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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Eighty-sixth Meeting
Montreal, 2-6 November 2020
Postponed to 8-12 March 2021¹

**ANALYSIS OF THE LEVEL AND MODALITIES OF FUNDING FOR HFC PHASE-DOWN
IN THE REFRIGERATION SERVICING SECTOR (DECISIONS 83/65(b) AND 84/86(b)(ii))**

Background

1. Since its 78th meeting, the Executive Committee has been discussing matters related to the HFC phase-down in the refrigeration servicing sector, in the context of the development of the cost guidelines for the phase-down of HFCs.
2. At its 80th meeting, the Executive Committee:
 - (a) Included in the draft cost guidelines for the phase-down of HFCs the following categories under the refrigeration servicing sector eligible for funding: public awareness activities; policy development and implementation; certification programmes and training of technicians; training of customs officers; prevention of illegal trade of HFCs; and servicing tools, refrigerant testing equipment and recycling and recovery of HFCs;² and
 - (b) Requested the Secretariat to prepare a preliminary document for the 82nd meeting, in cooperation with bilateral and implementing agencies, on all aspects related to the refrigeration servicing sector that support the HFC phase-down (decision 80/76(c)).³

¹ Due to coronavirus disease (COVID-19)

² Decision 80/76(a)(iv), made in line with the mandate given by paragraph 15(c) of decision XXVIII/2.

³ The document has to take into account previous policy documents, case studies, monitoring and evaluation reviews, and the work undertaken by the agencies in developing and implementing training and technical assistance programmes, in particular the partnership that the Compliance Assistance Programme had established with training and certification institutes; has to provide an analysis of the existing capacities in Article 5 countries with the funding approved thus far for the refrigeration servicing sector and how those could be utilized for HFC phase-down, and the minimum information needed for the development of training and certification programmes for service technicians and customs officers.

3. At its 81st meeting, the Executive Committee decided to consider, at the 82nd meeting, the matter of prioritization of technical assistance and capacity building to address safety issues associated with alternatives with low and zero global-warming potential (GWP) for all sectors (paragraph 23 of decision XXVIII/2), in light of the document being prepared by the Secretariat in response to decision 80/76 regarding aspects of refrigeration servicing sector that supported HFC phase-down (decision 81/67(c)).

4. In response to decisions 80/76(c) and 81/67(c), the Secretariat submitted to the 82nd meeting document UNEP/OzL.Pro/ExCom/82/64 on all aspects related to the refrigeration servicing sector that support HFC phase-down. Following a discussion, the Executive Committee took note of the document.

5. At its 83rd meeting, the Executive Committee agreed to reconstitute the contact group on the development of the cost guidelines for the phase-down of HFCs in Article 5 countries. Following the report by the convener of the contact group, the Committee *inter alia* requested the Secretariat to prepare, for the 85th meeting, a document providing an analysis of the level and modalities of funding for HFC phase-down in the refrigeration servicing sector, in light of the information provided in document UNEP/OzL.Pro/ExCom/82/64 and guidance provided by the Executive Committee, including the flexibility that Article 5 countries had in implementing their servicing sector activities in line with their national circumstances and the planned and ongoing activities in their HCFC phase-out management plans (HPMPs) (decision 83/65(b)).

6. At its 84th meeting, the Executive Committee considered document UNEP/OzL.Pro/ExCom/84/65 on the analysis of the implications of parallel or integrated implementation of HCFC phase-out and HFC phase-down activities. During the discussion, members expressed appreciation for the analysis, and highlighted, in particular, the potential for synergies in the HCFC phase-out and HFC phase-down in the refrigeration servicing sector, while noting opportunities in the foam, room air-conditioner, commercial refrigeration and chiller manufacturing sectors; members also expressed an interest in further discussion of ways to support a cost-effective approach to HCFC phase-out and HFC phase-down activities. Subsequently, the Committee *inter alia* requested the Secretariat to take into account the opportunities for integrated implementation of the phase-out of HCFC and phase-down of HFCs in the refrigeration servicing sector when developing the document on an analysis of the level and modalities of funding for the HFC phase-down in the refrigeration servicing sector requested by decision 83/65 (decision 84/86(b)(ii)).

Inter-agency coordination meeting (IACM)⁴

7. In addressing the request in decision 84/86(b)(ii), the Secretariat prepared an analysis of the level and modalities of funding for HFC phase-down in the refrigeration servicing sector, that would be discussed during the IACM. Bilateral and implementing agencies were requested to provide their views on: commonalities of HCFC phase-out and HFC phase-down activities in the refrigeration servicing sector that could be considered in the calculation of funding levels for the sector; additional eligible activities that have not been funded under the HPMPs, and a methodology to determine the funding levels per Article 5 country, based on previous experience under CFC and HCFC phase-out.

8. During the discussions, UNDP indicated that the strategy for the refrigeration servicing sector, should be a unique strategy for the entire 2021-2030 period rather than several strategies that could be implemented in stages. Funding should be estimated on the basis of the overall strategy, with a greater disbursement at the beginning to allow building the infrastructure to adopt low-GWP alternatives. The critical activities to be implemented include the adoption of policies and standards, a refrigerant management plan ensuring proper coverage of training and certification of technicians, strategies for containment of refrigerants, pilot projects and training in installation of refrigeration and air-conditioning (RAC) equipment operating with low-GWP refrigerants, and sound disposal of unwanted refrigerants.

⁴ Montreal, 25 – 27 February 2020.

Accordingly, funding for HFC phase-down should be increased, especially for low-volume consuming (LVC) countries.

9. UNIDO indicated that flammability of refrigerants would be the main issue to be considered when introducing alternative technologies to HFCs. A staged approach would be preferable than a unique 10-year strategy, as it would allow to assess the success of the plan at the end of each stage and introduce remedial actions as required. UNIDO also suggested the need to define key activities to be included in the servicing sector. For LVC countries, the level of funding should be at least three times that approved under decision 74/50, which would allow for providing specialized training with a longer duration to cover the management of flammable refrigerants.

10. UNEP emphasized that LVC countries will incur in additional costs to scale up the technicians' certification systems that are currently being established under the HPMPs.

