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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Eightieth Meeting
Montreal, 13-17 November 2017

OVERVIEW OF ISSUES IDENTIFIED DURING PROJECT REVIEW

1. This document consists of the following sections:

   (a) An overview of projects and activities submitted by bilateral and implementing agencies;

   (b) Issues identified during the project review process: Deadline for submission of projects over US $5 million;

   (c) HFC-related projects for funding under additional contributions to the Multilateral Fund:

      (i) Funding requests for enabling activities;

      (ii) Funding requests for preparation of HFC-related investment projects, and fully developed stand-alone HFC investment projects;

      (iii) Funding requests for preparation of HFC-23 demonstration projects;

   (d) Project and activities submitted for blanket approval; and

   (e) Investment projects for individual consideration.

Projects and activities submitted by bilateral and implementing agencies

2. Bilateral and implementing agencies submitted 86 funding requests for tranches of approved multi-year agreements, projects and activities amounting to US $148,636,101 (US $397,538,860 including amount requested in principle), including agency support costs, where applicable. The funding requests covered:

(a) Stage I of the HCFC phase-out management plan (HPMP) for one LVC country;

(b) Stage II of the HPMP for four non-LVC countries and one for a LVC country;

(c) Stage II of the HCFC production phase-out management plan (HPPMP) for China (to be considered by the Sub-group on the Production Sector);

(d) Tranches of approved HPMPs for 16 countries;

(e) One investment project to phase-out HCFC-142b/HCFC-22 in the extruded (XPS) polystyrene foam sector in Paskistan;

(f) Renewals of institutional strengthening (IS) projects in 30 countries;

(g) UNEP's Compliance Assistance Programme and core unit costs for UNDP, UNIDO and the World Bank; and

(h) Verification reports on the implementation of the HPMPs for eight countries.

3. Following the project review process, 49 projects and activities totalling US $9,512,427, including agency support costs, are recommended for blanket approval, and 33 projects and activities totalling US $128,934,167, of which US $47,939,497 is for the second tranche of stage II of the HPMP for China and US $54,342,000 for the first tranche of China's stage II HPPMP, are being forwarded for individual consideration. Together, the projects for blanket approval and those for individual consideration amount to US $138,446,594.

4. In addition, 90 HFC-related projects and activities totalling US $19,820,947, including agency support costs, are being forwarded to the 80th meeting following the project review process. These activities include funding for enabling activities in 59 countries, funding for preparation for HFC-related investment projects in 10 countries, fully-developed stand-alone HFC investment projects in four countries and two funding requests for preparation of HFC-23 demonstration projects in one country. HFC-related projects and activities are discussed separately, as their funding will be from the additional contributions to the Multilateral Fund by a group of non-A5 countries.

HPMPs submitted and subsequently withdrawn (Pakistan, Nigeria)

5. The request for an investment project to phase out HCFC-142b and HCFC-22 in the manufacturing of XPS foam at one enterprise in Pakistan, was withdrawn as the condition for the submission of the project as specified in decision 76/39(f) was not fulfilled (i.e., that the country's baseline consumption was revised to include HCFC-142b and approved by the Parties to the Montreal Protocol).

6. During the project review process, issues associated with stage II of the HPMP for Nigeria (at a cost of US $21,661,694 (including agency support costs) could not be addressed in time and, therefore, the submission was withdrawn by the relevant lead implementing agency. Some of the issues that required additional time to be addressed included *inter alia* the need to revise the 2015 verification report as the consumption in the HPMP was substantially larger than that reported in the verification report and under the Article 7 data of the Montreal Protocol; the lack of verification of the 2016 HCFC consumption; the slow progress in conversion of the foam system house and downstream users under stage I; the eligibility of a project to produce hydrocarbon (HC); the incremental costs of the conversion projects and the size of activities and associated HCFC phase-out in the refrigeration servicing sector. Stage II will be resubmitted to the 81st meeting, once all the issues have been addressed.

IS renewal requests

7. The Secretariat reviewed the terminal reports and requests for extension of IS funding for 30 countries against relevant decisions including decision 74/51(c) on the funding level for IS projects, and decision 74/51(e) on the requirement to include specific performance indicators for planned activities[1]. All requests were cross-checked against: previous IS reports; progress reports on the implementation of country programmes (CP); data reported under Article 7 of the Montreal Protocol; the latest reports on implementation of HPMPs; bilateral and implementing agencies' progress reports submitted to the 79th meeting; and relevant decisions on compliance adopted by the Parties to the Montreal Protocol. Fifteen countries reported on specific performance indicators as part of the progress report for the previous IS phase.[2] In this regard, all 15 countries achieved all, or the majority of the targets set. The Secretariat recommended all IS projects submitted to the 80th meeting for blanket approval.

Funding withheld pending submission of verification reports or meeting specific conditions

8. At the 77th meeting, the Executive Committee requested the Treasurer to withhold funding for the fourth tranche of stage I of the HPMP for Saudi Arabia[3] pending the receipt of a comprehensive report demonstrating that the conditions specified in Appendix 8-A of the Agreement had been met. As of the time of issuance of the present document, the Secretariat had not received confirmation that these conditions have been met.

9. In relation to the approval of the third tranche of the HPMP for Serbia at the 79th meeting, in accordance with decision 79/27(a), UNIDO submitted in September 2017 the outstanding 2016 HCFC consumption verification report confirming that the Government of Serbia was in compliance with the Montreal Protocol and the Agreement between the Government and the Executive Committee.

Summary of prices of the controlled substances and alternatives

10. At the 79th meeting[4], the Executive Committee requested the Secretariat to include in this document a summary of the prices of the controlled substances and the alternatives to be phased in, as communicated by enterprises requesting funding in any new project proposal, including clarification of any differences between those and the prices reported in the CP data report.

11. Out of the five stage I and stage II of HPMPs submitted to the 80th meeting, only the Philippines included an investment project in the air-conditioning manufacturing sector. The calculations provided by the World Bank indicated that the enterprise obtains a price of US $2.50 per kg of HCFC-22 while the average price reported in CP data report is US $4.13. The reason for the difference is that the price used by the World Bank in calculating the incremental operating cost (IOC) is the procurement price at the enterprise level, while the CP data reflects the average market price. The Secretariat noted that the IOC in the Philippines project was already above the IOC threshold of US $6.30 per kg, given that the unit costs for HFC-32 compressors and components are significant. The IOC were agreed at US $6.30/kg in line with decision 74/50(c)(viii).

[1] Fifteen countries requested a 28 per cent increase in accordance with decision 74/51(c) and included performance indicators in their corresponding action plan for the requested phase: Afghanistan, Angola, Bolivia (Plurinational State of), Bosnia and Herzegovina, Guinea, Kenya, Marshall Islands, Peru, Saint Lucia, Saint Vincent and the Grenadines, Samoa, Serbia, Solomon Islands, Tonga, and Turkey.

[2] Albania, Benin, Cameroon, Chad, Comoros, Costa Rica, Indonesia, Liberia, Malaysia, Niger, Palau, Panama, Rwanda, Senegal, and Uruguay.

[3] Decision 77/54(f).

[4] Decision 79/4(c).

Revision of starting points for aggregate reductions in HCFC consumption

12. The Secretariat noted that in recent meetings, in light of information available after the establishment of the starting point for aggregate reductions in HCFC consumption, few Article 5 countries have revised their starting points but not their HCFC consumption baseline. This issue is being considered in the document on Development of the cost guidelines for the phase-down of HFCs in Article 5 countries: Draft criteria for funding[5].

Issues identified during project review

Deadline for submission of projects over US $5 million

13. The Secretariat received project proposals from Bangladesh and Mexico for review for the consideration of the 79th and 80th meetings at a cost of US $7,064,007 and US $17,324,061 respectively, as originally submitted and excluding agency support costs, by the 8-week deadline of the respective meetings. The Secretariat advised the implementing agency that, in line with decision 20/7, projects with a requested level of funding of more than US $5 million should be submitted in full, 12 weeks in advance of the Executive Committee meeting at which they were to be considered. The implementing agency resubmitted the projects at a cost of US $5,936,508 and US $17,094,016 respectively, of which US $4,936,508 and US $4,500,000, excluding agency support costs, were requested from the Multilateral Fund. The Secretariat considers that the intent of decision 20/7 was to allow sufficient time for the review of projects based on their complexity and that the requested level of funding was used as a proxy for complexity.

14. Noting that projects with a cost of more than US $5 million, irrespective of the requested level of funding from the Multilateral Fund, would require at least 12 weeks for detailed review, analysis and consultations with the agencies, the Executive Committee may wish to consider requesting bilateral and implementing agencies to submit projects with a cost exceeding US $5 million, excluding agency support costs and irrespective of the level of funding requested of the Multilateral Fund, no later than 12 weeks in advance of the Executive Committee meeting at which they were to be considered in line with decision 20/7(a).

