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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Seventy-third Meeting
Paris, 9-13 November 2014

PROJECT PROPOSALS: MEXICO

This document consists of the comments and recommendation of the Secretariat on the following project proposals:

Phase-out

- HCFC phase-out management plan (HPMP) (stage I, fourth tranche) — UNDP/UNIDO
  - An updated Agreement between the Government of Mexico and the Executive Committee for stage I of the HPMP for Mexico.
- HCFC phase-out management plan (HPMP) (stage II, first tranche) — Germany/Italy/UNEP/UNIDO
  - A note by the Secretariat.
  - A draft Agreement between the Government of Mexico and the Executive Committee for stage II of the HPMP for Mexico.
  - Document UNEP/OzL.Pro/ExCom/72/33.

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Mexico

(I) PROJECT TITLE	AGENCY
HCFC phase out plan (Stage I)	UNDP, UNIDO (lead)

(II) LATEST ARTICLE 7 DATA (Annex C Group l)	Year: 2013	835.17 (ODP tonnes)

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)									Year: 2013
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-123					0.3				0.3
HCFC-124					0.1				0.1
HCFC-141b	83.8	215.4		216.8					516.1
HCFC-142b		5.8							5.8
HCFC-22	18.4	6.8		12.9	220.1				258.2

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	1,148.8	Starting point for sustained aggregate reductions:	1,214.8
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	417.3	Remaining:	797.5

(V) BUSINESS PLAN		2014	2015	2016	Total
UNDP	ODS phase-out (ODP tonnes)	0.0	26.0	0.0	26.0
	Funding (US $)	0	1,206,691	0	1,206,691
UNIDO	ODS phase-out (ODP tonnes)	33.0	5.3	46.2	84.5
	Funding (US $)	2,316,808	243,291	1,977,360	4,537,458

(VI) PROJECT DATA			2009	2010	2011	2012	2013	2014	2015-2017	2018	Total
Montreal Protocol consumption limits			n/a	n/a	n/a	n/a	1,148.8	1,148.8	1,033.9	1,033.9	n/a
Maximum allowable consumption (ODP tonnes)			n/a	n/a	n/a	n/a	1,148.8	1,148.8	1,033.9	804.2	n/a
Agreed funding (US$)	UNDP	Project costs	2,428,987		2,502,526	3,800,000	3,800,000		1,122,503		13,654,016
		Support costs	182,174		187,689	285,000	285,000		84,188		1,024,051
	UNIDO	Project costs			2,792,526	695,011	578,341	120,000	226,317		4,412,195
		Support costs			209,439	52,126	43,376	9,000	16,974		330,915
Funds approved by ExCom (US$)		Project costs	2,428,987	0	5,295,052	4,495,011	4,378,341	0	0		16,597,391
		Support costs	182,174	0	397,128	337,126	328,376	0	0		1,244,804
Total funds requested for approval at this meeting (US$)		Project costs						**120,000**			120,000
		Support costs						**9,000**			9,000

Secretariat's recommendation:	Blanket approval

PROJECT DESCRIPTION

1. On behalf of the Government of Mexico, UNIDO as the lead implementing agency, has submitted to the 73rd meeting a request for funding for the fourth tranche of stage I of the HCFC phase-out management plan (HPMP)[1] at the amount of US $120,000, plus agency support costs of US $9,000 for UNIDO only. The submission includes a progress report on the implementation of the third tranche of the HPMP and the tranche implementation plan for 2015.

Progress report on the implementation of the third tranche of the HPMP

2. Stage I of the HPMP for Mexico includes the phase-out of HCFCs in the polyurethane (PU) foam and aerosol manufacturing sectors and in the refrigeration servicing sector. The results achieved during the implementation of each project component are described below.

Activities in the foam manufacturing sector (UNDP)

3. Domestic refrigeration (Mabe): Implementation of the conversion of HCFC-141b/HCFC-22 foam insulation to hydrocarbon (HC) has been completed and awaiting for payment of the incremental operational costs (IOC) and administrative closure. The new cyclopentane based formulation for Mabe appliances has already been proven and is being used, but not yet at industrial scale. This project will result in the phase-out of 55.9 ODP tonnes of HCFC-141b and HCFC-22 by early 2015.

4. Systems houses: Ten eligible systems houses have installed equipment for the new HCFC-free formulations (based mostly on methyl formate, water-based, methylal) and related safety systems. Complementary equipment and safety items to operate with selected technologies are being delivered. All of the system houses have developed non-HCFC pre-blended polyol formulations and tested them at laboratory level. Developed HCFC-free formulations are currently being tested and optimized at selected downstream foam users and several are already commercially available. Some non-eligible systems houses have developed HFC-based (further HFOs) polyol systems which are commercially available (e.g., Bayer); other systems houses are testing water-blown or HFC-based polyol systems at foam enterprises (e.g., Dow and Hunstman).

5. Four systems houses (Aepsa, Urethane, Valcom and Zadro) have already phased out HCFC-141b and one (Zadro) has already completed the conversion of its downstream-users. The majority of systems houses will be fully operational without HCFCs by the end of 2014 and their downstream foam users will be converted during 2015. Few systems houses will take longer to implement due to the complexity of their alternatives (Aepsa and Pumex) or the number of downstream foam-users. A summary of progress of the systems houses project is presented in Table 1.

Table 1. Status of systems houses project

System House (SH)	Technologies developed	Project status	Downstream foam users (DSU)		Expected dates for completion
			Qty	Status	
Acsa	Methyl formate (MF) Pre-blended cyclopentane HFO	Conversion completed Formulations developed Some formulations commercially available HFO and CP are under development	73	Optimization ongoing Conversion ongoing	SH: End of 2015 DSU: Mid 2016
Aepsa	MF	Conversion completed Formulations developed Formulation commercially available	5	Optimization ongoing Conversion ongoing	SH: End 2014 DSU: End 2014

[1] The HPMP for Mexico was approved by the Executive Committee at its 64th meeting to reduce HCFC consumption by 30 per cent of the baseline by 1 January 2018.

System House (SH)	Technologies developed	Project status	Downstream foam users (DSU)		Expected dates for completion
			Qty	Status	
Bayer	HFC HFO	Non-eligible Formulations commercially available	24	Will start in 2015	SH: End 2015 DSU: Mid 2016
Comsisa	MF	Conversion in advanced stage Formulations developed Formulation commercially available	22	Optimization ongoing Conversion ongoing	SH: End 2014 DSU: Early 2015
Dow	HFC HFO (future) Water blown	Non-eligible	32	Tests on clients ongoing	SH: End 2015 DSU: Mid 2016
Eiffel	MF Water Methylal Methylal/HFC (low density spray) HFO Cyclopentane	Conversion completed Formulations developed Formulations commercially available	450	Optimization ongoing Conversion will start Kits for spray foam applicators delivered	SH: End 2014 DSU: End 2015
Huntsman	Water	Non-eligible	n.a.	Tests ongoing	
Maxima	MF Water Testing HFO	Conversion ongoing (safety adjustments still required) Formulations developed	96	Conversion kits for end-users were delivered	SH: End 2015 DSU: Early 2016
Polioles	HFC Water MF HFO (future)	Agreement still to be signed Formulations developed (HFC and water) and commercially available MF formulation being optimized at lab	9		SH: End 2015 DSU: End 2015
Pumex	MF Methylal Preblended Cyclopentane HFO	Conversion completed. Formulations developed. Formulation commercially available	32	Equipment delivered, training ongoing	SH: End 2015 DSU: Mid 2016
Urethane of Mexico	MF Water	Conversion completed. Formulations developed. Formulation commercially available	46	Conversion kits being delivered to spray-foam users	SH: End 2014 DSU: Mid 2015
Valcom	MF Methylal with HFC (HFO future)	Conversion completed Formulations developed Formulation commercially available	11	Equipment delivery and IOC pending	SH: End 2014 DSU: Mid 2015
Zadro	Methylal	Conversion completed Formulations developed Formulation commercially available	14	Retrofit kit delivered to the eligible clients Project completed. Only IOC pending	SH: Completed DSU: Completed

6. Commercial refrigeration (Fersa, Frigopanel, Metalfrio): Implementation of the conversion of HCFC-141b-based foam insulation to HC technology in three commercial refrigeration manufacturing enterprises is progressing as follows: Metalfrio (9.2 ODP tonnes) has installed all its equipment and will start industrial production after the safety audit is concluded at the end of 2014 or beginning of 2015. Frigopanel (6.4 ODP tonnes) agreed to source ancillary equipment locally to reduce the counterpart funding. A follow-up mission took place in August 2014 and a final agreement with the beneficiary is expected by the end of 2014 in order to deliver and install equipment in 2015. Fersa (7.3 ODP tonnes) completed the bidding process but the contract with the supplier is pending a visit from Fersa to the supplier expected during 2014. Once the contract is signed it is expected that equipment is delivered and installed in 2015.

Activities in the aerosol manufacturing sector (UNIDO)

7. Silimex: The installation of equipment and safety systems was completed and the production of new aerosol products started in June 2014. The conversion of the facility was finalized, trial runs and

safety audit were done, training of employees was conducted and operations started in June 2014, resulting in the complete phase-out of 11.0 ODP tonnes of HCFC-141b and HCFC-22.

Activities in the refrigeration servicing sector (UNIDO)

8. A training manual in good practices in cleaning refrigeration and air-conditioning systems and substitutes for HCFCs was prepared, published and made available online. Equipment and tools (e.g., flushing units using alternatives to HCFC-141b and spare parts) required for the training programme were received at eleven training centers in January 2014 and the training of trainers was organized at several locations. Administrative rules of procedures for the courses in each training center are being established and technicians training will start during the next months.

9. The organization of the remaining training activities was delayed as the alternative flushing agent delivered to the training centres to replace the current practice of cleaning refrigeration circuits with HCFC-141b, was very aggressive causing problems in the operation of the flushing units. UNIDO is addressing this issue to allow continuation of the training activities. Two alternatives have been tested: a flushing detergent agent and a filter cleaning system for bigger refrigeration systems. Both are working well.

Project implementation and monitoring

10. The Government of Mexico continued coordinating the activities being implemented under stage I and enforcing regulations to control HCFC import/export levels and production. The new energy standard has been officially published for residential air-conditioners allowing only the import and production of equipment without HCFC-22 due to the energy consumption of that technology. Several meetings with the industry took place in order to follow up the application of this standard.

Verification report of national HCFC consumption targets

11. A verification report for the year 2013 had already been submitted to the 72nd meeting along with the request for stage II of the HPMP[2]. The report confirmed that the Government is implementing a licensing and quota system for HCFC imports and exports and that the total consumption of HCFCs for 2013 was below the maximum allowable consumption target of 1,148.8 ODP tonnes.

Level of fund disbursement

12. As of 29 September 2014, of the US $4,378,341 approved for the third tranche, US $971,469 had been disbursed (US $850,000 for UNDP and US $121,469 for UNIDO. The balance of US $3,406,872 will be disbursed in 2014 and 2015 (Table 2).

Table 2. Financial report of the first, second and third tranches of the HPMP for Mexico

Agency	First tranche		Second tranche		Third tranche		Total	
	Approved	Disbursed	Approved	Disbursed	Approved	Disbursed	Approved	Disbursed
UNDP	*4,931,513	3,800,000	3,800,000	1,400,000	3,800,000	850,000	12,531,513	6,050,000
UNIDO	**2,792,526	1,419,878	695,011	336,396	578,341	121,469	4,065,878	1,877,743
Total	7,724,039	5,219,878	4,495,011	1,736,396	4,378,341	971,469	16,597,391	7,927,743
Disburse-ment rate		67.6%		38.6%		22.2%		47.7%

*Including individual project for Mabe.
**Including individual project for Silimex and the commercial refrigeration umbrella project.

[2] UNEP/OzL.Pro/ExCom/72/33.

Implementation plan for the fourth tranche of the HPMP

13. The main activities to be implemented for the remainder of 2014 and 2015 are described below:

(a) Update quota issuance to reinforce the phase-out of HCFC according to the criterion of the HPMP;

(b) Finalize the administrative actions to close the project for the conversion of Mabe, undertake final safety audit, organize the official opening of the new installations with cyclopentane and start industrial production of appliances by the first quarter of 2015;

(c) Finalize the conversion at Metalfrío by the end of 2014 and start industrial production of appliances with HC-based insulation foam. Deliver and install new equipment to Frigopanel and Fersa;

(d) Convert a large number of PU foam downstream-users to alternative technologies (mainly methyl formate, water-based and methylal) by providing *inter alia* spray-foam applicators and high and low-density injection applicators;

(e) Continue giving training in good refrigeration servicing practices including the use of alternatives for flushing to 1,000 technicians; and

(f) Continue ensuring compliance with the Montreal Protocol control measures and the Agreement targets through controls on imports and production levels, including the prevention of illegal trade.