Structure of the document

11. In response to decisions 83/65(b) and 84/86(b)(ii), the Secretariat has prepared the present document and submitted it to the 86th meeting.⁵

12. The present document is based on document UNEP/OzL.Pro/ExCom/82/64, which *inter alia*:

- (a) Describes the evolution of technical and financial assistance that has been provided to the refrigeration servicing sector since the inception of the Fund; presents an analysis of the characteristics of the RAC sectors; and identifies potential challenges for the phase-down of HFCs in the sector;
- (b) Describes the capacity that has been established and strengthened in Article 5 countries in relation to: policy and regulatory frameworks including standards; training and certification of refrigeration technicians; and technical assistance including the provision of servicing tools for technicians, the establishment of recovery, recycling and reclamation schemes, the retrofitting of refrigeration systems, and the maintaining of energy efficiency;
- (c) Presents an analysis of the information needed for the development of training and competency-based certification programmes for service technicians and customs officers; and
- (d) Discusses how common training modules could be applied to the circumstances prevailing in Article 5 countries, and analyses how the global products that have been developed by UNEP in partnership with other international organizations, could support the activities in the refrigeration servicing sector.

13. Although document UNEP/OzL.Pro/ExCom/82/64 described the activities, the modalities and funding levels that have been provided for the refrigeration servicing sector, it did not include an analysis of the level and modalities for funding the HFC phase-down in the refrigeration servicing sector, requested

⁵ The present document should have been submitted to the 85th meeting. In light of the COVID-19 pandemic, the Executive Committee agreed to postpone its 85th meeting, originally scheduled from 25 to 29 May 2020, and to hold it back-to-back with the 86th meeting in November 2020. In order to ensure continuity of compliance-related activities in Article 5 countries, and to reduce its workload when convened, the Executive Committee decided to implement an intersessional approval process for projects and activities that were to be submitted to the 85th meeting; agenda items that were not considered intersessionally would be included in the agenda of the 86th meeting. Given the evolution of the pandemic, the Executive Committee further deferred both meetings to March 2021.

by decision 83/65(b). On that basis, the present document is supplementary to document UNEP/OzL.Pro/ExCom/82/64.

14. In addition to document UNEP/OzL.Pro/ExCom/82/64, the Secretariat extracted information from the following sources:

- (a) The document on key considerations for developing a methodology for establishing the starting point for sustained aggregate reductions for the consumption and production sectors under the Kigali Amendment (decision 81/67(e)),⁶ in particular the discussion related to the role of the starting point in the servicing sector, considering *inter alia* that the initial years of the phase-down of HFCs will overlap with the phase-out of HCFCs, which for the majority of Article 5 countries would be mainly used in the refrigeration servicing sector;
- (b) The document presenting an analysis of the implications of parallel or integrated implementation of HCFC phase-out and HFC phase-down activities,⁷ as the information, analysis, and discussion contained therein supplements⁸ the present document;
- (c) The document on potential strategies, policy measures and commitments, as well as projects and activities that could be integrated within stage I of HFCs phase-down plans for Article 5 countries,⁹ as it *inter alia* describes the benefits for Article 5 countries of implementing an integrated strategy in the refrigeration servicing sector that addresses the reduction of HCFCs and HFCs, including the possibility of formulating a comprehensive plan that combines ozone and climate benefits, strengthening and/or expanding the existing infrastructure as needed, and combining the funding from HCFC phase-out and HFC phase-down reducing the number of synchronized tranches resulting in lower transaction costs for reporting and verifications;
- (d) The draft guidelines for the preparation of HFC phase-down plans for Article 5 countries,¹⁰ being submitted to the 86th meeting in response to decision 84/54(a), noting that the resulting phase-down plans will include an overarching strategy, an action plan and a set of activities to meet initial reduction obligations for the phase-down of HFCs including in the refrigeration servicing sector;
- (e) The document on ways to operationalize paragraph 16 of decision XXVIII/2, and paragraph 2 of decision XXX/5,¹¹ being submitted to the 86th meeting in response to decision 84/88, as the document describes ways to increase the funding available under decision 74/50 for LVC countries, when needed, for: the introduction of low- and zero-GWP alternatives to HCFCs or HFCs and maintaining energy efficiency in the servicing/end-user sector, developing and enforcing policies and regulations to avoid the market penetration of energy-inefficient RAC equipment and promoting penetration of

⁶ UNEP/OzL.Pro/ExCom/82/66

⁷ UNEP/OzL.Pro/ExCom/84/65

⁸ During the discussion of document UNEP/OzL.Pro/ExCom/84/65, Committee members highlighted the potential for synergies in the HCFC phase-out and HFC phase-down in the refrigeration servicing sector, while noting opportunities in the foam, room air-conditioner, commercial refrigeration and chiller manufacturing sectors.; and also expressed an interest in further discussion of ways to support a cost-effective approach to HCFC phase-out and HFC phase-down activities.

⁹ UNEP/OzL.Pro/ExCom/86/87

¹⁰ UNEP/OzL.Pro/ExCom/86/88

¹¹ UNEP/OzL.Pro/ExCom/86/92

energy-efficient equipment, and taking into account the criteria, performance indicators, and funding mechanisms of servicing sector plans in HPMPs;

- (f) The document presenting a synthesis report describing best practices and ways for the Executive Committee to consider operationalizing paragraph 24 of decision XXVIII/2,¹² as the document describes options when funding the environmentally sound management of waste ODS and other controlled substances, which are largely a result of the servicing of RAC equipment; and
- (g) The document on information relevant to the development of the cost guidelines for the phase-down of HFCs in Article 5 countries: enabling activities,¹³ which *inter alia* reviewed all the policies and guidelines that have been adopted by the Executive Committee related to enabling activities (listed under paragraph 20 of decision XXVIII/2) to support the phase-out of controlled substances in Article 5 countries, several of which relates to the refrigeration servicing sector.

15. In preparing this document, the Secretariat also gave due consideration to the comments and observations provided by the implementing agencies during the IACM held from 25 to 27 February 2020.

16. The present document consists of the following sections:

- (a) Overview of assistance provided under the Multilateral Fund in the refrigeration servicing sector;
- (b) Integrated HCFC and HFC compliance strategy for the refrigeration servicing sector;
- (c) Modalities and levels of funding for the HFC phase-down in the refrigeration servicing sector (stage I); and
- (d) Recommendation.

17. Annex I to the present document presents an overview of potential modalities for integrating HCFC phase-out and HFC phase-down activities in the refrigeration servicing sector.

Overview of assistance provided under the Multilateral Fund in the refrigeration servicing sector

18. Since its inception, the Multilateral Fund has provided assistance to Article 5 countries to phase out the controlled substances used in the refrigeration servicing sector.

Funding levels and modalities for CFC phase-out in the refrigeration servicing sector

19. The assistance was initially provided to implement stand-alone projects (e.g. drafting regulations to support the phase-out of CFCs, training to custom/enforcement officers, training of refrigeration technicians in good servicing practices; distribution of tools and equipment for technicians, refrigerant recovery and recycling schemes), without an overarching strategy and outside a management plan. The funding levels were approved on a case-by-case basis based on the project proposals submitted.