HFC-related projects for funding under additional contributions to the Multilateral Fund

Background

15. At the 79th meeting, the Executive Committee considered two documents related to the development of the cost guidelines for the phase-down of HFCs in Article 5 countries, one prepared in line with decision 78/3,[6] and another in line with decision 78/4(a).[7] Further to discussions,[8] the Executive Committee *inter alia* agreed on the criteria for considering stand-alone HFC-related investment projects pursuant to decision 78/3(g),[9] and on the criteria and requirements for the submission of funding requests for enabling activities.[10] As indicated in those decisions, funding requests for enabling activities and stand-alone HFC-related investment projects submitted to the 80th meeting, would be funded to the extent

[5] UNEP/OzL.Pro/ExCom/80/55.
[6] Development of the cost guidelines for the phase-down of HFCs in Article 5 countries: Draft criteria for funding (UNEP/OzL.Pro/ExCom/79/46).
[7] Development of the cost guidelines for the phase-down of HFCs in Article 5 countries: Draft guidelines on enabling activities (UNEP/OzL.Pro/ExCom/79/47).
[8] The discussion on the cost guidelines for the phase-down of HFCs is contained in paragraphs 137 to 141, and the discussion on enabling activities is contained in paragraphs 144 to 151, of document UNEP/OzL.Pro/ExCom/79/51.
[9] Decision 79/45.
[10] Decision 79/46.

possible from additional voluntary contributions provided by non-Article 5 Parties (with funding priority given to enabling activities).

16. At the 79th meeting, the Executive Committee also discussed key aspects related to HFC-23 by-product control technologies[11] and *inter alia*, invited implementing agencies to submit to the 81st meeting proposals for feasible technology demonstration for HFC-23 by-product mitigation or conversion technologies with the potential for cost-effective, environmentally sustainable conversion of HFC-23.[12]

17. In line with relevant decisions, the Governments of Germany and Italy (as bilateral cooperation) and UNDP, UNEP, UNIDO and the World Bank submitted the following requests at a total funding level of US $19,820,947 including agency support costs:

(a) Funding for enabling activities in 59[13] Article 5 countries, at a total cost of US $9,163,740, including support costs;

(b) Funding for preparation of HFC-related investment projects, in 10 Article 5 countries, at a total cost of US $494,000, including agency support costs;

(c) Fully-developed stand-alone HFC investment projects in four Article 5 countries, at a total cost of US $10,099,006, including agency support costs; and

(d) Two funding requests for preparation of HFC-23 demonstration projects in one Article 5 country, at a total cost of US $64,200, including agency support costs.

18. To facilitate the discussions by the Executive Committee, the Secretariat has included in the present document a summary of all the HFC-related activities above-mentioned,[14] providing an overview of the submissions, comments by the Secretariat and recommendations. The submissions of enabling activities, project preparation requests for HFC-related investment projects and funding requests for preparation of HFC-23 demonstration projects are described in the bilateral cooperation document and the respective work programme amendments of the implementing agencies, and the stand-alone investment projects under the country project related document.

19. The Executive Committee may wish to note that HFC-related projects and activities were not included in the 2017-2019 business plan of the Multilateral Fund, and are not required to meet compliance with the current control measure of the Montreal Protocol.

Funding requests for enabling activities

Description

20. On behalf of 59 Article 5 countries, bilateral and implementing agencies submitted their funding requests for enabling activities (i.e., 15 requests from Latin America and the Caribbean, nine from Asia and the Pacific, 21 from Africa, nine from Europe and Central Asia, and five from Pacific Island Countries).

[11] The discussion on key aspects related to HFC-23 by-product control technologies is contained in paragraphs 153 to 159 of document UNEP/OzL.Pro/ExCom/79/51.

[12] Decision 79/47.

[13] All 59 countries that submitted requests are classified as group 1 Article 5 countries (baseline years 2020-2022).

[14] In addition to the activities listed in paragraphs 17, the Executive Committee decided to allocate budget of up to US $100,000 from the additional contributions to the Multilateral Fund to undertake an evaluation by an independent consultant of cost-effective and environmentally sustainable options of HFC-23 destruction from HCFC-22 production facilities; that report will be submitted to the 81st meeting (decision 79/47(e)).

The requests by Article 5 countries are contained in Annex I to the present document, and summarized in Table 1.

Table 1. Overview of funding requests for enabling activities

Agency	Document (ExCom)	Total requests	Funding request (US $)		
			Cost	Support	Total
Germany	80/23	3	285,000	37,050	322,050
Italy	80/23	4*	195,000	25,350	220,350
UNDP	80/24	10	1,448,000	130,320	1,578,320
UNEP	80/25	31 (28 as lead)	3,256,000	423,280	3,679,280
UNIDO	80/26	18 (15 as lead)	2,336,000	210,240	2,546,240
World Bank	80/27	3	750,000	67,500	817,500
Total		69	8,270,000	893,740	9,163,740

(*) Cooperating implementing agency.

21. Each funding request contained a generic set of activities (that were adjusted according to the requirements of each country, as needed), institutional arrangements to support the implementation of the enabling activities, implementation plans and budgets.

Review by the Secretariat

22. To facilitate the preparation and submission of requests for enabling activities, the Secretariat prepared a Guide for the submission of enabling activities for HFC phase-down and presented it to bilateral and implementing agencies at the Inter-agency coordination meeting.[15] The Secretariat notes that the requests for enabling activities submitted by all bilateral and implementing agencies followed the Guide.

23. The Secretariat reviewed the requests for enabling activities and concluded that all of them fulfilled the requirements of decision 79/46. Endorsement letters from the Governments of Article 5 countries indicating their intent to make best efforts to ratify the Kigali Amendment as early as possible were received; the funding requests included detailed descriptions of each of the enabling activities, institutional arrangements, cost breakdown and the schedule for implementation within a timeframe of 18 months.

24. The Secretariat noted that the funding requested for enabling activities is greater than the additional voluntary contributions received at the time of issuance of the present document. The Secretariat further noted that, in line with decision 79/45, priority would be given to funding enabling activities over HFC-related stand-alone investment projects (and their preparation). Finally, the Secretariat does not have a basis to prioritize countries among the enabling activities and suggests that those requests be considered on an equitable basis.

Funding requests for preparation of HFC-related investment projects and fully-developed stand-alone HFC investment projects

Description

25. On behalf of 10 Article 5 countries, bilateral and implementing agencies submitted their funding requests for preparation of HFC-related investment projects and, on behalf of four Article 5 countries, funding requests for fully-developed stand-alone HFC investment projects, as shown in Table 2.

[15] Montreal, 5-7 September 2017. Bilateral and implementing agencies appreciated the development of the guide.

Table 2. Overview of submissions of HFC-related projects in the manufacturing sector

Country	Project title	Agency	Doc. ExCom	Funding requested (US $)		
				Cost	Support	Total
Project preparation						
China	Conversion from HFC-245fa to HFO as a foam agent in a refrigerator manufacturer	UNDP	80/24	30,000	2,100	32,100
China	Conversion from HFC-134a to HC-290 in a domestic freezer manufacturer (Qingdao Haier)	UNDP	80/24	30,000	2,100	32,100
China	Air-conditioning and production line optimization from HFC-134a to HFO-1234yf as refrigerant in a mobile air-conditioning (MAC) manufacturer	UNDP	80/24	30,000	2,100	32,100
China	Conversion of a MAC production line from HFC-134a to CO_2	Germany	80/23	30,000	3,900	33,900
Dominican Republic	Conversion from HFC-134a to HC-290 in the manufacture of stand-alone, self-contained commercial refrigerators at Farco	UNDP	80/24	30,000	2,100	32,100
Ecuador	Replacement of HFC-134a with R-600a in self-contained commercial refrigeration equipment at Ecasa	UNIDO	80/26	30,000	2,100	32,100
Ecuador	Replacement of HFC-134a with R-600a in self-contained commercial refrigeration equipment at Indurama	UNIDO	80/26	30,000	2,100	32,100
Egypt	Conversion from HFC-134a to HFO-1234ze and other liquid HFOs in the manufacture of polyurethane/pour in place and spray foam	UNDP	80/24	30,000	2,100	32,100
Lebanon	Replacement of HFC-134a with R-600a in domestic refrigeration manufacturing at Lematic Industries	UNIDO	80/26	30,000	2,100	32,100
Mexico	Replacement of HFC-134a with R-290 and R-744 in self-contained commercial refrigeration equipment at Fersa enterprise	UNIDO	80/26	30,000	2,100	32,100
Mexico	Replacement of HFC 134a with R-290 and R-744 in self-contained commercial refrigeration equipment at Imbera enterprise	UNIDO	80/26	30,000	2,100	32,100
Morocco	Replacement of HFC-134a with R-600a in domestic refrigeration equipment at Manar enterprise	UNIDO	80/26	30,000	2,100	32,100
Thailand	Conversion from HFC to HFO-based or other low-GWP alternatives in the production of commercial refrigeration equipment at Pattana Intercool and System Forms Co., Ltd.	World Bank	80/27	40,000	2,800	42,800
Viet Nam	Replacement of HFC-134a with R-290 in self-contained commercial refrigeration equipment at Nagakawa Vietnam Company	UNIDO	80/26	30,000	2,100	32,100
Zimbabwe	Conversion from HFC-134a to R-600a in the manufacture of domestic refrigerators at Capri	UNDP	80/24	30,000	2,100	32,100
	Sub-total			**460,000**	**34,000**	**494,000**
Investment projects		**Agency**	**Doc. ExCom**	**Funding recommended (US $)***		
				Cost	**Support**	**Total**
Argentina	Conversion project for replacement of HFC-134a with isobutane (R-600a) / propane (R-290)-based refrigerant in the manufacture of domestic and commercial refrigeration equipment	UNIDO	80/30	1,840,755	128,853	1,969,608

