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**Open-ended Working Group of the Parties to  
the Montreal Protocol on Substances that  
Deplete the Ozone Layer**  
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Geneva, 15–18 July 2009  
Agenda item 4 (a)

**Environmentally sound management of banks of  
ozone-depleting substances (decision XX/7):  
report of the co-chairs of the workshop**

**Summary report by the co-chairs of the workshop on the management  
and destruction of ozone-depleting substance banks and the implications  
for climate change**

**Introduction**

1. As requested by decision XX/7 of the Twentieth Meeting of the Parties, a workshop on the management and destruction of ozone-depleting substance banks and the implications for climate change was held on 13 July 2009 in Geneva. The workshop comprised two general sections, the first dealing with technical issues and the second dealing with policy and funding issues. Under each section presentations were given, followed by a session of questions and clarifications and an opportunity for participants to exchange views on the issues under consideration. A brief overview of the main presentations under the two sections is set out in chapters I and II below. Chapter III presents a consolidated list of some of the principal ideas put forward by participants at the workshop. Chapter IV presents a consolidated list of suggestions by some of the participants' for further work that might be useful in facilitating a robust decision on related items.

**I. Technical issues**

2. Following an overview of related challenges by the Executive Secretary of the Ozone Secretariat and an introduction of the agenda by the co-chairs of the workshop, representatives of the Technology and Economic Assessment Panel gave a presentation on ozone-depleting substance banks, which contained extensive and useful information on those banks. Their presentation was divided into four separate components, outlined in sections A–D below, which also included a brief review of some key points that arose in the presentation and the workshop discussions.

## A. Bank distribution and accessibility and the environmental benefits of mitigating reachable banks

3. As requested in decision XX/7, the Panel attempted to assess those segments of the ozone-depleting substance banks that were considered reachable given a low, medium and high level of effort. In that context, the Panel reported that it had defined reachable banks in a broad sense, as all banks of ozone-depleting substances that had not yet entered the waste stream. In terms of levels of effort, the Panel noted that costs of collection of the ozone-depleting substances in the waste stream tended to drive overall costs of disposal of ozone-depleting substance banks. Given that fact, and also the fact that costs of collection were lower in areas with higher population densities, the Panel explained that it had used population density as a major determinant in classifying the level of effort.

4. In terms of the total amounts of ozone-depleting substances that were available in reachable banks, and taking into account that the focus of the Panel's report was on low and medium effort options, the Panel estimated that a global total of 1,546 kilotonnes of CFCs, HCFCs and halons was reachable at a low effort, and 1,463 at a medium effort. It explained that the estimated size did not take into account the fact that some components of the bank could perhaps be used more favourably to meet predicted long-term shortfalls (e.g., halons) or long-term needs (e.g., CFCs that might be needed for servicing).

5. Where those and other estimates in the report were concerned, the Panel stressed that its analysis, and particularly its cost analysis, were at varying stages of infancy, and that it might be therefore useful to consider several of the sections in the report as an initial effort to develop and validate methodologies that could be refined on the basis of further information that would be forthcoming in the future.

## B. Cost factors and economic feasibility

6. The representatives of the Panel noted that the major components of cost included segregation of ozone-depleting substances from the waste stream, collection and recovery following ozone-depleting substance segregation and the destruction of recovered ozone-depleting substances. In that context, they noted that the application in which the ozone-depleting substance was used was the single biggest factor effecting accessibility. In addition, they noted that existing national laws on waste segregation could have an impact on the incremental cost of ozone-depleting substance disposal that might be faced by individual countries. Where destruction itself was concerned, they noted that related costs should be relatively uniform across all applications and countries, and that the individual substance to be destroyed would not significantly affect the destruction cost.

7. Given available studies and their emerging understanding of related costs, they were able to present an indicative cost-abatement curve that was application-specific. As noted above, however, they cautioned that the Panel's work on costs was still in its infancy, and that its efforts to date had been based on data that could be characterized as limited and anecdotal. That said, they noted the following costs for the destruction of all low and medium effort banks were they to be destroyed at the current time.

