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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Ninety-third Meeting
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Item 10(a) of the provisional agenda[1]

DRAFT GUIDELINES FOR FUNDING THE PHASE-DOWN OF HFCs IN ARTICLE 5 COUNTRIES, INCLUDING CONSIDERATION OF OPERATIONALIZING PARAGRAPH 24 OF DECISION XXVIII/2

Introduction

1. Since their Twenty-eighth Meeting, the Parties to the Montreal Protocol have requested the Executive Committee *inter alia:*

(a) To develop within two years guidelines for financing the phase-down of hydrofluorocarbon (HFC) consumption and production, including cost-effectiveness thresholds, and to present those guidelines to the Meeting of the Parties for the Parties' views and input before their finalization (decision XXVIII/2);[2] and

(b) To continue its work on developing guidelines for financing the phase-down of HFC consumption and production; to provide an update on progress on the elements as part of the annual report of the Executive Committee to the Meeting of the Parties; and to present the draft guidelines developed to the Meeting of the Parties for the Parties' views and input before their finalization (decision XXX/4).[3]

2. Since the adoption of the Kigali Amendment, the Executive Committee has been discussing the cost guidelines for HFC phase-down, and the Secretariat has produced a number of documents to assist the Committee in its ongoing deliberations.

[1] UNEP/OzL.Pro/ExCom/93/1

[2] Decision XXVIII/2 related to the amendment phasing down HFCs includes several elements that pertain to the operation of the Multilateral Fund, and thus are for the consideration of the Executive Committee.

[3] Decision XXX/4: Progress by the Executive Committee of the Multilateral Fund in the development of guidelines for financing the phase-down of HFCs.

3. At its 80th meeting, the Executive Committee decided *inter alia* to use as working documents for future discussions the draft template referred to in subparagraph 8(a) below, and the progressively updated list of outstanding elements od decision XXVIII/2, contained in table 1 of the present document.

4. Further to the postponement of discussions due to the COVID-19 pandemic, the Executive Committee continued its deliberations on the cost guidelines for the phase-down of HFCs in Article 5 countries at the in-person part of its 89th meeting.[4] The established contact group discussed the cost-effectiveness thresholds, disposal-related issues, and the starting point for HFC phase-down, but did not reach conclusions, and the Executive Committee agreed to continue discussions at its 90th meeting, based on the members' proposals outlined in the working texts prepared by the Secretariat.[5]

5. At the 90th and 91st meetings, the contact group achieved progress in the discussion of the cost-effectiveness thresholds for some manufacturing sectors and on the issue of disposal, as detailed in the relevant subsections below, and continued its deliberations on the starting point for sustained aggregate reductions in HFC consumption, based on a presentation by the Secretariat. As further discussion was required on the starting point, the cost-effectiveness thresholds for stationary air-conditioning (AC) and commercial refrigeration, and the incremental operating costs (IOCs), the Executive Committee agreed to pursue, at its 92nd meeting, its consideration of these unresolved issues, based *inter alia* on the working texts used by the contact group,[6] and requested the Secretariat to prepare a paper on the starting point for sustained aggregate reductions based on the discussions that took place at the 91st meeting; and information to assist the Executive Committee in defining what was to be considered "small and medium-sized enterprises" (SMEs) in the commercial AC and commercial refrigeration manufacturing sectors.[7]

6. At the 92nd meeting, the analysis of issues related to establishing the starting point for sustained aggregate reductions in HFC phase-down was presented in document UNEP/OzL.Pro/ExCom/92/46, while the information to assist the Executive Committee in establishing a definition of SMEs in the commercial AC and refrigeration manufacturing sectors, reproduced in section II of the present document, was included in document UNEP/OzL.Pro/ExCom/92/45. The contact group continued to progress in its discussion of the starting point for sustained aggregate reductions in HFC consumption and on the cost-effectiveness thresholds but did not reach a conclusion. However, a separate contact group established to discuss the modalities and levels of funding for the refrigeration servicing sector reached an agreement on the matter.

7. The working documents issued for the consideration of the Executive Committee at the 93rd meeting are:

(a) The draft template of the cost guidelines, first adopted at the 78th meeting, updated to reflect decision 92/37 on the modalities and levels of funding for the refrigeration servicing sector and the agreement that the Sub-group on the Production Sector would consider compensation for compliance-related control obligations for the production sector on a case-by-case basis,[8] as included in annex I to the present document;

(b) The working text on the cost-effectiveness thresholds, reflecting discussions that took place between the 89th and the 92nd meetings, included in annex II to the present document;

(c) The working text on the IOCs, considered at the 91st meeting and included in annex III to the present document; and

[4] UNEP/OzL.Pro/ExCom/89/6.
[5] Contained, respectively, in annexes II, III, and IV of document UNEP/OzL.Pro/ExCom/89/16.
[6] Contained in annex XXXII of document UNEP/OzL.Pro/ExCom/91/72.
[7] Decision 91/64.
[8] Paragraph 244 of document UNEP/OzL.Pro/ExCom/92/56.

(d) The paper on the starting point for sustained aggregate reductions, prepared for the 92nd meeting,[9] discussed in the contact group on the cost guidelines for the phase-down of HFCs, and reissued as document UNEP/OzL.Pro/ExCom/93/97.