Country	Project title	Agency	Doc. ExCom	Funding requested (US $)		
				Cost	Support	Total
Bangladesh	Conversion of domestic refrigerator manufacturing facility from HFC-134a to isobutane as a refrigerant and conversion of compressor manufacturing facility from HFC-134a-based compressors to isobutane-based compressors at Walton Hitech Industries Limited ("Walton")	UNDP	80/32	3,131,610	219,212	3,350,822
Colombia	Conversion from HFC-134a to isobutane in the manufacture of domestic refrigerators at Mabe Colombia	UNDP	80/38	1,114,350	78,005	1,192,355
Mexico	Conversion of domestic refrigeration manufacturing facility from HFC-134a to isobutane (R-600a) as a refrigerant and conversion of compressor manufacturing facility from HFC-134a-based compressors to isobutane-based compressors at Mabe Mexico S.A. de C.V. (Mabe Mexico)	UNDP	80/45	3,351,608	234,613	3,586,221
	Sub-total			9,438,323	660,683	10,099,006
Total				**9,898,323**	**694,683**	**10,593,006**

*Total funding requested in the submissions for these four projects is US $16,135,905 including support costs.

Review by the Secretariat

26. The Secretariat reviewed the project preparation requests for HFC-related investment projects and the four stand-alone HFC phase-out investment projects taking into consideration existing policies and guidelines of the Executive Committee, the conditions set out in decision 78/3(g),[16] and the criteria in decision 79/45(a).[17] Letters of commitment from all countries concerned were received, funding levels for requests for project preparation were consistent with existing guidelines (i.e., US $30,000 for one enterprise and US $60,000 for two enterprises[18]), and the submissions contained sufficient information to allow for their consideration by the Executive Committee. However, the Secretariat is seeking guidance from the Committee on how to address multiple requests from the same country.

27. With regard to funding requests for preparation of HFC-related investment projects, the Secretariat noted as follows:

(a) More than one request was received from one country (i.e., China), and three requests were received for more than one enterprise in the same sector in the same country (i.e., Ecuador,

[16] The Executive Committee decided *inter alia* to consider approving a limited number of HFC-related projects in the manufacturing sector only, to allow the Committee to gain experience in the incremental capital and operating costs that might be associated with phasing down HFCs, on the understanding: that any country that submitted a project should have ratified the Kigali Amendment or submitted a formal letter indicating the government's intention to ratify the Amendment; that no further funding would be available until the instrument of ratification had been deposited at the United Nations in New York; and that any amount of HFC reduced as a result of the project would be deducted from the starting point.

[17] The Executive Committee *inter alia* reiterated decision 78/3(g) and decided the following criteria for considering proposals for HFC-related projects: the projects should be in individual enterprises deciding to convert to mature technologies, should have broad replicability to the country or region or sector, and should take into account geographic distribution; projects must be fully implemented by no more than two years; project completion reports should be comprehensive with detailed information on the eligible incremental capital costs, incremental operating costs, any possible savings incurred during the conversion and relevant factors that facilitated implementation.

[18] The World Bank is requesting US $40,000 covering two enterprises.

Mexico[19] and Thailand) that may require prioritization to account for geographic distribution;

(b) Of the 15 requests, 11 are related to the conversion of HFC-134a-based domestic and/or commercial refrigeration manufacturing enterprises to R-600a or R-744 technologies;

(c) Two requests are related to the HFC-134a-based mobile air-conditioning (MAC) manufacturing sector in China: one for the conversion to HFO-1234yf, and the other for the conversion to CO_2 technology; and

(d) Two requests are related to the foam sector: one would replace the use of HFC-245fa with cyclopentane and HFO for insulation foam in domestic refrigerator manufacturing in China; and the other to replace HFC-134a for polyurethane and spray foam applications in Egypt.

28. A summary of each of the project proposals and the assessment by the Secretariat is presented in Annex I to the present document.

29. With regard to the four fully-developed stand-alone HFC investment projects, the Secretariat followed the same approach used when reviewing stand-alone investment projects. The four project proposals are for the conversion of HFC-134a-based domestic refrigeration manufacturing enterprises to R-600a technology in three countries in the Latin American regions (Argentina[20], Colombia[21] and Mexico[22]), and one in the Asia region (Bangladesh[23]). The projects in Bangladesh and Mexico also include the conversion of HFC-134a-based compressors to R-600a technology.

30. Detailed comments on technical and costs issues were sent to the implementing agencies followed by discussions, with a view to providing the Executive Committee with an overall understanding of the potential incremental costs associated with the projects. The project description, comments by the Secretariat and recommendations are contained in each individual project document.

Funding requests for preparation of HFC-23 demonstration projects

31. In line with decision 79/47(g), UNDP and the World Bank submitted the following funding requests for China:

(a) Demonstration project for HFC-23 by-product conversion at Liaocheng Fuer New Material Technology Ltd. (UNDP); and

(b) Technology demonstration of HFC-23 by-product conversion technology at Shandong Dongyue Chemical Co. Ltd. (World Bank).

32. A summary of each of the two project preparation requests and the assessment by the Secretariat is presented in Annex III to the present document.

[19] Mexico also submitted a stand-alone project to the 80th meeting.
[20] UNEP/OzL.Pro/ExCom/80/30.
[21] UNEP/OzL.Pro/ExCom/80/38.
[22] UNEP/OzL.Pro/ExCom/80/45.
[23] UNEP/OzL.Pro/ExCom/80/32.

Review by the Secretariat

33. The Secretariat noted that the request for project preparation for a technology demonstration project for HFC-23 by-product conversion was consistent with relevant decisions related to project preparation funding, and contained sufficient detail to allow consideration of this request.

34. UNDP and the World Bank indicated that the funding requested at the 80th meeting was necessary for preparing and submitting to the 81st meeting, full the projects proposals, as requested in decision 79/47(g).

Secretariat's recommendation

35. In light of the additional contributions provided by a group of non-Article 5 Parties as contained in document UNEP/OzL.Pro/ExCom/80/53, the Executive Committee may wish:

(a) To approve the enabling activities submitted by 59 Article 5 countries at the funding levels requested as contained in the respective documents on bilateral cooperation and UNDP, UNEP, UNIDO and World Bank work programme amendments;

(b) To consider approving the stand-alone HFC investment projects submitted by the Governments of Argentina, Bangladesh, Colombia and Mexico in line with decisions 78/3(g) and 79/45, after discussion in agenda item 9(f), Investment projects;

(c) With regard to requests for preparation of HFC-related investment projects, in light of the assessment contained in document UNEP/OzL.Pro/ExCom/80/22 and the information provided in the relevant documents of the Executive Committee:

(i) To consider whether or not to allow for the preparation of more than one stand-alone HFC investment project in a single country; and

(ii) To decide which HFC investment project should be prepared and allocate funding accordingly;

(d) To decide on the funding source for the stand-alone HFC investment projects and the requests for project preparation for HFC-related investment projects where funding from the additional voluntary contributions provided by a group of non-Article 5 countries might not be sufficient to cover all the requests in sub-paragraphs (a), (b) and (c) above,

(e) To request the Treasurer, in consultation with the Secretariat, to transfer funding from the additional voluntary contributions provided by a group of non-Article 5 Parties, to the relevant bilateral and implementing agencies as follows:

(i) Enabling activities mentioned in sub-paragraph (a) as soon as the total amount of US $8,270,000, plus agencies support costs of US $893,740, is available to cover all such activities;

(ii) Stand-alone HFC investment projects that that the Executive Committee wishes to approve in sub-paragraph (b), once sufficient funding is available to cover all such projects after funding the enabling activities mentioned in sub-paragraph (e)(i);

(iii) Project preparation for HFC-related investment projects that the Executive Committee wishes to ap prove in sub-paragraph (c), once sufficient funding is

available to cover all such requests after funding all the projects and activities mentioned in sub-paragraphs (e)(i) and (e)(ii);

36. With regard to requests for preparation of HFC-23 demonstration projects, the Executive Committee may wish:

(a) To decide on the funding source for the requests for preparation of HFC-23 demonstration projects submitted by UNDP and the World Bank, noting that pursuant to decision 79/47(g) funding requests for demonstration projects for HFC-23 emissions controls were to be submitted to the 81st meeting; and

(b) To approve the project preparation requests indicated in sub-paragraph (a) above in light of the assessment contained in document UNEP/OzL.Pro/ExCom/80/22 and the detailed information provided in the relevant documents of the Executive Committee.