Region	Low effort	Medium effort	Total
Developed countries	\$19–26 billion	\$43–59 billion	\$64–86 billion
Developing countries	\$27–35 billion	\$44–58 billion	\$70–93 billion
Global total	\$46–62 billion	\$89–117 billion	\$135–179 billion

8. In response to questions, the representatives of the Panel clarified in particular that, while the costs that it had estimated for the destruction of banks would be incurred over a long period, a significant portion of the funding would be necessary in the earlier years to address the need to develop infrastructure, as well as to address those sectors that were diminishing quickly. They also explained that costs for countries which had already developed waste management systems would be lower and that, if ozone-depleting substance destruction programmes were more generally targeted, costs could be spread over chemicals and applications with different cost effectiveness.

## C. Funding issues and the risk of perverse incentives

9. In terms of funding, the representatives of the Panel noted that carbon financing was recognized as one of the few funding sources that would be able to generate the level of funds required for ozone-depleting substance bank management. Under carbon financing, funding would be driven by the global-warming-potential value of the ozone-depleting substances destroyed. In that regard, they estimated that it would take the following carbon prices to achieve the noted categories of reductions if related ozone-depleting substance banks were to be destroyed at the current time:

CO <sub>2</sub> price in \$/tonnes	low effort	medium effort
Developed countries	9–12.44	26.45–34.98
Developing countries	11.70–15.60	15.95–21.10

10. Where policy issues and perverse incentives were concerned, the Panel noted the following potential risks – all of which they suggested could be overcome with careful management: the risk that the value of destruction credits could become so high that it would lead to production for the purpose of destruction; the diversion of needed ozone-depleting substances away from justified recycling; the destruction of banks that might otherwise be required for later uses (such as halons); and missed potential for ozone-depleting substance transformation.

## D. Role and implications of incentive mechanisms in promoting ozone-depleting substance destruction

11. In terms of incentive mechanisms, the Panel noted the current availability of funding through the voluntary carbon markets and suggested that certain components needed to be in place to ensure that those markets were not misused. Essential components noted included the presence of a robust and transparent registry and the development of good methodologies to ensure, among other things, additionality and the achievement of related reductions. In that regard, it suggested that the Montreal Protocol was uniquely placed to create an essential framework for that purpose. Several concerns were expressed about using the voluntary markets, relating, among other things, to the credibility of related credits, guarantees that the work promised would actually be done in the manner promised, and concerns that ozone-depleting substance destruction credits might become so readily available as to flood the market and diminish the value of all voluntary market credits.

12. Following a final round of clarifying questions and a brief open discussion, the workshop turned its attention to the Secretariat's report on funding opportunities for the destruction of ozone-depleting substance banks.

## II. Policy and funding issues

13. In its consideration of policy and funding issues, the workshop heard presentations from the Secretariat on funding opportunities and an update by the secretariat of the Multilateral Fund on related action, reports by the European Commission and the World Bank on continuing related work; and, finally, engaged in a brief open discussion of the issues involved.

### A. Presentation by the Ozone Secretariat and the secretariat of the Multilateral Fund

14. Following introductory remarks on the Kyoto Protocol's cap and trade provisions and the carbon markets, representatives from the Secretariat and from the Multilateral Fund secretariat gave presentations focusing on over 20 funding options that had been identified for supporting ozone-depleting substance destruction. Those options may be divided into the categories listed below.

**1. Options relating to funding for Article 5 Party efforts that could potentially be accessed through international organizations**

15. The following options may be included under this category:

(a) Use of the Multilateral Fund to fund pilot projects, to fund destruction projects as part of its main mission, or to fund destruction projects through a new facility that would focus on climate co-benefits;

(b) Use of the ozone, climate and persistent organic pollutants funding focal areas of the Global Environment Facility (GEF): in that context, the Secretariat noted that GEF was currently in replenishment discussions and it was therefore of crucial importance that it should receive guidance on the issues on which the ozone regime might like it to focus. Where the persistent organic pollutants focal area was concerned, a specific proposal was put forward that persistent organic pollutant or ozone-depleting substance projects related to the collection or destruction of ozone-depleting substances should only be considered for funding under GEF or the Multilateral Fund if they included an indication that synergies with the other multilateral environmental agreements were considered and were, to the extent possible, being exploited;

