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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
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**DEVELOPMENT OF THE COST GUIDELINES FOR THE PHASE-DOWN OF HFCS IN
ARTICLE 5 COUNTRIES: DRAFT GUIDELINES ON ENABLING ACTIVITIES
(DECISION 78/4(a))**

Background

1. The 78th meeting of the Executive Committee was held from 4 to 7 April 2017 to address only matters related to the Kigali Amendment to the Montreal Protocol (the Kigali Amendment).
2. Under agenda items 6(a)(ii) and (iii)¹, the Executive Committee began discussions on matters concerning the cost guidelines for the phase-down of HFCs, including the following enabling activities listed in paragraph 20 of decision XXVIII/2:
 - (a) Capacity-building and training for the handling of HFC alternatives in the servicing, manufacturing and production sectors;
 - (b) Institutional strengthening;
 - (c) Article 4B licensing;
 - (d) Reporting;
 - (e) Demonstration projects; and
 - (f) Development of national strategies.

¹ The Executive Committee decided to deal with the agenda sub-items on enabling activities (6(a)(ii)) and institutional strengthening (6(a)(iii)) together, owing to the interlinkages between the two, and because paragraph 20 of decision XXVIII/2 had included institutional strengthening as an enabling activity.

3. The Executive Committee discussed the matter based on document UNEP/OzL.Pro/ExCom/78/6, which provided a review of decisions, guidelines and practices relevant to enabling activities that have been adopted by the Parties and the Executive Committee. Matters related to institutional strengthening were discussed based on document UNEP/OzL.Pro/ExCom/78/7².

Discussion at the 78th meeting

4. During the discussions,³ some Executive Committee members supported the need to define the appropriate enabling activities eligible for funding, when they would be needed, and how they would be delivered. The enabling activities needed immediately to assist Article 5 countries in starting the HFC phase-down process included: ratifying the Kigali Amendment; initiating the supporting institutional arrangements; establishing a licensing system for HFCs; conducting consultations with stakeholders and government agencies; and developing data-collection methodologies. It was important to avoid duplication of activities and to ensure clarity regarding which mechanisms were to be used and in what circumstances.

5. Enabling activities were also defined as those activities that would empower or enable national ozone units to fulfil their initial obligations with regard to the HFC phase-down in line with the Kigali Amendment. This distinction was made to differentiate between those activities that would assist the national ozone unit through institutional strengthening support after ratification to help compliance with the new obligations in the long term.

6. There was general recognition that a flexible approach was needed to reflect the variety of country circumstances, as well as the legal and political structure of individual countries. Ensuring the appropriate scheduling and sequencing of activities was complicated, given the range of requirements of Article 5 countries, although ratification and licensing system activities were of high priority. There was also recognition that there should be no differentiation between Article 5 parties that had opted for inclusion in either group 1 or group 2 phase-down schedules for HFCs.

7. Following the discussions, the Executive Committee *inter alia* requested the Secretariat to prepare a document providing draft guidelines on enabling activities taking into account the discussions on the matter at the 78th meeting (decision 78/4(a)).

8. The present document has been prepared in response to decision 78/4(a).

Scope of the document

9. The present document builds upon the information provided at the 78th meeting⁴ that described the enabling activities that have been approved since the establishment of the Multilateral Fund and the roles and responsibilities of stakeholders at the national level, in particular National Ozone Units (NOUs). The document also proposes a sequence for implementing such activities and suggests, in the context of the Kigali Amendment, the timing of when these are required. The document also presents a recommendation.

² The Executive Committee decided, *inter alia*, to consider increasing funding for institutional strengthening at a future meeting in accordance with paragraph 20 of decision XXVIII/2 (decision 78/4(b))

³ This section summarizes the discussions supported by several Executive Committee members. The full text of the discussions is presented in paragraphs 100 to 108 of document UNEP/OzL.Pro/ExCom/78/11.

⁴ UNEP/OzL.Pro/ExCom/78/6.

10. Decisions and current practice by the Parties and the Executive Committee related to the enabling activities are contained in Annex I to the present document.⁵

Introduction

11. Since the inception of the Multilateral Fund, the Executive Committee has developed policies and guidelines, and has approved funding⁶ for the implementation of the enabling activities listed under paragraph 20 of decision XXVIII/2, to support the phase-out of controlled substances under the Montreal Protocol.

12. Experience under the Multilateral Fund has shown that assistance from bilateral and implementing agencies has contributed to the implementation of enabling activities in Article 5 countries, in particular the assistance provided through the Compliance Assistance Programme.⁷ For example, issues related to compliance with the Montreal Protocol, or data reporting of controlled substances, are regularly included in the discussions during the regional network meetings of ozone officers organized by the Compliance Assistance Programme on an annual basis.

13. The timing for implementing enabling activities depends on various factors, including: the circumstances, as well as the legal and political structure of each country; the compliance schedule for phasing out controlled substances; and the national strategies and action plans elaborated to meet the compliance targets of the Protocol.

14. Taking into consideration discussions at the 78th meeting (where ratification of the Kigali Amendment and reviewing the licensing system to incorporate HFCs were identified as high-priority activities), the main objectives of enabling activities for the purpose of providing support to Article 5 countries in planning and identifying priority activities that would enable them to formulate cost-effective approaches to meet compliance with new obligations under the Montreal Protocol, in particular the Kigali Amendment are proposed as follows:

- (a) In the near term, to facilitate and support Article 5 countries to ratify the Kigali Amendment as soon as possible;
- (b) In the medium term, to support activities that countries would need to meet the first obligations⁸ of the Kigali Amendment after ratification; and
- (c) In the long term, to support compliance with the Montreal Protocol and the phase-down of HFC.