8. The present summary of the progress of discussions on HFC phase-down cost guidelines[10] consists of the following sections:

I. Progress made and outstanding issues in the development of cost guidelines for the phase-down of HFCs

II. Information to assist the Executive Committee in defining "small and medium-sized enterprises" in the commercial air-conditioning manufacturing and commercial refrigeration manufacturing sectors

III. Recommendation

I. Progress made and outstanding issues in the development of cost guidelines for the phase-down of HFCs

A. Summary of the status of discussions and possible further actions on the HFC phase-down cost guidelines

Table 1. Status of discussions on the HFC phase-down cost guidelines as at the 92nd meeting

Elements of decision XXVIII/2	Paragraph	Status of discussions	Further actions
Discussed			
Flexibility in implementation that enabled Parties to select their own strategies and priorities in sectors and technologies	13	Text included in the draft template.*	None
Eligible incremental costs – Production sector	15(b)	Text on categories of eligible costs included in the draft template.* The Sub-group on the Production Sector would consider compensation for compliance-related control obligations for the production sector on a case-by-case basis once official reporting of HFC production had been submitted by Article 5 countries.	None
Eligible incremental costs – Refrigeration servicing sector	15(c)	Discussion on the levels of funding for low-volume-consuming (LVC) and non-LVC countries concluded. Text on categories of eligible costs and decision 92/37 on the modalities and levels of funding for the refrigeration servicing sector included in the draft template.*	None

[9] UNEP/OzL.Pro/ExCom/92/46

[10] Complemented by related information in documents UNEP/OzL.Pro/ExCom/89/10/Rev.1 and UNEP/OzL.Pro/ExCom/89/10/Add.1 (cost-effectiveness thresholds), UNEP/OzL.Pro/ExCom/91/66 (disposal), UNEP/OzL.Pro/ExCom/92/44 (servicing sector), and UNEP/OzL.Pro/ExCom/92/46 (starting point).

Elements of decision XXVIII/2	Paragraph	Status of discussions	Further actions
Cut-off dates for eligible capacity	17	Text included in the draft template.*	None
Second and third conversions	18	Text included in the draft template.*	None
Capacity building to address safety	23	Matter integrated into the discussions on the refrigeration servicing sector.	None
Other costs	25	Agreement not to include text in the draft template.[11]	None
Eligibility of Annex F substances subject to high-ambient-temperature exemptions	35	Text included in the draft template.*	None
Under discussion			
Sustained aggregate reductions in consumption	19	Text included in the draft template.* Subject discussed between the 89th and 92nd meetings; paper on the starting point prepared based on discussions that took place at the 91st meeting (decision 91/64(a)) and reissued as document UNEP/OzL.Pro/ExCom/93/97.	To agree on a methodology for establishing the starting point for sustained aggregate reductions, taking into consideration document UNEP/OzL.Pro/ExCom/93/97.
Eligible incremental costs – Consumption manufacturing sectors	15(a)	Text on categories of eligible costs included in the draft template.* Agreement on cost-effectiveness thresholds for some manufacturing sectors reached between the 89th and the 92nd meetings. Working text on cost-effectiveness thresholds available in annex II, working text on IOCs available in annex III, and information on SMEs prepared for the 92nd meeting available in section II of the present document.	To continue discussions on establishing cost-effectiveness thresholds, IOCs and their duration in manufacturing sectors, taking into consideration the present document including the information on SMEs, background documents UNEP/OzL.Pro/ExCom/89/10/Rev1, UNEP/OzL.Pro/ExCom/89/10/Add.1, and the working texts contained in annexes II and III.
Energy efficiency	22	Energy efficiency discussed under a separate agenda item between the 83rd and the 92nd meetings. Funding window established for pilot projects to maintain and/or enhance energy efficiency in the context of HFC phase-down (decision 91/65). Discussions on the operational framework to further elaborate on institutional aspects and projects and activities that could be undertaken by the Multilateral Fund for maintaining and/or enhancing the energy efficiency of replacement technologies and equipment in the manufacturing and servicing	To consider whether to include in the cost guidelines any decisions made with regard to energy efficiency under agenda item 10(b).

[11] Parties to the Montreal Protocol may identify other items to be added to the indicative list of incremental costs emanating from conversion to low-GWP alternatives.

Elements of decision XXVIII/2	Paragraph	Status of discussions	Further actions
		sectors when phasing down HFCs will continue at the 93rd meeting (decision 92/38(a)).	
Disposal	24	Flexibility provided for Article 5 countries to include in their HCFC phase-out management plans (HPMPs) or Kigali HFC implementation plans (KIPs) activities related to the environmentally sound management of used or unwanted controlled substances, including disposal, taking into account paragraphs 19-24 of document UNEP/OzL.Pro/ExCom/89/9 and lessons learned from previous ODS disposal projects; deliberations on operationalizing paragraph 24 of decision XXVIII/2 to continue in the context of discussions of HFC phase-down cost guidelines (decision 90/49(b)). Funding window established for preparing inventories of banks of used or unwanted controlled substances and developing plans for their collection, transport and disposal (decision 91/66).	To continue deliberations on operationalizing paragraph 24 of decision XXVIII/2, in the context of the discussion of the cost guidelines for the phase-down of HFCs in Article 5 countries.

*Annex I to the present document

B. Summary of discussions on the various components of the cost guidelines for the phase-down of HFCs up to the 92nd meeting

Methodology for determining the starting point for sustained aggregate reductions

9. At the 92nd meeting, following the introduction of document UNEP/OzL.Pro/ExCom/92/46, the Executive Committee discussed the methodology for determining the starting point for sustained aggregate reductions. During the discussions, later continued in a contact group, a member found the methodology proposed by the Secretariat interesting and another member mentioned that although his delegation had been in favour of the starting point being measured in metric tonnes (mt), the Secretariat's proposal included appropriate mechanisms that appeared to address the previously raised concerns about the funding liability under the CO_2-equivalent (CO_2-eq) tonne approach. He was therefore open-minded to the approach to be taken. Issues that needed further discussion and raised by members included: the need to clarify the methodology for including the HCFC component of the HFC baseline in the starting point and an appropriate level for the starting point; that the policy for the final phase-down step was still under consideration; that subparagraph 18(e) and paragraph 19 of decision XXVIII/2 were to be read in conjunction; that an incentive might be needed for Article 5 countries to transition to refrigerants with low global-warming potential (GWP) as quickly as possible; that further consideration should be given to the transfer of ineligible consumption, including at ineligible enterprises, from the manufacturing to the servicing sector, including approaches other than that identified in the document; that it might be desirable to review the methodology in 2029; addressing phase-out achieved without assistance from the Multilateral Fund; and the need for more precise wording in subparagraph 6(a) of the document. Discussions on the starting point will continue based on document UNEP/OzL.Pro/ExCom/93/97.