Projects and activities submitted for blanket approval

37. Annex IV to the present document lists 49 projects and activities totalling US $9,512,427 including agency support costs that are recommended for blanket approval. The approval of these projects would include the relevant conditions or provisions in the corresponding project evaluation sheets as well as the approval of implementation programmes associated with the relevant tranches of multi-year projects.

Investment projects for individual consideration

38. Thirty-three projects/activities totalling US $128,934,167 including agency support costs, of which US $47,939,497 is for the second tranche of stage II of the HPMP for China, and US $54,342,000 for the first tranche of China's stage II HPPMP (US $362,828,876 including amount requested in principle, of which US $283,261,000 is for China's HPPMP), and 90 HFC-related projects and activities totalling US $19,820,947 including agency support costs, after the review by the Secretariat, are proposed for individual consideration. To facilitate the Executive Committee's consideration of the investment projects for individual consideration, the Secretariat has classified the projects by sector, and has grouped them according to the issues, as shown in Table 3. Table 3 also includes a section on individual investment projects to phase out HFCs as per decision 78/3(g).

Table 3. Investment projects submitted for individual consideration

Country	Project	Agency	ExCom	Issue
Stage I of HPMPs				
Mauritania	HCFC phase-out management plan (stage I - first tranche)	UNEP (Lead)/ UNDP	80/44	Lack of reliable HCFC imports records, establishment of starting point
Stage II of HPMPs				
Kenya	HCFC phase-out management plan (stage II - first tranche)	France	80/41	All technical and cost issues resolved; stage II of an HPMP
Peru	HCFC phase-out management plan (stage II - first tranche)	UNDP (Lead)/ UNEP	80/47	All technical and cost issues resolved; stage II of an HPMP
Philippines (the)	HCFC phase-out management plan (stage II - first tranche)	World Bank	80/48	All technical and cost issues resolved; stage II of an HPMP
Timor-Leste	HCFC phase-out management plan (stage II - first tranche)	UNEP (Lead)/ UNDP	80/51*	All technical and cost issues resolved; stage II of an HPMP

Country	Project	Agency	ExCom	Issue
Tranche request of stage I, stage II HPMP				
Bangladesh	HCFC phase-out management plan (stage I – third and fourth (final) tranche)	UNDP (Lead)/ UNEP	80/32	Request for combined third and fourth tranches and revision of Agreement
Brazil	HCFC phase-out management plan (stage II - second tranche)	UNDP (Lead)/ UNIDO/Germany/ Italy	80/34	Two-year extension of stage II and revision of tranches distribution and Agreement
Burkina Faso	HCFC phase-out management plan (stage I - third tranche)	UNEP (Lead)/ UNIDO	80/35	Revision of starting point and Agreement
China	Extruded polystyrene (XPS) foam sector plan (stage II - second tranche)	UNIDO (Lead)/ Germany	80/37	Level of fund disbursement
	Industrial and commercial refrigeration and air-conditioning (ICR) sector plan (stage II - second tranche)	UNDP	80/37	Issue of technology selection: the technology to be used in the second tranche is not in the list of approved technologies
	Room air-conditioner manufacturing (RAC) sector plan (stage II - second tranche)	UNIDO (Lead)/ Government of Italy	80/37	Level of fund disbursement
Democratic Republic of the Congo (the)	HCFC phase-out management plan (stage I - third tranche)	UNEP (Lead)/ UNDP	80/40	Revision of starting point and Agreement
Kenya	HCFC phase-out management plan (stage I – fifth tranche)	France	80/41	Revision of starting point and Agreement
Lesotho	HCFC phase-out management plan (stage I – third tranche)	Germany	80/42	Revision of starting point and Agreement
Maldives	HCFC phase-out management plan (stage I – fourth (last) tranche)	UNEP (Lead)/ UNDP	80/43	Progress of the transition from the interim technology selected by the Government to low-GWP refrigerants
Myanmar	HCFC phase-out management plan (stage I – second and third tranches)	UNEP (Lead)/ UNIDO	80/46	Request for combined second and third tranches and revision of Agreement
Thailand	HCFC phase-out management plan (stage I – fourth and final tranche)	World Bank	80/50	Revision of funds and Agreement
Individual investment projects to reduce HFCs				
Argentina	Demonstration of replacement of HFC-134a with isobutane (R-600a)/propane (R-290) based refrigerant in the manufacture of domestic and commercial refrigeration equipment	UNIDO	80/30	HFC phase-down project pursuant decisions 78/3(g) and 79/45
Bangladesh	Conversion from HFC-134a to isobutane as a refrigerant and conversion of compressor manufacturing facility from HFC-134a-based compressors to isobutene-based compressors at Walton Hitech Industries Limited	UNDP	80/32	HFC phase-down project pursuant decisions 78/3(g) and 79/45

Country	Project	Agency	ExCom	Issue
Colombia	Conversion from HFC-134a to isobutane in the manufacture of domestic refrigerators at Mabe Colombia	UNDP	80/38	HFC phase-down project pursuant decisions 78/3(g) and 79/45
Mexico	Conversion of domestic refrigeration manufacturing facility from HFC-134a to isobutane (R-600a) as a refrigerant and conversion of compressor manufacturing facility from HFC-134a-based compressors to isobutene-based compressors at Mabe Mexico S.A. de C.V.	UNDP	80/45	HFC phase-down project pursuant decisions 78/3(g) and 79/45

*Document also includes a tranche request for stage I of the HPMP, which is for blanket approval.

Annex I

FUNDING REQUESTS FOR ENABLING ACTIVITIES SUBMITTED TO THE 80TH MEETING

Agency	Country	Amount requested (US $)		
		Cost	Support	Total
Germany	Liberia	95,000	12,350	107,350
	Papua New Guinea	95,000	12,350	107,350
	Seychelles	95,000	12,350	107,350
Subtotal		285,000	37,050	322,050
Italy	Lesotho**	40,000	5,200	45,200
	Maldives**	40,000	5,200	45,200
	Rwanda**	40,000	5,200	45,200
	Tunisia**	75,000	9,750	84,750
Subtotal		195,000	25,350	220,350
UNDP	Chile	33,000	2,970	35,970
	China	165,000	14,850	179,850
	Colombia	250,000	22,500	272,500
	Costa Rica	150,000	13,500	163,500
	Fiji	150,000	13,500	163,500
	Jamaica	150,000	13,500	163,500
	Lebanon	150,000	13,500	163,500
	Peru	150,000	13,500	163,500
	Trinidad and Tobago	150,000	13,500	163,500
	Uruguay	100,000	9,000	109,000
Subtotal		1,448,000	130,320	1,578,320
UNEP	Angola	150,000	19,500	169,500
	Bhutan	50,000	6,500	56,500
	Cambodia	150,000	19,500	169,500
	China**	85,000	11,050	96,050
	Chile**	31,000	4,030	35,030
	Dominica	50,000	6,500	56,500
	Dominican Republic (the)	150,000	19,500	169,500
	Ecuador	150,000	19,500	169,500
	Eritrea	95,000	12,350	107,350
	Gabon	150,000	19,500	169,500
	Ghana	150,000	19,500	169,500
	Guatemala	150,000	19,500	169,500
	Kyrgyzstan	95,000	12,350	107,350
	Lesotho	55,000	7,150	62,150
	Maldives	55,000	7,150	62,150
	Mexico**	30,000	3,900	33,900
	Mongolia	95,000	12,350	107,350
	Namibia	150,000	19,500	169,500
	Nigeria	250,000	32,500	282,500
	Palau	50,000	6,500	56,500
	Rwanda	55,000	7,150	62,150
	Saint Lucia	95,000	12,350	107,350
	Saint Vincent and the Grenadines	50,000	6,500	56,500
	Senegal	150,000	19,500	169,500
	Sudan	75,000	9,750	84,750
	Suriname	95,000	12,350	107,350