15. The following sequence of activities for the implementation of the enabling activities is suggested:

- (a) Activities to facilitate and support the early ratification of the Kigali Amendment which may be required from the 79th meeting until the last meeting in 2019;

⁵ Extracted from the document on Information relevant to the development of the cost guidelines for the phase-down of HFCs in Article 5 countries: enabling activities (UNEP/OzL.Pro/ExCom/78/6).

⁶ Enabling activities have been funded as stand-alone projects or as components of sector/national phase-out plans.

⁷ Paragraph 35 of document UNEP/OzL.Pro/ExCom/77/70/Rev.1.

⁸ Initial obligations of all Parties after ratification would include reporting HFC consumption data under Article 7; establishment of a licensing system for Annex F substances by 1 January 2019 or within three months of the entry into force of the Amendment, for Article 5 countries who are not in a position to implement the system by date above may delay this until 1 Jan 2021 (Article 4B); freeze in consumption of HFC in 2024 for Group I countries, and 2028 for Group II.

- (b) Country-specific activities aimed at initiating the supporting institutional arrangements, the review of licensing systems, and data reporting on HFC consumption and production may be implemented until two years after entry into force of the Kigali Amendment;
- (c) Formulation of national plans for the phase-down of HFCs; including capacity building for handling HFC alternatives within two years from the entry into force of the Kigali Amendment and/or after a country signifies its intent to ratify the amendment; and
- (d) Investment and demonstration projects for HFC phase-down that may be considered until the first meeting of 2019.

16. The sequence of activities, timing, and related actions are further described below.

Activities to facilitate and support the early ratification of the Kigali Amendment

17. Although funding has not been directly provided simply for the ratification of the Vienna Convention, the Montreal Protocol and its four amendments, the enabling activities that have been funded through the Multilateral Fund have contributed indirectly to the ratification of these instruments. These activities have been either directly implemented or coordinated by the NOUs⁹ that have been funded through institutional strengthening projects.

18. In regard to the ratification of the Kigali Amendment, activities that strengthen capacity of all Article 5 countries to support the early ratification of the Kigali Amendment and fulfil their initial obligations with regard to HFC phase-down may include:

- (a) Reinforcing the role of the NOU to take a leading role in engaging stakeholders, including Government institutions and customs authorities, importers/exporters and traders of controlled substances, industry and industry/trade associations, and other organizations, on the implications of the Kigali Amendment, and its ratification and implementation;
- (b) Develop mechanisms for integrated and comprehensive multi stakeholder consultations with all stakeholders who will be affected by the Kigali Amendment including internal consultations with other government authorities, and acquire knowledge and develop a practical understanding of climate change and energy efficiency concepts in the context of phasing down HFCs;
- (c) Identify and assign responsibilities of relevant government entities responsible for facilitating ratification, and for eventual implementation of the Kigali Amendment; and
- (d) Initiate the drafting of an appropriate bill for early ratification of the Kigali Amendment, and drafting of relevant regulations as appropriate.

19. As of 31 May 2017, four Parties had already ratified the Kigali Amendment, namely Mali, Marshall Islands, the Federated States of Micronesia and Rwanda, and did so without additional financial support from the Multilateral Fund.

Country-specific activities aimed at initiating the supporting institutional arrangements, and the review of licensing systems, including data reporting on HFC consumption and production

20. The NOUs would also need to lead in strengthening the existing infrastructure capacity and regulatory framework to facilitate implementation of the Kigali Amendment and ensure compliance with

⁹ The roles and responsibilities of NOUs are described in document UNEP/OzL.Pro/ExCom/74/51.

the Montreal Protocol. This would include establishing a licensing system for HFCs under Article 4B, and developing data-collection methodologies. In particular:

- (a) Assist authorities to put in place and enforce legislation and regulations for reporting and monitoring HFCs, including a review, update and/or further development of the import/export licensing system;¹⁰
- (b) Update existing and/or develop new methodologies for collecting, analyzing, verifying, and reporting consumption and production of HFCs (and emissions of HFC-23 where applicable) under Article 7 of the Montreal Protocol and under country programme data reporting, based on new formats that will be developed,¹¹ noting that that several of these HFCs are used in blends rather than pure substances;
- (c) Strengthen cooperation and collaboration with customs departments to ensure that customs and enforcement officers can assume the additional monitoring and reporting responsibilities acquired under the Kigali Amendment; and
- (d) Assist the relevant institutions/authorities in developing and/or adopting standards, codes of practice, and/or technical norms for the use of alternatives to HFCs, particularly for those that are flammable and/or toxic.

Formulation of national plans for the phase-down of HFCs including capacity building for handling HFC alternatives

21. In the context of HFC phase-down, and noting that early preparation of overall national strategies have assisted Article 5 countries to develop a comprehensive plan to meet their compliance obligations,¹² assistance may be provided to initiate data collection, develop institutional arrangements, and consultations leading to the development of national HFC phase-down strategies. These activities may be initiated within two years from the entry into force of the Kigali Amendment and after an Article 5 country has ratified, or signified its intent to ratify the amendment. This may include the following:

- (a) Policies and regulations to facilitate the phase-down of HFCs and the introduction of low-GWP alternative technologies through, *inter alia*, potential controls on the import of HFC-based equipment when nationally appropriate; development and enforcement of safety standards for handling flammable and toxic alternatives; and development of minimum standards for the energy efficiency of refrigeration and air-conditioning equipment;
- (b) Training for customs and enforcement officers addressing the obligations under the Kigali Amendment, including the revised import/export licensing systems;
- (c) Training programmes for refrigeration service technicians addressing issues related to flammability and/or toxicity of refrigerants being phased in;

¹⁰ HFCs are currently not included in the Harmonized Commodity Description and Coding System of the World Customs Organization. While the new HS codes would in that case enter into force on 1 January 2022, governments can start applying the new codes in the interim.