Eligible incremental costs for the consumption manufacturing sector

10. Preliminary discussions on cost-effectiveness thresholds for the phase-down of HFCs in the consumption manufacturing sector started at the 78th meeting, where members noted *inter alia* that the cost-effectiveness thresholds for the phase-out of CFCs and HCFCs were not necessarily applicable to HFCs, that there was limited experience at the Fund in phasing out HFCs in certain sectors, and that the associated incremental costs might differ from the costs associated with phasing out other controlled substances. Accordingly, the Executive Committee considered that additional information was required to reach a decision on the eligible incremental costs and agreed to consider approving a limited number of stand-alone HFC investment projects.

11. In line with decisions 78/3(g),[12] 79/45,[13] 81/53,[14] and 84/53,[15] the Executive Committee approved 10 stand-alone HFC investment projects in the domestic and commercial refrigeration manufacturing sectors.[16]

12. Additional discussions were held at the 83rd and the 84th meeting, where the Executive Committee requested the Secretariat to prepare for its 86th meeting an analysis of and information on the incremental capital costs (ICCs) and IOCs and their duration in the consumption manufacturing sector (decision 84/87(a)).

13. At the 89th meeting, the Secretariat presented document UNEP/OzL.Pro/ExCom/89/10/Rev.1, containing a summary of the ICCs, IOCs, and the cost-effectiveness of investment projects approved in particular for the refrigeration and air-conditioning (RAC) and foam manufacturing sectors; and document UNEP/OzL.Pro/ExCom/89/10/Add.1, presenting a preliminary analysis of the ICCs and IOCs incurred in the completed conversions of HFC-consuming enterprises. As no additional reports from completed projects approved pursuant to decision 78/3(g) have been received by the Secretariat, no update has been produced to the document.

14. At the 89th, 90th and 91st meetings, the contact group established to discuss the matter agreed that in the interim, cost-effectiveness thresholds would be used at US $13.76/kg for the domestic refrigeration

[12] The Executive Committee considered approving a limited number of HFC-related projects in the manufacturing sector only, without prejudice to different kinds of technology, no later than at the first meeting of 2019, to allow the Committee to gain experience in the ICCs and IOCs that might be associated with phasing down HFCs in Article 5 countries, on the understanding: that any Article 5 country that submitted a project should have ratified the Kigali Amendment or submitted a formal letter indicating the government's intention to ratify the Amendment; that no further funding would be available until the instrument of ratification had been received by the depositary at the Headquarters of the United Nations in New York; and that any amount of HFC reduced as a result of the project would be deducted from the starting point.

[13] Projects submitted under decision 78/3(g) would be considered on a case-by-case basis, should be in individual enterprises deciding to convert to mature technologies, have broad replicability to the country or region or sector, take into account geographic distribution, and must be fully implemented by no more than two years from the time of their approval; the relevant project completion reports should be comprehensive with detailed information on the eligible ICCs, IOCs, any possible savings incurred during the conversion and relevant factors that facilitated implementation; and any remaining funds would be returned to the Multilateral Fund no later than one year after the date of project completion as per the project proposals.

[14] To invite bilateral and implementing agencies to prepare and present project proposals for conversion to alternatives to HFCs and promotion of new technologies, for submission up to and including the 84th meeting, especially in sectors and regions that were not covered by projects approved up to and including the 81st meeting

[15] To consider proposals for such projects up to the 87th meeting, in accordance with the criteria set out in decisions 78/3(g), 79/45, and 81/53, and prioritizing projects in the stationary AC, commercial refrigeration, and mobile AC sectors.

[16] Projects at a total value of US $13,397,249 (plus agency support costs) were approved for Argentina, Bangladesh, China, the Dominican Republic, Jordan, Lebanon, Mexico (two), Thailand, and Zimbabwe to phase down 1,090 mt (1.63 million CO_2-eq tonnes) of HFCs.

sector, and at US $9.00/kg for the rigid polyurethane (PU) foam sector, with special consideration for SMEs, while the cost-effectiveness of projects in the flexible PU foam, integral skin, extruded polystyrene (XPS) foam, aerosol, fire extinguishing, metered-dose inhaler, solvent, mobile AC, and transport refrigeration sectors would be considered on a case-by-case basis.

15. The group did not reach conclusions regarding the appropriate cost-effectiveness thresholds for projects in the commercial refrigeration sector as well as the stationary domestic and commercial AC manufacturing subsectors, and on whether those latter two subsectors should be considered together or separately. There was a common understanding that special consideration should be given to small enterprises in commercial refrigeration and commercial AC manufacturing, but additional information on what constituted a "small enterprise" in the sector was required. At the 91st meeting, the Executive Committee agreed to continue to discuss at the 92nd meeting thresholds for stationary AC and commercial refrigeration and IOCs on the basis of the working text used by the contact group,[17] and to request the Secretariat to provide information to assist the Executive Committee in its consideration of what constitutes an SME in the commercial AC manufacturing and commercial refrigeration manufacturing sectors (decision 91/64(b)).

16. At the 92nd meeting, the contact group discussed information prepared by the Secretariat to assist the Executive Committee in defining what were to be considered SMEs in the commercial AC manufacturing and commercial refrigeration manufacturing sectors. This information and the relevant discussion are included in section II of the present document. The Executive Committee agreed to continue, at its 93rd meeting, the discussion of the agenda item on draft guidelines for funding the phase-down of HFCs, including consideration of operationalizing paragraph 24 of decision XXVIII/2 and the working text on the cost-effectiveness thresholds contained in annex II to the present document.

Incremental operating costs

17. Although the level and duration of IOCs have been discussed in the context of the cost guidelines for the phase-down of HFCs, the Executive Committee has not discussed this item at the same level of detail as the cost-effectiveness thresholds. Previous policies on IOCs are summarized in paragraphs 57-64 of document UNEP/OzL.Pro/ExCom/78/5 on the development of the cost guidelines.