Agency	Country	Amount requested (US $)		
		Cost	Support	Total
	Togo	150,000	19,500	169,500
	Tonga	50,000	6,500	56,500
	Turkmenistan	150,000	19,500	169,500
	Zambia	95,000	12,350	107,350
	Zimbabwe	150,000	19,500	169,500
Subtotal		3,256,000	423,280	3,679,280
UNIDO	Albania	95,000	8,550	103,550
	Armenia	150,000	13,500	163,500
	Bosnia and Herzegovina	95,000	8,550	103,550
	Burkina Faso	150,000	13,500	163,500
	Cameroon	150,000	13,500	163,500
	Chile**	86,000	7,740	93,740
	Congo (Republic of)	150,000	13,500	163,500
	Gambia	95,000	8,550	103,550
	the former Yugoslav Republic of Macedonia	95,000	8,550	103,550
	Mexico	220,000	19,800	239,800
	Montenegro	50,000	4,500	54,500
	Serbia	150,000	13,500	163,500
	Somalia	150,000	13,500	163,500
	Sudan	75,000	6,750	81,750
	Tunisia	75,000	6,750	81,750
	Turkey	250,000	22,500	272,500
	Uruguay**	50,000	4,500	54,500
	Viet Nam	250,000	22,500	272,500
Subtotal		2,336,000	210,240	2,546,240
World Bank	Malaysia	250,000	22,500	272,500
	Philippines (the)	250,000	22,500	272,500
	Thailand	250,000	22,500	272,500
Subtotal		750,000	67,500	817,500
Total		8,270,000	893,740	9,163,740

**As cooperating implementing agency.

Annex II

PROJECT PREPARATION REQUESTS SUBMITTED TO THE 80TH MEETING (ALPHABETICAL ORDER BY SUBSECTOR)

DOMESTIC REFRIGERATION SUBSECTOR	
Country	China
Implementing agency	UNDP
Project title	Conversion from HFC-134a to HC-290 in a domestic freezer manufacturer (Qingdao Haier)
Subsector/application	Domestic refrigeration
Alternative technology	HC-290
Funding requested (US $)	30,000 (estimated project cost is US $3 million)
Description: To convert one enterprise from HFC-134a to HC-290 in the domestic freezer sector and provide incentives for sector to move to this technology. The project will collect ICC, IOC and energy efficiency data of the process, and described barriers that were encountered during the conversion.	
Assessment: The project is expected to phase out 50 mt of HFC-134a with the conversion of one production line, and a compressor line. The enterprise has six HFC-134a freezer lines that produced 280,000 HFC-134a-based freezers in 2016. Significant potential for replicability in China as numerous other enterprises in the country already produce HC-290 domestic freezers, the beneficiary enterprise is a leading domestic freezer manufacturer, its conversion could be followed by other manufacturers. The technology selected is a mature technology for this application. This is one of four proposals submitted for China, and one of eight proposals in the domestic refrigeration sub-sector, including the four full-developed project proposals from other countries submitted to the 80th meeting.	
Country	Lebanon
Implementing agency	UNIDO
Project title	Replacement of HFC 134a with R-600a in domestic refrigeration manufacturing at Lematic Industries
Subsector/application	Domestic refrigeration
Alternative technology	R600a
Funding requested (US $)	30,000 (estimated project cost is not provided)
Description: The project will phase-out HFC-134a used for manufacturing domestic refrigerators by Lematic	
Assessment: Lematic Industries consumes 21.4 mt of HFC-134a use for the production of 115,000 domestic refrigerators in 2016. The alternative technology is R-600a, which is already available in the country. The company has several factories located in Saudi Arabia and the Syrian Arab Republic; therefore, the project has potential for replicability in the country and in the region. This is one of eight project preparation requests for the domestic refrigeration sub-sector, including the four fully-developed project proposals from other countries submitted to the 80th meeting.	
Country	Morocco
Implementing agency	UNIDO
Project title	Replacement of HFC-134a with R-600a in domestic refrigeration equipment at Manar enterprise
Subsector/application	Domestic refrigeration
Alternative technology	R-600a
Funding requested (US $)	30,000 (estimated project cost is not provided)
Description: The project will convert Manar from HFC-134a to R-600a technology	

Assessment: Manar is a manufacturer of different domestic refrigerator models, with a production of 150,000-180,000 units annually and a consumption of 20.7 mt of HFC-134a. It was provided with assistance at the 29th meeting to convert its domestic refrigerator manufacturing to HFC-134a from CFC-12. The technology selected is a mature technology for this application. This is one of eight requests for project preparation in the domestic refrigeration sub-sector, including the four fully-developed project proposals submitted to the 80th meeting	
Country	Zimbabwe
Implementing agency	UNDP
Project title	Conversion from HFC-134a to R-600a in the manufacture of domestic refrigerators at Capri
Subsector/application	Domestic refrigeration
Alternative technology	R-600a
Funding requested (US $)	30,000 (estimated project cost is US $400,000)
Description: Conversion to R-600a as refrigerant in place of HFC-134a used in the manufacture of domestic refrigerators to determine the ICC and IOC cost of the conversion	
Assessment: The project will be implemented in Capri, an enterprise with an estimated use of 20 mt of HFC-134a in domestic refrigerator manufacturing. R-600a technology is mature as it is already in used in several domestic refrigerator manufacturers in Africa. No projects have yet been funded to assess the ICC and IOC associated with this conversion in the region; therefore, there are opportunities for its replicability both at the national and regional levels. This is one of four project preparation requests for the domestic refrigeration sub-sector, including the four fully-developed project proposals from other countries submitted to the 80th meeting.	
COMMERCIAL REFRIGERATION SUBSECTOR	
Country	The Dominican Republic
Implementing agency	UNDP
Project title	Conversion from HFC-134a to HC-290 in the manufacture of stand-alone, self-contained commercial refrigerators at Farco
Subsector/application	Commercial refrigeration
Alternative technology	HC-290
Funding requested (US $)	30,000 (estimated project cost not provided)
Description: Conversion to HC-290 as refrigerant in place of HFC-134a and R-404A used in the manufacture of stand-alone self-contained commercial refrigerators to determine the ICC and IOC of the conversion	
Assessment: The project is expected to phase out 3.7 mt of HCFC-134a and 0.25 mt of R-404A. The technology is considered to be mature and available at reasonable cost in the Latin American region. The project will also provide for improved energy efficiency products. The project could be replicated in Latin American countries, as there are several similar manufacturing enterprises of stand-up vending coolers. This is one of seven requests for project preparation in the commercial refrigeration subsector.	
Country	Ecuador
Implementing agency	UNIDO
Project title	Replacement of HFC-134a with R-600a in self-contained commercial refrigeration equipment at Ecasa
Subsector/application	Commercial refrigeration
Alternative technology	R-600a
Funding requested (US $)	30,000 (estimated project cost is not provided)
Description: The project will phase out HFC-134a and R-404a used in the manufacture of self-contained refrigeration equipment in Ecasa, and gather data for IOC and ICC costs of the conversion. The alternative technology to be used is R-600a	