¹¹ Document UNEP/OzL.Pro/ExCom/79/5 on Country programme data and prospects for compliance, recommends that the Executive Committee *inter alia* request the Secretariat to revise the CP data report to include the HFCs controlled under the Kigali Amendment, and submit it to the 81st meeting.

¹² In the context of HFC phase-down, baselines for compliance for Article 5 group 1 countries will be established by 2023 (based on the 2020-2022 average consumption or production of HFCs) and the first controlled target will enter into force by 1 January 2024.

- (d) Introduction, adaption and/or optimization of low-GWP alternative technologies as replacement of HFC-based technologies in the manufacturing sector, including technical assistance and training for engineers and technicians at the enterprise level in the operation of the technology phased in, taking into account safety issues associated with the technology; and
- (e) Development of policies and regulations to ban the venting of HFC-23, where applicable, and consideration of technical assistance for process optimization and leakage control.

22. In the case of HCFC phase-out, the time allocated for the preparation of HCFC phase-out management plans (HPMP) followed the average implementation period of an individual Multilateral Fund project at the historic level of 35 months. In order for national strategies to phase-down HFC to be ready for implementation, the Executive Committee may consider approving project preparation funds for such strategies as soon as an Article 5 country has deposited its instrument of ratification for the Kigali Amendment.

23. The Executive Committee would need to provide guidance to the Secretariat for developing guidelines for preparation on national strategies for the phase-down of HFCs.

Investment and demonstration projects for HFC phase-down

24. In the context of funding windows, additional demonstration projects on HFC alternative technologies could be established through-out the HFC phase-down period as required, in line with previous experiences in establishing funding windows based on detailed criteria and guidance provided by the Executive Committee to the Secretariat and bilateral and implementing agencies.

25. The Executive Committee may also wish to note that prior to the approval of cost guidelines for the phase-out of the HCFCs, it allowed the submission of stand-alone projects where the amounts of HCFCs associated with the projects were deducted from the starting point for aggregate consumption. These projects were then subsumed into the approved HCFC phase-out management plan. In all cases, the early approval of stand-alone investment projects reduced the baselines of Article 5 countries.

Delivery mechanisms and funding availability

26. The implementation of enabling activities, as with any other activity funded through the Multilateral Fund, occurs with the assistance of bilateral and/or implementing agencies. The institutions that have been established at the national level for implementation of the Montreal Protocol would continue to be used for the phase-down of HFCs.

27. The Executive Committee may wish to note that no funding is available in 2017 for activities related to HFCs. It may also wish to consider the total funding that would be available for enabling activities during the 2018 to 2020 triennium.

SECRETARIAT'S RECOMMENDATION

28. The Executive Committee may wish:

- (a) To note:
 - (i) The Draft guidelines for enabling activities contained in document UNEP/OzL.Pro/ExCom/79/47;

- (ii) With appreciation the ratification of the Kigali Amendment to the Montreal Protocol by Mali, Marshall Islands, the Federated States of Micronesia and Rwanda;
- (b) To invite National Ozone Units, within the limits of their mandate and available capacity to consider initiating the activities listed in paragraphs 18 and 20 of document UNEP/OzL.Pro/ExCom/79/47; and
- (c) To consider an appropriate schedule for supporting enabling activities for phasing down HFCs based on the information contained in document UNEP/OzL.Pro/ExCom/79/47.

Annex I

RELEVANT DECISIONS AND CURRENT PRACTICE BY THE PARTIES AND THE EXECUTIVE COMMITTEE RELATED TO THE ENABLING ACTIVITIES LISTED UNDER PARAGRAPH 20 OF DECISION XXVIII/2

1. This annex presents relevant decisions and current practice by the Parties and the Executive Committee related to the enabling activities extracted from 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

2. The enabling activities listed in paragraph 20 of decision XXVIII/2 are also related to other elements of the decision,¹⁴ as indicated below:

- (a) “Capacity-building and training for the handling of HFC alternatives in the servicing, manufacturing and production sectors” is related to: “costs of the safe introduction of flammable and toxic alternatives” for the consumption manufacturing sector (paragraph 15(a)(vi)); “certification programmes and training of technicians on safe handling, good practice and safety in respect of alternatives, including training equipment” for the servicing sector (paragraph 15(c)(iii)); and “capacity-building to address safety: to request the Executive Committee to prioritize technical assistance and capacity-building to address safety issues associated with low-global warming potential (GWP) or zero-GWP alternatives” (paragraph 23);
- (b) “Institutional strengthening” is related to “institutional strengthening: to direct the Executive Committee to increase institutional strengthening support in light of the new commitments related to HFCs under the Amendment” (paragraph 21);
- (c) “Article 4B licensing” is related to: “policy development and implementation” for the servicing sector (paragraph 15(c)(ii)), as the development, strengthening and operation of the licensing (and quota) system is included therein; “training of customs officers” for the servicing sector (paragraph 15(c)(iv)), as one of the main objectives of the training programmes is to train customs officers and authorities in the operation of the import/export of controlled substances under the Montreal Protocol; and “prevention of illegal trade of HFCs” (paragraph 15(c)(v)); and
- (d) “Reporting” is related to “institutional strengthening” (paragraph 20(b) under “enabling activities” and paragraph 21), as data reporting under Article 7 of the Montreal Protocol to the Ozone Secretariat, and under the progress report on the implementation of the country programme (CP data) to the Fund Secretariat, is one of the key responsibilities of the National Ozone Unit (NOU) (supported through “institutional strengthening”).

Capacity-building and training for handling HFC alternatives in the servicing, manufacturing and production sectors

3. Since the 4th meeting (June 1991), the Executive Committee has approved funding for capacity building and training for handling alternatives to ODS, mainly CFCs and HCFCs, in the manufacturing and servicing sectors. Funding for similar activities has also been approved for the introduction of alternative technologies to the use of methyl bromide as a soil fumigant and as a fumigant for commodities and structures.