18. At the 91st meeting, the contact group started to discuss the matter with one member suggesting to maintain the thresholds and duration of IOCs as established for HCFCs, with some flexibility to be applied to SMEs in the PU foam sector, while another member suggested an increase of 40 per cent and a duration of three years. The group agreed to continue to discuss *inter alia* the IOCs on the basis of the working texts used in the contact group. Accordingly, the Executive Committee agreed to pursue, at its 92nd meeting, consideration of the development of the cost guidelines for the phase-down of HFCs in Article 5 countries on the basis of *inter alia* the working text on the cost-effectiveness thresholds and IOCs.[18] The IOCs were not discussed at the 92nd meeting. The working text related to IOCs is presented in annex III to the present document.

Energy efficiency

19. Matters related to energy efficiency were first discussed in the contact group on the cost guidelines for the phase-down of HFCs, established in the margins of the 81st meeting, but since the 83rd meeting, they have been included under a separate agenda item. Once the Executive Committee has finished its deliberations, it may wish to consider whether to include in its cost guidelines for the phase-down of HFCs in Article 5 countries any decisions adopted on energy efficiency.

[17] Annex XXXII of document UNEP/OzL.Pro/ExCom/91/72.
[18] Annex XXXII of document UNEP/OzL.Pro/ExCom/91/72.

Disposal

20. At its 90th meeting, the Executive Committee decided to provide flexibility to Article 5 countries to include in their HPMPs and KIPs activities related to the environmentally sound management of used or unwanted controlled substances including disposal, considering paragraphs 19-24 of document UNEP/OzL.Pro/ExCom/89/9[19] and lessons learned from previous ODS disposal projects. The Committee also requested the Secretariat to develop criteria for a funding window to provide Article 5 countries with assistance to prepare an inventory of banks of used or unwanted controlled substances and to develop a plan for the collection, transport and disposal (including consideration of recycling, reclamation and cost-effective destruction) of such substances, and to continue its deliberations on operationalizing paragraph 24 of decision XXVIII/2 of the Twenty-Eighth Meeting of the Parties in the context of the discussion of the cost guidelines for the phase-down of HFCs in Article 5 countries (decision 90/49).

21. Based on the relevant document prepared by the Secretariat for the 91st meeting,[20] the Executive Committee established a funding window for the preparation of national inventories of banks of used or unwanted controlled substances and a plan for the collection, transport and disposal of such substances, including consideration of recycling, reclamation and cost-effective destruction (decision 91/66).

II. Information to assist the Executive Committee in defining "small and medium-sized enterprises" in the commercial air-conditioning manufacturing and commercial refrigeration manufacturing sectors (decision 91/64(b))

22. At the 91st meeting, the Secretariat was requested to prepare for the 92nd meeting information to assist the Executive Committee in defining what were to be considered SMEs in the commercial AC manufacturing and commercial refrigeration manufacturing sectors. Accordingly, the Secretariat presented in section II of document UNEP/OzL.Pro/ExCom/92/45 the information reproduced in paragraphs 24 to 35 below.

23. Funding for the conversion of SMEs is often limited by their lower level of consumption, relative to larger enterprises.[21] SMEs may also require additional technical assistance and training as they tend to have a more limited technical capacity. Formulating a definition of SMEs will allow the Executive Committee to ensure that funds are appropriately directed to those manufacturers that may require additional resources, relative to large enterprises.

Characteristics of small and medium-sized enterprises

24. What is considered an SME may vary across countries as there is no one universal definition. Governments may choose to define SMEs based on characteristics that are relevant in their country, which may include a combination of investment levels, number of employees, sales revenue, and other characteristics. Seeing as such information may not be readily available to bilateral and implementing agencies during the project preparation process, the Secretariat, with the assistance of an independent technical expert, identified the following characteristics of SMEs that would be simple and readily available to bilateral and implementing agencies:

(a) *Level of HFC consumption:* To date, consumption had been used by the Executive Committee as the sole criterion for defining SMEs in the foam and aerosol sectors.[22] This

[19] Synthesis report describing best practices and ways for the Executive Committee to consider operationalizing paragraph 24 of decision XXVIII/2 (decision 84/87(b)).
[20] UNEP/OzL.Pro/ExCom/91/66
[21] Annex IV to the present document contains the historical consideration of SMEs by the Executive Committee.
[22] See annex I to the present document.

criterion has the advantage of using information that is readily available to agencies in the project preparation process. However, consumption by itself may not fully reflect the enterprises' technical capacity and ability to convert to new technologies;

(b) *Manufacturing output:* The number of units manufactured by an enterprise may be another relevant consideration in determining whether an enterprise is an SME. Depending on the refrigerant charge per unit, an enterprise may have low consumption yet still manufacture a large number of units, and higher manufacturing output may require more personnel or higher levels of automation than are typically found in SMEs;

(c) *Technical capacity:* Larger enterprises tend to have a higher level of technical capacity than SMEs. However, measuring that capacity is difficult. A proxy for the technical capacity of an enterprise could be the range of equipment types and the number of models manufactured. An enterprise that manufactures a wide range of equipment types and a large number of product models requires adequate technical capacity, knowledge, experience and capability to design the models and place them on the market, and is likely to be more capable of addressing the technical and marketing challenges associated with converting to a new technology. SMEs would be characterized by a narrow range of equipment types and a small number of product models;

(d) *Financial capacity:* SMEs usually have limited financial capacity, which constrains their ability to invest in sales and marketing activities to promote new technologies and also limits their ability to influence supply chains for components and raw materials; and

(e) *Foreign ownership and exports to non-Article 5 countries:* SMEs in commercial refrigeration and AC manufacturing are locally owned and cater predominantly to domestic markets. Some SMEs may also export the equipment they manufacture to Article 5 countries in the region; however, significant (greater than 10 per cent) exports to non-Article 5 countries are indicative of a higher level of technical capability.

Assessment of the criteria

25. Identifying a cut-off for defining SMEs based on two common characteristics used by Governments—sales revenue and number of employees—is difficult in the context of projects supported by the Multilateral Fund. This is due to the broad size range of Article 5 economies, which impacts sales, and the lack of readily available data on the number of employees within enterprises.