14. The funds requested under the fourth tranche (US $120,000) will be used for technical assistance in the in the refrigeration servicing sector and the project management.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

Operational licensing system

15. The Government of Mexico has already issued HCFC import quotas for 2014 and 2015 in accordance with the Montreal Protocol control targets.

HCFC consumption

16. The 2009-2013 HCFC consumption in the Mexico is shown in Table 3. The HCFC consumption in 2013 is below the baseline for compliance.

Table 3. HCFC consumption in Mexico (2009-2013 Article 7 data)

HCFC	2009	2010	2011	2012	2013	Baseline
Metric tonnes						
HCFC-22	9,419.0	7,591.2	6,704.53	7,425.30	5,714.13	8,505.1
HCFC-123	54.0	92.1	63.29	37.00	20.90	73.1
HCFC-124	5.0	10.9	161.30	29.33	-62.17	8.0
HCFC-141b	5,503.5	6,744.2	6,196.20	5,882.20	4,691.44	6,123.9
HCFC-142b	20.0	158.3	437.70	725.53	89.00	89.2
Total (mt)	**15,001.5**	**14,596.7**	**13,563.02**	**14,099.36**	**10,453.29**	**14,799.3**

HCFC	2009	2010	2011	2012	2013	Baseline
ODP tonnes						
HCFC-22	518.0	417.5	368.75	408.39	314.28	467.8
HCFC-123	1.1	1.8	1.27	0.74	0.42	1.4
HCFC-124	0.1	0.2	3.55	0.64	-1.37	0.2
HCFC-141b	605.4	741.9	681.58	647.04	516.06	673.6
HCFC-142b	1.3	10.3	28.45	47.15	5.79	5.8
Total (ODP tonnes)	**1,125.9**	**1,171.7**	**1,083.40**	**1,103.98**	**835.17**	**1,148.8**

Technical issues

17. Given the progress achieved in the systems houses project in Mexico including the conversion of several downstream foam users, the Secretariat requested any available information on the IOCs incurred in the use the alternative formulations in comparison with HCFC-141b formulations. However, no concrete information was received as it was indicated that this calculation varies and depends on the systems house, the alternative, the production scale, the subsector and the size of the customer. Based on this, the Secretariat could not determine at present whether IOCs are larger or lower than initially envisaged.

18. It was noted that implementation issues reported last year at the commercial refrigeration enterprises Fersa and Frigopanel continued. UNIDO indicated that the main problem of both enterprises is the difficulty to cover the counterpart funding to purchase the equipment. The Secretariat enquired if it would be possible that these enterprises use pre-blended hydrocarbons (HC) being developed by some of the systems houses in Mexico in order to reduce the cost of storage and pre-mixing. UNIDO confirmed that at least two local systems houses have developed formulations based on HC but the distribution among the users is not ready as some safety issues have to be resolved. In the case of Fersa this alternative was considered but discarded, and in Frigopanel it is under evaluation. UNIDO will continue following up and exploring options for these two enterprises.

Revision of the Agreement

19. On behalf of the Government of Mexico, UNIDO submitted stage II of the HPMP to the 73rd meeting. Due to activities included in stage II, the Government of Mexico is committing to reduce in 2018 HCFC consumption by 35 per cent of the baseline, which is an additional 5 per cent reduction of the commitment acquired under stage I. Although stage II will be governed by a separate Agreement, in case it is approved, in order to maintain consistency, the relevant paragraphs and Appendix 2-A of the Agreement for stage I would need to be updated to reflect the additional reduction commitment in 2018. A new paragraph 16 has been added to indicate that the updated Agreement supersedes that reached at the 64th meeting, as shown in Annex I to this document. The full revised Agreement will be appended to the final report of the 73rd meeting.

Conclusion

20. The Secretariat notes that the implementation of the HPMP for Mexico is progressing. The investment projects in the aerosol sector (Silimex), domestic refrigeration sector (Mabe) and one of the commercial refrigeration enterprises (Metalfrio) are practically completed, representing a combined phase-out of 76 ODP tonnes of HCFC-141b and HCFC-22. In addition, four systems houses are no longer supplying HCFC-141b-based polyol systems, and all of them are already assisting their downstream foam users to phase out HCFC-141b. Two small enterprises in the commercial refrigeration sector are facing difficulties to provide the counterpart funding to convert to cyclopentane, which requires UNIDO's follow up and possibly exploring alternative options. The activities in the refrigeration servicing sector continue to be implemented as planned. In view of activities underway, the fact that the consumption of HCFCs of 835.17 ODP tonnes in 2013 is already 73 per cent of the baseline and 198.73 ODP tonnes

below the allowable consumption for 2015; the operational licensing and quota system in place; and the level of disbursement, the Secretariat recommends approval of the funding for the tranche.

RECOMMENDATION

21. The Fund Secretariat recommends that the Executive Committee:

(a) Takes note of the progress report on the implementation of the third tranche of stage I of the HCFC phase-out management plan (HPMP) for Mexico; and

(b) Requests the Fund Secretariat, in the event that stage II of the HPMP for Mexico is approved by the Executive Committee at its 73rd meeting with a different consumption target for 2018, to update paragraph 1 and Appendix 2-A of the Agreement for stage I between the Government of Mexico and the Executive Committee and to add a new paragraph indicating that the updated Agreement superseded that reached at the 64th meeting as continued in Annex I to the present document.

22. The Fund Secretariat further recommends blanket approval of the fourth tranche of stage I of the HPMP for Mexico, and the corresponding 2015 tranche implementation plan, with associated support costs at the funding level shown in the table below:

	Project title	Project funding (US $)	Support cost (US $)	Implementing agency
(a)	HCFC phase-out management plan (stage I, fourth tranche)	120,000	9,000	UNIDO

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Mexico

(I) PROJECT TITLE	AGENCY
HCFC phase out plan (Stage II)	UNDP, UNIDO (lead)

(II) LATEST ARTICLE 7 DATA (Annex C Group l)	Year: 2013	835.17 (ODP tonnes)

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)									Year: 2013
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-123					0.3				0.3
HCFC-124					0.1				0.1
HCFC-141b	83.8	215.4		216.8					516.1
HCFC-142b		5.8							5.8
HCFC-22	18.4	6.8		12.9	220.1				258.2

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	1,148.8	Starting point for sustained aggregate reductions:	1,214.8
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	417.3	Remaining:	797.5

(V) BUSINESS PLAN		2014	2015	2016	Total
UNIDO	ODS phase-out (ODP tonnes)	160.23	0.0	46.2	84.5
	Funding (US $)	9,289,019	0	3,742,860	13,031,879
Germany	ODS phase-out (ODP tonnes)	0.0	1.6	0.0	1.6
	Funding (US $)	33,900	400,000	0.0	433,900
Italy	ODS phase-out (ODP tonnes)	25.6	0.0	0.0	25.6
	Funding (US $)	300,000	0	0	300,000
UNEP	ODS phase-out (ODP tonnes)	0.0	0.0	0.0	0.0
	Funding (US $)	0	0	40,000	40,000

(VI) PROJECT DATA			2014	2015	2016	2018	2020	2022	Total
Montreal Protocol consumption limits			1,148.80	1,033.92	1,033.92	1,033.92	746.72	746.72	n/a
Maximum allowable consumption (ODP tonnes)			1,148.80	1,033.92	1,033.92	746.72	574.40	373.36	n/a
Project Costs requested in principle(US$)	UNIDO	Project costs	2,581,403	0	3,499,200	2,440,472	1,162,350	450,600	10,134,025
		Support costs	180,698	0	244,944	170,833	81,365	31,542	709,382
	Germany	Project costs	325,000	0	325,000	0	0	0	650,000
		Support costs	40,750	0	40,750	0	0	0	81,500
	Italy	Project costs	281,200	0	0	0	0	0	281,200
		Support costs	36,556	0	0	0	0	0	36,556
	UNEP	Project costs	0	0	40,000	0	0	0	80,000
		Support costs	0	0	5,200	0	5,200	0	10,400
Total project costs requested in principle (US $)			3,187,603	0	3,864,200	2,440,472	1,202,350	450,600	11,145,225
Total support costs requested in principle (US $)			258,004	0	290,894	170,833	86,565	31,542	837,838
Total funds requested in principle (US $)			3,445,607	0	4,155,094	2,611,305	1,288,915	482,142	11,983,063

(VII) Request for funding for the first tranche (2014)		
Agency	**Funds requested (US $)**	**Support costs (US $)**
UNIDO	2,581,403	180,698
Germany	325,000	40,750
Italy	281,200	36,556

Funding request:	Approval of funding for the first tranche (2014) as indicated above
Secretariat's recommendation:	For individual consideration

Note by the Secretariat

Background

23. At the 72nd meeting, UNIDO, as the lead implementing agency, submitted stage II of the HCFC phase-out management plan (HPMP) for Mexico to phase out 433.14 ODP tonnes of HCFCs by 2022. Following a review of the submission and subsequent discussions between the Secretariat and UNIDO, the Secretariat prepared document UNEP/OzL.Pro/ExCom/72/33, containing a recommendation for the approval of stage II of the HPMP comprising the following main components[3]:

(a) Aerosol sector plan to phase-out 63.37 ODP tonnes of HCFC-141b and HCFC-22 using several HFCs, perchloretylene and hydrocarbons (HCs), at a total cost of US $2,708,103, and with a cost-effectiveness of US $3.74/kg;

(b) Activities in the refrigeration and air-conditioning servicing sector to phase out 98.66 ODP tonnes of HCFC-141b and HCFC-22 at a total cost of US $6,817,790 and with a cost-effectiveness of US $4.50/kg;

(c) Policy activities with an associated phase-out of 2.42 ODP tonnes of HCFC-22 at a total cost of US $197,350 and with a cost-effectiveness of US $4.50/kg;

(d) Monitoring of HCFC production, at a total cost of US $100,000; and

(e) Project monitoring and implementation unit, at a total cost of US $690,000.

24. In total, the activities included in the recommended stage II of the HPMP for Mexico would result in the phase-out of 164.45 ODP tonnes of HCFCs with an overall cost-effectiveness of US $4.52/kg. In addition, 272.10 ODP tonnes of HCFCs non-eligible for funding would be phased out, achieving a total reduction of 436.55 ODP tonnes at cost-effectiveness of US $2.13/kg. With approval of stage II of the HPMP, the Government of Mexico committed to achieving reductions of its baseline consumption as follows: 35 per cent in 2018: 50 per cent in 2020; and 67.5 per cent in 2022. The Government also committed to achieving total phase-out of HCFC-141b and to introducing a ban for imports of HCFC-141b both in bulk or contained in pre-blended polyols by 1 January 2022.

25. The Secretariat explained that the draft Agreement between the Government of Mexico and the Executive Committee was not finalized due to outstanding issues that required further analysis, including the existence of tranches overlapping with potential implications in the financial monitoring and closure of stage I; two different phase-out targets in 2018; and two different penalty clauses for years in which two stages were ongoing[4]. Based on this, the Secretariat recommended finalization of the draft Agreement for submission to the 73rd meeting once these issues were addressed.

26. At the 72nd meeting, there was general support by the members of the Executive Committee for the project proposal. The Government of Mexico was complimented on moving forward with stage II of its HPMP, which would also convert non-eligible enterprises without funding from the Multilateral Fund. Overall, the cost-effectiveness was good and there were a number of interesting elements in the proposal. However, several members expressed concern at approving the project without first seeing the draft Agreement. It was also pointed out that having two overlapping stages meant that the issues being considered were particularly complex and the Executive Committee would need to proceed carefully

[3] For ease of reference, the detailed table of overall cost of the HPMP stage II is attached with document UNEP/OzL.Pro/ExCom/72/33).

[4] These issues were further developed in the document on "Overview of issues identified during project review" (UNEP/OzL.Pro/ExCom/72/12).

when approving the Agreement. Questions were also raised about the choice of the technologies to be used in the aerosol sector; the accelerated phase-out proposed; and the associated distribution of the funding tranches.