¹³ UNEP/OzL.Pro/ExCom/78/6.

¹⁴ Paragraph 16 of document UNEP/OzL.Pro/ExCom/78/6.

4. The majority of the training programmes were implemented at the country level, mainly as stand-alone activities up to the 23rd meeting (November 1997), where the refrigerant management plans (RMPs) for five low-volume-consuming (LVC) countries¹⁵ were approved. Since then, training programmes have been incorporated into sector plans (e.g., terminal phase-out management plans (TPMPs) for LVC countries), NPPs, and HPMPs. These training programmes have addressed the training needs of two groups of stakeholders:

- (a) Customs officers and law enforcement officers on the legislation and regulations issued at the country level to phase out controlled substances under the Montreal Protocol, including the implementation of mandatory import/export licensing systems (under Article 4B of the Montreal Protocol) and associated quota systems; and
- (b) Refrigeration service technicians on good servicing practices, including proper handling of alternative refrigerants, recovery and recycling of refrigerants, and, to a lesser extent, retrofitting of refrigeration equipment to non-ODS-based refrigerants.

5. Other characteristics of training provided under the Multilateral Fund include:

- (a) Training as a funded component of investment projects for the conversion to alternative technologies used in the manufacturing of equipment (e.g., RAC equipment), products (e.g., foams or aerosols), and/or processes (e.g., cleaning equipment with non-ODS based solvents) where engineers and technicians at the enterprise level have been trained in the operation of the alternative technology phased in and the associated equipment; and
- (b) Regional training programmes, addressing issues related to, *inter alia*, policy development, training for extension workers, and sector-specific training in the foam, halon, refrigeration and solvent sectors; and global training programmes for a number of topics that have been approved since the 6th meeting (February 1992).

6. Capacity-building (excluding direct funding support to NOUs, which is considered under “institutional strengthening”) has also been provided at the regional and global levels, mainly through the Compliance Assistance Programme (CAP) of United Nations Environment Programme (UN Environment). Capacity-building for ozone officers and key stakeholders on a broad range of topics has been strengthened since the approval of the first regional network of ozone officers at the 9th meeting (March 1993). Regional network meetings are conducted on an annual basis. The Executive Committee may wish to note that at their Twenty-eighth meeting, the Parties requested the Executive Committee of the Multilateral Fund to consider maintaining or, if required, increasing the Fund’s technical and capacity-building assistance, in particular through the UN Environment Compliance Assistance Programme, with a view to improving cooperation between national authorities in charge of implementation of the Montreal Protocol and national and regional standards committees (paragraph 6 of decision XXVIII/4).

7. Several of the alternative technologies that were phased in as replacements of ODS in all the manufacturing and refrigeration servicing sectors were flammable and/or toxic. In all those cases, safety related equipment was provided as an eligible incremental cost, and the capacity-building and training programmes took fully into account safety issues associated with the alternative technology (in line with paragraph 23 of decision XXVIII/2¹⁶). Previous Executive Committee decisions and practice related to the safe introduction of flammable and toxic alternatives is further discussed in the document on

¹⁵ Bahamas, Georgia, Guyana, Saint Lucia and Trinidad and Tobago.

¹⁶ To prioritize technical assistance and capacity building to address safety issues associated with low-GWP or zero-GWP alternatives.

Information relevant to the development of the cost guidelines for the phase-down of HFCs in Article 5 countries: draft criteria for funding.¹⁷

Article 4B of the Montreal Protocol (licensing)

8. Article 4B of the Montreal Protocol requires that each Party establish and implement a system for licensing the import and export of new, used, recycled and reclaimed controlled substances in Annexes A, B, C and E of the Montreal Protocol. Since the adoption of the Protocol, the Parties and the Executive Committee have adopted a series of decisions to fund activities to enable Article 5 countries' compliance with their obligations related to Article 4B.

9. With regard to Article 4B of the Montreal Protocol, the Kigali Amendment inserted the following text after paragraph 2: "Each Party shall, by 1 January 2019 or within three months of the date of entry into force of this paragraph for it, whichever is later, establish and implement a system for licensing the import and export of new, used, recycled and reclaimed controlled substances in Annex F. Any Party operating under paragraph 1 of Article 5 that decides it is not in a position to establish and implement such a system by 1 January 2019 may delay taking those actions until 1 January 2021."

10. One of the outstanding issues related to the development of a licensing system for HCFCs is that their replacements include HFCs where global trade is expected to grow, yet these were not included in the existing Harmonized Commodity Description and Coding System (Harmonized System) developed and maintained by the World Customs Organization, which made it difficult for customs authorities to recognize the illegal nature of the relevant import or export of HCFCs if declared as HFCs. The Twenty-sixth Meeting of the Parties (November 2014) therefore requested the Ozone Secretariat to liaise with the World Customs Organization to examine the possibility of designating individual Harmonized System codes for the most commonly traded fluorinated substitutes for HCFCs and CFCs classified under Harmonized System code 2903.39, and encouraged parties to take the necessary steps to recommend such international customs classifications and consider establishing domestic customs codes for the relevant substitutes (decision XXVI/8).

Reporting

11. Parties to the Montreal Protocol are required to report under Article 7, data on controlled substances on an annual basis to the Ozone Secretariat. In addition, Article 5 countries are required to report data on controlled substances by sector and subsector under the CP data to the Fund Secretariat. This section of the document presents key decisions on data reporting by Article 5 countries relevant to the HFC phase-down.

Article 7 data

12. Article 7 of the Montreal Protocol requires that each Party shall provide to the Ozone Secretariat, within three months of becoming a Party, statistical data (or the best possible estimates of such data where actual data are not available) on its production, imports and exports of each of the controlled substances in Annexes A, B, C and E including amounts used for feedstock, the amounts destroyed using technologies approved by the Parties, and, imports from and exports to Parties and non-Parties respectively; and for substance listed in Annex E the amounts used for quarantine and pre-shipment applications. Data reported under Article 7 was used to calculate baseline consumptions for the controlled substances, as well as determine a Party's compliance with the provisions of the Protocol.¹⁸

¹⁷ UNEP/OzL.Pro/ExCom/78/5.