Assessment: Ecasa's estimated use of HCFC-134a and R-404A for 2016 was 6.50 mt and 2.17 mt, respectively, used for the manufacture of self-contained domestic refrigerators, vertical and horizontal coolers with different temperature ranges. The technology selected is a mature technology for this application. There is potential for replicability for similar manufacturing applications in the region. This is one of two funding requests from Ecuador for the same manufacturing sector and for the same alternative technology, and of seven requests for project preparation in the commercial refrigeration subsector.	
Country	Ecuador
Implementing agency	UNIDO
Project title	Replacement of HFC-134a with R-600a in self-contained commercial refrigeration equipment at Induglob
Subsector/application	Commercial refrigeration
Alternative technology	R-600a
Funding requested (US $)	30,000 (estimated project cost is not provided)
Description: The project will phase out HFC-134a and R-404A used in the manufacture of self-contained refrigeration equipment in Induglob, and gather data in IOC and ICC of the conversion. The alternative technology to be used is R-600a	
Assessment: Induglob's estimated use of HCFC-134a in 2016 was 18.6 mt for the manufacture of self-contained domestic refrigerators and vertical and horizontal coolers with different temperature ranges. The company produced 158,700 units in 2016. The technology selected is a mature technology for this application. There is potential for replicability for similar manufacturing applications in the Latin American region. This is one of two requests for project preparation from Ecuador for the same manufacturing sector and for the same alternative technology, and of seven requests for project preparation in the commercial refrigeration subsector.	
Country	Mexico
Implementing agency	UNIDO
Project title	Replacement of HFC 134a with R-290 and R-744 in self-contained commercial refrigeration equipment at Fersa enterprise
Subsector/application	Commercial refrigeration
Alternative technology	R-290/R-600a
Funding requested (US $)	30,000 (estimated project cost is not provided)
Description: The project will result in the conversion of the enterprise to use R-290 and R-600a as alternative refrigerants to HFC-134a and R-404A in self-contained commercial refrigeration equipment. Fersa is small-medium sized company	
Assessment: Fersa produced 19,744 units HFC-134a-based and 2,243 of R-404A based units in 2016, with consumption of 11.1 mt and 2.1 mt of HFC-134a and R-404A, respectively. HFC-134a will be replaced with R-290 and R-404A will be replaced with either R-290 of R-600a. There are no regulations for the use of R-290 in Mexico; therefore, the project will provide information on IOC and ICC and will contribute to putting standards in place. The technology selected is a mature technology for this application. This project is one of two similar projects for the same application submitted for Mexico, and one of seven proposals in the commercial refrigeration sub-sector. Mexico has also submitted a fully-developed project proposals in the domestic refrigeration subsector to the 80th meeting.	
Country	Mexico
Implementing agency	UNIDO
Project title	Replacement of HFC 134a with R-290 and R-744 in self-contained commercial refrigeration equipment at Imbera enterprise
Subsector/application	Commercial refrigeration
Alternative technology	R-290
Funding requested (US $)	30,000 (estimated project cost is not provided)

Description: The project will result in the conversion of the enterprise to use R-290 as alternative refrigerants to HFC-134a in self-contained commercial refrigeration equipment.	
Assessment: Imbera manufactures self-contained commercial refrigeration equipment (e.g., glass door refrigerators and freezers, display cases, solid door refrigerators and freezers). It consumed 70 mt of HFC-134a in 2016; while the company also uses small amounts of R-404A, the proposal is to convert only HFC-134a-based equipment. The technology selected is a mature technology for this application. There is potential for replicability in the region upon successful project completion. This project is one of two similar projects for the same application submitted for Mexico, and one of seven proposals in the commercial refrigeration sub-sector. Mexico has also submitted a fully-developed project proposal in the domestic refrigeration subsector to the 80th meeting. While the current consumption of R-404A in the enterprise is small relative to HFC-134a, the Secretariat considers that it would be helpful if assurances could be provided that the consumption of R-404A would not grow as a consequence of the conversion.	
Country	Viet Nam
Implementing Agency	UNIDO
Project title	Replacement of HFC-134a with R-290 in self contained commercial refrigeration equipment at Nagakawa Viet Nam Company
Subsector/application	Commercial refrigeration
Alternative technology	R-290
Funding requested (US $)	30,000 (estimated project cost is not provided)
Description: The project will convert Nakagawa Vietnam, a small manufacturer of self-contained commercial refrigeration enterprise with a production of 3,000 units in 2016, and consumption of 0.4 mt of HFC-134a. The project will provide information on ICC and IOC for a very small enterprise, which is relevant for Vietnam that has a many small companies.	
Assessment: UNIDO confirmed that the company has its own manufacturing line, and does not just assemble equipment despite the small consumption. There is potential replicability in other countries in the region, where circumstances are similar. UNIDO indicated that during project preparation, a larger or medium sized enterprise may also be considered. This is one of seven project preparation requests in the commercial refrigeration sub-sector.	
Country	Thailand
Implementing agency	World Bank
Project title	Project preparation for conversion from HFC to HFO-based or other low-GWP alternatives in the production of commercial refrigeration equipment at Pattana Intercool and System Forms Co., Ltd.
Subsector/application	Commercial refrigeration
Alternative technology	HFO (not specified)
Funding requested (US $)	40,000 (estimated project cost is not provided)
Description: Conversion from HFC to HFO-based alternatives in two manufacturers of commercial refrigeration equipment for low and medium temperature applications. The two companies consumed approximately 35 mt of HFC-134a and small quantity of R-404A and R-507	
Assessment: The alternative technology to be used will be identified only during project preparation given that the enterprises produce different models with different capacity, refrigerant charge, and temperature requirements; as well as the quantities of HFC to be phased out. The Secretariat is not clear whether the Executive Committee wishes to consider multiple enterprises in the same country. This is one of seven project preparation requests in the commercial refrigeration sub-sector. As the HFO has not yet been selected, it is difficult to assess whether the technology is mature and the GWP of the alternative.	

MOBILE AIR-CONDITIONING SUBSECTOR	
Country	China
Implementing Agency	UNDP
Project title	Air conditioning and production line optimization from HFC-134a to HFO-1234yf as refrigerant in a mobile air conditioning manufacturer
Subsector/application	Mobile air-conditioning
Alternative technology	HFO-1234yf
Total funding (US $)	US $30,000 (estimated project cost not provided)
Description: Reduce the cost of using HFO-12334yf as an alternative refrigerant, and improve the safety and efficiency of the MAC refrigeration system by controlling refrigerant leakage during manufacturing and use stages, and propose standards for MAC system leakage. It will also assess the performance of the MAC system using HFO-12334yf, propose steps to optimize these products, and establish a production line for an optimized MAC system. Shanghai Jiao tong University Institute of Automotive Engineering and Nanjing Xiezhong Auto-Air-conditioner (Group) Co., Ltd., will jointly carry out the activities of analysis, assessment, and optimization. One line will be converted from Nanjing Xiezhong Auto-Air-conditioner Ltd., with a production of 1,124,722 units in 2016 which, when charged with HFC-134a will require 562.36 mt using standard charges based on capacity	
Assessment: The project will lead to an indirect reduction of HFC-134a as it will be implemented in a MAC manufacturer, and the refrigerant is charged only when the MAC is installed in a car manufacturer. UNDP indicated that an indirect reduction of 22.5 mt of HFC-134a will result from this project. The technology selected is a mature technology for this application. The project does not include consideration of the operation of the MAC servicing sector; however, the introduction of leakage control protocol will contribute to the reduction of the servicing demand for the refrigerant. This is one of two proposals in the mobile air-conditioning sub-sector, and one of four proposals in China.	
Country	China
Implementing Agency	Government of Germany
Project title	Project for the conversion of conversion of MAC units using HFC-134a to CO_2 as a refrigerant
Subsector/application	Mobile air-conditioning
Alternative technology	CO_2
Funding requested (US $)	US $30,000 (estimated project cost was not provided)
Description: Develop a project to convert a MAC manufacturing line from HFC-134a to CO_2 (R744) that will help define define the ICC and IOC	
Assessment: The project request noted that the proposed technology (CO_2) is already applied in some automobile models in Germany and therefore considered mature. A prototype CO_2 compressor for MAC is already produced and tested by a local manufacturer in China. The enterprise where the demonstration project will be implemented, and the amount of HFC to be phased out has not yet been identified, and will be done only during the project preparation. This is one of two proposals in the mobile air-conditioning sub-sector, and one of four proposals in China.	

FOAM SECTOR	
Country	China
Implementing Agency	UNDP
Project title	Conversion from HFC-245fa to cyclopentane and HFOs (C5+HFO) in a domestic refrigerator manufacturer
Subsector/application	Foam
Alternative technology	Cyclopentane and HFO
Total funding (US $)	US $30,000 (estimated project cost US $3 million)
Description: The project will promote the use of cyclopentane+HFO technology for insulation foam in domestic refrigeration manufacturing through the conversion of one production line in Hisense-Kelon Co., Ltd. It will focus on removing or mitigating the barriers for using this technology, and collecting ICC, IOC, and improvements in energy efficiency related to the conversion	
Assessment: Hisense-Kelon has experience in the use of C5+HFO for insulation foam in domestic refrigerators as it has produced these products for export to Europe; in addition, many groups are investigating such blends for specific applications where insulation (and hence energy efficiency) are of importance.[1]. The proposed project will look at optimizing the system for use in domestic manufacturing where requirements could be different and where the cost of HFO might affect sustainability. The consumption of HFC-245fa in domestic refrigerators in China is estimated to be about 6,000 mt. The project has a significant potential for replicability among manufacturers, which could also lead to some price reduction in HFOs assuming it is adopted in a large scale. No investment nor demonstration projects have been funded to assess the costs of foam blowing agent combination. This is one of four proposals submitted in China and one of two in the foam sector.	
Country	Egypt
Implementing Agency	UNDP
Project title	Conversion from HFC-134a to HFO-1234ze and other liquid HFOs in the manufacture of PU/PIP and spray foam
Subsector/application	Foam
Alternative technology	HFO-1234ze
Total funding (US $)	US $30,000 (estimated project cost US $400,000)
Description: Convert the manufacture of PU/PIP and spray foam at Army Construction factory from HFC-134a to HFO-1234ze and other liquid HFOs. The conversion will gather information on the ICC and IOC cost of the conversion	
Assessment: Army Construction factory was funded for the conversion of CFC to HFC-134a through indirect injection in foam blowing, as part of an umbrella project approved at the 22nd meeting. This is the only enterprise in Egypt that used this substance for foam blowing. Consumption of HFC-134a at this enterprise is estimated at 35 mt in 2016. There may be limited replicability in the country as no enterprises use HFC for foam blowing; there are also very limited uses of HFC-134a in PU foam in many countries. This is one of two project preparation requests in the foam sector.	