27. Upon discussions, the Executive Committee, in decision 72/37, decided:

"(a) To note with appreciation that stage II of the HCFC phase-out management plan (HPMP) for Mexico, as contained in document UNEP/OzL.Pro/ExCom/72/33 was cost effective, well-crafted, and was formulated and submitted without preparatory funding;

(b) To defer consideration of stage II of the HPMP for Mexico to the 73rd meeting to allow for the preparation of an Agreement and to further optimize the aerosol sector plan proposal to explore options to further reduce its climate impact;

(c) To request the Government of Mexico, the Secretariat and UNIDO to finalize the draft Agreement between the Government of Mexico and the Executive Committee for the reduction in consumption of HCFCs; and

(d) To approve funds on an exceptional basis at the level of US $40,000, plus agency support costs of US $2,800 for UNIDO, in order to optimize the aerosol sector plan proposal to explore options to further reduce its climate impact. "

28. As a result, UNIDO, on behalf of the Government of Mexico, submitted to the 73rd meeting a revised version of stage II of the HPMP at a total cost of US $11,145,225, excluding agency support costs. Given that the revision has had minimum impact on most aspects of the HPMP, and understanding that it is the intention of the Executive Committee to continue discussions at the 73rd meeting, the Secretariat has prepared the present note on new developments, while attaching document UNEP/OzL.Pro/ExCom/72/33 for reference.

29. The present note provides additional and revised information in the following two aspects:

(a) Modifications to the aerosol sector to reflect the new plan for the enterprise Quimobasicos to replace the use of 225.35 mt (23.76 ODP tonnes) of HCFCs by HFO-1233zd instead of HFC-245fa; and

(b) The submission of the draft Agreement between the Government of Mexico and the Executive Committee presented as Annex II to the present document.

Submission of a revised stage II of the HPMP to the 73rd meeting

30. In response to decision 72/37, UNIDO and the Government of Mexico undertook additional consultations with the aerosol sector in order to explore options for replacing the use of HCFCs by alternatives with lower climate impact instead of HFCs.

Revised aerosol sector plan

31. In the submission and during the discussions with the Secretariat, UNIDO explained in more detail the differences between the aerosol applications in Quimobasicos and the other enterprises. Quimobasicos uses HCFC-141b for several industrial cleaning processes with very strict considerations on flammability, safety and performance (e.g., industrial cleaning processes in the automotive sector, and metal and electronic cleaning processes in the electronics manufacturing sector). Based on those requirements, HFE, HFC-43-10mee and perchloroethylene were considered not feasible options due to poor performance (e.g., a cleaning process that would require more than an hour with any of these

alternatives, can be completed in 10 minutes with an hydrofluorolefine (HFO-1233zd), which has a negligible impact on climate). HCs such as propane or butane could only be used in cases where the end-users allow the use of flammable substances, which is not the case for the applications by Quimobasicos. Another consideration is that air quality control authorities discourage the direct emission of volatile organic compounds (VOCs) like HC, due to the excessive levels of tropospheric ozone in all large Mexican cities.

32. HFOs are not well known in Mexico yet as they have only been recently introduced in some markets in the world. The manufacturer of HFO states that the properties of these substances are good as a cleaning solvent, but so far, not enough tests had been made by Quimobasicos to confirm the said performance.

33. Based on consultations held with Quimobasicos and notwithstanding the limited information available, it was decided to consider HFO-1233zd as the alternative solvent instead of HFC-245fa (at a price of US $12.50/kg) as originally planned. As the current price of HFO-1233zd is estimated at US $22/kg, the project component using this substance is scheduled for the years 2016 to 2019, with the expectation that by that time the price would decrease to US $18.00/kg and its availability would improve. On this basis, the incremental operational costs of the Quimobasicos component would be US $3,154,278, (instead of US $1,915,098 based on HFC-245fa). Considering the local ownership portion of 51 per cent, the cost of this conversion would be US $1,608,682 (or US $631,982 higher than the original proposal).

34. The conversion of the other enterprises covered under the aerosol sector plan will remain as originally submitted and reflected in Table 6 of document UNEP/OzL.Pro/ExCom/72/33. The revised selection of alternatives in the aerosol sector is presented in Table 4 (changes introduced from the original plan are presented in bold font).

Table 4. Revised selection of alternatives for aerosol and solvent applications stage II*

Application	HCFC consumption	Current formulation	Proposed formulation	Observations
Electronic cleaner	189.37	70% HCFC-141b 30% HCFC-22	50% perchloroetylene 50% HFC-134a	Formulation must be non-flammable
Duster (compressed air)	289.47	100% HCFC-22	100% HFC-152a	No flammability concerns
Silicon application	64.02	61% HCFC-141b 39% HCFC-22	34% HAP 40% solvent 25% silicon	Price sensitive No flammability concerns
Industrial aerosols (Quimobásicos)	225.31	100% HCFC-141b or 85% HCFC-141b 15% HCFC-22	**100% HFO-1233zd**	Formulations must be non-flammable
Total	768.17			

*Revised Table 6 from document UNEP/OzL.Pro/ExCom/72/33.

35. The Secretariat and UNIDO also discussed the possibility to convert all the enterprises to HFO-1233zd as Quimobasicos; however it was found not feasible for the following reasons:

(a) The recently approved Silimex project as well as the enterprises non-eligible for funding use HFC-134a for cleaning electronic parts and components, where flammable substances are not allowed. Introduction of HFO-1233zd in newly assisted enterprises would jeopardize sustainability of their conversions, due to the much higher cost of HFO-1233zd as compared to HFC-134a; and

(b) Conversion of the small enterprises cannot be delayed until the prices of HFC-134a and HFO-1233zd would equalize, since the schedule for phasing out HCFC-141b should be

similar or as close as possible to that for Silimex (2014) to avoid unfair price competition (in view of the lower price of HCFC-141b compared to HFC-134a).

36. UNIDO also reiterated that HFC-134a would be introduced only for applications where currently no other financially feasible non-flammable alternative exists (cleaning of electrical and electronic parts and components). HFC-134a as a non-flammable propellant is used widely for the same application in non-Article 5 countries. To reduce the climate impact due to its high-GWP value, it will be applied in combination with perchloretylene, so for each kg of HCFC phased out, only 0.5 kg of HFC-134a are phased in. Out of the 768 mt of HCFCs to be phased out by the aerosol sector, only 94 mt of HFC-134a will be phased in, and 289 mt of HFC-152a, which has a relatively low-GWP (124 calculated for 100 years). These alternatives are in line with the air quality measures being applied as part of the Mexican air quality programmes to curb release of VOCs.

37. The revised cost of the aerosol sector plan is presented in Table 5. The additional cost of the new proposal for the Multilateral Fund is US $631,982. The cost-effectiveness changed from US 3.53/kg to US $4.35/kg (changes introduced from the original plan are presented in bold font).

Table 5. Revised cost aerosol project

Enterprise	Alternatives	Total consumption (mt)	ICC (US $)	IOC (US $)	Total cost (US $)	C.E. (US $/kg)
Aerosoles Internacionales	Perchloroetylene/HFC-134a, HFC-152a	48.55		145,668	145,668	3.00
Alben international	HFC-152a	10.27		30,810	30,810	3.00
Dimmex	Perchloroetylene/HFC-134a, HFC-152a	60.34		181,032	181,032	3.00
Envatec	Perchloroetylene/HFC-134a, HFC-152a	84.06		252,198	252,198	3.00
Quimica Jerez	Perchloroetylene/HFC-134a, HFC-152a	51.90		155,700	155,700	3.00
Quimica Marcat	Perchloroetylene/HFC-134a, HFC-152a, Propane/butane	170.15	310,420	142,925	453,345	2.66
Quimobasicos	**HFO-1233zd**	225.35		**3,154,278**	**1,608,682**	**7.14***
Tecnosol	Perchloroetylene/HFC-134a, HFC-152a	117.55		352,650	352,650	3.00
Technical assistance for formulation development and awareness					160,000	
TOTAL		768.17	310,420	**4,415,261**	**3,340,085**	**4.35**

*Calculated based on the total HCFC consumption.

38. The new proposal for the aerosol sector will avoid the emission into the atmosphere of some 801.2 thousand tonnes of CO_2-equivalent per year (Table 6), which is 212 thousand tonnes of CO_2-equivalent less emissions as compared to the 589.3 thousand tonnes of CO_2-equivalent that would have been avoided in the original proposal. The additional cost for the Multilateral Fund of achieving these additional emissions avoided is US $631,982.

Table 6. Revised impact on the climate of the aerosol conversion projects

Enterprise	Annual warming impact before conversion (t-CO_2E)			Annual warming impact after conversion by alternative technology (t-CO_2E)					Climate impact of conversion t-CO_2E
	HCFC-22	HCFC-141b	Total	HFC-134a	HFC-152a	HC	**HFO-1233zd**	Total	
GWP	1,810	725		1,430	124	20	**4**		
Aerosoles Internacionales	64,798	9,248	74,046	13,029	3,761			16,790	-57,256
Alben International	18,589		18,589		1,273			1,273	-17,315
Dimmex	109,223		109,223		7,483			7,483	-101,740
Envatec	126,819	10,150	136,969	14,300	7,944			22,244	-114,725
Quimica Jerez	54,119	15,950	70,069	22,471	2,538			25,009	-45,060
Quimica Marcat	164,348	57,529	221,877	35,291	7,042	454		42,787	-179,089
Tecnosol	123,623	35,706	159,329	50,306	5,852			56,158	-103,171
Quimobasicos	33,938	149,785	183,723				**901**	**901**	**-182,821**
TOTAL	973,824			**172,646**					**-801,178**

*****Revised Table 10 from document UNEP/OzL.Pro/ExCom/72/33.

39. In reviewing the proposal, the Secretariat noted its increased cost and climate benefit. The cost-effectiveness level of converting Quimobasicos to HFO-1233zd increased from US $8.49/kg to US $14.00/kg before discounting the non-Article 5 ownership portion (or from US $4.33/kg to US $7.14/kg after discount). While the cost-effectiveness level of the enterprise is higher than the aerosol threshold used in the past for CFCs (US $4.40/kg), the cost-effectiveness of the overall aerosol sector plan (US $4.35/kg) continues to be below that threshold. In addition, the revised Quimobasicos conversion would reduce its annual emissions of CO_2-equivalent by 182.8 thousand tonnes per year (or 99.5 per cent of its current emissions of 183.7 thousand tonnes) instead of increasing them as in the previous proposal.

40. Taking into account that as per current guidelines for stage I HPMPs, projects in the aerosol sector should be considered on a case-by-case basis, the proposal is being forwarded to the Executive Committee for consideration.

Revised overall cost of stage II of the HPMP for Mexico

41. Table 7 presents the revised overall cost of stage II of the HPMP for Mexico, including the new proposal for Quimobasicos, changes the cost-effectiveness level of the overall stage II of the HPMP from US $4.52/kg to US $4.79/kg, leaving it still below US $5.00/kg. Counting the self-funded phase-out committed by the Government of Mexico, the cost-effectiveness changes from US $2.13/kg to US $2.26/kg.

Table 7. Revised detailed activities and costs agreed in stage II of the HPMP*

Description of component	Agency	HCFC	Total HCFC		Cost (US $)	C.E. (US $/kg)	% baseline
			Mt	ODP			
Conversion from HCFC-141b to HFO blowing agent at Whirlpool Mexico		HCFC-141b	1,000.0	110.00	-		9.6
Conversions other non-eligible enterprises		HCFC-141b HCFC-22	1,599.8	162.10	-		14.1
Subtotal non-funded activities			2,599.8	272.10	-		23.7
Aerosol sector activities	UNIDO	HCFC-141b HCFC-22	768.2	63.37	**3,340,085**	**4.35**	5.5
Servicing sector activities							
Cleaning agent phase-out in the refrigeration servicing sector	UNIDO	HCFC_141b HCFC-22	308.0	32.23	1,385,990	4.50	2.8

Description of component	Agency	HCFC	Total HCFC		Cost (US $)	C.E. (US $/kg)	% baseline
			Mt	ODP			
Technicians training programme	UNIDO	HCFC-22	1,000.1	55.01	4,500,600	4.50	4.8
Assistance for the introduction of HC alternatives	Germany	HCFC-22	145.0	7.98	650,000	4.48	0.7
Strengthening of recovery, recycling and reclamation network	Italy	HCFC-22	62.5	3.44	281,200	4.50	0.3
Subtotal servicing sector activities			1,515.6	98.66	6,817,790	4.50	8.6
Policy and regulatory actions							
Updating and operating the quota and licensing system and legislation	UNIDO	HCFC-22	8.3	0.46	37,350	4.50	0.0
Customs activities	UNEP	HCFC-22	17.8	0.98	80,000	4.49	0.1
Public awareness	UNIDO	HCFC-22	17.8	0.98	80,000	4.49	0.1
Subtotal policy and regulatory actions			43.9	2.42	197,350	4.50	0.2
Preparatory funding production sector	UNIDO				-		0.0
Monitoring of HCFC production	UNIDO				100,000		0.0
HPMP monitoring and coordination	UNIDO				690,000		0.0
Subtotal funded activities			2,327.7	164.45	**11,145,225**	**4.79**	14.3
Total for stage II of the HPMP			4,927.5	436.55	**11,145,225**	**2.26**	38.0

*Revised Table 9 from document UNEP/OzL.Pro/ExCom/72/33.