¹⁸ Article 8 of the Protocol on Non-compliance, requires that The Parties, at their first meeting, shall consider and approve procedures and institutional mechanisms for determining non-compliance with the provisions of this Protocol and for treatment of Parties found to be in noncompliance.

13. The adoption of the Kigali Amendment at the Twenty-eighth Meeting of the Parties added Annex F to the Montreal Protocol, which added 18 HFCs as controlled substances. As the consumption of HFCs in blends is likely to be significant in many countries, it is important that countries initiate actions to develop methodologies to collect data on HFC consumption (including HFC-blends), noting that new reporting formats may be agreed upon by the Meeting of the Parties. Those Article 5 countries that had completed surveys of ODS alternatives, which included HFCs, may adapt these data collection approaches used during the surveys in order to facilitate data reporting.

Country programme (CP) data

14. CP data reporting was initiated at the 5th meeting (November 1991). Since then, CP data helped assess the prospects of Article 5 countries in their efforts to comply with one or more of the control measures in the Montreal Protocol, has been used to identify ODS yet to be addressed by actions supported by the Multilateral Fund, and has been a pillar for the implementation of projects and activities in all Article 5 countries assisted by the Multilateral Fund.

15. Article 5 countries are required to submit CP data on an annual basis, to include information on all ODS including HCFCs. CP data provides best estimates of use by sector, as well as information on imports of these substances. The CP data reporting format is approved by the Executive Committee and revised accordingly when new substances are included or where consumption data for some substances are not required anymore (i.e. CFCs/CTC), with the last revision made at the 63rd meeting (April 2011) (decision 64/4(b)(ii)).

16. At its 76th meeting (July 2016), the Executive Committee also decided to consider revising the CP data report format at a future meeting, on the basis of the outcome of the surveys of ODS alternatives and the discussions on the HFC amendment (decision 76/7(c) and (d)).

Demonstration projects

17. The Multilateral Fund has funded demonstration projects in the past, often to facilitate the adoption and/or optimization of cost-effective and available technologies under the local conditions prevailing in Article 5 countries. The first demonstration project was approved at the 5th meeting (November 1991) for CFC recovery and recycling. Since then, the Executive Committee has approved 136 demonstration projects at a total value of US \$70.9 million (including agency support costs).

18. The Executive Committee has also approved specific funding windows for demonstration projects for the phase-out of methyl bromide, chiller projects, ODS waste management, and low-GWP alternative technologies to HCFCs. Given the relevance to the phase-down of HFCs of the projects to demonstrate low-GWP alternative technologies to HCFCs, a description of those projects is presented below.

Projects to demonstrate low-GWP alternative technologies¹⁹

19. At its 55th meeting (July 2008), the Executive Committee, in the context of initiating the phase out of HCFCs and within the framework of cost considerations of the HCFC phase-out, invited bilateral and implementing agencies to prepare and submit project proposals for HCFC uses in the foam sector including systems houses and/or chemical suppliers for the development, optimization and validation of chemical systems for use with non-HCFC blowing agents, and a limited number of demonstration

¹⁹ The information in this section of the document has been extracted from the Overview of approved HCFC demonstration projects and options for additional projects to demonstrate climate-friendly and energy-efficient alternative technologies to HCFCs (decision 71/51(a)) (UNEP/OzL.Pro/ExCom/72/40), and section c (Projects to demonstrate low-GWP technologies pursuant to decision 72/40) of the Overview of issues identified during project review (UNEP/OzL.Pro/ExCom/76/12).

projects in the RAC sub-sectors to low- GWP technologies to identify all the steps required and to assess their associated costs.

20. The demonstration projects approved in line with decision 55/43 have been completed and have provided an independent assessment of alternative technologies through an analysis of their performance and costs under local conditions prevailing in Article 5 countries. The results have been documented in the final reports submitted to the Executive Committee, and also disseminated through workshops attended by government and industry representatives from the regions where the demonstrations have taken place. These proposals have shown how alternative technologies perform and facilitated the collection of accurate technical data on the application of alternative technologies, and have increased know-how in terms of alternative technologies, as their concepts or approaches were concretely described and justified in the initial proposals

21. The projects identified the following barriers to broader penetration of the alternative technologies:

- (a) For the foam sector: the lack of clarity on the side of users about how to gain access to the technology and the associated costs (i.e., possible licenses, royalties or technology transfer fees); lack of know-how in the application of the technologies by many users; lack of availability of the alternative blowing agent and compatible components on the local market; and the high operating costs of some alternative technologies. In several Article 5 countries (mostly LVCs) the lack of local systems houses limited the introduction of a viable technology that complies with availability, cost, performance, safety and environmental requirements, particularly with small and medium-sized enterprises (SMEs) and with spray foam applications; and
- (b) For the RAC sector: the use of flammable refrigerants requires assessing the procedures used for storage, transportation, servicing and disposal of RAC systems. The lack of standards on good practices for the use of flammable substances blocks market access for systems based on those technologies

22. Based on the successful completion of these projects, several of the demonstrated technologies have been incorporated into HPMPs, with the following examples:

- (a) The validation project for the use of methyl formate in several PU foam applications has led to the introduction of this technology in 12 Article 5 countries, involving more than 15 local systems houses and hundreds of downstream users with an aggregated consumption of approximately 5,000 metric tonnes (mt) of HCFC-141b;
- (b) The project for room air-conditioners using HC-290²⁰ (propane) has led to the use of HC-290 as an alternative for HCFC-22 in the room air conditioner sector plan of China under both stage I and stage II of the HPMP. Once completed, those projects will result in the conversion of 18 lines with consumption of approximately 7,300 mt for stage I and a further 20 lines with consumption of 8,050 mt; in addition, three compressor manufacturers have been converted to HC-290 technology under stage I and a further three will be converted under stage II; and
- (c) The project for the use of HFC-32²¹ has led to the introduction of this technology as an

²⁰ Demonstration sub-project for conversion from HCFC-22 to propane at Midea Room Air Conditioner Manufacturer Company, approved at the 61st meeting.