(c) Efforts by the United Nations Industrial Development Organization (UNIDO) to undertake projects aimed at helping countries set aside some portion of the sales price of ozone-depleting substance equipment in order to use related funds for end-of-useful-life disposal;

(d) The possibility of having the World Bank work with donors to tap into their existing donor trust funds for ozone-depleting substance destruction purposes; the possibility that the World Bank could spearhead a funding initiative for ozone-depleting substance destruction as had been done for the closure of ozone-depleting substance production facilities in the 1990s in the Russian Federation; and the possibility of having the World Bank attempt to include ozone-depleting substance destruction in the development strategies of their client countries;

**2. Options related to the carbon markets**

16. The following options fall under this category:

(a) The idea put forward by the United Nations Development Programme to establish an ozone-depleting substance carbon facility, possibly managed by Montreal Protocol bodies, with a view to demonstrating proof of concept and building confidence in ozone-depleting substance destruction credits in a manner that might facilitate their medium or long-term inclusion in carbon compliance markets;

(b) Efforts by UNIDO to develop methodologies for obtaining ozone-depleting substance destruction credits in the voluntary carbon market;

(c) Use of the voluntary carbon market and, in particular, the Chicago Climate Exchange and the Voluntary Carbon Standard Association to generate funding for ozone-depleting substance destruction;

(d) Potential use by the European Community of some of its emissions credit auction revenues to fund ozone-depleting substance destruction activities.

**3. Other opportunities that might be available as an option for use by all Parties individually if they were consistent with national laws and preference**

17. The following options are subsumed under this category:

(a) Producer responsibility programmes under which a levy or tax is placed on import or sale of bulk ozone-depleting substances or products containing ozone-depleting substances, on the understanding that the levy or tax collected would be used to fund end-of-useful-life treatment;

(b) Use of alternative producer incentive programmes where the producer of the ozone-depleting substance alternative agrees to dispose of the ozone-depleting substance if the user agrees to use its product;

(c) Use of extinguisher exchange programmes where halon extinguishers brought in for refilling are replaced with extinguishers containing alternatives;

(d) Use of refrigeration equipment energy-efficiency projects in which users return their old equipment and receive a subsidy toward the purchase of new, energy-efficient equipment.

#### 4. Potential opportunities discussed with other multilateral environmental agreements

18. Lastly, the following options may be grouped under this category:

- (a) Use of the quick Start Programme under the Strategic Approach to International Chemicals Management to facilitate joint work;
- (b) Initiatives co-funded by the secretariats of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Stockholm Convention on Persistent Organic Pollutants and the Multilateral Fund.

#### B. Other presentations

19. Following the presentations by the Secretariat and the secretariat of the Multilateral Fund on the above study, and a brief question-and-answer session, the workshop heard presentations by the European Commission, the United States of America and Australia on their destruction efforts and a presentation on a study undertaken by the World Bank on methodologies that might be used to gain access to the voluntary carbon markets for ozone-depleting substance destruction.

### III. Ideas put forward by workshop participants

20. The presentations given during the workshop were followed by open discussion sessions among the participants in the workshop. The ideas set out in the following subparagraphs reflect some of the common threads that were identified by representatives during the open discussion and are not meant to be an exhaustive list of the ideas raised:

- (a) The work by the Technology and Economic Assessment Panel represented an excellent start in developing methodologies and initial information to facilitate consideration of the issue;
- (b) Action to eliminate the large amount of ozone-depleting substances contained in banks could benefit the climate system significantly and the ozone layer;
- (c) The potential costs of efforts to eliminate ozone-depleting substance banks posed significant challenges;
- (d) In the view of some, the Multilateral Fund should be the main vehicle for the cost-effective destruction of ozone-depleting substances, while others considered that the voluntary carbon markets presented good opportunities instead;
- (e) The high level of climate co-benefits and the high cost of destruction necessitated a broad examination of funding options;
- (f) Work currently under way, including Multilateral Fund pilot projects, would produce further specific information that would be useful to all Parties and to the Technology and Economic Assessment Panel;
- (g) Some considered that more demonstration projects might be desirable and some also considered that the Fund should go beyond demonstration projects;
- (h) The voluntary carbon markets presented an opportunity in the short term, but efforts would have to be undertaken to ensure that any effort to use them for the purposes of ozone-depleting substance destruction should support and not undermine either the carbon markets or the ozone and climate regimes;
- (i) Many considered that the Clean Development Mechanism was not widely accessible to all Article 5 Parties, but others considered that the Mechanism represented a good long-term option for ozone-depleting substance destruction that should be pursued;
- (j) Appropriate incentives were considered necessary by some to stimulate destruction;
- (k) Some considered that GEF presented good opportunities for efforts to destroy ozone-depleting substances and that this option should be examined further, while others considered that issues relating to timing, other priorities and quota-setting for funding rendered problematic the use of GEF in efforts to destroy ozone-depleting substances;

- (l) Some considered that producer and manufacturer responsibility programmes (where a fee levied on the sale of an ozone-depleting substance or ozone-depleting substance product would be used for end-of-life treatment) presented a good model for dealing with ozone-depleting substance destruction;
- (m) All Parties should consider developing plans to deal with unwanted ozone-depleting substances;
- (n) Many Parties raised the possibility of Montreal Protocol bodies collaborating to develop information on a framework to manage ozone-depleting substance destruction credits;
- (o) The workshop report could be sent to climate institutions and appreciation should be expressed to those multilateral environmental agreements which had participated in preparing information for the workshop;
- (p) It was noted that, in some sectors, urgent measures were needed to prevent emissions from ozone-depleting substance banks;
- (q) It was also noted that other multilateral environmental agreements had other priorities and that the Montreal Protocol Parties should not expect co-funding from them;
- (r) Many considered that positive results of Multilateral Fund and bilateral pilot projects should be shared widely;
- (s) Many noted the desirability of first addressing the most cost-effective products – what might be termed the “low-hanging fruit”.

#### **IV. Suggestions for further work**

21. 21. During the discussions that took place throughout the day, a number of suggestions were made for possible additional work by the Panel or the Secretariat. A non-exhaustive list of those suggestions is set out below, solely for the record:
- (a) Further delineations of ozone-depleting substance bank data related to regions and subregions;
  - (b) Delineation of the funding that might be needed year by year;
  - (c) Further assessment of the voluntary carbon markets and consideration of safeguards that could be put in place to ensure the credibility of any related credits issued for ozone-depleting substance destruction;
  - (d) Further explanation of why destruction of all ozone-depleting substances would be preferable to an approach focusing only on the most cost-effective sectors;
  - (e) Further identification and delineation of benefits in terms of their ozone-depleting potential;
  - (f) Further delineation of the benefit to the ozone layer of ozone-depleting substance destruction, including considering the extent to which such destruction would accelerate the repair of the ozone layer;
  - (g) Desirability of having information on costs related to the transport of ozone-depleting substances to destruction facilities located outside countries;
  - (h) Further delineation of ozone-depleting substance banks that included a distinction between ozone-depleting substances in existing stockpiles, ozone-depleting substances in waste equipment and ozone-depleting substances in equipment in operation. With regard to ozone-depleting substances in stockpiles, further delineation was also needed, depending on the usability of the ozone-depleting substance;
  - (i) More transparent explanation of how low, medium and high efforts were determined by the Panel;
  - (j) Further consideration of chemical recovery and destruction efforts being undertaken through other multilateral environmental agreements, including the Stockholm and Basel conventions, and their possible linkages to ozone-depleting substance destruction;
  - (k) Consideration of the cost of enforcement of waste recovery efforts;

- (l) Explanation why the cost of halon recovery and destruction appeared similar to that for refrigeration, and further explanation why halon bank destruction was being discouraged;
- (m) Consideration of the role of bilateral funding for ozone-depleting substance destruction projects.

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