20. As the CFC phase-out progressed, the stand-alone projects were subsumed into a holistic funding plan applicable to LVC countries: a refrigerant management plan (RMP). The RMP was a country-driven approach that allowed flexibility on the implementation of activities that would enable the relevant country to meet its compliance obligations under the Montreal Protocol. Subsequently, countries could submit an

¹² UNEP/OzL.Pro/ExCom/86/90

¹³ UNEP/OzL.Pro/ExCom/78/6

RMP update to achieve 50 per cent and 85 per cent reductions from the CFC consumption baseline in 2005 and 2007, respectively. Finally, to achieve the complete phase-out of CFCs, terminal phase-out management plans (TPMPs) were developed for LVC countries and national phase-out plans (NPPs) for non-LVC countries, as performance-based agreements following the country-driven approach. Funding for these plans was provided in tranches upon verification of compliance with specific consumption targets.

21. The funding levels for RMP updates, TPMPs and NPPs were pre-determined by the Executive Committee, rather than allocated on a case-by-case basis, and are summarized in Table 1.

Table 1. Level and modalities of funds approved in the refrigeration servicing sector

Modality	Years used	Target countries	Modality of funding	Level of funding	Commitment
Stand-alone	1993 to 1997	LVC and non-LVC	Based on incremental cost of specific activities	Case-by-case basis	Reduce a specific tonnage of CFC consumption proposed in the project
RMP	1997 to 2005	LVC and non-LVC	Based on incremental cost of specific activities	Case-by-case basis	Reduce a specific tonnage of CFC consumption proposed in the project, supported by a policy and regulatory framework, with phase-out activities
RMP update (decision 33/32)	2001 to 2006	LVC and non-LVC	An increase to the funds approved for the RMP	Up to 50 per cent of the RMP approved value	To achieve the 50 per cent (2005) and 85 per cent (2007) reduction CFC phase-out targets
TPMP (decision 45/54)	2005 to 2010	LVC	Funding based on CFC consumption baseline	Below 15 mt: US \$205,000 15 to 30 mt: US \$295,000 30 to 60 mt: US \$345,000 60 to 120 mt: US \$520,000 Above 120 mt: US \$565,000	Performance-based; annual targets up to total CFC phase-out
NPP	2003 to 2010	Non-LVC	Fixed cost-effectiveness threshold	US \$5.00/kg	Performance-based; total CFC phase-out

Funding levels and modalities for HCFC phase-out in the refrigeration servicing sector

22. The HCFC phase-out followed a similar approach to that used for the TPMPs and NPPs with the sole difference that the phase-out of HCFCs followed a staged approach, with each stage governed by a separate performance-based agreement and with specific cost guidelines.

23. The funding levels and modalities for the phase-out of HCFCs in the refrigeration servicing sector were determined by decision 60/44 for stage I of the HPMPs, and decision 74/50 for stage II of the HPMPs. In line with these decisions:

- (a) Funding levels for LVC countries (i.e., countries with HCFC consumption below 360 metric tonnes (mt) in the refrigeration servicing sector only) were agreed based on the HCFC baseline for compliance as shown in Table 2; and
- (b) Funding for non-LVC countries was agreed at US \$4.50/metric kg for stage I and US \$4.80/metric kg for stage II.

Table 2. Funding for HCFC phase-out in the refrigeration servicing sector for LVC countries

HCFC baseline (mt)*	Funding (US \$)			No. of countries	Consumption (mt)**	Estimated cost (US \$)
	Up to 2020 (35% reduction)	Up to 2025 (67.5% reduction)	Total HCFC phase-out			
>0 <15	205,625	396,500	587,500	21	1,580	12,337,500
15 <40	262,500	506,250	750,000	17	467	12,750,000
40 <80	280,000	540,000	800,000	13	780	10,400,000
80 <120	315,000	607,500	900,000	10	1,000	9,000,000
120 <160	332,500	641,250	950,000	9	1,260	8,550,000
160 <200	350,000	675,000	1,000,000	3	540	3,000,000
200 <320	560,000	1,080,000	1,600,000	12	3,120	19,200,000
320 <360	630,000	1,215,000	1,800,000	2	680	3,600,000
Total				87	9,427	78,837,500

* Level of HCFC baseline consumption in the refrigeration servicing sector.

**Estimated consumption calculated as the average consumption in each group of countries multiplied by the number of countries in that group.

24. Since the approval of the first HPMP at the 60th meeting, the Executive Committee has approved stages I, II and III of HPMPs for 145, 73 and three Article 5 countries, respectively. An additional 50 countries are preparing stages II or III that will be submitted in future meetings. Implementation of the already approved HPMPs will result in the phase-out of approximately 71 per cent of the starting point for aggregate reduction of HCFC consumption, and 86 per cent of the consumption of HCFC-141b contained in imported pre-blended polyols.¹⁴

25. The total funding that has been approved in principle for the phase-out of HCFCs in the refrigeration servicing sector amounts to approximately US \$192.7 million (including US \$24.0 million for one country). An additional amount of up to US \$586.2 million (including up to US \$155.7 million for one country) remains to be approved, noting that this amount might be lower after considering the funding eligibility of the remaining HCFC consumption in non-LVC countries, as funding is subject to the actual level of consumption at the time those countries submit the last stage of their HPMPs. The Secretariat notes that HCFC-22 consumption in a number of countries is decreasing faster than expected. Table 3 summarizes the funding available for phasing out HCFC in the servicing sector, based on the funding levels agreed in decision 74/50.

Table 3. Funding for the phase-out of HCFCs in the refrigeration servicing sector

Countries	Number of countries	Baseline servicing sector (mt)*	Total funding (US \$)	
			Approved in principle as of the 86 th meeting**	Still to be approved in principle based on decision 74/50
LVC	87	9,427	51,015,199	26,840,945
Non-LVC	57	189,164	***141,648,656	****559,356,013
Total	144	198,591	192,663,855	586,196,958

* Portion of the baseline used in the refrigeration servicing sector based on the country programme report.

** While this funding has been approved in principle, it has only been gradually released as tranches are submitted.

*** Including US \$23,982,237 for one Article 5 country.

**** Including US \$155,717,354, for one Article 5 country.

Key achievements in the refrigeration servicing sector

26. Through the technical and financial assistance provided to the refrigeration servicing sector, measures have been put in place to ensure the long-term sustainability of the activities being implemented.¹⁵

¹⁴ UNEP/OzL.Pro/ExCom/86/8

¹⁵ Document UNEP/OzL.Pro/ExCom/82/64 provides a comprehensive summary of the activities being implemented under the refrigeration servicing sector.