²¹ Demonstration project for conversion from HCFC-22 technology to HFC-32 technology in the manufacture of commercial air-source chillers/heat pumps at Tsinghua Tong Fang Artificial Environment Co. Ltd., approved at the 60th meeting.

alternative for HCFC-22 in the industrial and commercial refrigeration and air-conditioning (ICR) sector plan of China, where conversions at 10 enterprises with an aggregated consumption of approximately 4,143 mt have been implemented in stage I of the HPMP. In addition, two compressor manufacturers have converted to HFC-32 technology. In stage II of the HPMP, HFC-32 has been selected as an alternative to HCFC 22 in unitary air-conditioning sub-sector with a planned phase-out of 3,150 mt, and one compressor line is expected to convert to HFC-32 technology. HFC-32 has also been selected in Indonesia, where three refrigeration and five air-conditioning equipment manufacturers using more than 550 mt of HCFC-22 are currently converting to HFC-32. Similarly, this technology has been introduced in Algeria (8.3 mt of HCFC-22), and in Thailand (1,036 mt of HCFC-22).

23. Several projects have also been approved for systems houses to customize formulations using new and emerging low-GWP alternative technologies (including HFOs, methyl formate and methylal) to supply a large number of downstream users, many of them SMEs. For example, stage I of the HPMPs for Brazil, China, Egypt, India, the Islamic Republic of Iran, Malaysia, Mexico, Nigeria, Saudi Arabia, South Africa and Thailand have included projects to assist locally-owned systems houses in introducing low-GWP alternative formulations. Some of these projects include direct assistance to local downstream-users, as well as, in other countries (e.g., Costa Rica, El Salvador, Jamaica and Trinidad and Tobago), to facilitate the transition to alternative technologies. In the case of China, systems houses will supply HC pre-blended polyols to enterprises that cannot establish HC storage and pre-blending stations in situ due to financial, safety and technical reasons. In Malaysia, four systems houses have already developed and tested one formulation based on methyl formate, while two of them have also developed one formulation based on HFO-1233zd. In Mexico, 10 local systems houses have already fully developed formulations based on methyl formate (and some on methylal and pre-blended HCs), which are being tested in downstream users and being made commercially available. In South Africa, the first six downstream users supported by their systems houses have converted to methyl formate.

24. In addition, the following demonstration projects have also been undertaken as part of stage I and stage II of HPMPs, or through other projects:

- (a) Promoting low-GWP refrigerants for air-conditioning sectors in high-ambient temperature countries in West Asia, where air-conditioning constitutes more than 50 per cent of the energy demand. This project is designed to address the challenges related to the availability of long-term low-GWP alternative refrigerants; technical issues including final products, components, and accessories; assess relevant energy efficiency standards and codes; and identify opportunities for facilitating the transfer of low-GWP technologies;
- (b) District cooling in Colombia and Maldives²² associated with ODS phase out plans in these countries. The district cooling project in Colombia emerged from the demonstration project for integrated management of the centrifugal chiller sub-sector, focusing on energy-efficient CFC-free technologies for replacement of CFC-based chillers approved at the 47th meeting (November 2005); the project is expected to generate at least 31 per cent of energy savings compared to standard centrifugal chillers and reduce about 35 per cent of CO₂-eq emissions per year. The district cooling project in the Maldives, was a feasibility study that examined approaches to replace HCFC- and HFC-based air-conditioners by not-in-kind technologies (e.g., vapor absorption, deep seawater cooling, tidal and other systems), using different energy sources (e.g., waste heat, steam, direct heat, electricity) and its associated costs, which are potentially more energy efficient and have a lower carbon footprint than HFC technologies;

²² The feasibility study is funded by the Climate and Clean Air Coalition.

- (c) Demonstration of HCFC alternative technologies in the refrigeration servicing sector and end-users. Several HPMPs proposed pilot projects to: demonstrate and assess the performance of emerging technologies in RAC systems (e.g., Chile, Georgia, Kenya, Mexico (stage II), and Turkey); facilitate production of alternatives (e.g., Nigeria); or facilitate the development of standards for the use of flammable alternative technologies (Ghana, Georgia, Indonesia, Kenya, Kuwait, Mexico (stage II) and Oman). For example:
- (i) Stage I of the HPMP for Chile included a programme to demonstrate low-GWP and high energy-efficiency technologies in the supermarket sector (which consumes 45 per cent of the total HCFC-22 used in the servicing sector), and tackle technical and cost issues related to the lack of expertise and unavailability of components needed to implement these technologies;
 - (ii) Stage II of the HPMP for Mexico included a demonstration project to distribute 1,000 new HC air-conditioning units on a pilot basis to specific users willing to assist the Government in collecting the necessary data on energy use and functioning of the system during a 12 month-period. Data on emission reductions and energy performance will be used for different purposes;
 - (iii) Stage I of the HPMP for Nigeria included a demonstration project to establish a facility for locally produced refrigerant-grade HCs, demonstrate the production and safe use of HCs in refrigeration servicing applications, and training to ensure that the use of HC would occur in a safe way; and
 - (iv) Stage I of the HPMP for Turkey included activities to demonstrate the conversion of refrigeration systems in supermarkets to low-GWP technologies (i.e., CO₂, ammonia, HC) with the objective of gaining commitments from larger end-users to stop using HCFC-22.

