction (decisions IV/11 and XV/9), and they have clarified destruction efficiency issues (decisions IV/11, XV/10 and XVII/17). Despite this, destruction rates in non-Article 5 countries remain inadequately low. Non-Article 5 countries should be encouraged to take immediate steps to maintain the Banks within their jurisdiction and to adopt comprehensive Banks maintenance and destruction programs supported by adequate resources to ensure their effectiveness.

In 2006, it was estimated that there were 515,000 tonnes of reachable CFCs Banks of Article 5 Parties. Since the production of CFCs will cease in Article 5 countries as of January 1, 2010, the IPCC and TEAP estimate that there will be a need for as much as 30,000 tonnes of CFCs to meet the global demand for servicing CFC-based refrigeration, that amount dropping to 3,000 tonnes by 2015. While some evidence suggests that these estimates are too high, it does indicate that there will be a commercial incentive to recover and properly maintain a certain percentage of Banks for the purpose of replenishment of CFCs.

The Multilateral Fund ("MLF") has financed at least 100 recovery and recycling projects to establish the expertise and to distribute the equipment necessary for recovery and recycling of Banks. Anecdotal data obtained by the expert group that prepared the 2006 report for the MLF indicated that recovery efforts to date have been highly ineffective.

MAINTENANCE AND DESTRUCTION OF BANKS (CONTINUED)

For example, based on responses received from 11 Article 5 Parties, only 23 of the 4,275 tonnes of ODS used in easily recoverable refrigeration equipment had been recovered. This report indicates the difficulty of recovery and suggests that opportunities are rife for the Montreal Protocol to assist Article 5 Parties to recover and recycle reachable Banks. This would ensure the availability of adequate supplies for replenishment and would advance the goal of aggressive Banks destruction. Although it is clear there will be a need for financial and technology transfers to recover, store and maintain existing Banks, create destruction facilities, and transport ODS to existing facilities for destruction, these activities are consistent with others traditionally occurring through the MLF. Infrastructure building and personnel training in these countries must continually be enhanced to ensure ODS destruction validation and verification.

The Montreal Protocol has approved twelve technologies to date for the destruction of CFCs and halons.[6] Developed countries use many different technologies for CFC destruction on a commercial basis. For instance, in Japan, more than ten technologies were being used in approximately eighty-two operational ODS destruction plants in 2006.[7] Commercial ODS destruction facilities using technologies approved by the TEAP are in operation in twenty countries worldwide.[8] ICF International estimates that ODS destruction capacities range roughly from 40 to 600 tonnes per year. The cost to destroy ODS at these facilities varies by country, technology, capacity, and ODS type. Overall, it was estimated that ODS destruction costs range between $2 and $13 per kilogram, with an average of about $7/kg.[9] The cost of destroying CFC-12 and CFC-134a was found to be approximately $2.45[10] per pound or $5,401.33 per tonne. As CFC-12 has a GWP of 8500 this means that the cost of destruction of CFC-12 is only $0.63 per tonne CO_2-eq.; CFC-134a with a GWP of 1430 costs $3.77 per tonne CO_2-eq. to destroy.

Pilot studies approved by the Montreal Protocol and a similar study being undertaken by the World Bank[11] are intended to determine which technologies work best for which ODS, identify ODS that are actually recoverable, devise a plan to address ODS in Article 5 countries, ascertain the recovery costs for different ODS, and suggest methodologies for validation and verification of the destruction of ODS. Unfortunately, to date only six of 37 proposed pilot projects have received funding and are being evaluated. Given the enormity of the Banks issue and the need for immediate action, funding should be made immediately available for all viable proposed pilot projects.