Specifically, Article 5 countries have:

- (a) Strengthened their national capacity related to customs and law enforcement authorities and their institutes, providing refrigerant identifiers and periodically updating the curricula of the training programmes for customs authorities;
- (b) Enhanced their institutional capacity, allowing for training to a large number of refrigeration technicians, providing training equipment and tools to vocational/training institutions, periodically updating the curricula of training programmes, and developing schemes to certify the competency of technicians to implement good servicing practices, in some cases including servicing of equipment using flammable and toxic refrigerants;
- (c) Established an infrastructure for recovery, recycling and in some cases, reclamation of refrigerants, mostly focused on HCFC-22; and
- (d) Promoted and participated in the development and/or adaptation of codes of good service practices and standards to facilitate the introduction of equipment based on low-GWP alternative technologies and the management of refrigerants.

Integrated HCFCs and HFCs compliance strategy for the refrigeration servicing sector¹⁶

27. During the 2021 to 2030 period, it is expected that Article 5 countries will be simultaneously implementing projects for phasing out HCFCs and phasing down HFCs to meet their compliance obligations of both group of substances as shown in Table 4. After 2030, Article 5 countries will be implementing activities to phase down HFCs and monitor the sustainability of the HCFC phase-out. Therefore, the 2021-2030 period is of critical importance given the linkages between HCFCs and HFCs.

Table 4. Compliance obligations for HCFCs and HFCs for Article 5 countries

Description	HCFC	HFC
Baseline: aggregated consumption of substances	Annex C Group I (HCFC)	Annex F and (65 per cent of baseline) Annex C Group I. Two different baselines and phase-out schedules *
Base years	2009, 2010	Group 1: 2020, 2021, 2022 Group 2: 2024, 2025, 2026
Number of controlled substances	40, of which HCFC-22, HCFC-141b and HCFC-142b represented over 99 per cent of the total consumption	17 in Annex F Group I, 1 in Group II ** The most highly consumed are five pure substances (mainly HFC-134a and to a lesser extent HFC-152a, HFC-245fa, HFC-365mfc, HFC-227ea), and four blends (R-410A, R-407C, R-404A, R-507A), containing two or more of HFC-32, HFC-125, HFC-134a, HFC-143a
Schedule	Reduction steps: • 2013–2014: 0 per cent of the baseline • 2015–2019: 10 per cent of the baseline • 2020–2024: 35 per cent of the baseline • 2025–2029: 67.5 per cent of the baseline • 2030, thereafter: 100 per cent reduction for the baseline***	Group 1: • 2024–2028: 100 per cent of baseline • 2029–2034: 90 per cent of baseline • 2035–2039: 70 per cent of baseline • 2040–2044: 50 per cent of baseline • 2045 and thereafter: 20 per cent of baseline. Group 2: • 2028–2031: 100 per cent of baseline • 2032–2036: 90 per cent of baseline • 2037–2041: 80 per cent of baseline • 2042–2046: 70 per cent of baseline

¹⁶ This section is extracted from document UNEP/OzL.Pro/ExCom/86/87

Description	HCFC	HFC
		• 2047 and thereafter: 15 per cent of baseline

* Group 1 countries: all Article 5 countries except for the 10 countries in group 2. Group 2 countries: Bahrain, India, Islamic Republic of Iran, Iraq, Kuwait, Oman, Pakistan, Qatar, Saudi Arabia, and the United Arab Emirates.

** HFC-23, with a GWP of 14,800, is mainly a by-product of the production of HCFC-22.

***Countries may exceed that limit on consumption any year between 2030 and 2040 so long as the average annual consumption for such 10-year period does not exceed 2.5 per cent of the HCFC consumption baseline and provided that such consumption shall be restricted to specific uses determined by paragraph 8 (ter)(e) of Article 5 of the Montreal Protocol.

28. The overlapping schedules of HCFC phase-out and HFC phase-down presents an opportunity to develop an integrated cost-effective strategy that addresses the reduction of both groups of substances, using the existing infrastructure supported under the Multilateral Fund, and avoiding duplication of efforts.

29. Particularly for the refrigeration servicing sector, the majority of the activities already being implemented and planned for the phase-out of HCFCs¹⁷ will have an impact on the reduction of consumption of HFCs. Additional efforts might be needed in the sector during the first years of the HFC phase-down for, *inter alia*:

- (a) Strengthening regulatory frameworks for refrigerant management through *inter alia* updating the operational import/export licensing systems to include HFCs (which are currently not included in the existing Harmonized System), which should be in place by 1 January 2021 for Article 5 countries that have ratified the Kigali Amendment; establishing import/export quota systems; issuing regulations for the certification of technicians; limiting the access to refrigerants only to trained/certified technicians and licensed service workshops; labelling of refrigerants, record keeping, monitoring and reporting; and capacity building for authorities and stakeholders;
- (b) Developing, revising or adopting standards, codes and norms that could facilitate the adoption, operation, management and servicing of refrigeration technologies based on low-GWP refrigerants, noting that a large number of these refrigerants are flammable and/or toxic;
- (c) Strengthening and updating the mechanisms in place to report consumption and production (where applicable) of controlled substances, noting the increased amount and variety of controlled substances, which include a large portion of HFC-based blends, a wider set of applications where these substances are used (e.g., domestic refrigeration, mobile air-conditioning and a larger set of commercial refrigeration systems), as well as the measurement of compliance of HFC production and consumption in CO₂-equivalent tonnes;
- (d) Reviewing and periodically updating the curricula of the training programmes for customs and enforcement officers, addressing the obligations under the Montreal Protocol including its Kigali Amendment;
- (e) Strengthening the capacity of vocational training systems and certification bodies by periodically reviewing the curricula of the training programmes to address good servicing practices and safety issues related to the management of flammable and/or toxic refrigerants, noting the increasing number of more technologically advanced RAC

¹⁷ These activities are thoroughly described in document UNEP/OzL.Pro/ExCom/82/64 and include *inter alia*: training and certification of technicians, strengthening technical/vocational schools and refrigeration associations, refrigerant containment strategies, the distribution of basic equipment and service tools including recovery/recycling units, and the adoption of standards and codes of practice to facilitate the safe adoption of flammable and/or toxic low-GWP refrigerants.

equipment based on a variety of refrigerants with different operating characteristics related to pressure, flammability and toxicity; and strengthening RAC associations, ensuring their engagement in the implementation of activities related to the servicing sector;

- (f) Developing or strengthening self-sustained refrigerant containment strategies to ensure that installed refrigeration equipment can continue operating until end-of-life; assessing and start adapting the existing infrastructure for recovering, recycling and reclaiming refrigerants to operate with a wider set of RAC systems, refrigerants and blends;
- (g) Strengthening technical support for the assembly, installation and initial-refrigerant-charge sub-sector as it could influence the introduction of technologies in local markets; and
- (h) Combining the funding from HCFC phase-out and HFC phase-down to implement more comprehensive, longer-term activities that will have a broader impact; reducing the number of funding tranches being concurrently implemented, with lower transaction costs for reporting and verifications.