26. In the context of the HCFC phase-out, the Executive Committee has used consumption as the sole parameter to define SMEs in the foam sector. This definition may not fully capture the complexity of SMEs in Article 5 countries. It may also have resulted in inadvertently excluding some enterprises from the SME category and including some enterprises that would more appropriately be considered large-sized. However, it has proven to be a simple and practical proxy for identifying those enterprises that require additional funding relative to larger enterprises. Accordingly, the Secretariat proposes that consumption be used as a necessary but not sufficient characteristic to define SMEs in the commercial RAC sector.

27. The ratio of foam blowing agent to refrigerant in the past CFC and HCFC conversion projects (i.e., the ratio of CFC-11/CFC-12 or HCFC-141b/HCFC-22) ranged from 2:1 to 4:1. Based on the definition that SMEs in the PU foam manufacturing sector would have a consumption of up to 20 mt of foam blowing agent, this suggests a cut-off between 5 and 10 mt for SMEs in the commercial RAC manufacturing sector.

28. To narrow this range, the Secretariat consulted an independent technical expert and reviewed the ICCs incurred in converting 89 commercial RAC manufacturing enterprises with consumption of less than 20 mt of HCFC-22 in 10 countries, noting that while IOCs vary linearly with consumption, ICCs include

certain costs that might change in a discontinuous manner based *inter alia* on the number of units manufactured, the range of products and their complexity, and other factors. For example, a large enterprise with high manufacturing output may require several vacuum pumps and an automatic charging machine to achieve the necessary manufacturing cycle time, while an SME producing lower quantities of equipment may be able to use a single vacuum pump and charge units manually. Thus, both the quantity (e.g., the number of vacuum pumps) and the type of equipment (e.g., automatic charging machine versus manual charging) needed for a conversion will vary across SMEs and large enterprises.

29. Based on the ICCs of the 86[23] enterprises, a pronounced change in the agreed ICCs is found between 5 and 6 mt. Noting the limited data available, and choosing to err on the side of being overly inclusive rather than inadvertently exclusive, given the challenges faced by SMEs in converting from HFCs in particular to flammable, toxic or high-pressure low-GWP alternatives, the Secretariat proposes a cut-off consumption threshold of 7 mt. For reference, an enterprise with a consumption of 7 mt of refrigerant manufacturing equipment with an average charge of 250 g/unit would manufacture 28,000 units per year.

30. The Secretariat considers consumption to be a necessary but insufficient criterion to identify those SMEs that may require additional funding to successfully and sustainably convert from HFCs. In particular, the Secretariat proposes that enterprises that are owned or partly owned by multinational corporations not be categorized as SMEs for funding purposes, given these enterprises' access to technical expertise, supply chains and capital. Similarly, enterprises that export their products to non-Article 5 countries likely present a higher level of technological involvement and financial capability in placing products in a competitive market, while noting that there could be exceptions to allow for exports of a small number of units on a trial basis. Accordingly, the Secretariat proposes that enterprises that export more than 10 per cent of their products to non-Article 5 countries not be categorized as SMEs for funding purposes.

31. In addition, the Secretariat notes that an enterprise may have multiple manufacturing lines but only wish to convert one of those lines. What is relevant in defining an SME is the consumption of the enterprise rather than just the consumption of the line to be converted. Moreover, an enterprise may have multiple manufacturing lines, only one of which consumes HFCs. For example, an enterprise may manufacture HFC-based commercial RAC equipment on one line, and non-HFC-based equipment on other lines. Accordingly, the Secretariat proposes that an enterprise that manufactures more than 40,000 units[24] of RAC equipment per year, irrespective of whether all such equipment is HFC-based, not be considered an SME for funding purposes.

32. It should be noted that some enterprises manufacturing both commercial RAC equipment and related components (such as compressors, fans, or vacuum pumps) could be inadvertently considered as SMEs based on their HFC consumption, despite significant manufacturing output of related components; however, it is not clear how many enterprises would fall into this category or how they could be identified and excluded.

33. In reviewing the 89 projects to convert commercial RAC manufacturing enterprises, the Secretariat noted that some of them included enterprises with consumption of less than 1 mt. The Executive Committee may wish to consider whether it wishes to define an additional category within SMEs: micro-enterprises with consumption of less than 1 mt. Such enterprises, which similarly could neither be multinationals nor export their products to non-Article 5 countries, likely have a lower technical capability and would likely face greater challenges than larger enterprises in establishing the necessary supply chains to convert from HFCs. Given those additional challenges, micro-sized enterprises would likely be the last enterprises in the sector to convert. The Executive Committee may wish to note that converting such micro-enterprises would likely only be sustainable as part of an umbrella project that addressed all remaining enterprises in the

[23] Document UNEP/OzL.Pro/ExCom/92/45 incorrectly indicated that the analysis was based on 89 enterprises.

[24] Calculated based on a consumption of 7 mt and a refrigerant charge of 175 g/unit, a threshold below which commercial RAC equipment is not manufactured.

sector. As such, any individual enterprise could be eligible for up to twice the agreed cost-effectiveness threshold, as long as the overall cost-effectiveness of the umbrella project fell within the sectoral threshold established by the Executive Committee; the umbrella project included all the remaining enterprises in a sector or subsector for which cost-effectiveness thresholds had been established; and it was understood that the country concerned would submit no further requests for funding from the Multilateral Fund for any enterprise in that sector or subsector, in line with decision 19/32(a).

Conclusion

34. The Executive Committee may wish to consider defining SMEs in the commercial RAC manufacturing sector as enterprises with HFC consumption of 7 mt or less manufacturing commercial AC or commercial refrigeration equipment, on the understanding that:

(a) The entirety of HFC consumption by the enterprise will be considered, rather than just consumption of the line or the process to be converted;

(b) An enterprise that manufactures more than 40,000 units of equipment per year, irrespective of whether all such equipment is HFC-based, will not be considered an SME for funding purposes; and

(c) An enterprise will not be considered an SME if it is owned or partly owned by a multinational corporation, regardless of whether that corporation is owned by an Article 5 country, if it exports more than 10 per cent of its products to non-Article 5 countries.