FINANCING THE MANAGEMENT AND DESTRUCTION OF BANKS

In November 2008, at the Twentieth Meeting of the Parties, the Parties took the first concrete steps to manage and destroy Banks. In Decision XX/7,[12] the Parties agreed to a broad range of actions to evaluate the management and destruction of Banks, including: (1) evaluating ways to mitigate emissions of ODS from Banks through the Montreal Protocol or by national and/or regional legislative strategies; (2) authorizing pilot projects to evaluate collection, transport, storage, and destruction of ODS to generate data on how these measures would protect the ozone layer and achieve climate benefits; and (3) evaluating and adopting best practices and performance standards to prevent emissions from Banks, whether by recovery, recycling, reclamation, reuse as feedstock, or destruction.[13] The Parties also commissioned the TEAP to conduct a cost-benefit analysis of destroying Banks of ODS, versus recycling, reclaiming and reusing such substances, taking into consideration the relative economic costs and environmental benefits to the ozone layer and climate.[14] Additionally, recognizing that financial constraints limiting the ability to manage and destroy Banks are going to be the decisive factor as to whether emissions from Banks can be effectively destroyed, the Parties scheduled a meeting of experts from funding institutions, such as the UNFCCC, the Global Environment Facility, the Executive Board of the Clean Development Mechanism, and the World Bank, to assess possible funding opportunities before the next meeting of the Open-Ended Working Group.[15]

On May 20, 2009, the Report by the Secretariat on Funding Opportunities of the Management and Destruction of Ozone-Depleting Substances was issued ("Funding Report")[16]. One of the reasons for the unparalleled success of the Montreal Protocol's phasing out of ODS was the financial and technological support provided to Parties operating under Article 5 through the MLF. In the replenishment of the MLF in 2008, for the first time, funds were allocated to conduct pilot projects for the recovery and destruction of Banks. However, since the Montreal Protocol has not historically directly controlled Banks management and destruction, these concerns have not been part of the MLF's mandate nor has the MLF historically been funded to effectuate the tasks. Given the fact that Banks destruction is now being driven by a desire to prevent climate change, the Funding Report investigated the broad range of funding mechanisms for projects with climate benefits to determine whether there was a way to increase MLF funding or to leverage the available MLF resources to finance much greater Banks management and destruction.

FINANCING THE MANAGEMENT AND DESTRUCTION OF BANKS (CONTINUED)

The Funding Report described traditional MLF funding mechanisms and potential modifications to them, as well as funding from international institutions, such as the Global Environment Facility, the World Bank and its multiple funds, the United Nations Development Program, and the United Nations Industrial Development Organization. The investigation also looked into generating revenue by obtaining credits in the cap and trade carbon market established by the Clean Development Mechanism of the UNFCCC or through voluntary carbon markets. The Secretariat explored funding opportunities for ODS management and destruction from national or regional sources, including use of revenues from carbon credit auctions, national levies on ODS, end-of-life disposal fees, contributions from alternatives producers, and use of energy efficiency exchange programs to obtain voluntary carbon credits for funding. Finally, the Secretariat evaluated whether a strategic approach to ODS management and destruction could result in funding or other benefits under existing programs implemented by the Basel, Stockholm and Rotterdam Conventions.

The Funding report concluded that:

1) Carbon Markets are not a viable source of short-term or up-front funding.
   a. While the carbon markets are generating billions of dollars annually and may provide a real opportunity to fund ODS destruction, gaining access to the bulk of those markets would necessitate a change to the Kyoto Protocol guidance, but also the development and approval of new methodologies, both of which would be time consuming measures. This is particularly true given the concern of some that opening up the Clean Development Mechanism to ozone-depleting substances would significantly increase the level of credits availability and thereby decrease their value.
   b. Carbon credits are typically given after the emissions reductions have been achieved so do not constitute a good source of up front funding for destruction of Banks.
   c. The potential funding from the carbon markets do not obviate the need to mobilize up-front funding for project development and implementation.
   d. Carbon markets are volatile so they are not likely to assure a steady source of funding for Banks destruction over the long term.
2) Traditional funding of ODS destruction pilot projects is likely to be needed for the short-term but may be able to generate voluntary carbon and energy credits that can be sold to finance other projects.
3) International institutions including the Global Environment Facility, the World Bank and its multiple funds, the United Nations Development Program and the United Nations Industrial Development Organization, provide funding opportunities for ODS recovery and destruction. Additionally, national or regional sources are a viable source of funding for Banks destruction through programs such as carbon credit auctions, national levies on ODS, end-of-life disposal fees, contributions from alternatives producers, and use of energy efficiency exchange and similar programs to obtain voluntary carbon credits for funding. Finally, a strategic approach to ODS management and destruction under existing programs implemented by the Basel, Stockholm and Rotterdam Conventions hold real opportunities to either generate funding through the MLF or for individual Article 5 Parties.