30. Additional activities in the refrigeration servicing sector will be dependent on the priorities established by each Article 5 country. Annex I presents an overview of potential modalities for integrating HCFC phase-out and HFC phase-down activities in the sector.

Additional ongoing discussions related to the refrigeration servicing sector

31. In adopting the Kigali Amendment, the Parties asked the Executive Committee to increase in relation to the servicing sector, the funding available under decision 74/50 for LVC countries when needed for the introduction of alternatives to HCFCs with low- and/or zero-GWP refrigerants and maintaining energy efficiency in the servicing/end-user sector (paragraph 16 of decision XXVIII/2). From the 82nd to the 84th meetings, the Executive Committee held discussions on this matter, as summarized in document UNEP/OzL.Pro/ExCom/86/92 submitted to the 86th meeting. In that document, the Secretariat had invited the Executive Committee if it wishes to consider the information and analysis contained in the present document, while finalising its discussions on the ways to operationalize paragraph 16 of decision XXVIII/2, and paragraph 2 of decision XXX/5, given the close relationship between the two documents.

32. In this regard, the Secretariat notes that if additional funding would be provided under HPMPs, the activities related to maintaining energy efficiency in the servicing/end-user sector would be applicable only for HCFC-based equipment. However, if the additional funding would be provided following an integrated approach for HCFC phase-out and HFC phase-down, the funding would be applicable for all RAC equipment in operation (i.e., HCFC- and HFC-based refrigerants).

33. Also, in adopting the Kigali Amendment, the Parties asked the Executive Committee to consider funding the cost-effective management of stockpiles of used or unwanted controlled substances, including destruction (paragraph 24 of decision XXVIII/2).¹⁸ At its 84th meeting, the Committee *inter alia* requested the Secretariat to prepare for the 85th meeting a synthesis report describing best practices and ways for the Executive Committee to consider operationalizing paragraph 24 of decision XXVIII/2, taking into account, the final report on the evaluation of the pilot demonstration projects on ODS disposal and destruction,¹⁹ and the synthesis report on pilot ODS disposal projects;²⁰ other relevant projects implemented in HPMPs; lessons learned from existing infrastructure and policies that could be used to establish the cost-effective

¹⁸ Discussions on the issue of the disposal of unwanted controlled substances has been taken up since the 78th meeting in the context of the development of the cost guidelines for the phase-down of HFCs.

¹⁹ UNEP/OzL.Pro/ExCom/84/11

²⁰ UNEP/OzL.Pro/ExCom/82/21

management of stockpiles of used or unwanted controlled substances; and external funding opportunities and existing disposal programmes and partnerships (decision 84/87(b)).

34. In response to decision 84/87(b), document UNEP/OzL.Pro/ExCom/86/90 has been submitted to the 86th meeting. The document notes that the majority of activities already being implemented in the refrigeration servicing sector under ongoing HPMPs and future HFC phase-down plans provide opportunities for considering the development of an integrated approach for the sustainable and cost-effective management of unwanted controlled substances to prevent harmful emissions to the environment. Including a strategy for the environmentally sound management of waste ODS and other controlled substances when economically feasible will ensure that all aspects of management of the refrigerant until its disposal are fully considered.

Modalities and levels of funding for HFC phase-down in the refrigeration servicing sector (stage I)

35. The modality and levels of funding proposed for the phase-down of HFCs in the refrigeration servicing sector, are based on the extensive analysis and information contained in the various documents that have been considered by the Executive Committee (listed under the Background section of the present document), and the review of all the projects related to the servicing sector that have been approved, in particular under the HPMPs. Specifically, the following facts were considered:

- (a) The need to meet the freeze (all Article 5 countries) and the 10 per cent reduction (all Article 5 group 1 countries) on HFC consumption where the actual levels of HFCs consumption, type of HFCs (pure or contained in blends) being consumed and their sectoral distribution, are unknown, and the HFC baselines for compliance cannot be reliably forecast;
- (b) The relevance of the servicing sector during the 2020-2030 period, noting that for the majority of Article 5 countries the remaining HCFC consumption is solely or mainly used for servicing RAC equipment. Furthermore, HFC phase-down activities in this sector are expected to be necessary for the majority of LVC countries and several non-LVC countries to meet their compliance obligations, as HFCs are solely used for servicing RAC equipment;
- (c) The full utilization of the regulatory framework and the training infrastructure that has been established since the inception of the Multilateral Fund and strengthened and expanded during the phase-out of HCFCs. This include *inter alia* the training/vocational institutions for customs officers and refrigeration technicians that have been supported with equipment, tools and refrigerant identifiers, and strengthened with updated curricula including good servicing practices and, in many cases, proper handling of flammable and toxic refrigerants; the customs and enforcement officers that have been trained; and the service technicians that have been trained in good service practices and the proper handling of flammable and toxic refrigerants, and equipped with basic service tools;
- (d) The demonstrated benefits for Article 5 countries of implementing an integrated strategy in the refrigeration servicing sector that addresses the reduction of HCFCs and HFCs, through a comprehensive plan that combines ozone and climate benefits and the funding from HCFC phase-out and HFC phase down, following a performance-based multi-staged approach, rather than a set of stand-alone activities in the absence of a holistic approach for the refrigeration servicing sector;²¹ and

²¹ Paragraph 65 of document UNEP/OzL.Pro/ExCom/86/87 describes in detail the benefits associated with an integrated strategy in the refrigeration servicing sector.

- (e) The level of funding available during the 2021-2030 period for phasing out HCFCs in the refrigeration servicing sector in all Article 5 countries. As previously explained and shown in Table 3, US \$51.0 million has been approved in principle to LVC countries (with a large portion already disbursed) and US \$26.8 million is yet to be approved. For non-LVC countries, US \$141.6 million has been approved in principle (and only part of it already disbursed), and up to US \$559.4 million²² is yet to be approved.

36. Taking into consideration the above facts, the Secretariat assessed several modalities and levels of funding for HFC phase-down in the refrigeration servicing sector, as described below.