Discussion at the 92nd meeting on the definition of small and medium-sized enterprises

35. At the 92nd meeting, the contact group discussed the above conclusion, including clarifications of the analysis provided by the Secretariat and the basis of the proposed definition; a proposal by one member to establish the HFC consumption limit at 20 rather than 7 mt, followed by a revised proposal of 15 mt; as well as several questions related to the eligibility of enterprises, which resulted in the bracketing of subparagraph 35(c).

III. Recommendation

36. The Executive Committee may wish:

(a) To note document UNEP/OzL.Pro/ExCom/93/96 on the draft guidelines for funding the phase-down of HFCs in Article 5 countries, including consideration of operationalizing paragraph 24 of decision XXVIII/2; and

(b) To continue its deliberations on the guidelines for funding the phase-down of HFCs in Article 5 countries in light of document UNEP/OzL.Pro/ExCom/93/96.

Annex I

DRAFT TEMPLATE OF THE COST GUIDELINES FOR THE PHASE-DOWN OF HFCs (As of the 92nd meeting)

Background

1. The present annex contains the draft cost guidelines for the phase-down of HFCs based on the relevant elements of decision XXVIII/2 agreed by the Parties at their Twenty-Eighth Meeting. These draft cost guidelines contain elements agreed at the 78th and subsequent meetings of the Executive Committee and will be updated pursuant to further discussions at future meetings of the Executive Committee.

Draft cost guidelines for the phase-down of HFCs

Flexibility in implementation that enables Parties to select their own strategies and priorities in sectors and technologies

2. Article 5 countries will have flexibility to prioritize HFCs, define sectors, select technologies and alternatives and elaborate and implement their strategies to meet agreed HFC obligations, based on their specific needs and national circumstances, following a country-driven approach.

Cut-off date for eligible capacity

3. The cut-off date for eligible capacity is 1 January 2020 for those Parties with baseline years from 2020 to 2022, and 1 January 2024 for those Parties with baseline years from 2024 to 2026.

Second and third conversions

4. To apply the following principles for second and third conversion projects:

(a) First conversions, in the context of a phase-down of HFCs, are defined as conversions to low-GWP or zero-GWP alternatives of enterprises that have never received any direct or indirect support, in part or in full, from the Multilateral Fund, including enterprises that converted to HFCs with their own resources;

(b) Enterprises that have already converted to HFCs in phasing out CFCs and/or HCFCs will be eligible to receive funding from the Multilateral Fund to meet agreed incremental costs in the same manner as enterprises eligible for first conversions;

(c) Enterprises that convert from HCFCs to high-GWP HFCs, after the date of adoption of the Amendment, under HCFC phase-out management plans (HPMPs) already approved by the Executive Committee will be eligible to receive funding from the Multilateral Fund for a subsequent conversion to low-GWP or zero-GWP alternatives to meet agreed incremental costs in the same manner as enterprises eligible for first conversions;

(d) Enterprises that convert from HCFCs to high-GWP HFCs with their own resources before 2025 under the Amendment will be eligible to receive funding from the Multilateral Fund to meet agreed incremental costs in the same manner as enterprises eligible for first conversions; and

(e) Enterprises that convert from HFCs to lower-GWP HFCs with Multilateral Fund support when no other alternatives are available will be eligible to receive funding from the Multilateral Fund for a subsequent conversion to low-GWP or zero-GWP alternatives if necessary to meet the final HFC phase-down step.

Sustained aggregate reductions

5. The remaining eligible consumption for funding in tonnage will be determined on the basis of the starting point of national aggregate consumption less the amount funded by previously approved projects in future multi-year agreement templates for Kigali HFC implementation plans (KIPs).

Eligible incremental costs

Consumption manufacturing sector

6. To make the following categories of costs eligible and to include them in the cost calculation associated with the phase-down of HFCs in the consumption manufacturing sector:

(a) Incremental capital costs;

(b) Incremental operating costs for a duration to be determined by the Executive Committee;

(c) Technical assistance activities;

(d) Research and development, when required to adapt and optimize alternatives to HFCs with low or zero GWP;

(e) Costs of patents and designs, and incremental costs of royalties, when necessary and cost-effective; and

(f) Costs of the safe introduction of flammable and toxic alternatives.

Production sector

7. To make the following categories of costs eligible and to include them in the cost calculation associated with the phase-down of HFCs in the production sector:

(a) Lost profit due to the shutdown/closure of production facilities, as well as production reduction;

(b) Compensation for displaced workers;

(c) Dismantling of production facilities;

(d) Technical assistance activities;

(e) Research and development related to the production of low-GWP or zero-GWP alternatives to HFCs with a view to lowering the costs of alternatives;

(f) Costs of patents and designs or incremental costs of royalties;

(g) Costs of converting facilities to produce low-GWP or zero-GWP alternatives to HFCs when technically feasible and cost-effective; and

(h) Costs of reducing emissions of HFC-23, a by-product from the production process of HCFC-22, by reducing its emission rate in the process, destroying it from the off-gas, or by collecting and converting it to other environmentally safe chemicals; such costs should be funded by the Multilateral Fund to meet the obligations of Article 5 Parties specified under the Amendment.

8. The Sub-group on the Production Sector would consider compensation for compliance-related control obligations for the production sector on a case-by-case basis once official reporting of HFC production had been submitted by Article 5 countries.

Refrigeration servicing sector

9. To make the following categories of costs eligible and to include them in the cost calculation associated with the phase-down of HFCs in the refrigeration servicing sector:

(a) Public awareness activities;

(b) Policy development and implementation;

(c) Certification programmes and training of technicians on safe handling, good practices and safety in respect of alternatives, including training equipment;

(d) Training of customs officers;

(e) Prevention of illegal trade of HFCs;

(f) Servicing tools;

(g) Refrigerant testing equipment for the refrigeration and air-conditioning sector; and

(h) Recycling and recovery of HFCs.