The report identifies many opportunities for developing countries to obtain additional funding from international institutions, strategic partners and voluntary carbon markets to advance the Montreal Protocol's efforts to manage and destroy Banks. The generation of credits on the voluntary carbon markets for Banks destruction would have to be done in a manner to ensure that cap and trade mechanisms set up under the Kyoto Protocol. However, it should be noted that linking ODS destruction to carbon markets has the potential to result in widespread and rapid ODS bank destruction, and which requires careful consideration to ensure the stability of these markets, substantial climate savings are gained, and illegal production of ODS is not stimulated. The high GWP of CFCs and other ODS means that the destruction of relatively small amounts of these gases can generate large numbers of credits. EIA's many years experience monitoring illegal trade in ODS substantiates that payment for the destruction of CFCs and other ODS can create perverse incentives for illicit production from HCFC/CFC swing plants. Therefore, any methodology developed to include Banks destruction within carbon markets must create secure systems to ensure that illegal production does not occur.

In May of this year, the Governments of the Federated States of Micronesia and Mauritius submitted a proposal to amend and strengthen the Montreal Protocol on Substances that Deplete the Ozone Layer to promote the destruction of Banks. The rationale behind the proposed amendment was to manage and destroy Banks before they are released to the atmosphere which would both delay the recovery of the ozone layer as well as exacerbate global climate change.The amendment would authorize the MLF to finance a global Banks management and destruction program for Article 5 countries, immediately fund the Banks destruction pilot projects that have been filed, seek to develop co-financing opportunities with international institutions including carbon financing generated through the Clean Development Mechanism of the Kyoto Protocol and future carbon markets established under the post-2012 climate treaty, and requiring Parties operating under Article 2 to recover and destroy a certain percentage of their ODS Banks in certain sectors.

Only with an aggressive approach as described in the pending Amendment will Banks management and destruction be achieved in time to prevent this one time, massive release of greenhouse gases.

CONCLUSION

E. Clark / EIA.

Managing and destroying ODS Banks provides a unique opportunity to control emissions of super greenhouse gases at a much lower cost per CO_2-eq. than most other climate mitigation measures, while simultaneously directly improving efforts to restore the ozone layer. The Parties cannot continue to allow ongoing emissions from Banks. Unless change is effectuated immediately, approximately 6 billion tonnes CO_2-eq. emissions from the most easily accessible and destroyable Banks in refrigeration and air conditioning will be released by 2015. The Parties must act now or this opportunity will be lost.

Acknowledging that Banks were created by the phase-out of ODS under the Montreal Protocol, the Parties must take all reasonable actions to prevent Banks emissions from continuing unabated. Pilot projects must be undertaken promptly to evaluate innovative and effective Banks management and destruction measures, which leverage funding from the MLF, qualify for co-financing and/or generate voluntary carbon credits for funding. Proven projects that many countries can replicate will provide a rapid and effective response to emissions from Banks. The technology exists to manage and, where appropriate, to collect, transport and destroy Banks; however, this cannot be implemented without funding. The Parties must provide clear criteria and direction for cost-effective means to destroy Banks, and the Executive Committee must establish acceptable incremental costs for related Banks management and destruction. The Executive Committee should be instructed to pursue opportunities identified in the TEAP Funding Report for immediate funding through international institutions, strategic partners and voluntary carbon markets. The Executive Committee should also be instructed to investigate how Banks destruction can generate credits in the mandatory carbon markets without destabilizing those markets or creating incentives for the illegal production of ODS. The Parties to the Montreal Protocol have an obligation to use traditional MLF funding mechanisms for the short-term management and destruction of Banks until alternative funding becomes available.

ENDNOTES

1. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, IPCC/TEAP SPECIAL REPORT: SAFEGUARDING THE OZONE LAYER AND THE GLOBAL CLIMATE SYSTEM: ISSUES RELATED TO HYDROFLUOROCARBONS AND PERFLUOROCARBONS, SUMMARY FOR POLICYMAKERS 30 (Cambridge University Press 2005), *available at* http://www.ipcc.ch/pdf/special-reports/sroc/sroc_full.pdf [hereinafter IPCC/TEAP Special Report], Summary for Policymakers at 9.

2. *Id.* at 11. The Kyoto Protocol's emission reduction target is to reduce GHG emissions by 5.8 percent below a baseline of 18.4 Gt. CO2–eq. between 2008 and 2012, reducing emissions by approximately 1.1 Gt. CO2-eq. per year for that period, or approximately 4.3 Gt. CO2–eq. *See* UNFCCC, Key GHG DATA: GREENHOUSE GAS EMISSIONS DATA FOR 1990-2003 at 15 (2005), *available at* http://unfccc.int/resource/docs/publications/key_ghg.pdf.