42. With approval of stage II of the HPMP, the Government of Mexico commits to achieving accelerated reductions of 35 per cent the baseline for compliance in 2018, 50 per cent in 2020 and 67.5 per cent in 2022. The Government of Mexico also commits to achieving total phase-out of HCFC-141b and introducing a ban for imports of HCFC-141b by 1 January 2022. Accordingly, the remaining eligible consumption of 428.10 ODP tonnes of HCFC-141b is deducted from the starting point.

Agreement between the Government of Mexico and the Executive Committee:

43. The Secretariat developed a draft Agreement for stage II separate from that of stage I based on the feedback provided by Executive Committee members during the discussion on this issue at the 72nd meeting (decision 72/23). The draft Agreement includes new text in Appendix 4-A and Appendix 7-A addressing the approach to prepare tranche implementation reports and plans, verifications and penalty clauses when more than one stage of an HPMP is being implemented during a particular year and when there are differences in the consumption targets and the penalty clauses (The text added to the draft Agreement is highlighted for easy reference). Further details on the preparation of the Agreement can be found in document UNEP/OzL.Pro/ExCom/73/24 "Overview of issues identified during project review".

2014-2020 draft business plan of the Multilateral Fund

44. The revised level of funding requested for the implementation of stage II of the HPMP of US $11,983,063 (including support costs and excluding costs associated with stage I tranches) is still lower than that in the business plan (US $15,196,509).

RECOMMENDATION

45. In view of the revised stage II of the HPMP for Mexico submitted by UNIDO, the Executive Committee may wish to consider:

(a) Approving, in principle, stage II of the HCFC phase-out management plan (HPMP) for Mexico for the period 2014 to 2022 to reduce HCFC consumption by 67.5 per cent of the

baseline, at the amount of US $11,983,063 consisting of US $10,134,025, plus agency support costs of US $709,382 for UNIDO; US $80,000, plus agency support costs of US $10,400 for UNEP; US $650,000, plus agency support costs of US $81,500 for the Government of Germany; and US $281,200, plus agency support costs of US $36,556 for the Government of Italy;

(b) Deducting additional 533.6 ODP tonnes of HCFCs from the starting point for sustained aggregate reduction in HCFC consumption, including 28.6 ODP tonnes of HCFC-141b contained in exported pre-blended polyols;

(c) Noting the commitment of the Government of Mexico to issue a ban on import of HCFC-141b by 1 January 2022;

(d) Noting that the Government of Mexico has committed to reduce HCFC consumption by 35 per cent of the baseline in 2018, 50 per cent in 2020, and 67.5 per cent in 2022;

(e) Noting that approval of stage II of the HPMP did not preclude Mexico from submitting earlier than 2020, a proposal to achieve a reduction in HCFCs beyond that addressed in stage II of the HPMP;

(f) Approving the draft Agreement between the Government of Mexico and the Executive Committee for the reduction in consumption of HCFCs, in accordance with stage II of the HPMP, as contained in Annex II to the present document; and

(g) Approving the first tranche of stage II of the HPMP for Mexico, and the corresponding tranche implementation plans, at the amount of US $3,445,607, consisting of US $2,581,403, plus agency support costs of US $180,698 for UNIDO; US $281,200, plus agency support costs of US $36,556 for the Government of Italy and US $325,000, plus agency support costs of US $40,750 for the Government of Germany.

Annex I

TEXT TO BE INCLUDED IN THE UPDATED AGREEMENT BETWEEN THE GOVERNMENT OF MEXICO AND THE EXECUTIVE COMMITTEE OF THE MULTILATERAL FUND FOR THE REDUCTION IN CONSUMPTION OF HYDROCHLOROFLUOROCARBONS

(Relevant changes are in bold font for ease of reference)

1. This Agreement represents the understanding of the Government of Mexico and the Executive Committee with respect to the reduction of controlled use of the ozone-depleting substances (ODS) set out in Appendix 1-A ("The Substances") to a sustained level of **746.72** ODP tonnes by 1 January 2018 in compliance with Montreal Protocol schedule.

16. This updated Agreement supersedes the Agreement reached between the Government of Mexico and the Executive Committee at the 64th meeting of the Executive Committee.

APPENDIX 2-A: THE TARGETS, AND FUNDING

		2009	2011	2012	2013	2014	2015	2016	2017	2018	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)			n/a	1,148.8	1,148.8	1,033.9	1,033.9	1,033.9	1,033.9	n/a
1.2	Maximum allowable total consumption of Annex C Group I substances (ODP tonnes)				1,148.8	1,148.8	1,033.9	1,033.9	1,033.9	**746.72**	n/a
2.1	Lead IA (UNIDO) agreed funding (US $)	0	2,792,526	695,011	578,341	120,000	226,317	0	0	0	4,412,195
2.2	Support costs for Lead IA (US $)	0	209,439	52,126	43,376	9,000	16,974	0	0	0	330,915
2.3	Cooperating IA (UNDP) agreed funding (US $)	2,428,987	2,502,526	3,800,000	3,800,000	0	1,122,503	0	0	0	13,654,016
2.4	Support costs for Cooperating IA (US $)	182,174	187,689	285,000	285,000	0	84,188	0	0	0	1,024,051
3.1	Total agreed funding (US $)	2,428,987	5,295,052	4,495,011	4,378,341	120,000	1,348,820	0	0	0	18,066,211
3.2	Total support costs (US $)	182,174	397,128	337,126	328,376	9,000	101,162	0	0	0	1,354,966
3.3	Total agreed costs (US $)	2,611,161*	5,692,180**	4,832,137	4,706,717	129,000	1,449,982	0	0	0	19,421,177
4.1.1	Total phase-out of HCFC–22 agreed to be achieved under this Agreement (ODP tonnes)										4.7
4.1.2	Phase-out of HCFC-22 to be achieved in previously approved projects (ODP tonnes) (*)										20.1
4.1.3	Remaining eligible consumption for HCFC-22 (ODP tonnes)										368.0
4.2.1	Total phase-out of HCFC-141b agreed to be achieved under this Agreement (ODP tonnes)										345.8
4.2.2	Phase-out of HCFC-141b to be achieved in previously approved projects (ODP tonnes) (**)										46.7
4.2.3	Remaining eligible consumption for HCFC-141b (ODP tonnes)										428.1
4.3.1	Total phase-out of HCFC-142b agreed to be achieved under this Agreement (ODP tonnes)										0.0
4.3.2	Phase-out of HCFC-142b to be achieved in previously approved projects (ODP tonnes)										0.0
4.3.3	Remaining eligible consumption for HCFC-142b (ODP tonnes)										1.0
4.4.1	Total phase-out of HCFC-123 agreed to be achieved under this Agreement (ODP tonnes)										0.0
4.4.2	Phase-out of HCFC-123 to be achieved in previously approved projects (ODP tonnes)										0.0
4.4.3	Remaining eligible consumption for HCFC-123 (ODP tonnes)										0.3
4.5.1	Total phase-out of HCFC-124 agreed to be achieved under this Agreement (ODP tonnes)										0.0
4.5.2	Phase-out of HCFC-124 to be achieved in previously approved projects (ODP tonnes)										0.0
4.5.3	Remaining eligible consumption for HCFC-124 (ODP tonnes)										0.1

(*) Approved at the 59th meeting for UNDP for Mabe.
(**) US $559,985 approved at the 63rd meeting for UNIDO for Silimex.

Annex II

DRAFT AGREEMENT BETWEEN THE GOVERNMENT OF MEXICO AND THE EXECUTIVE COMMITTEE OF THE MULTILATERAL FUND FOR THE REDUCTION IN CONSUMPTION OF HYDROCHLOROFLUOROCARBONS IN ACCORDANCE WITH STAGE II OF THE HCFC PHASE-OUT MANAGEMENT PLAN

1. This Agreement represents the understanding of the Government of Mexico (the "Country") and the Executive Committee with respect to the reduction of controlled use of the ozone-depleting substances (ODS) set out in Appendix 1-A ("The Substances") to a sustained level of 373.36 ODP tonnes by 1 January 2022 in compliance with Montreal Protocol schedule.

2. The Country agrees to meet the annual consumption limits of the Substances as set out in row 1.2 of Appendix 2-A ("The Targets, and Funding") in this Agreement as well as in the Montreal Protocol reduction schedule for all Substances mentioned in Appendix 1-A. The Country accepts that, by its acceptance of this Agreement and performance by the Executive Committee of its funding obligations described in paragraph 3, it is precluded from applying for or receiving further funding from the Multilateral Fund in respect to any consumption of the Substances that exceeds the level defined in row 1.2 of Appendix 2-A as the final reduction step under this Agreement for all of the Substances specified in Appendix 1-A, and in respect to any consumption of each of the Substances that exceeds the level defined in rows 4.1.3, 4.2.3, 4.3.3, 4.4.3 and 4.5.3 (remaining consumption eligible for funding).

3. Subject to compliance by the Country with its obligations set out in this Agreement, the Executive Committee agrees, in principle, to provide the funding set out in row 3.1 of Appendix 2-A to the Country. The Executive Committee will, in principle, provide this funding at the Executive Committee meetings specified in Appendix 3-A ("Funding Approval Schedule").

4. The Country agrees to implement this Agreement in accordance with the stage II of the HCFC phase-out management plan (HPMP) approved ("the Plan"). In accordance with sub-paragraph 5(b) of this Agreement, the Country will accept independent verification of the achievement of the annual consumption limits of the Substances as set out in row 1.2 of Appendix 2-A of this Agreement. The aforementioned verification will be commissioned by the relevant bilateral or implementing agency.

5. The Executive Committee will not provide the Funding in accordance with the Funding Approval Schedule unless the Country satisfies the following conditions at least eight weeks in advance of the applicable Executive Committee meeting set out in the Funding Approval Schedule:

(a) That the Country has met the Targets set out in row 1.2 of Appendix 2-A for all relevant years. Relevant years are all years since the year in which this Agreement was approved. Years for which there are no due ~~no obligation for reporting of~~ country programme implementation reports ~~data exists~~ at the date of the Executive Committee meeting at which the funding request is being presented are exempted;

(b) That the meeting of these Targets has been independently verified, unless the Executive Committee decided that such verification would not be required;

(c) That the Country had submitted Tranche Implementation Reports in the form of Appendix 4-A ("Format of Tranche Implementation Reports and Plans") covering each previous calendar year; that it had achieved a significant level of implementation of activities initiated with previously approved tranches; and that the rate of disbursement of funding available from the previously approved tranche was more than 20 per cent; and

(d) That the Country has submitted a Tranche Implementation Plan in the form of Appendix 4-A covering each calendar year until and including the year for which the funding schedule foresees the submission of the next tranche or, in case of the final tranche, until completion of all activities foreseen.

~~(e) That, for all submissions from the 68th Meeting onwards, confirmation has been received from the Government that an enforceable national system of licensing and quotas for HCFC imports and, where applicable, production and exports is in place and that the system is capable of ensuring the Country's compliance with the Montreal Protocol HCFC phase-out schedule for the duration of this Agreement.~~

6. The Country will ensure that it conducts accurate monitoring of its activities under this Agreement. The institutions set out in Appendix 5-A ("Monitoring Institutions and Roles") will monitor and report on implementation of the activities in the previous Tranche Implementation Plans in accordance with their roles and responsibilities set out in Appendix 5-A. This monitoring will also be subject to independent verification as described in paragraph 4 above.