10. In relation to the level and modalities of funding for HFC phase-down in the refrigeration servicing sector, in line with decision 92/37:

(a) To apply the following principles with regard to the eligible incremental costs in the refrigeration servicing sector for stage I of the KIPs, on the understanding that the funding levels specified below would be revised for activities submitted for future KIP stages when activities under HPMPs had been completed:

(i) Article 5 countries must include in their KIPs, at a minimum:

a. A commitment to meeting, without further requests for funding, at least the 10 per cent reduction target in HFC consumption in line with the compliance schedule of the Montreal Protocol, and to restricting imports of HFC-based equipment, if feasible, and if necessary to achieve the compliance schedule and support relevant phase-down activities;

b. Mandatory reporting, by the time funding tranches for the KIPs were requested, on the implementation of activities undertaken in the refrigeration servicing sector and in the manufacturing sector, when applicable, in the previous tranche, as well as a comprehensive annual

work plan for the implementation of the activities associated with the next tranche;

c. A description of the roles and responsibilities of major stakeholders and the lead implementing agency and the cooperating agencies, where applicable;

d. A description of how activities in the servicing sector under KIPs and HPMPs would be coordinated in their implementation;

(ii) Article 5 countries that had an average HFC consumption in the servicing sector during the baseline years of up to 360 metric tonnes (mt) would be provided funding consistent with the level of consumption in the refrigeration servicing sector, as shown in the table below, on the understanding that project proposals would still need to demonstrate that the funding level was necessary to achieve at least the 10 per cent of the Montreal Protocol HFC reduction target;

Average HFC consumption in servicing in baseline years (mt)	**Funding for meeting the 10% Montreal protocol HFC reduction target (US $)**
>0 <15	135,000
15 <40	145,000
40 <80	158,000
80 <120	170,000
120 <160	180,000
160 <200	190,000
200 <300	325,000
300 <360	360,000

*Plus 20 per cent funding for countries committing to reduce consumption by 10 per cent of the average HFC consumption in the baseline years

(iii) Article 5 countries with average HFC consumption above 360 metric tonnes and below 25,000 metric tonnes in the servicing sector in the baseline years would be provided funding, which would be deducted from their starting point for aggregate reductions in HFC consumption, at a level up to US $5.10/kg on the understanding that project proposals would still need to demonstrate that the funding level was necessary to achieve at least the 10 per cent HFC reduction target;

(iv) Funding for Article 5 countries that had an average HFC consumption in servicing in baseline years above 25,000 metric tonnes would be considered on a case-by-case basis;

(b) That Article 5 countries referred to in subparagraph (b)(iii) above that could achieve the 10 per cent reduction step in HFC consumption in line with the compliance schedule of the Montreal Protocol could receive funding up to the level determined for low-volume-consuming countries with average HFC consumption in servicing in the baseline years between 300 and 360 metric tonnes as specified in subparagraph (a)(ii) above, on the understanding that they must include in their HFC phase-down plans, as a minimum, the requirements described in subparagraph (a)(i) above; and

(c) To revisit the principles referred to in subparagraphs (a) and (b) in 2028 for the funding of future stages of the KIPs.

Energy efficiency

Capacity building to address safety (addressed as part of the servicing sector in line with decision 81/67(c))

Disposal

Eligibility of Annex F substances subject to high-ambient-temperature exemption

11. That amounts of Annex F substances that are subject to the high-ambient-temperature exemption are not eligible for funding under the Multilateral Fund while they are exempted for that Party.

Annex II

WORKING TEXT ON THE COST-EFFECTIVENESS THRESHOLDS

(Annex XX of document UNEP/OzL.Pro/ExCom/92/56)

Cost-effectiveness (CE) thresholds for the CFC and HCFC phase-out

Sector	National ODS phase-out plans (UNEP/OzL.Pro/ExCom/16/20 para. 32)			HPMPs (decisions 60/44, 62/13 and 74/50)			TEAP (ExMOP 3)	Agreed CE (US $/kg)
	Baseline substance	Main alternatives introduced	CE threshold (US $/kg)	Baseline substance	Main alternatives introduced	CE threshold (US $/kg)		
Domestic refrigeration (refrigerant and PU foam panel components)	CFC-12	HFC-134a R-600a	13.76	n.a.	n.a.	n.a.	8-10 [13.76] (Canada)	13.76
	CFC-11	HCFC-141b cyclopentane		HCFC-141b	Cyclopentane	7.83*,**		
RAC – domestic							7-9	
Commercial refrigeration (refrigerant and PU foam panel components)	CFC-12	HFC-134a	15.21	HCFC-22	HFC-32, R-290, HFC-134a, CO_2, NH_3, cascade systems	15.21*	10-15	[15.21 plus 25% for SMEs] [~~*~~] [~~19~~] [18**] [*] plus special consideration for small enterprises [<20 mt?]
	CFC-11	HCFC-141b cyclopentane water		HCFC-141b	Cyclopentane, water, MF, methylal, HFC-245fa, reduced HFOs			
Stationary AC (domestic AC manufacturing)	n.a	n.a	n.a	HCFC-22	R-410A, HFC-32, R-290	case-by-case	11-15 Stationary AC	[11][12**]/[13 **][*]
[Stationary AC (commercial)]								[13 **] (US) [case-by-case] [15.21 – 18**] [*] (India)
RAC – transportation and industrial							10-15	Case-by-case
Rigid PU foam (including PU foam panel in commercial refrigeration)	CFC-11	HCFC-141b cyclopentane water	7.83	HCFC-141b	Cyclopentane, water, MF, methylal, HFC-245fa, reduced HFOs	7.83*,**	7-9	9**
Flexible PU foam	CFC-11	HCFC-141b cyclopentane water	6.23	HCFC-141b	Cyclopentane, water, MF, methylal, HFC-245fa, reduced HFOs	6.23*,**	7-9	case-by-case
Integral skin	CFC-11	HCFC-141b cyclopentane water	16.86	HCFC-141b	Cyclopentane, water, MF, methylal, HFC-245fa, reduced HFOs	16.86*,**	7-9	case-by-case