Modality 1

37. Given the uncertainties related to the cost of additional efforts to be undertaken to reduce HFC consumption to achieve the 10 per cent reduction target while completing the phase-out of HCFCs, one modality considered, similar to that followed prior to the approval of the first RMPs, was to approve stand-alone activities that would be required to phase-down the consumption of HFCs, at a funding level commensurate to the activity being submitted.

38. This modality could help ensure that Article 5 countries present in a sound manner the additional effort required for HFC phase-down and its associated cost. However, it would limit following a holistic strategy where similar activities to phase out HCFCs and phase down HFCs could be integrated and implemented (e.g., integrating HFC considerations in ongoing training programmes for phasing down HCFCs would be more cost-effective than implementing a new separate training programme only for HFCs). Furthermore, a stand-alone approach in the current context would generate difficulties in assessing the impact of different project components, and would substantially increase the administrative workload of the Multilateral Fund institutions on individual review, approval and monitoring of separate activities.

Modality 2

39. Another modality considered was grouping Article 5 countries according to their HCFC baselines for compliance (used as a proxy in the absence of estimated/calculated HFC baselines), without differentiating LVC countries from non-LVC countries, with increasing funding levels proportional to increases in their HCFC baselines. This modality is similar to the approach used for the phase-out of HCFCs for LVC countries in decision 60/44 (for stage I of the HPMPs) and decision 74/50 (for subsequent stages), and extended to non-LVC countries instead of using a unique cost-effectiveness threshold (e.g., US \$4.80/kg) applicable to the HCFC consumption in the refrigeration servicing sector eligible for funding.

40. This modality would allow for the development of a holistic strategy for addressing the phase-out of HCFCs and the phase-down of HFCs, for implementing a number of common activities addressing the two groups of controlled substances, avoiding duplication of efforts (and thus costs), and streamlining the administrative workload of the Multilateral Fund institutions.

41. Although this would be the preferred modality for funding, at present, in the absence of the estimated/established HFC baselines for compliance and the sectoral distribution of HFCs in the various applications, it is not possible to have a meaningful grouping of Article 5 countries (especially in the case of non-LVC countries) and establish the associated funding levels to achieve compliance with the control obligations set under the Kigali Amendment.

²² Including up to US \$155.7 million for one country.

42. Furthermore, after 2030 Article 5 countries would have phased-out HCFCs²³ and activities in the refrigeration servicing sector would only be associated to the phase-down of HFCs; at that time, a thorough assessment of the modalities and levels of funds for phasing down HFC consumption in the servicing sector in future stages should be undertaken based on the remaining HFC phase-down needed and the scenario of HFC uses and alternatives available in the market.

Modality 3

43. This modality considered extending the modality of funding agreed under decision 74/50 for the first stage of HFC phase-down plans when HCFC phase-out and HFC phase-down overlap.²⁴ In the absence of estimated/established HFC baselines, LVC countries were grouped according to their HCFC baselines (eight groups) with associated funding levels; and non-LVC countries with their HCFC baselines below 25,000 mt were all considered in one group, irrespective of their HCFC baselines, with funding for phase-out activities provided at a fixed cost effectiveness. Funding for Article 5 countries with HCFC baseline above 25,000 mt would be considered on a case-by-case basis. Similar to the previous modality, this modality would allow for the development of a holistic HCFC phase-out/HFC phase-down strategy, for implementing several activities addressing the two groups of controlled substances, avoiding duplication of efforts, and streamlining the administrative workload of the Fund institutions.

44. In the absence of the estimated/established HFC baselines and the sectoral distribution of HFCs, this is the preferred modality to meet the freeze and the 10 per cent reduction of the HFC baselines, as the grouping of countries and associated funding levels of the ongoing HPMPs will remain, facilitating the integration of the phase-down/phase-out activities in the servicing sector.

45. For LVC countries, the Secretariat considered that additional funding could be up to 15 per cent of the overall funding agreed under decision 74/50, on the understanding that the LVC countries commit to meet the freeze and the 10 per cent reduction of their HFC baselines. This funding, which is around one and a half times the funding approved to meet the 10 per cent reduction on HCFC consumption under decision 60/44, will allow LVC countries to address the challenges described in the documents related to the refrigeration servicing sector and the integrated/parallel implementation of the HCFC phase-out/HFC phase-down referred to under section Background above, and summarized in the present document.

46. In addition, within these funding levels, the request by the Parties under paragraph 16 of decision XXVIII/2 (i.e., introduction of alternatives to HCFCs with low- and/or zero-GWP refrigerants and maintaining energy efficiency in the servicing/end-user sector) could be addressed.

47. Table 5 shows the level of funding proposed for stage I of the HFC phase-down plans for LVC countries.

Table 5. Funding levels proposed for stage I of the HFC phase-down plans in LVC countries (US \$)

Baseline (mt)	HCFC funding		Maximum HFC funding Stage I: 10%	Number of countries*	Total funding stage I of HFCs
	Total (decision 74/50)	Stage I: 10% (decision 60/44)			
>0 <15	587,500	51,700	88,125	21	1,850,625
15 <40	750,000	66,000	112,500	17	1,912,000
40 <80	800,000	88,000	120,000	13	1,560,000
80 <120	900,000	99,000	135,000	10	1,350,000
120 <160	950,000	104,500	142,500	9	1,282,500
160 <200	1,000,000	110,000	150,000	3	450,000

²³ Between 2030 and 2040, some Article 5 countries may import HCFCs for the servicing tail in line with paragraph 8 (ter)(e) of Article 5 of the Montreal Protocol.

²⁴ Article 5 group 1 countries, which include all LVC countries will need to achieve the 10 per cent reduction of their HFC consumption baseline by 2029 and Article 5 group 2 countries by 2032.

Baseline (mt)	HCFC funding		Maximum HFC funding Stage I: 10%	Number of countries*	Total funding stage I of HFCs
	Total (decision 74/50)	Stage I: 10% (decision 60/44)			
200 <320	1,600,000	176,000	240,000	12	2,880,000
320 <360	1,800,000	198,000	270,000	2	540,000

*Seven non-LVC countries (Benin, Burkina Faso, Democratic Republic of the Congo, Ecuador, Gabon, Madagascar and Togo), requested funding similar to countries with an HCFC baseline between 320 and 360 mt.