7. The Executive Committee agrees that the Country may have the flexibility to reallocate the approved funds, or part of the funds, according to the evolving circumstances to achieve the smoothest reduction of consumption and phase-out of the Substances specified in Appendix 1-A:

(a) Reallocations categorized as major changes must be documented in advance either in a Tranche Implementation Plan submitted as foreseen in sub-paragraph 5(d) above, or as a revision to an existing Tranche Implementation Plan to be submitted eight weeks prior to any meeting of the Executive Committee, for its approval. Major changes would relate to:

(i) Issues potentially concerning the rules and policies of the Multilateral Fund;

(ii) Changes which would modify any clause of this Agreement;

(iii) Changes in the annual levels of funding allocated to individual bilateral or implementing agencies for the different tranches; and

(iv) Provision of funding for programmes or activities not included in the current endorsed Tranche Implementation Plan, or removal of an activity in the Tranche Implementation Plan, with a cost greater than 30 per cent of the total cost of the last approved tranche;

(b) Reallocations not categorized as major changes may be incorporated in the approved Tranche Implementation Plan, under implementation at the time, and reported to the Executive Committee in the subsequent Tranche Implementation Report;

(c) Should the Country decide during implementation of the Agreement to introduce an alternative technology other than that proposed in the Plan, this would require approval by the Executive Committee as part of a Tranche Implementation Plan or the revision of the approved plan. Any submission of such a request for change in technology would identify the associated incremental costs, the potential impact to the climate, and any differences in ODP tonnes to be phased out if applicable. The Country agrees that potential savings in incremental costs related to the change of technology would decrease the overall funding level under this Agreement accordingly;

(d) Any enterprise to be converted to non-HCFC technology included in the Plan and that would be found to be ineligible under the guidelines of the Multilateral Fund (i.e., due to foreign ownership or establishment post the 21 September 2007 cut-off date), will not receive assistance. This information would be reported to the Executive Committee as part of the Tranche Implementation Plan; and

(e) Any remaining funds under the Plan will be returned to the Multilateral Fund upon completion of the last tranche foreseen under this Agreement.

8. Specific attention will be paid to the execution of the activities in the refrigeration servicing sub-sector included in the Plan, in particular:

(a) The Country would use the flexibility available under this Agreement to address specific needs that might arise during project implementation; and

(b) The Country and the relevant bilateral and/or implementing agencies will take into consideration decision 72/41 during the implementation of the plan.

~~(c) The Country and the bilateral and implementing agencies involved will take full account of the requirements of decisions 41/100 and 49/6 during the implementation of the plan.~~

9. The Country agrees to assume overall responsibility for the management and implementation of this Agreement and of all activities undertaken by it or on its behalf to fulfil the obligations under this Agreement. UNIDO has agreed to be the lead implementing agency (the "Lead IA") and the Government of Germany, the Government of Italy and UNEP have agreed to be the cooperating implementing agencies (the "Cooperating IAs") under the lead of the Lead IA in respect of the Country's activities under this Agreement. The Country agrees to evaluations, which might be carried out under the monitoring and evaluation work programmes of the Multilateral Fund or under the evaluation programme of the Lead IA and/or Cooperating IAs taking part in this Agreement.

10. The Lead IA will be responsible for ensuring co-ordinated planning, implementation and reporting of all activities under this Agreement, including but not limited to independent verification as per sub-paragraph 5(b). This responsibility includes the necessity to co-ordinate with the Cooperating IAs to ensure appropriate timing and sequence of activities in the implementation. The Cooperating IAs will support the Lead IA by implementing the activities listed in Appendix 6-B under the overall co-ordination of the Lead IA. The Lead IA and Cooperating IAs have reached consensus on the arrangements regarding inter-agency planning, reporting and responsibilities under this Agreement to facilitate a co-ordinated implementation of the Plan, including regular co-ordination meetings. The Executive Committee agrees, in principle, to provide the Lead IA and the Cooperating IAs with the fees set out in rows 2.2, 2.4, 2.6 and 2.8 of Appendix 2-A.

11. Should the Country, for any reason, not meet the Targets for the elimination of the Substances set out in row 1.2 of Appendix 2-A or otherwise does not comply with this Agreement, then the Country agrees that it will not be entitled to the Funding in accordance with the Funding Approval Schedule. At the discretion of the Executive Committee, funding will be reinstated according to a revised Funding Approval Schedule determined by the Executive Committee after the Country has demonstrated that it has satisfied all of its obligations that were due to be met prior to receipt of the next tranche of funding under the Funding Approval Schedule. The Country acknowledges that the Executive Committee may reduce the amount of the Funding by the amount set out in Appendix 7-A ("Reductions in Funding for Failure to Comply") in respect of each ODP kg of reductions in consumption not achieved in any one year. The Executive Committee will discuss each specific case in which the Country did not comply with this

Agreement, and take related decisions. Once these decisions are taken, this specific case will not be an impediment for future tranches as per paragraph 5 above.

12. The Funding of this Agreement will not be modified on the basis of any future Executive Committee decision that may affect the funding of any other consumption sector projects or any other related activities in the Country.

13. The Country will comply with any reasonable request of the Executive Committee, the Lead IA and the Cooperating IAs to facilitate implementation of this Agreement. In particular, it will provide the Lead IA and the Cooperating IAs with access to the information necessary to verify compliance with this Agreement.

14. The completion of the Plan and the associated Agreement will take place at the end of the year following the last year for which a maximum allowable total consumption level has been specified in Appendix 2-A. Should at that time there still be activities that are outstanding, and which were foreseen in the last Tranche Implementation Plan and its subsequent revisions as per sub-paragraph 5(d) and paragraph 7, the completion of the Plan will be delayed until the end of the year following the implementation of the remaining activities. The reporting requirements as per sub-paragraphs 1(a), 1(b), 1(d), and 1(e) of Appendix 4-A will continue until the time of the completion of the Plan unless otherwise specified by the Executive Committee.

15. All of the conditions set out in this Agreement are undertaken solely within the context of the Montreal Protocol and as specified in this Agreement. All terms used in this Agreement have the meaning ascribed to them in the Montreal Protocol unless otherwise defined herein.

APPENDICES

APPENDIX 1-A: THE SUBSTANCES

Substance	Annex	Group	Starting point for aggregate reductions in consumption (ODP tonnes)
HCFC-22	C	I	392.8
HCFC-141b	C	I	820.6
HCFC-142b	C	I	1.0
HCFC-123	C	I	0.3
HCFC-124	C	I	0.1
Total	C	I	1,214.8

APPENDIX 2-A: THE TARGETS, AND FUNDING

Row	Particulars	2014	2015	2016	2018	2020	2022	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	1,148.80	1,033.92	1,033.92	1,033.92	746.72	746.72	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	1,148.80	1,033.92	1,033.92	746.72	574.40	373.36	n/a
2.1	Lead IA (UNIDO) agreed funding (US $)	2,581,403		3,499,200	2,440,472	1,162,350	450,600	10,134,025
2.2	Support costs for Lead IA (US $)	180,698	-	244,944	170,833	81,365	31,542	709,382
2.3	Cooperating IA (Germany) agreed funding (US $)	325,000		325,000				650,000
2.4	Support costs for Cooperating IA (US $)	40,750		40,750				81,500
2.5	Cooperating IA (Italy) agreed funding (US $)	281,200						281,200
2.6	Support costs for Cooperating IA (US $)	36,556						36,556
2.7	Cooperating IA (UNEP) agreed funding (US $)			40,000		40,000		80,000
2.8	Support costs for Cooperating IA (US $)			5,200		5,200		10,400
3.1	Total agreed funding (US $)	3,187,603	-	3,864,200	2,440,472	1,202,350	450,600	11,145,225
3.2	Total support costs (US $)	258,004	-	290,894	170,833	86,565	31,542	837,838
3.3	Total agreed costs (US $)	3,445,607	-	4,155,094	2,611,305	1,288,915	482,142	11,983,063
4.1.1	Total phase-out of HCFC-22 agreed to be achieved under this Agreement (ODP tonnes)							105.5
4.1.2	Phase-out of HCFC-22 to be achieved in previously approved projects (ODP tonnes)							24.8
4.1.3	Remaining eligible consumption for HCFC-22 (ODP tonnes)							262.5
4.2.1	Total phase-out of HCFC-141b agreed to be achieved under this Agreement (ODP tonnes)							428.1
4.2.2	Phase-out of HCFC-141b to be achieved in previously approved projects (ODP tonnes)							392.5
4.2.3	Remaining eligible consumption for HCFC-141b (ODP tonnes)							-
4.3.1	Total phase-out of HCFC-142b agreed to be achieved under this Agreement (ODP tonnes)							-
4.3.2	Phase-out of HCFC-142b to be achieved in previously approved projects (ODP tonnes)							-
4.3.3	Remaining eligible consumption for HCFC-142b (ODP tonnes)							1.0
4.4.1	Total phase-out of HCFC-123 agreed to be achieved under this Agreement (ODP tonnes)							-
4.4.2	Phase-out of HCFC-123 to be achieved in previously approved projects (ODP tonnes)							-
4.4.3	Remaining eligible consumption for HCFC-123 (ODP tonnes)							0.3
4.5.1	Total phase-out of HCFC-124 agreed to be achieved under this Agreement (ODP tonnes)							-
4.5.2	Phase-out of HCFC-124 to be achieved in previously approved projects (ODP tonnes)							-
4.5.3	Remaining eligible consumption for HCFC-124 (ODP tonnes)							0.1

APPENDIX 3-A: FUNDING APPROVAL SCHEDULE

1. Funding for the future tranches will be considered for approval at the second meeting of the year specified in Appendix 2-A.

APPENDIX 4-A: FORMAT OF TRANCHE IMPLEMENTATION REPORTS AND PLANS

1. The submission of the Tranche Implementation Report and Plans for each tranche request will consist of five parts:

(a) A narrative report, with data provided by calendar year, regarding the progress since the year prior to the previous report, reflecting the situation of the Country in regard to phase out of the Substances, how the different activities contribute to it, and how they relate to each other. The report should include ODS phase-out as a direct result from the implementation of activities, by substance, and the alternative technology used and the related phase-in of alternatives, to allow the Secretariat to provide to the Executive Committee information about the resulting change in climate relevant emissions. The report should further highlight successes, experiences, and challenges related to the different activities included in the Plan, reflecting any changes in the circumstances in the Country, and providing other relevant information. The report should also include information on and justification for any changes vis-à-vis the previously submitted Tranche Implementation Plan(s), such as delays, uses of the flexibility for reallocation of funds during implementation of a tranche, as provided for in paragraph 7 of this Agreement, or other changes. The narrative report will cover all relevant years specified in sub-paragraph 5(a) of the Agreement and can in addition also include information on activities in the current year;

(b) An independent verification report of the Plan results and the consumption of the Substances mentioned in Appendix 1-A, as per sub-paragraph 5(b) of the Agreement. If not decided otherwise by the Executive Committee, such a verification has to be provided together with each tranche request and will have to provide verification of the consumption for all relevant years as specified in sub-paragraph 5(a) of the Agreement for which a verification report has not yet been acknowledged by the Committee;

(c) A written description of the activities to be undertaken until and including the year of the planned submission of the next tranche request, highlighting the interdependence of the activities, and taking into account experiences made and progress achieved in the implementation of earlier tranches; the data in the plan will be provided by calendar year. The description should also include a reference to the overall plan and progress achieved, as well as any possible changes to the overall plan that are foreseen. The description should cover the years specified in sub-paragraph 5(d) of the Agreement. The description should also specify and explain in detail such changes to the overall plan. This description of future activities can be submitted as a part of the same document as the narrative report under sub-paragraph (b) above;

(d) A set of quantitative information for all Tranche Implementation Reports and Plans, submitted through an online database. This quantitative information, to be submitted by calendar year with each tranche request, will be amending the narratives and description for the report (see sub-paragraph 1(a) above) and the plan (see sub-paragraph 1(c) above), the Tranche Implementation Plan and any changes to the overall plan, and will cover the same time periods and activities; and

(e) An Executive Summary of about five paragraphs, summarizing the information of the above sub-paragraphs 1(a) to 1(d).

2. In the event that in a particular year more than one stage of the HPMP are being implemented in parallel, the following considerations should be taken in preparing the Implementation Report and Plans:

(a) The Implementation Report and Plans referred to as part of this Agreement, will exclusively refer to activities and funds covered by this Agreement;

(b) If the stages under implementation have different HCFC consumption targets in a particular year, the lower HCFC consumption target will be used as reference for compliance with the HPMP Agreements and for the independent verification.

APPENDIX 5-A: MONITORING INSTITUTIONS AND ROLES

1. The Ministry of the Environment and Natural Resources (SEMARNAT) is in charge of the protection, restoration and conservation of all ecosystems, natural resources and environmental services in order to promote a sustainable development. It is also responsible for carrying out national policies regarding climate change and ozone layer protection. The National Ozone Unit (under SEMARNAT) monitors the consumption and production of all ozone depleting substances (ODS) through regional teams. Inspections at converted companies to non-ODS technologies are foreseen to ensure the non uses of ODS after project completion.