Sector	National ODS phase-out plans (UNEP/OzL.Pro/ExCom/16/20 para. 32)			HPMPs (decisions 60/44, 62/13 and 74/50)			TEAP (ExMOP 3)	Agreed CE (US $/kg)
	Baseline substance	Main alternatives introduced	CE threshold (US $/kg)	Baseline substance	Main alternatives introduced	CE threshold (US $/kg)		
XPS foam	CFC-12	HFC-134a	8.22	HCFC-22/ HCFC-142b	HC, CO_2	8.22*,**	7-9	case-by-case
Aerosol	CFC-12/ CFC-11	HC	4.40	HCFC-22/ HCFC-141b	HC, HFC-134a, HFC-152a, perchloretylene, HFO		4-6	case-by-case
Fire extinguishing	Halon	ABC dry powder CO_2	1.48	HCFC-123	No projects approved yet	case-by-case	3-5	case-by-case
Solvent	CFC-113	Heat cleaning, aqueous cleaning, trichlorethylene, HC, others	19.73	HCFC-141b	Iso-paraffin	case-by-case		case-by-case
Solvent	TCA		38.50	n.a	n.a	n.a		case-by-case
Metered dose inhaler (MDI)	CFC-12/ CFC-11	HFC-134a	n.a	n.a	n.a	n.a		case-by-case
Mobile AC	CFC-12	HFC-134a	n.a	n.a	n.a	n.a	4-6	case-by-case
Other RAC manufacturing (heat pumps, transport, chillers, industrial)	CFC-11/ CFC-12 (chillers)	HFC-134a/ HFC-123 (chillers)	n.a	HCFC-22	R-410A, HFC-32, R-290, CO_2, NH_3, cascade systems	case-by-case		

[* Funding of up to a maximum of 25 per cent above the cost-effectiveness threshold will be provided for projects when needed for the introduction of low-GWP [non-HFC/non-controlled substances] alternatives (decision 60/44(f)(iv)).]

** For SMEs ~~in the foam sector~~ [with consumption of less than TBD/20 mt], the maximum would be up to [40/25] per cent above the cost-effectiveness threshold ~~(decision 74/50(c)(iii)).~~

Annex III

WORKING TEXT ON THE INCREMENTAL OPERATING COSTS

(Annex XXXII of document UNEP/OzL.Pro/ExCom/91/72)

Sector	HCFCs (decisions 60/44, 62/13 and 74/50)			91st meeting – contact group
	Baseline substance	Duration	CE threshold (US $/kg)	
Domestic refrigeration (refrigerant and PU foam)	n.a.	n.a.	n.a.	
	HCFC-141b	One year	**Stage I**: 1.60. **Stage II** 1.60 and up to 5.00, when clearly demonstrated that low-GWP alternatives with IOCs at this level were not feasible, higher level of IOCs would be funded for the introduction of low-GWP alternatives by SMEs (decision 74/50(c)(vi)).	[Maintain HCFC IOC thresholds and duration. Case-by-case for SMEs in PU foam sector] Canada [40% increase in IOCs for all sectors Duration: 3 years] India
Commercial refrigeration (refrigerant and PU foam)	HCFC-22	One year	3.80	
	HCFC-141b	One year	**Stage I:** 1.60. **Stage II** 1.60 and up to 5.00, when clearly demonstrated that low-GWP alternatives with IOCs at this level were not feasible, higher level of IOCs would be funded for the introduction of low-GWP alternatives by SMEs (decision 74/50(c)(vi)).	
Rigid PU foam (including PU foam in commercial refriger.)	HCFC-141b	One year		
Flexible PU foam	HCFC-141b	One year		
Integral skin	HCFC-141b	One year		
XPS foam	HCFC-22/ HCFC-142b	One year	1.40	
Aerosol	HCFC-22/ HCFC-141b	One year	Case-by-case	
Fire extinguishing	HCFC-123	Case-by-case	Case-by-case	
Solvent	HCFC-141b	Case-by-case	Case-by-case	
Solvent	n.a	n.a	n.a	
Metered-dose inhaler (MDI)	n.a	n.a	n.a	
Mobile AC	n.a	n.a	n.a	
Domestic AC manufacturing (room AC and heat pumps)	HCFC-22	One year	6.30	
Other refrigeration and AC manufacturing (heat pumps, transport, chillers, industrial)	HCFC-22	One year	Refrigeration 3.80 AC: 6.30	

Annex IV

HISTORICAL CONSIDERATION OF SMALL AND MEDIUM-SIZED ENTERPRISES BY THE EXECUTIVE COMMITTEE

1. The issue of phase-out at small and medium-sized enterprises (SMEs) had been discussed extensively by the Executive Committee during the CFC phase-out. At the 19th meeting, the Executive Committee considered document UNEP/OzL.Pro/ExCom/19/54 that described the approaches to ODS phase-out in SMEs based on an analysis of 104 approved projects, proposed to use consumption as a defining criterion for SMEs and suggested several additional criteria in the different foam subsectors. For example, an SME in the polyurethane foam sector was defined as an enterprise consuming less than 10 ODP tonnes/year of foam blowing agent, while in the extruded polyethylene/polystyrene subsector it would consume 25 ODP tonnes/year. However, no criteria were set for the commercial refrigeration and air-conditioning sector in this document.

2. During the 20th to the 24th meetings, the Executive Committee requested the Secretariat, in cooperation with the implementing agencies and the target countries, to collect relevant data needed to refine the definition of SMEs based on the criteria for defining small, medium-sized, and large enterprises contained in document UNEP/OzL.Pro/ExCom/19/54. The Executive Committee also requested that recommendations be made regarding options to advance the phase-out in SMEs, including the possibility of establishing a funding window with appropriate cost-effectiveness thresholds. Relevant data was collected from target countries but proved to be insufficient for the Secretariat to refine the definition of SMEs at the time. At the 25th meeting, the Executive Committee approved a funding window of US $10 million to facilitate pilot conversions at a significant group of small enterprises in the aerosol or foam sectors in non-low-volume-consuming countries only. In reviewing these projects, the definition proposed in document UNEP/OzL.Pro/ExCom/19/54 was used to define SMEs (decision 25/26).

3. Subsequently, in approving the cost guidelines for funding stage II of the HCFC phase-out management plans at its 74th meeting, the Executive Committee decided that a maximum of up to 40 per cent above the cost-effectiveness threshold would be provided for SMEs in the foam sector with consumption of less than 20 metric tonnes (decision 74/50(c)(iii)).