48. For many non-LVC countries, it could be expected that compliance with the freeze and the 10 per cent reduction of the HFC baseline could be met solely or mostly through the conversion of manufacturing enterprises. Given that non-LVC countries will be extensively implementing activities in the refrigeration servicing sector to meet their last HCFC compliance targets, and notwithstanding the funding still not being disbursed or yet to be approved under future stages of their HPMPs (estimated at US \$559.3 million²⁵), it would be relevant to approve additional funding for addressing the phase-down of HFCs in the servicing sector as the impact of integrating both groups of substances into a holistic strategy would have a substantive impact on the activities being implemented, and will favour the adoption of low-GWP alternatives during the overlapping period, resulting in lower consumption of HFCs that would have been needed for servicing HFC-based RAC equipment. In addition, the funding would help non-LVC countries start addressing, where needed, those applications not addressed during HCFC phase-out and where growth of HFC consumption needs to be curtailed.

49. Accordingly, taking into consideration the robust set of ongoing activities in the refrigeration servicing sector and the level of funds already approved and available to be approved under the last stages of the HPMPs to non-LVC countries, the Secretariat proposes additional funding of up to US \$3.20/metric kg²⁶ for phasing down HFCs used in the refrigeration servicing sector by non-LVC countries for stage I of the HFC phase-down plans (i.e., the overlapping period between HCFC phase-out and HFC phase-down), on the understanding that the tonnage associated with the funding approved will be deducted from the starting point for aggregate consumption of HFCs, that this amount would be applicable only during the overlapping period and will be reviewed for future stages upon an assessment of needs for the refrigeration servicing sector to be undertaken in 2028 when HFC baselines will be already established, the sectoral distribution of HFCs will be already known and the scenario of alternatives to HFCs will have evolved.

50. During the HCFC phase-out, seven non-LVC countries, where the majority of the HCFC consumption was related to the refrigeration servicing sector, decided to request funding based on the funding levels for LVC countries with HCFC baseline between 320 and 360 mt, agreed under decision 74/50. At present, it is not known whether the HFCs consumption in those seven countries (or possibly in other non-LVC countries) would be related only to the refrigeration servicing sector or if a significant HFC consumption would be related to the manufacturing sector. For all these non-LVC countries which will achieve the 10 per cent reduction in HFC consumption only through activities in the refrigeration servicing sector, the Secretariat suggests funding for stage I of the HFC phase-down up to US \$270,000, i.e., the funding level for LVC countries with HCFC baseline between 320 and 360 mt.

Revision of the modalities and levels of funding

51. The modalities and levels of funding being proposed in the present document are only related to the period of 2021-2030, where Article 5 countries will be phasing out HCFCs and phasing down HFCs, simultaneously. These funding levels would not set a precedent for the total funding that would be required in the refrigeration servicing sector post 2030. After 2030, when countries will be phasing down only HFCs, the modalities and funding levels for activities in the refrigeration servicing sector would need to be

²⁵ Including up to US \$155.7 million for one country.

²⁶ This value, which corresponds to two thirds of the US \$4.80/kg funded for HCFC, reflects the savings to be achieved by integrating part of the initial HFC phase-down activities within ongoing activities in the HPMPs.

thoroughly assessed, noting that HFC baselines will be already established, the sectoral distribution of HFCs will be already known and the scenario of alternatives to HFCs will have evolved. The funding levels approved for the period 2021 to 2030 will be included in the overall funding level for the entire refrigeration servicing sector. The Executive Committee may wish to consider requesting the Secretariat to prepare this analysis at the last meeting of 2028.

RECOMMENDATION

52. The Executive Committee may wish to consider:

- (a) Noting the analysis of the level and modalities of funding for HFC phase-down in the refrigeration servicing sector, contained in document UNEP/OzL.Pro/ExCom/86/89;
- (b) Applying the following principles with regard to the eligible incremental costs for stage I of the HFC phase-down in the refrigeration servicing sector for the period 2021-2029 for Article 5 group 1 countries, and 2021-2032 for Article 5 group 2 countries, all of which are non-low-volume consuming (LVC) countries, on the understanding that the funding levels specified below would be revised for activities submitted for future HFC phase-down stages when activities under HCFC phase-out management plans (HPMPs) were completed:
 - (i) Article 5 countries with total HCFC consumption baseline of up to 360 metric tonnes (mt) must include in their HFC phase-down plans, as a minimum:
 - a. A commitment to meeting, without further requests for funding at least the 10 per cent reduction step in HFC consumption in line with the compliance schedule of the Montreal Protocol, and restricting imports of HFC-based equipment if necessary to achieve the compliance schedule and to support relevant phase-out activities;
 - b. Mandatory reporting, by the time funding tranches for the HFC phase-down plans 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; and
 - c. A description of the roles and responsibilities of major stakeholders, as well as the lead implementing agency and the cooperating agencies, where applicable;
 - (ii) Article 5 countries that have a total HCFC consumption as specified in sub-paragraph (b)(i) above will 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 will still need to demonstrate that the funding level is necessary to achieve at least the HFC 10 per cent reduction target:

Baseline (mt)	Funding (US \$)
>0 <15	88,125
15 <40	112,500
40 <80	120,000
80 <120	135,000
120 <160	142,500

Baseline (mt)	Funding (US \$)
160 <200	150,000
200 <320	240,000
320 <360	270,000

- (iii) Article 5 countries that have total HCFC consumption above 360 mt and below 25,000 mt that clearly demonstrate that they require assistance in the refrigeration servicing sector to comply at least with the 10 per cent reduction step in HFC consumption in line with the compliance schedule of the Montreal Protocol, will be provided funding at a level up to US \$3.20/metric kg, which will be deducted from their starting point for aggregate reductions in HFC consumption;
- (iv) Article 5 countries referred to in paragraph (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, only through activities in the refrigeration servicing sector, could receive funding up to the level determined for LVC countries with HCFC baseline between 320 and 360 mt as specified in sub-paragraph (b)(ii) above, on the understanding that they must include in their HFC phase-down plans, as a minimum the requirements described in sub-paragraph (b)(i) above; and
- (v) Funding for Article 5 countries that have a total HCFC consumption baseline above 25,000 mt will be considered on a case-by-case basis;
- (c) Including the principles referred to in sub-paragraph (b) in the draft cost guidelines for the phase-down of HFCs and revising these principles in 2028 for the funding of future stages of HFC phase-down plans; and
- (d) Whether to add the increase of funds agreed in the discussion of document UNEP/OzL.Pro/ExCom/86/92 on ways to operationalize paragraph 16 of decision XXVIII/2, and paragraph 2 of decision XXX/5, to the approval of stage I of the HFC phase-down instead of the HPMP, noting that the activities proposed for such increase of funds will benefit both HCFC phase-out and HFC phase-down through introduction of alternatives with low and zero GWP to HFC and maintain energy efficiency also in the servicing/end-user sector for LVC countries.