3. The reduction in emission will also speed the recovery of the ozone layer by up to two years. Id.

4. *See* Forty-Eighth Meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol, Montreal, Que., Can., Apr. 3-7, 2008, *Report of the Meeting of Experts to Assess the Extent of Current and Future Requirements for the Collection and Disposition of Non-Reusable and Unwanted ODS in Article 5 Countries (Follow Up to Decision 47/52)* at 47, UNEP/OzL.Pro/ExCom/48/42 (Mar. 20. 2006) *available at* http://www.multilateralfund.org/files/48/4842.pdf [hereinafter Report of the Meeting of Experts].

5. *See* ICF International, STUDY ON THE COLLECTION AND TREATMENT OF UNWANTED OZONE-DEPLETING SUBSTANCES IN ARTICLE 5 AND NON-ARTICLE 5 COUNTRIES, FINAL REPORT, May 2008, ("MLF 2008 Study") *available at* http://ozone.unep.org/Meeting_Documents/oewg/28oewg/ICF_Study_on-Unwanted_ODS-E.pdf[Report of the Executive Committee of the Multilateral Fund on case studies called for under decision XVII/17 on environmentally sound destruction of ozone-depleting substances (decision XVIII/9)]; *see also* U.S. EPA's STRATOSPHERIC PROTECTION DIVISION DRAFT REPORT DESTRUCTION OF OZONE-DEPLETING SUBSTANCES IN THE UNITED STATES, July 2008, *available at* http://www.epa.gov/ozone/title6/downloads/ODSDestruction.pdf.

6. UNEP.OZL.Pro/Excom/48/42).

7. ICF International, DESTRUCTION OF OZONE-DEPLETING SUBSTANCES IN THE UNITED STATES 5 (2008), a*vailable at* http://www.epa.gov/ozone/title6/downloads/ODSDestruction.pdf (draft report prepared for the U.S. Environmental Protection Agency's Stratospheric Protection Division) [hereinafter ICF International Destruction].

8. MINISTRY OF THE ENVIRONMENT OF JAPAN, REVISED REPORT OF THE STUDY ON ODS DISPOSAL OPTIONS IN ARTICLE 5 COUNTRIES 15 (2006), *available at* http://www.env.go.jp/en/earth/ozone/ods2006.pdf.

9. *See* ICF International, STUDY ON THE COLLECTION AND TREATMENT OF UNWANTED OZONE-DEPLETING SUBSTANCES IN ARTICLE 5 AND NON-ARTICLE 5 COUNTRIES, FINAL REPORT, May 2008, ("MLF 2008 Study") *available at* http://ozone.unep.org/Meeting_Documents/oewg/28oewg/ICF_Study_on-Unwanted_ODS-E.pdf [Report of the Executive Committee of the Multilateral Fund on case studies called for under decision XVII/17 on environmentally sound destruction of ozone-depleting substances (decision XVIII/9)] .

10. *See* ICF International, STUDY ON THE COLLECTION AND TREATMENT OF UNWANTED OZONE-DEPLETING SUBSTANCES IN ARTICLE 5 AND NON-ARTICLE 5 COUNTRIES, FINAL REPORT, May 2008, ("MLF 2008 Study") *available at* http://ozone.unep.org/Meeting_Documents/oewg/28oewg/ICF_Study_on-Unwanted_ODS-E.pdf [Report of the Executive Committee of the Multilateral Fund on case studies called for under decision XVII/17 on environmentally sound destruction of ozone-depleting substances (decision XVIII/9)] .

11. The 54th Meeting of Executive Committee approved a 2008-2010 study of ODS. *See generally* Fifty-Fourth Meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol, Montreal, Que., Can., Apr. 7-11, 2008, *The World Bank Business Plan for the Years 2008-2010*, UNEP/OzL.Pro/ExCom/54/11 (Mar. 7, 2008), *available at* http://www.multilateralfund.org/files/54/5411.pdf.

12. Twentieth Report, *supra* note 38, Decision XX/7 ("Environmentally sound management of banks of ozone-depleting substances.").

13. *Id.*

14. *Id.* para. 7.

15. *Id.* para. 9.

16. UNEP/OzL.Pro/Workshop.3./2/Add.1

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