2. The Government of Mexico has offered and intends to offer continuity of activities and endorsement for the projects over the next years as specified in the institutional support component and the list of activities of the institutional strengthening project. This will guarantee the success of any activity approved for Mexico

3. Close monitoring of all activities and coordination between stakeholders is an essential element of the HPMP and key to reach compliance. There will be regular coordination meetings with industry stakeholders, HCFC importers, Government stakeholders (i.e., Ministries of Economy, Energy and Health), various industrial associations, and all sectors involved, in order to enact the necessary agreements and measures to carry out the investment and non-investment activities on time and in a coordinated manner. In the manufacturing sector the implementation process and the achievement of the phase-out will be monitored through site visits at enterprise level.

4. Yearly monitoring will be carried out through the ODS licensing and quota system. Verification site visits will be undertaken by independent international experts.

APPENDIX 6-A: ROLE OF THE LEAD IMPLEMENTING AGENCY

1. The Lead IA will be responsible for a range of activities, including at least the following:

(a) Ensuring performance and financial verification in accordance with this Agreement and with its specific internal procedures and requirements as set out in the Country's HPMP;

(b) Assisting the Country in preparation of the Tranche Implementation Reports and Plans as per Appendix 4-A;

(c) Providing independent verification to the Executive Committee that the Targets have been met and associated tranche activities have been completed as indicated in the Tranche Implementation Plan consistent with Appendix 4-A;

(d) Ensuring that the experiences and progress is reflected in updates of the overall plan and in future Tranche Implementation Plans consistent with sub-paragraphs 1(c) and 1(d) of Appendix 4-A;

(e) Fulfilling the reporting requirements for the Tranche Implementation Reports and Plans and the overall plan as specified in Appendix 4-A for submission to the Executive Committee. The reporting requirements include the reporting about activities undertaken by the Cooperating IAs;

(f) Ensuring that appropriate independent technical experts carry out the technical reviews;

(g) Carrying out required supervision missions;

(h) Ensuring the presence of an operating mechanism to allow effective, transparent implementation of the Tranche Implementation Plan and accurate data reporting;

(i) Co-ordinating the activities of the Cooperating IAs, and ensuring appropriate sequence of activities;

(j) In case of reductions in funding for failure to comply in accordance with paragraph 11 of the Agreement, to determine, in consultation with the Country and the Cooperating IAs, the allocation of the reductions to the different budget items and to the funding of the Lead IA and each Cooperating IA;

(k) Ensuring that disbursements made to the Country are based on the use of the indicators; and

(l) Providing assistance with policy, management and technical support when required.

2. After consultation with the Country and taking into account any views expressed, the Lead IA will select and mandate an independent entity to carry out the verification of the HPMP results and the consumption of the Substances mentioned in Appendix 1-A, as per sub-paragraph 5(b) of the Agreement and sub-paragraph 1(b) of Appendix 4-A.

APPENDIX 6-B: ROLE OF THE COOPERATING IMPLEMENTING AGENCIES

1. The Cooperating IAs will be responsible for a range of activities. These activities are specified in the Plan, including at least the following:

(a) Providing assistance for policy development when required;

(b) Assisting the Country in the implementation and assessment of the activities funded by the Cooperating IAs, and refer to the Lead IA to ensure a co-ordinated sequence in the activities; and

(c) Providing reports to the Lead IA on these activities, for inclusion in the consolidated reports as per Appendix 4-A.

APPENDIX 7-A: REDUCTIONS IN FUNDING FOR FAILURE TO COMPLY

1. In accordance with paragraph 11 of the Agreement, the amount of funding provided may be reduced by US $136 per ODP kg of consumption beyond the level defined in row 1.2 of Appendix 2-A for each year in which the target specified in row 1.2 of Appendix 2-A has not been met. In the event that the penalty needs to be applied for a year in which there are two Agreements in force (two stages of the HPMP being implemented in parallel) with different penalty levels, the application of the penalty will be determined on a case-by-case basis taking into consideration the specific sectors related to the non-

compliance. If it is not possible to determine a sector, or both stages are addressing the same sector, the penalty level to be applied would be the largest.

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THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Seventy-second Meeting
Montreal, 12-16 May 2014

PROJECT PROPOSAL: MEXICO

This document consists of the comments and recommendation of the Secretariat on the following project proposal:

Phase-out

- HCFC phase-out management plan (stage II, first tranche) Germany/Italy/UNEP/UNIDO

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS
Mexico

(I) PROJECT TITLE	AGENCY
HCFC phase out plan (Stage II)	Germany, Italy, UNEP, UNIDO (lead)

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2012	1,103.98 (ODP tonnes)

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)									Year: 2012
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab Use	Total sector consumption
				Manufacturing	Servicing				
HCFC-123					0.7				0.7
HCFC-124					0.6				0.6
HCFC-141b	32.5	382.6		218.9					634.0
HCFC-142b		47.2							47.2
HCFC-22	20.9	27.0		50.6	310.1				408.5

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	1,148.8	Starting point for sustained aggregate reductions:	1,214.8
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	417.30	Remaining:	797.45

(V) BUSINESS PLAN		2014	2015	2016	2017	2018	2020	Total
UNEP	ODS phase-out (ODP tonnes)	0	0	0	0	0	0	0
	Funding (US $)	0	0	40,000	0	40,000	0	80,000
UNIDO	ODS phase-out (ODP tonnes)	160.2	0	73.9	0	10.0	10.0	254.10
	Funding (US $)	8,888,839	0	3,742,860	0	875,455	875,455	14,382,609
Germany	ODS phase-out (ODP tonnes)	0	1.6	1.6	1.6	0	0	4.8
	Funding (US $)	33,900	400,000	0	0	0	0	433,900
Italy	ODS phase-out (ODP tonnes)	25.6	0	0	0	0	0	25.6
	Funding (US $)	300,000	0	0	0	0	0	300,000

(VI) PROJECT DATA			2014	2015	2016	2018	2020	2022	Total
Montreal Protocol consumption limits (*)			1,148.80	1,033.92	1,033.92	1,033.92	746.72	746.72	n/a
Maximum allowable consumption (ODP tonnes) (*)			1,148.80	1,033.92	1,033.92	746.72	574.40	373.36	n/a
Project costs requested in principle (US$)	UNIDO	Project costs	2,581,403		3,499,200	1,808,490	1,162,350	450,600	9,502,043
		Support costs	180,698	-	244,944	126,594	81,365	31,542	665,143
	Germany	Project costs	325,000		325,000				650,000
		Support costs	40,750		40,750				81,500
	Italy	Project costs	281,200						281,200
		Support costs	36,556						36,556
	UNEP	Project costs			40,000		40,000		80,000
		Support costs			5,200		5,200		10,400
Total project costs requested in principle (US $)			3,187,603	-	3,864,200	1,808,490	1,202,350	450,600	10,513,243
Total support costs requested in principle (US $)			258,004	-	290,894	126,594	86,565	31,542	793,599
Total funds requested in principle (US $)			3,445,607	-	4,155,094	1,935,084	1,288,915	482,142	11,306,842

(*) Consumption limits for 2017 are the same as in 2016, for 2019 are the same as in 2018, and for 2021 are the same as in 2020.

(VII) Request for funding for the first tranche (2014)		
Agency	**Funds requested (US $)**	**Support costs (US $)**
UNIDO	2,581,403	180,698
Germany	325,000	40,750
Italy	281,200	36,556

Funding request:	Approval of funding for the first tranche (2014) as indicated above
Secretariat's recommendation:	For individual consideration

PROJECT DESCRIPTION

1. On behalf of the Government of Mexico, UNIDO, as the lead implementing agency, has submitted to the 72nd meeting of the Executive Committee stage II of the HCFC phase-out management plan (HPMP) [1] at a total cost of US $11,932,054, consisting of US $10,086,353, plus agency support costs of US $706,045 for UNIDO, US $80,000, plus agency support costs of US $10,400 for UNEP, US $650,000, plus agency support costs of US $81,500 for Germany and US $281,200, plus agency support costs of US $36,556 for Italy, as originally submitted. The implementation of stage II of the HPMP will phase out 433.14 ODP tonnes[2] of HCFCs and assist Mexico in meeting the Montreal Protocol's compliance target of the 65 per cent reduction by 2022.

2. The first tranche for stage II of the HPMP being requested at this meeting amounts to US $3,623,828, consisting of US $2,746,563, plus agency support costs of US $192,259 for UNIDO, US $325,000, plus agency support costs of US $42,250 for Germany, and US $281,200, plus agency support costs of US $36,556 for Italy, as originally submitted.

Status of stage I

3. Stage I of the HPMP for Mexico was approved by the Executive Committee at its 64th meeting to meet the 30 per cent reduction of the established HCFC baseline of 1,148.8 ODP tonnes by 1 January 2018. Stage I includes the reduction of HCFCs in the foam and aerosol manufacturing sector, and in the refrigeration servicing sector. An overview of the results achieved so far is included below.

Activities in the polyurethane (PU) foam manufacturing sector

4. *Domestic refrigeration (MABE):* The conversion from HCFC-141b and HCFC-22 to cyclopentane in the production of insulation foam for domestic refrigerators at Mabe Mexico is ongoing. Equipment is currently being installed and the converted plant will be fully operational by the end of 2014, resulting in the phase-out of 55.90 ODP tonnes of HCFC-141b and HCFC-22.

5. *Systems houses and downstream users*: Assistance is being provided to 10 systems houses[3] and their customers to phase out 299.90 ODP tonnes of HCFC-141b used in the manufacturing of rigid and flexible/integral skin PU foams. To date, the majority of assisted systems houses have completed industrial conversion and have developed new HCFC-free formulations that are being tested by selected end-users/customers.

6. *Commercial refrigeration (Fersa, Frigopanel and Metalfrio):* Through this project, three commercial refrigeration companies are phasing out their total consumption of HCFC-141b and replacing it with cyclopentane. Metalfrio will complete its conversion by the end of 2014 with a phase-out of 9.2 ODP tonnes, while Frogopanel and Fersa, which had slower implementation due to the large share of counterpart inputs required, are expected to be completed during 2015, with an estimated phase-out of 13.7 ODP tonnes.

Activities in the aerosol manufacturing sector

7. *Conversion of Silimex Company:* This project is phasing out 11 ODP tonnes of HCFC-22 and HCFC-141b in the manufacturing of aerosols at Silimex. HCFC-free formulations have been developed, and some of those not requiring hydrocarbons (HC) are already being distributed on the market.

[1] Stage II of the HPMP for Mexico was formulated without preparatory funding. Preparatory funding for Mexico is estimated at US $170,000.
[2] A total of 164.01 ODP tonnes funded by the Multilateral Fund plus additional 269.13 ODP tonnes not funded.
[3] Three additional non-eligible systems houses are also participating without assistance from the Multilateral Fund.

Conversion has also been finalized and trial runs are ongoing followed by training of employees. The project will be completed in 2014.

Activities in the refrigeration sector

8. The main activity is the first part of the project to phase out HCFCs used as cleaning agent during servicing. Under this project UNIDO is promoting the use of low-global warming potential (GWP), zero ODP tonne and low toxicity alternatives[4], and the use of recovery equipment that allows the reuse of the flushing agent up to 25 to 30 times. Results include *inter alia* delivery of equipment to 20 training centres, training to 60 trainers, and finalization of the new manual on good maintenance practices for technicians. Technical specifications for equipment procurement have been prepared and agreed with the Government, and shipping is expected in November 2014.

Project coordination and monitoring

9. Other activities implemented to control HCFC import levels and production include the issuance of quotas per company and per chemical on the basis of the average imports for 2009-2010, training of 50 customs officers on methods to prevent illegal trade and delivery of 12 identifiers to more than 23 customs offices throughout the country.

Tranches and disbursement

10. Table 1 shows the status of tranches approved and funds disbursed under stage I of the HPMP for Mexico.

Table 1. Status of tranche approvals and disbursements stage I as of February 2014

Description	Impact (ODP tonnes)		Funds (US $)		
	HCFC-141b	HCFC-22	Approved in principle	Tranches approved	Disbursement
Mabe foam project	38.9	16.8	2,428,987	2,428,987	2,100,500
Three commercial refrigeration	23.0	-	2,046,110	2,046,110	563,622
Systems houses	299.9	-	11,225,029	10,102,526	3,500,000
Silimex aerosol project	7.7	3.3	520,916	520,916	336,229
Servicing sector and project monitoring	23.0	4.7	1,845,169	1,498,852	415,505
Total	392.5	24.8	18,066,211	16,597,391	6,915,856

Stage II

ODS policy and regulatory framework

11. Mexico has ratified all the Amendments to the Montreal Protocol. The Government of Mexico has also established an enforceable national licensing and quota system for imports and exports of HCFCs, operated by the Ozone Office under the auspices of the Secretary of Environment and Natural Resources (SEMARNAT) and in coordination with the Ministry of Health and Customs Administration. The annual import quotas for the years 2013 and 2014 were established at 1,141.14 ODP tonnes, which is 7.65 ODP tonnes below the baseline for compliance. Mexico also established a specific customs tariff for each of the HCFCs to ensure that all HCFCs are properly regulated and controlled.