Annex I

**AN OVERVIEW OF POTENTIAL MODALITIES FOR INTEGRATING
HCFC PHASE-OUT AND HFC PHASE-DOWN ACTIVITIES IN THE REFRIGERATION SERVICING SECTOR**

Categories*	Target	Covered under HPMP	Possibility of integration
Policy development and implementation	Government institutions	Operational HCFC import/export licensing and quota systems established. Additional regulatory measures in the refrigeration servicing sector promulgated depending on the country.	In most countries, the basic regulations so far cover only to HCFCs (such as the licensing and quota system and bans on equipment containing HCFC). Additional work will be required to identify additional importers/distributors/users of HFCs, to start recording data in a systematic manner and to ensure the establishment of a regulatory framework that also addresses HFCs.
Training of customs officers and prevention of illegal trade of HFCs	Customs departments, customs officers, enforcement officers from other government departments, importers	Regular customs training on control of HCFCs provided. Custom departments strengthened with equipment (identifiers), these identifiers may also operate with most common HFCs. Contents of training on HCFC control included in the training curricula of customs departments. Capacity has been created (or is being created) for the customs departments to continue providing HCFC training in their regular training programme provided to officers. However, this training has so far not included HFCs control as they were not controlled under the Montreal Protocol.	The subject related to HFC phase-down needs to be integrated in the current training to customs departments and enforcement officers. Additional training will be required on HFC substances (pure and blends), ways to control their imports/exports (including harmonized systems codes) and ways to measure consumption/compliance in CO ₂ equivalent. Periodic training updates are also needed due to the high-rotation nature of the customs departments' personnel. This additional training can benefit from already established partnerships with relevant institutions, and Montreal Protocol knowledge and infrastructure already built during CFC and HCFC phase-out.
Training of technicians on safe handling, good practices and safety in respect of alternatives, including training equipment	Technicians, technical institutes, refrigeration associations	Multiple training in good servicing practices delivered over time. Through HPMPs good servicing practices have been included in training institutes' training curricula and training institutes have been strengthened with technical assistance and equipment. Many Article 5 countries already included training on low--global-warming-potential (GWP) alternatives in their training programmes, including safe practices for flammable and toxic refrigerants. However, equipment based on those technologies is not widely available yet.	Training infrastructure strengthened through HPMPs. Continuous training on handling low-GWP refrigerants needed as population of equipment based on these alternatives grows. This activity may need to be complemented by certification (discussed below) to ensure technicians comply with minimum requirements to service equipment based on low-GWP refrigerants. In addition, training needs associated to mobile air-conditioning (MAC) application may need to be assessed, if this application has not been already covered by general good refrigeration practices.
Certification programmes	Technicians, refrigeration associations, government institutions	Most countries are developing certification schemes under the HPMP. Technicians certification so far focused on good practices, which cover HCFC and HFC based refrigerants. Additional specialized modules for handling low-GWP refrigerants or provide service to specific, complex applications still to be developed.	Certification infrastructure already created or being created through the HPMPs. Certification of technicians so far focused on good servicing practices covering both HCFC and HFC. The HFC phase-down will cause larger import and manufacturing of equipment using low-GWP refrigerants that could be flammable, operate at higher pressure conditions or be toxic. This will require that technicians expecting to work with these technologies upgrade their certification to additional competencies in order to be able to do it in a safe manner. Certification schemes then will need to add new certification competencies including handling low-GWP refrigerants. Additional work required in the long term to certify a large portion of

Categories*	Target	Covered under HPMP	Possibility of integration
			technicians to handle low-GWP alternatives being introduced in the countries.
Refrigerant testing equipment for the refrigeration and air-conditioning sector	Training institutions	Training institutions strengthened with equipment during the HPMPs.	Refrigerant testing equipment under HPMPs is already for low-GWP refrigerants. Additional equipment may be needed in some countries to have a larger coverage of training institutes.
Servicing tools	Refrigeration technicians	Only a portion of technicians covered through the HPMPs. For the majority of countries, it is not possible to cover all technicians. Servicing tool kits in some countries already include additional tools to handle low-GWP refrigerants, but in other countries they have not included them.	Servicing tools can continue being provided to cover a larger population of technicians. In some countries the servicing kits would need to add tools needed for servicing equipment with low-GWP alternatives (flammability, high pressure); tool kits may also need to be provided to technicians from new sectors (e.g., MAC).
Recycling and recovery of HFCs	Refrigeration technicians, refrigerant importers and distributors, end-users	Recovery and recycling programmes implemented in practically all Article 5 countries with different level of success. During the last HPMP stages countries are improving their networks by promulgating the required regulations to support recovery and recycling (and reclaiming where applicable), and establishing business models with operators to make the operation economically sustainable. In some countries the equipment provided can handle the most common HFCs. During the ongoing stages of HPMPs, Article 5 countries will focus on ensuring the maximum possible impact of recovery, recycling and reclaiming of HCFC-22.	Opportunities to expand the refrigerant recovery, recycling and reclaiming programmes to HFCs given the additional uses of HFCs in RAC applications, including large commercial equipment and MAC, and a wider variety of pure and blended refrigerants that will require additional equipment and logistical considerations, including potential larger amounts of unwanted refrigerant. All activities on MAC will be additional as there is no use of HCFCs in this sector. Use of HFCs in commercial refrigeration applications may also be larger than that of HCFC-22.
Public awareness activities	Refrigeration technicians, importers and distributors, end-users	Annual public and targeted awareness campaigns being implemented under HPMPs to support HCFC phase-out efforts in the servicing sector.	Platforms used for public awareness related to HCFC are the same for HFCs. Additional efforts may be required to address applications where HCFC are not used, such as domestic refrigeration, MAC and a larger portion of commercial refrigeration applications.
Technical assistance and capacity building to address safety issues associated with alternatives with low and zero GWP for all sectors (paragraph 23 of decision XXVIII/2)	Refrigeration technicians, end-users, importers and distributors, Government institutions	Codes of practice being updated through HPMPs. National ozone units collaborating on the processes to adopt industry standards that would allow a larger use of equipment based on flammable low-GWP refrigerants. Additional considerations on training covered in the training section above.	The need for a larger influx of equipment based on low-GWP refrigerants, some of them flammable, would require a more systematic collaboration with national safety authorities. This will require additional efforts. Given the need to give priority to this activity in line with decision XXVIII/2, these efforts should start at the early stages of HFC phase-down to allow proper transition to low-GWP alternatives.

* As per paragraph 15(c) of decision XVIII/2 of the Parties.