25. At the 75th and 76th meetings, the Executive Committee, in response to decision XXV/5²³, approved an additional 18 project proposals to demonstrate low-GWP technologies using specific criteria²⁴ for project selection.

Development of national strategies

²³ To request the Executive Committee to consider the information in the TEAP report with a view to considering whether additional demonstration projects to validate whether low-GWP alternatives and technologies, together with additional activities to maximize the climate benefits in the HCFC production sector, would be useful in assisting Article 5 parties operating in further minimizing the environmental impact of the HCFC phase-out.

²⁴ The following criteria was applied in project selection: the project offered a significant increase in current know-how in terms of a low-GWP alternative technology, concept or approach or its application and practice in an Article 5 country, representing a significant technological step forward; the technology, concept or approach had to be concretely described, linked to other activities in a country and have the potential to be replicated in the medium future in a significant amount of activities in the same sub-sector; for conversion projects, an eligible company willing to undertake conversion of the manufacturing process to the new technology had been identified and had indicated whether it was in a position to cease using HCFCs after the conversion; the project proposals should prioritize the RAC sector, not excluding other sectors; they should aim for a relatively short implementation period in order to maximize opportunities for the results to be utilized for activities funded by the Fund as part of their stage II of HPMPs; the project proposals should promote energy efficiency improvements, where relevant, and address other environmental impacts. The Committee also invited bilateral and implementing agencies to provide proposals for feasibility studies, including business cases for district cooling; the resulting studies should assess possible projects, their climate impact, economic feasibility and options for financing such undertakings, and the studies should enable stakeholders to understand the advantages and challenges as compared to business as usual (decision 72/40).

26. National strategies have been the basis for assisting Article 5 countries in phasing out ODS, with the first and most important being the country programme. Other relevant national strategies include RMPs mainly for LVC countries, followed by TPMP also mainly for LVC countries. Towards the end of the 2010 compliance-target period for CFCs, performance-based phase-out plans were approved for non-LVC countries to address the remaining consumption of CFCs, mostly used in the refrigeration servicing sector (although several NPPs included the remaining consumption in the manufacturing sector). Subsequent to decision XIX/6 on accelerated phase-out of production and consumption of HCFCs, phase-out activities in Article 5 countries were addressed through HPMPs. A brief analysis of these national strategies is presented below.

Country programme

27. Country programmes have been part of the mechanism for funding ODS phase-out since the Interim Financial Mechanism was established at the Second Meeting of the Parties (June 1990). Specifically, the terms of reference of the Executive Committee approved by the Parties, included to “consider and, where appropriate, approve country programmes for compliance with the Protocol and, in the context of those country programmes, assess and, where applicable, approve all project proposals or groups of project proposals where the agreed incremental costs exceed US \$500,000.”

28. Country programmes are expected to contain a review of recent production, imports, applications and use of controlled substances by the main producers, users, and consumers (where information is available it would be useful to indicate links to multinational producers or users); a description of the institutional framework governing controlled substances (e.g., Government agencies, collaborating non-governmental organizations, consumer groups, industry associations); a description of policy framework, regulatory and incentive systems; a description of government and industry activities in response to the Protocol; a statement of strategy for implementation of the Protocol, indicating the respective roles of Government, supporting multilateral and bilateral agencies; an action plan encompassing investment and technical assistance projects, pre-investment studies, and any additional policy analysis required; a timetable for each activity, and for action plan review; and a budget and financing programme for the above activities.

29. The country programme served as basis for project preparation and further co-operation between the Party and the implementing agencies; it was not a funding document *per se*, but rather was a statement of the overall strategy that an Article 5 country wished to take to phase out ODS. While the approval of a country programme was a requirement for the approval of project proposals, in some instances, the Executive Committee also approved projects and activities for phasing out ODS during the preparation of country programmes.

Refrigeration management plans (RMPs)/Terminal phase-out plans (TPMPs)

30. Up until the 22nd meeting (May 1997), ODS phase-out was achieved through the submission of stand-alone investment projects. In considering the needs of LVC countries with approved country programmes to take near-term action to meet the CFC freeze, the Executive Committee requested them to submit RMPs²⁵ based on the draft guidelines contained in decision 23/15.

31. RMPs were expected to address a country’s particular circumstances and all relevant sectors including the informal sector that were still using ODS, especially CFCs, and included all or some of the following elements: a training programme for refrigeration technicians; recovery and recycling system; a

²⁵ The objective of a RMP is to develop and plan a strategy that will manage the use and phase-out of CFC refrigerants for servicing RAC equipment. The RMP is a critical management tool for LVCs for a smooth transition to non-ODS refrigerants, and will contribute to the country’s phase-out of ODS by identifying all the activities required, describing all the Government measures that will be necessary to ensure the success of projects and planning how all these activities will be implemented over time.

training programme for customs officials; and an improved system for collection and monitoring and control of consumption of ODS refrigerant.

32. Several decisions were also taken by the Executive Committee at subsequent meetings in order to be more responsive to the needs of LVC countries, and other non-LVC countries with regard to activities in the RAC servicing sector, and to the nature by which the activities in the other remaining sectors evolved, as well as to reorient the approach to RMPs to better facilitate compliance.

33. One result of these decisions was the shift from the development of an RMP to a TPMP, which was expected to contain the remaining activities that an Article 5 country needed to implement the total phase out of CFCs, with specific requirements and conditions that a country needed to fulfil before consideration by the Executive Committee (e.g., presence of a licensing system, commitment of the Government to completely phase out CFCs, and annual reporting and monitoring of activities).