[1] UNEP/OzL.Pro/ExCom/76/58.

Annex III

PROJECT PREPARATION REQUESTS FOR HFC-23 DEMONSTRATION PROJECTS SUBMITTED TO 80TH MEETING

HFC-23 demonstration projects	
Country	China
Implementing agency	UNDP
Project title	Demonstration project to convert HFC-23 by-product to valuable organic halides by reaction with hydrogen and carbon dioxide for Liaocheng Fuer New Material Technology Ltd.
Subsector/application	HFC-23 conversion technology (production sector)
Alternative technology	-
Total funding (US $)	US $30,000 (estimated project cost US $2.8 million)
Description: Demonstrate the use of a conversion technology introduced by Midwest Refrigerants designed to create and recover (high purity) anhydrous hydrogen fluoride and carbon monoxidevaluable organic halides halides from HFC-23 from chemical reaction of hydrogen (H_2) and CO_2. The demonstration project will build a 550 mt/year capacity unit for Liaocheng Fuer New Material Technology Ltd., collect information on the amounts of HFC-23 converted and its products, AHF and CO, and prepare detailed report capturing ICC, IOC, and lessons learnt to be shared with other HCFC-22 producer. Liaocheng Fuer New Material Technology Ltd. will provide co-financing for the project	
Assessment: This is one of two project preparation requests for a project to demonstrate a cost-effective and environmentally sustainable conversion technology of HFC-23.	
Country	China
Implementing agency	World Bank
Project title	Technology demonstration of HFC-23 by-product conversion technology at Shandong Dongyue Chemical Co. Ltd.
Subsector/application	HFC-23 conversion technology (production sector)
Alternative technology	-
Total funding (US $)	US $30,000 (estimated project not provided)
Description: Technical assessment and financial analyses of various HFC-23 conversion technologies in comparison to HFC-23 destruction and by-product mitigation. It will include review and evaluation of technical feasibility of various HFC-23 conversion technologies, determination of the capital cost of investment and operating costs of each option, and price and market for converted chemicals. Comparison of these costs for various technologies will be made in order to identify the most cost-effective option taking into account the needs of the enterprise	
Assessment: The project preparation will identify the selected HFC-23 conversion technology and provide information on the set up of the facility, costs, and HFC-23 conversion. This is one of two project preparation requests for a project to demonstrate a cost-effective and environmentally sustainable conversion technology of HFC-23.	

Project Title	Agency	ODP (tonnes)	Funds recommended (US$) Project	Support	Total	C.E. (US$/kg)
AFGHANISTAN						
SEVERAL						
Ozone unit support						
Extension of institutional strengthening project (phase VIII: 12/2015-11/2017)	UNEP		$192,000	$0	$192,000	
Total for Afghanistan			**$192,000**		**$192,000**	
ALBANIA						
SEVERAL						
Ozone unit support						
Renewal of institutional strengthening project (phase VIII: 7/2018-6/2020)	UNEP		$139,776	$0	$139,776	
Total for Albania			**$139,776**		**$139,776**	
ANGOLA						
SEVERAL						
Ozone unit support						
Extension of the institutional strengthening project (phase VI: 11/2017-10/2019)	UNEP		$172,032	$0	$172,032	
Total for Angola			**$172,032**		**$172,032**	
BAHAMAS						
PHASE-OUT PLAN						
HCFC phase out plan						
HCFC phase-out management plan (stage I, third tranche)	UNIDO	0.6	$35,828	$3,224	$39,052	
HCFC phase-out management plan (stage I, third tranche)	UNEP	0.7	$58,175	$7,563	$65,738	
Total for Bahamas		**1.3**	**$94,003**	**$10,787**	**$104,790**	
BARBADOS						
PHASE-OUT PLAN						
HCFC phase out plan						
HCFC phase-out management plan (stage I, second tranche)	UNDP	0.4	$38,000	$3,420	$41,420	
HCFC phase-out management plan (stage I, second tranche)	UNEP		$48,000	$6,240	$54,240	
Total for Barbados		**0.4**	**$86,000**	**$9,660**	**$95,660**	

Project Title	Agency	ODP (tonnes)	Funds recommended (US$) Project	Support	Total	C.E. (US$/kg)
BENIN						
SEVERAL						
Ozone unit support						
Renewal of institutional strengthening project (phase X: 1/2018-12/2019)	UNEP		$85,000	$0	$85,000	
Total for Benin			**$85,000**		**$85,000**	
BOLIVIA						
SEVERAL						
Ozone unit support						
Extension of institutional strengthening project (phase X: 1/2018-12/2019)	UNEP		$100,950	$0	$100,950	
Total for Bolivia			**$100,950**		**$100,950**	
BOSNIA AND HERZEGOVINA						
SEVERAL						
Ozone unit support						
Extension of the institutional strengthening project (phase VI: 3/2018-2/2020)	UNIDO		$122,026	$8,542	$130,568	
Total for Bosnia and Herzegovina			**$122,026**	**$8,542**	**$130,568**	
BOTSWANA						
PHASE-OUT PLAN						
HCFC phase out plan						
Verification report on the implementation of the HCFC phase-out management plan	UNEP		$30,000	$3,900	$33,900	
Total for Botswana			**$30,000**	**$3,900**	**$33,900**	
CAMEROON						
PHASE-OUT PLAN						
HCFC phase out plan						
HCFC phase-out management plan (refrigeration servicing sector plan) (stage I, fourth tranche)	UNIDO		$59,136	$4,435	$63,571	
SEVERAL						
Ozone unit support						
Extension of institutional strengthening project (phase XI: 1/2018-12/2019)	UNEP		$178,601	$0	$178,601	
Total for Cameroon			**$237,737**	**$4,435**	**$242,172**	

Project Title	Agency	ODP (tonnes)	Funds recommended (US$) Project	Support	Total	C.E. (US$/kg)
CHAD						
SEVERAL						
Ozone unit support						
Extension of the institutional strengthening project (phase VIII: 1/2018-12/2019)	UNEP		$85,000	$0	$85,000	
Total for Chad			**$85,000**		**$85,000**	
CHINA						
PHASE-OUT PLAN						
HCFC phase out plan						
HCFC phase-out management plan (stage II, second tranche) (solvent sector plan)	UNDP	59.8	$3,777,190	$245,517	$4,022,707	
Total for China		**59.8**	**$3,777,190**	**$245,517**	**$4,022,707**	
COMOROS						
PHASE-OUT PLAN						
HCFC phase out plan						
Verification report on the implementation of the HCFC phase-out management plan	UNEP		$30,000	$3,900	$33,900	
SEVERAL						
Ozone unit support						
Extension of the institutional strengthening project (phase X: 1/2018-12/2019)	UNEP		$85,000	$0	$85,000	
Total for Comoros			**$115,000**	**$3,900**	**$118,900**	
COSTA RICA						
PHASE-OUT PLAN						
HCFC phase out plan						
HCFC phase-out management plan (stage I, fourth tranche)	UNDP		$106,000	$7,950	$113,950	
SEVERAL						
Ozone unit support						
Extension of institutional strengthening project (phase XII: 1/2018-12/2019)	UNDP		$179,857	$12,590	$192,447	
Total for Costa Rica			**$285,857**	**$20,540**	**$306,397**	
DJIBOUTI						
PHASE-OUT PLAN						
HCFC phase out plan						
Verification report on the implementation of the HCFC phase-out management plan	UNEP		$30,000	$3,900	$33,900	