12. The licensing and quota system in Mexico is based on the National Rules for Imports and Exports of Chemical Substances and Materials issued in 2004. The authorized importer has to explicitly request the General Direction of Air Quality Management for an import quota based on the 2009-2010 average

[4] Products used include superflush, turboclean and CF-20.

amounts imported. This request is reviewed by the National Ozone Unit (NOU). Following clearance, the importer has to request an import authorization from the Secretariat of Health. An import permit has to be requested through the Hazardous Materials and Substances Division of the Secretariat of the Environment. The amount of HCFCs to be imported is registered in the Information and Monitoring System (SISSAO). After ensuring that all import permits are in place, the amounts of HCFCs entering into the country are registered in the SISSAO by the Customs authorities and the information is passed on to the NOU.

HCFC consumption, production and sector distribution

Table 2. HCFC consumption in Mexico (2008-2012 Article 7, 2013 estimated)

HCFC	2008	2009	2010	2011	2012	2013*	Baseline
Metric tonnes							
HCFC-22	7,142.0	9,419.0	7,591.2	6,704.5	7,425.3	4,694.6	8,505.1
HCFC-123	13.9	54.0	92.1	63.3	37.0	20.9	73.1
HCFC-124	2.7	5.0	10.9	161.3	29.3	-62.2	8.0
HCFC-141b	7,459.7	5,503.5	6,744.2	6,196.2	5,882.2	4,691.4	6,123.9
HCFC-142b	16.0	20.0	158.3	437.7	725.5	89.0	89.2
Total mt	**14,634.3**	**15,001.5**	**14,596.7**	**13,563.0**	**14,099.3**	**9,433.7**	**14,799.3**
ODP tonnes							
HCFC-22	392.8	518.0	417.5	368.75	408.39	258.2	467.8
HCFC-123	0.28	1.1	1.8	1.27	0.74	0.4	1.5
HCFC-124	0.1	0.1	0.2	3.55	0.65	-1.4	0.2
HCFC-141b	820.6	605.4	741.9	681.58	647.04	516.1	673.6
HCFC-142b	1.04	1.3	10.3	28.45	47.16	5.8	5.8
Total ODP tonnes	**1,424.7**	**1,125.9**	**1,171.7**	**1,083.40**	**1,103.98**	**779.2**	**1,148.8**

*Based on verification report submitted by UNIDO.

13. Similar to the HCFC consumption levels in 2011 and 2012, preliminary data indicates that HCFC consumption for 2013 is below the first Montreal Protocol control target of 1,148.8 ODP tonnes for Mexico. The first official consumption report for 2013 (country programme implementation report) will be submitted to the Multilateral Fund Secretariat on 1 May 2014.

14. Mexico continues to produce HCFC-22 for the domestic market and for exports. Mexico also exports HCFC-141b contained in pre-blended polyols (estimated at 12.22 ODP tonnes in 2013). Production and exports figures for HCFC-22 are presented below in Table 3.

Table 3. HCFC-22 production and exports in Mexico

Production	2010	2011	2012	2013*	Baseline
Metric tonnes	12,618.80	11,812.70	7,872.00	7,378.00	12,671.90
ODP tonnes	694.0	649.70	432.96	405.79	697.00
Exports					
Metric tonnes	10,800.00	10,952.73	4,590.91	5,726.60	n/a
ODP tonnes	594.00	602.40	252.50	314.96	n/a

*****Based on verification report submitted by UNIDO.

15. Table 4 below shows HCFC consumption distributed by user sectors.

Table 4. HCFC use distribution by sector (2012)*

HCFC	Refrigeration		Foam	Aerosol	Total	Percentage of total
	Manufacture	Servicing				
Metric tonnes						
HCFC-22	920.00	5,638.00	478.90	391.00	7,428.00	53%
HCFC-123	-	37.00	-	-	37.00	0%
HCFC-124	-	29.30	-	-	29.30	0%
HCFC-141b	1,971.80	-	3,357.60	434.20	5,763.60	41%
HCFC-142b	-	-	725.50	-	725.50	5%
Total (mt)	**2,891.80**	**5,704.30**	**4,562.00**	**825.20**	**13,983.40**	100%
Percentage of total	21%	41%	33%	6%	100%	
ODP tonnes	-	-	-	-		
HCFC-22	50.60	310.09	26.34	21.51	408.53	37%
HCFC-123	-	0.74	-	-	0.74	0%
HCFC-124	-	0.64	-	-	0.64	0%
HCFC-141b	216.90	-	369.34	47.76	634.00	58%
HCFC-142b	-	-	47.16	-	47.16	4%
Total (ODP tonnes)	**267.50**	**311.47**	**442.84**	**69.27**	**1,091.07**	
Percentage of total	25%	29%	41%	6%	100%	

*The estimation of HCFCs use can differ from consumption reported under Article 7. One possible reason is that not all imported and produced HCFC are used in the same year.

16. In 2012, HCFC-22 represented 53 per cent of the consumption in metric tonnes, followed by HCFC-141b (41 per cent). However, in ODP tonnes, consumption of HCFC-141b accounted for 58 per cent of the consumption. The completion of the investment projects funded under stage I will represent a large reduction of HCFC-141b in 2014 and 2015, leaving HCFC-22 as the largest consumed substance in both metric and ODP tonnes.

HCFC consumption in manufacturing sectors

17. The status of consumption of HCFCs by manufacturing sectors after stage I of the HPMP is summarized as follows:

(a) All eligible consumption of HCFC-141b and HCFC-22 in the PU foam manufacturing sector has been addressed by stage I with an overall impact of 361.74 ODP tonnes of HCFC-141b and 16.83 ODP tonnes of HCFC-22. The remaining consumption of HCFC-141b in this sector, estimated at 1,000 mt (110 ODP tonnes) is consumed by one non-Article 5 owned enterprise. This enterprise will phase out the use of HCFC-141b by 2022 with its own funds during stage II;

(b) There are 65 aerosol plants in Mexico but only nine of them have used HCFCs in recent years. The largest enterprise (Silimex) was assisted during stage I of the HPMP. The remaining HCFC consumed in these applications will be addressed in stage II, except for 2.97 ODP tonnes of HCFC-141b used in medical applications for which no alternative has been yet identified;

(c) Consumption of HCFC-22 in the refrigeration and air-conditioning manufacturing sector is attributed mostly to five air-conditioning manufacturing enterprises, out of which around 99 per cent of the consumption corresponds to a non-Article 5 owned enterprise, and a very small portion is consumed by three locally owned enterprises manufacturing commercial and industrial refrigeration equipment. HCFC-22 consumption in the air-conditioning manufacturing sector has decreased in recent years; and

(d) HCFC-22 and HCFC-142b are also consumed in the extruded polystyrene (XPS) foam manufacturing sector by one non-Article 5 enterprise and two smaller locally owned enterprises. Given the limited consumption of HCFCs by the local XPS manufacturers, their conversion would require a large co-financing that they are not able to provide. These enterprises will be addressed at a future stage when appropriate and financially viable alternatives become available.

HCFC consumption in the refrigeration and air-conditioning servicing sector

18. While the use of HCFC-22 in the refrigeration and air-conditioning manufacturing sector decreased from 211.75 ODP tonnes in 2008 to 50.60 ODP tonnes in 2012, consumption in the refrigeration servicing sector increased from 137.06 ODP tonnes to 310.09 ODP tonnes during the same years. The main reasons provided for this shift in consumption are:

(a) A sharp reduction in the manufacturing of HCFC-22-based air-conditioning equipment and some appliances for commercial refrigeration, due to technology, costs, energy-efficiency requirements and bans on HCFC-based equipment in the main export markets; and

(b) An increase in air-conditioning equipment installation in recent years and the tendency by many end-users to maintain their old air-conditioning equipment in operation beyond its recommended useful life instead of replacing it, thereby intensifying servicing needs. The leak rate of such equipment during operation and repeated servicing is abnormally high.

HCFC phase-out strategy

19. The Government of Mexico considers it urgent to start stage II of the HPMP[5] to complete the conversion of the aerosol sector to ensure equivalent conditions for competing enterprises being converted under stage I and stage II; reduce HCFC-141b imports to prevent emerging enterprises from starting its use; and provide more significant assistance to the refrigeration servicing sector, where easy access to inexpensive domestically produced HCFC-22 hinders the reduction of consumption of this substance.

20. To maintain the momentum achieved in stage I and ensure the sustainable and accelerated achievement of forthcoming reduction targets, the Government of Mexico and UNIDO formulated stage II of the HPMP to reach 50 per cent reduction of baseline consumption by 2020 as the first step, and a total of 65 per cent reduction of the baseline by the year 2022 as the second step.

21. To achieve these reductions, the Government of Mexico proposes for stage II to phase out the remaining HCFC-141b consumption in all eligible and in some non-eligible enterprises by 2022, except for 27 mt (2.97 ODP tonnes) left as reserve to be used in the manufacturing of medical needles for which no viable alternative is available yet. In addition, stage II includes assistance to reduce 105.06 ODP tonnes of HCFC-22 used in aerosol manufacturing and in the refrigeration servicing sector. Upon completion of stage II, HCFC consumption will be mainly in the refrigeration servicing sector, as well as a small portion linked to two eligible enterprises in the XPS foam sector[6].

22. The accelerated phase-out is supported by the conversion of non-eligible enterprises (110.00 ODP tonnes of HCFC-141b by 2020 and an additional 145.26 ODP tonnes of HCFC-141b and

[5] Submitted in line with decision 64/45(e) which "notes that approval of stage I of the HPMP did not preclude Mexico from submitting, prior to 2015, a proposal to achieve phase-out of HCFCs beyond that addressed in stage I of the HPMP".

[6] HCFC consumed by an additional non-eligible enterprise in the XPS foam sector would need to be deducted from the remaining eligible consumption when this sector is addressed.

13.88 ODP tonnes of HCFC-22 by 2022). The Government of Mexico will ensure that there are agreements with non-eligible enterprises to take voluntary measures and/or apply for other sources of financing for the accelerated phase-out of their HCFC-141b consumption.

Proposed phase-out activities

23. The main activities to be implemented during stage II of the HPMP are regulatory actions, activities in the manufacturing sector, activities in the refrigeration servicing sector and staged phase-out of HCFC-22 production (which is not included in this proposal).

Regulatory actions and monitoring

24. The following activities will be implemented between 2018 and 2022 in coordination with the investment and training activities started in stage I:

(a) *Updating and operating the quota and licensing system and legislation:* It includes periodic update of the ODS import, export and production registry and monitoring system introduced in stage I (SISSAO), installation of a new workstation to monitor the performance of the system and further updates to the HCFC related legislation;

(b) *Customs activities:* It includes two additional workshops on new customs legislation, harmonized customs system, new refrigerants and their identification codes, intelligence systems, smuggling patterns, and ODS identification methods to prevent or identify illegal trade;

(c) *Monitoring of HCFC production:* It includes continuation of yearly monitoring of domestic HCFC production through the licensing and quota system and verification visits to the production facilities by international experts;

(d) *Public awareness:* It includes media campaigns, and other dissemination actions by SEMARNAT and other stakeholders to support timely phase-out of HCFCs and facilitate introduction of HCFC-free products; and

(e) *HPMP coordination and monitoring:* It includes annual coordination meetings with stakeholders to enact the necessary agreements for investment and non-investment activities in a timely and coordinated manner. This component is of particular importance in stage II as it includes negotiations, plant visits and regular on-site monitoring of the phase-out process in non-eligible enterprises.

Activities in the manufacturing sector

Conversion from HCFC-141b to HFO blowing agent at Whirlpool Mexico

25. Whirlpool will replace the use of 110 ODP tonnes of HCFC-141b by a hydrofluoro-olefin (HFO) blowing agent in two domestic refrigeration manufacturing plants with funding outside the Multilateral Fund. This activity will assist the country to achieve the 50 per cent reduction in 2020.