34. At its 49th meeting (July 2006) the Executive Committee considered a document containing a Compendium of recommendations relevant to the evaluation of RMPs and NPPs in non-LVC countries,²⁶ prepared by the Senior Monitoring and Evaluation Officer pursuant to decision 48/10.²⁷ The evaluation of RMPs and TPMPs resulted in actions and additional guidance to NOUs and implementing agencies regarding the considerations to be taken into account when planning and implementing RMPs, NPPs or TPMPs. These included cooperation with other government agencies within the country, updating legislative measures, requiring mandatory certification of technicians, and taking into account decision 41/100 for the recovery and recycling part of NPPs, among other things. With regard to training, the decision addressed the need to update training to include the latest information with regard to application of good practices to significantly reduce usage of ODS and to promote the use of alternatives, and paying full attention to safety aspects and the necessary modification or replacement of electrical components in countries where training in the use of hydrocarbons was carried out. In the decision, the Executive Committee also requested the Secretariat, in cooperation with bilateral and implementing agencies, to develop recommendations for indicative lists of appropriate equipment for the main target groups and share information about competitive suppliers, including from Article 5 countries (decision 49/6).

Performance-based phase-out plans

35. At the 35th meeting (December 2001), the Executive Committee adopted the adjusted funding policies of the Multilateral Fund²⁸, and emphasized greater government responsibility for managing national phase-out programmes, as well as the demonstrated relevance of projects defined as a direct, and, if applicable, quantifiable linkage between the funded activities and meeting the specific Montreal Protocol control measures. The Committee also requested the Secretariat to work with members of the Executive Committee, and the bilateral agencies and implementing agencies to develop draft guidelines for the preparation, implementation and management of performance-based substance-wide and national phase-out agreements (decision 35/56(a) and (b)).

36. One key element of the adjusted funding policies of the Multilateral Fund was the notion that the Fund's goal would have to shift toward assisting individual Article 5 countries to implement time-bound compliance targets, which would necessitate an adjustment from emphasizing the impact of individual

²⁶ UNEP/OzL.Pro/ExCom/49/7.

²⁷ The Executive Committee noted with appreciation the final report on the intermediate evaluation of RMPs and national phase-out plans in non-LVC consuming countries focusing on the refrigeration servicing sector contained in document UNEP/OzL.Pro/ExCom/48/12; and requested the Senior Monitoring and Evaluation Officer to develop a comprehensive and categorized compendium of recommendations relevant to that evaluation, distinguishing between new recommendations and those that had already been approved by the Executive Committee.

²⁸ Annex XVI of document UNEP/OzL.Pro/ExCom/35/67.

projects to putting greater emphasis on the demonstrated relevance of such projects to compliance²⁹, as “funding must be predicated on a commitment by the country to achieve sustainable, permanent aggregate reductions in consumption and production, as relevant.” Depending on the preference and readiness of the country concerned, two modalities were proposed to implement the adjusted funding policy: funding of performance-based group-wide phase-out agreements; and funding of individual projects or stand-alone sector phase-out plans based on national phase-out strategies.

37. In line with decision 35/56, the Executive Committee approved the guidelines for the preparation, implementation and management of performance-based sector and national ODS phase-out plans, on the understanding that the purpose of the guidelines was to provide general principles and procedures that should be followed in developing and implementing performance-based ODS phase-out plans; and that the guidelines did not apply to already approved performance-based sectoral and national ODS phase-out plans in any regard (decision 38/65).³⁰

HPMPs

38. As a result of accelerating the phase out of HCFCs, the Executive Committee, at its 53rd meeting (November 2007), considered a document on “Options for assessing and defining eligible incremental costs for HCFC consumption and production phase-out activities (follow-up to decision 52/4³¹)”³² where it noted that the Multilateral Fund has funded two similar exercises: the country programming and the preparation of sector/NPPs, and introduced guidelines for each of them. National surveys have always been an integral part of each of these exercises and provide the factual basis for the planning exercises. The country programming exercise took place for most countries at the early stages of funding of the CFC phase-out activities in a country and prior to the establishment of the CFC baseline. The process assisted the countries in building consensus on the national phase-out plan of action.

39. This formed the basis for the development of guidelines for the preparation of HPMPs, where a staged approach was proposed to allow countries to develop an overarching plan to achieve total phase-out, primarily by allowing for concrete proposals to achieve the first two HCFC control measures in 2013 and 2015, while at the same time allowing countries to propose a subsequent stage, or stages if needed, to manage their HCFC phase-out.

40. At the time of deciding these guidelines, the Executive Committee acknowledged the importance of performance-based funding where a commitment to a maximum fundable consumption ceiling for each country, with annual linear reduction steps, was matched with a funding commitment agreed in principle from the Fund. It also noted the importance of timing, where the planning for HCFC phase-out was similar to the country programming exercise, since it took place at the beginning of the phase-out programme and most likely prior to establishing the baseline. The Committee also recognised the uncertainties both in terms of availability of substitutes and knowledge of their costs, therefore opting for a phase-out strategy based on a phased implementation approach, taking on sectors where substitute technologies are more developed and new technologies become available.

Other enabling activities that have been funded

41. Based on the 25 years of operation of the Multilateral Fund, implementation of sound enabling activities in Article 5 countries as early as feasible would allow for a sustainable, cost-effective and successful phase-down of HFC consumption and production in Article 5 countries, and potentially reduce

²⁹ Defined as a direct and, if applicable, quantifiable linkage between the funded activities and the specific Montreal Protocol compliance target to be achieved.

³⁰ The guidelines are contained in document UNEP/OzL.Pro/ExCom/38/57/Rev.1.

³¹ The Secretariat was requested to prepare a document on options for assessing and defining eligible incremental costs for HCFC consumption and production phase-out activities.

³² UNEP/OzL.Pro/ExCom/53/60.

demand for HFCs during the base year as agreed in the Kigali Amendment to the Montreal Protocol. Assistance from bilateral and implementing agencies has contributed extensively to the implementation of enabling activities in Article 5 countries, in particular the assistance provided through the UN Environment CAP.