Project Title	Agency	ODP (tonnes)	Funds recommended (US$) Project	Support	Total	C.E. (US$/kg)
Total for Djibouti			**$30,000**	**$3,900**	**$33,900**	
GABON						
PHASE-OUT PLAN						
HCFC phase out plan						
Verification report on the implementation of the HCFC phase-out management plan	UNEP		$30,000	$3,900	$33,900	
Total for Gabon			**$30,000**	**$3,900**	**$33,900**	
GUINEA						
SEVERAL						
Ozone unit support						
Extension of the institutional strengthening project (phase X: 1/2018-12/2019)	UNEP		$85,000	$0	$85,000	
Total for Guinea			**$85,000**		**$85,000**	
INDONESIA						
SEVERAL						
Ozone unit support						
Extension of institutional strengthening project (phase XI: 1/2018-12/2019)	UNDP		$347,194	$24,304	$371,498	
Total for Indonesia			**$347,194**	**$24,304**	**$371,498**	
KENYA						
SEVERAL						
Ozone unit support						
Extension of institutional strengthening project (phase XI: 11/2017-10/2019)	UNEP		$194,134	$0	$194,134	
Total for Kenya			**$194,134**		**$194,134**	
LIBERIA						
SEVERAL						
Ozone unit support						
Extension of the institutional strengthening project (phase VII: 11/2017-10/2019)	UNEP		$109,073	$0	$109,073	
Total for Liberia			**$109,073**		**$109,073**	
MALAYSIA						
SEVERAL						
Ozone unit support						
Extension of institutional strengthening project (phase XII: 1/2018-12/2019)	UNDP		$357,760	$25,043	$382,803	
Total for Malaysia			**$357,760**	**$25,043**	**$382,803**	

Project Title	Agency	ODP (tonnes)	Funds recommended (US$) Project	Support	Total	C.E. (US$/kg)
MARSHALL ISLANDS						
SEVERAL						
Ozone unit support						
Extension of the institutional strengthening project (phase VI: 12/2017-11/2019)	UNEP		$85,000	$0	$85,000	
Total for Marshall Islands			**$85,000**		**$85,000**	
NIGER						
SEVERAL						
Ozone unit support						
Extension of institutional strengthening project (phase XI: 1/2018-12/2019)	UNEP		$85,000	$0	$85,000	
Total for Niger			**$85,000**		**$85,000**	
OMAN						
PHASE-OUT PLAN						
HCFC phase out plan						
Verification report on the implementation of the HCFC phase-out management plan	UNIDO		$30,000	$2,700	$32,700	
Total for Oman			**$30,000**	**$2,700**	**$32,700**	
PALAU						
SEVERAL						
Ozone unit support						
Renewal of institutional strengthening project (phase VII: 12/2017-11/2019)	UNEP		$85,000	$0	$85,000	
Total for Palau			**$85,000**		**$85,000**	
PANAMA						
SEVERAL						
Ozone unit support						
Extension of institutional strengthening project (phase VIII: 12/2017-11/2019)	UNDP		$191,360	$13,395	$204,755	
Total for Panama			**$191,360**	**$13,395**	**$204,755**	
PERU						
SEVERAL						
Ozone unit support						
Renewal of institutional strengthening project (phase V: 1/2018-12/2019)	UNEP		$170,893	$0	$170,893	
Total for Peru			**$170,893**		**$170,893**	

Project Title	Agency	ODP (tonnes)	Funds recommended (US$) Project	Support	Total	C.E. (US$/kg)
RWANDA						
SEVERAL						
Ozone unit support						
Extension of the institutional strengthening project (phase VII: 12/2017-11/2019)	UNEP		$85,000	$0	$85,000	
Total for Rwanda			**$85,000**		**$85,000**	
SAINT LUCIA						
SEVERAL						
Ozone unit support						
Renewal of institutional strengthening project (phase X: 1/2018-12/2019)	UNEP		$85,000	$0	$85,000	
Total for Saint Lucia			**$85,000**		**$85,000**	
SAINT VINCENT AND THE GRENADINES						
SEVERAL						
Ozone unit support						
Extension of the institutional strengthening project (phase VII: 1/2018-12/2019)	UNEP		$85,000	$0	$85,000	
Total for Saint Vincent and the Grenadines			**$85,000**		**$85,000**	
SAMOA						
SEVERAL						
Ozone unit support						
Extension of institutional strengthening project (phase IX: 11/2015-10/2017)	UNEP		$85,000	$0	$85,000	
Total for Samoa			**$85,000**		**$85,000**	
SENEGAL						
SEVERAL						
Ozone unit support						
Extension of institutional strengthening project (phase XII: 1/2018-12/2019)	UNEP		$194,689	$0	$194,689	
Total for Senegal			**$194,689**		**$194,689**	
SERBIA						
SEVERAL						
Ozone unit support						
Extension of institutional strengthening project (phase VI: 12/2017-11/2019)	UNIDO		$168,064	$11,764	$179,828	
Total for Serbia			**$168,064**	**$11,764**	**$179,828**	

Project Title	Agency	ODP (tonnes)	Funds recommended (US$) Project	Support	Total	C.E. (US$/kg)
SOLOMON ISLANDS						
SEVERAL						
Ozone unit support						
Renewal of institutional strengthening project (phase VII: 12/2017-11/2019)	UNEP		$85,000	$0	$85,000	
Total for Solomon Islands			**$85,000**		**$85,000**	
SUDAN						
PHASE-OUT PLAN						
HCFC phase out plan						
Verification report on the implementation of the HCFC phase-out management plan	UNIDO		$30,000	$2,700	$32,700	
HCFC phase-out management plan (stage I, third tranche) (refrigeration servicing sector)	UNIDO	4.3	$40,000	$3,000	$43,000	
Total for Sudan		**4.3**	**$70,000**	**$5,700**	**$75,700**	
SWAZILAND						
PHASE-OUT PLAN						
HCFC phase out plan						
Verification report on the implementation of the HCFC phase-out management plan	UNEP		$30,000	$3,900	$33,900	
Total for Swaziland			**$30,000**	**$3,900**	**$33,900**	
TIMOR LESTE						
PHASE-OUT PLAN						
HCFC phase out plan						
HCFC phase-out management plan (stage I, third tranche) *The Government, UNEP and UNDP were requested to complete stage I of the HPMP by 31 December 2018, and to submit the project completion report to the second meeting of the Executive Committee in 2019.*	UNDP		$10,680	$961	$11,641	
HCFC phase-out management plan (stage I, third tranche) *The Government, UNEP and UNDP were requested to complete stage I of the HPMP by 31 December 2018, and to submit the project completion report to the second meeting of the Executive Committee in 2019.*	UNEP		$16,400	$2,132	$18,532	
Total for Timor Leste			**$27,080**	**$3,093**	**$30,173**	
TOGO						
PHASE-OUT PLAN						
HCFC phase out plan						
Verification report on the implementation of the HCFC phase-out management plan	UNEP		$30,000	$3,900	$33,900	

Project Title	Agency	ODP (tonnes)	Funds recommended (US$) Project	Support	Total	C.E. (US$/kg)
Total for Togo			**$30,000**	**$3,900**	**$33,900**	
TONGA						
SEVERAL						
Ozone unit support						
Renewal of institutional strengthening project (phase VII: 12/2017-11/2019)	UNEP		$85,000	$0	$85,000	
Total for Tonga			**$85,000**		**$85,000**	
TURKEY						
SEVERAL						
Ozone unit support						
Extension of institutional strengthening project (phase VII: 12/2017-11/2019)	UNIDO		$332,800	$23,296	$356,096	
Total for Turkey			**$332,800**	**$23,296**	**$356,096**	
URUGUAY						
SEVERAL						
Ozone unit support						
Extension of institutional strengthening project (phase XII: 1/2018-12/2019)	UNDP		$193,024	$13,512	$206,536	
Total for Uruguay			**$193,024**	**$13,512**	**$206,536**	
ZIMBABWE						
PHASE-OUT PLAN						
HCFC phase out plan						
HCFC phase-out management plan (stage I, fourth tranche) (refrigeration servicing sector)	Germany	2.3	$168,000	$20,097	$188,097	
Approved on the understanding that if Zimbabwe were to decide to proceed with retrofits and associated servicing to flammable and toxic refrigerants in refrigeration and air-conditioning equipment originally designed for non flammable substances, it would do so assuming all associated responsibilities and risks and only in accordance with the relevant standards and protocols; and that the approved funds will not be transferred to the Government of Germany until the Secretariat has reviewed the revised verification report covering the period 2009 to 2016 and addressing the issues that were identified in the verification report submitted to the 80th meeting, on the understanding that any revision to the reported consumption of the baseline years that could result in an adjustment to the starting point for aggregate reduction in HCFC consumption, would be considered at the time of the approval of the last tranche of stage I of the HPMP, and the funding level would be adjusted accordingly.						
Total for Zimbabwe		**2.3**	**$168,000**	**$20,097**	**$188,097**	
GRAND TOTAL		**68.1**	**$9,046,642**	**$465,785**	**$9,512,427**	