Phase-out of HCFC-22 and HCFC-141b in the aerosol manufacturing sector

26. This project will eliminate the use of 42.24 ODP tonnes of HCFC-141b and 21.13 ODP tonnes of HCFC-22 in aerosol and solvent applications in eight enterprises. HCFC-22 use as an aerosol propellant and as a product in duster aerosols began after CFC-12 was banned. HCFC-141b use as a solvent increased after the ban of CFC-11, CFC-113a and 1,1,1-trichloroethane.

27. Current conditions for phasing out HCFC in the aerosol sector are different from those for CFC phase-out[7]. Each enterprise needs to formulate its own HCFC-free products. Several uses such as dusters have been formulated from their origins with HCFC. In addition, HCFC-based products (e.g. electronic cleaners) still have major quality and price advantages over HCFC-free ones. The performance of some solvent alternatives also needs to be proven as it will be a factor for end-users to choose one aerosol product over another.

28. Currently there are eight aerosol enterprises consuming HCFC in Mexico, mostly in dusters (using HCFC-22), and electrical and electronic cleaners (using HCFC-141b and HCFC-22). One enterprise manufactures a solvent aerosol for various industrial applications using HCFC-141b (90 per cent) and HCFC-22 (10 per cent).

Table 5. Aerosol enterprises consuming HCFC in Mexico (2012)

Enterprise(*)	Uses	HCFC-22		HCFC-141b		Total consumption	
		mt	ODP tonnes	mt	ODP tonnes	mt	ODP tonnes
Aerosoles internacionales	Electronic cleaner, duster	35.80	1.97	12.75	1.40	48.55	3.37
Alben international	Duster	10.27	0.56	-	-	10.27	0.56
Dimmex	Duster	60.34	3.32	-	-	60.34	3.32
Envatec	Electronic cleaner, duster	70.06	3.85	14.00	1.54	84.06	5.39
Quimica Jerez	Electronic cleaner, duster	29.90	1.64	22.00	2.42	51.90	4.06
Quimica Marcat	Electronic cleaner, duster, silicon	90.80	4.99	79.35	8.73	170.15	13.72
Quimobasicos**	Industrial cleaner	18.75	1.03	206.60	22.73	225.35	23.76
Tecnosol	Electronic cleaner, duster	68.30	3.76	49.25	5.42	117.55	9.17
TOTAL		**384.22**	**21.13**	**383.95**	**42.23**	**768.17**	**63.37**

(*) For all enterprises, production started prior to the cut-off date.
(**) Fifty-one percent local ownership.

29. Alternatives to HCFCs in aerosol and solvent applications were evaluated on availability, cost, capital cost of conversion, market conditions, end-users' requirements, performance and environmental aspects such as impact on climate and on air quality. After considering availability in local markets, price, impact on climate and air quality, and issues related to flammability, the proposed formulations for aerosol and solvent applications are shown in Table 6.

Table 6. Selection of alternatives for aerosol and solvent applications stage II

Application	HCFC consumption	Current formulation	Proposed formulation	Observations
Electronic cleaner	189.37	70% HCFC-141b 30% HCFC-22	50% perchloroetylene 50% HFC-134a	Formulation must be non-flammable
Duster (compressed air)	289.47	100% HCFC-22	100% HFC-152a	No flammability concerns
Silicon application	64.02	61% HCFC-141b 39% HCFC-22	34% HAP 40% solvent 25% silicon	Price sensitive No flammability concerns
Industrial aerosols (Quimobásicos)	225.31	100% HCFC-141b or 85% HCFC-141b 15% HCFC-22	100% HFC-245fa	Formulations must be non-flammable
Total	**768.17**			

[7] CFC-based aerosol products were easily converted to propane-butane at a lower cost and largely without assistance from the Multilateral Fund. A few unfunded conversions to HCFC took place where safety requirements prohibited the use of flammables.

30. The cost of converting the eight remaining enterprises in the aerosol sector is US $2,873,263 with an impact of 768.17 mt (63.37 ODP tonnes) of HCFC and cost-effectiveness of US $3.74 per kg (Table 7).

Table 7. Cost aerosol project

Enterprise	Alternatives	Total consumption (mt)	ICC (US $)	IOC (US $)	Total cost (US $)	C.E. (US $/kg)
Aerosoles Internacionales	Perchloroetylene/HFC-134a, HFC-152a	48.55		145,668	145,668	3.00
Alben international	HFC-152a	10.27		30,810	30,810	3.00
Dimmex	Perchloroetylene/HFC-134a, HFC-152a	60.34		181,032	181,032	3.00
Envatec	Perchloroetylene/HFC-134a, HFC-152a	84.06		252,198	252,198	3.00
Quimica Jerez	Perchloroetylene/HFC-134a, HFC-152a	51.90		155,700	155,700	3.00
Quimica Marcat	Perchloroetylene/HFC-134a, HFC-152a, Propane/butane	170.15	310,420	275,085	585,505	3.44
Quimobasicos	HFC-245fa	225.35		1,915,098	976,700	4.33*
Tecnosol	Perchloroetylene/HFC-134a, HFC-152a	117.55		352,650	352,650	3.00
Technical assistance for formulation development and awareness					193,000	
TOTAL		**768.17**	**310,420**	**3,308,241**	**2,873,263**	**3.74**

*Calculated based on the total HCFC consumption.

Activities in the servicing sector

Cleaning agent phase-out in the refrigeration servicing sector

31. This is the second and concluding phase of the programme aimed at eliminating the remaining 278 mt (30.58 ODP tonnes) of HCFC-141b used for flushing and cleaning refrigeration and air-conditioning equipment during servicing and 30 mt (1.65 ODP tonnes) of HCFC-22 used as a pressurizing substance. The approach followed for this activity is an extension of that approved for stage I, and includes additional training to 4,000 technicians and flushing kits to more than 1,000 technicians and servicing enterprises to avoid emissive use of HCFCs during servicing. This activity will contribute to the complete phase-out of HCFC-141b and enable the Government to issue the ban on HCFC-141b imports.

Technicians training programme

32. This project aims to phase out 1,000 mt (55 ODP tonnes) of HCFC-22 consumed by the service sector; reduce direct emissions of refrigerants; and maintain the momentum in the training programme for technicians started during the national phase-out plan (NPP) and continued in stage I of the HPMP, which addressed the cleaning component of servicing.

33. The training programme will focus on air-conditioning servicing, more specifically on good servicing practices, proper management, recovery, reuse and disposal as well replacement of HCFC-22, and replacement of HCFCs with alternatives, taking into account safety, energy consumption and equipment conditions. The plan also includes strengthening the vocational institutes with training equipment, developing a manual for 5,000 technicians, training 4,500 technicians, and providing servicing tools to 1,650 technicians and servicing enterprises (comprising recovery units, cylinders, vacuum pumps, leak detectors, hand tools, manifolds, hoses and scales).

Assistance for the introduction of HC alternatives

34. Based on an analysis of feasibility and preconditions to introduce HCs, the project aims to facilitate the introduction of HCs as an alternative refrigerant for stationary air-conditioning and commercial refrigeration equipment. The project will establish qualified service centres through certified personnel for installation or maintenance of HC equipment; test and select potential and conditions for application of HC technology where appropriate; provide institutional capacity for training and certification; and implement a pilot incentive programme for the replacement of old HCFC-based equipment with HC-based equipment.

35. Specific outputs proposed by this project include:

(a) Demonstration of replacement with HC technology at 20 sites. Data obtained from the demonstrations will be used to determine guidelines and standards with regard to the application of HC to air-conditioning systems. A regulatory programme for establishing standards, rules and codes of practice in the use of HCs and other natural refrigerants will be implemented based on the outcome of the test trials; and

(b) Distribution of 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 for 12 months. Data on emission reductions and energy performance will be used for a larger roll out in the air-conditioning user sector and for the standards and labelling programmes.

36. The project outputs will also contribute to the environmental labelling scheme for products and services being developed by SEMARNAT.

Strengthening of recovery, recycling and reclamation network

37. Based on the planned regulation to make recovery, recycling and reclamation of refrigerants mandatory, this project is aimed at upgrading two national HCFC reclamation centres to ensure supply of recovered and reclaimed HCFC-22 to the local servicing market, thereby reducing demand for virgin HCFC-22. The project will identify and address deficiencies in existing policies and current legal framework concerning the use of natural refrigerant alternatives; upgrade of two reclamation centres using a centralized reclaim station and set of portable recovery units to collect refrigerants from large/medium sized systems; and organize a study tour to demonstrate a successful supply chain of virgin and reclaimed refrigerants in Italy and to train selected servicing technicians and representatives of the NOU.

Staged phase-out of HCFC-22 production

38. In order to comply with its obligations under the Montreal Protocol, the Government of Mexico plans to phase out the total HCFC-22 production in the country in a phased manner. UNIDO, on behalf of the Government of Mexico, included preparatory funding for the HCFC production sector to be released in 2015 with the understanding that a full-fledged project would be submitted.

Total cost of stage II of the HPMP

39. The total cost of the activities proposed in stage II of the HPMP to be funded through the Multilateral Fund amounts to US $11,097,553 (excluding agency support costs). These activities will result in the phase-out of 164.01 ODP tonnes of HCFCs with an overall cost-effectiveness of US $4.78 per kg. In addition, 269.13 ODP tonnes not eligible for funding will be phased out, achieving a total

reduction of 433.14 ODP tonnes at a cost of US $2.27 per kg. Detailed activities and cost breakdown are shown in Table 8.

Table 8. Overall cost of stage II of the HPMP for Mexico

Description of component	Agency	HCFC	Total HCFC		Cost (US $)	C.E.	Percentage of baseline
			Mt	ODP			
Conversion from HCFC-141b to HFO blowing agent at Whirlpool Mexico		HCFC-141b	1,000.0	110.00	-		9.6%
Conversions other non-eligible enterprises		HCFC-141b HCFC-22	1,572.8	159.13	-		13.9%
Subtotal non-funded activities			**2,572.8**	**269.13**	**-**		**23.4%**
Aerosol sector activities	UNIDO	HCFC-141b HCFC-22	768.2	63.37	2,873,263	3.74	5.5%
Servicing sector activities							
Cleaning agent phase-out in the refrigeration servicing sector	UNIDO	HCFC-141b HCFC-22	308.0	32.23	1,385,990	4.50	2.8%
Technicians training programme	UNIDO	HCFC-22	1,000.1	55.01	4,500,600	4.50	4.8%
Assistance for the introduction of HC alternatives	Germany	HCFC-22	145.0	7.98	650,000	4.48	0.7%
Strengthening of recovery, recycling and reclamation network	Italy	HCFC-22	59.0	3.25	281,200	4.77	0.3%
Subtotal servicing sector activities			1,512.1	98.47	6,817,790	4.51	8.6%
Policy and regulatory actions							
Updating and operating the quota and licensing system and legislation	UNIDO	HCFC-22	8.3	0.46	37,500	4.52	0.0%
Customs activities	UNEP	HCFC-22	17.8	0.98	80,000	4.49	0.1%
Public awareness	UNIDO	HCFC-22	13.3	0.73	80,000	6.02	0.1%
Subtotal policy and regulatory actions			39.4	2.17	197,500	5.01	0.2%
Preparatory funding production sector	UNIDO				150,000		0.0%
Monitoring of HCFC production	UNIDO				360,000		0.0%
HPMP monitoring and coordination	UNIDO				699,000		0.0%
Subtotal funded activities			**2,319.7**	**164.01**	**11,097,553**	**4.78**	**14.3%**
Total for stage II of the HPMP			**4,892.5**	**433.14**	**11,097,553**	**2.27**	**37.7%**

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

40. The Secretariat notes with appreciation that the Government of Mexico submitted stage II of its HPMP without requesting preparatory funding. As the proposal was submitted prior to a decision by the Executive Committee on criteria for funding HCFC phase-out in the consumption sector for stage II, in line with decision 70/21(e)(i), the Secretariat reviewed the proposal on the basis of the existing guidelines for stage I of HPMPs, including the criteria for funding HCFC phase-out in the consumption sector agreed at the 60th meeting (decision 60/44), subsequent decisions on HPMPs and the 2014-2016 business plan of the Multilateral Fund.

Activities in the servicing sector

Prioritization and size

41. Considering that Mexico would already be in a position to reduce HCFC consumption beyond the compliance limits by only addressing HCFC-141b and the HCFC-22 associated with aerosols and solvents, the Secretariat and UNIDO discussed the need to include a large refrigeration servicing sector

proposal in stage II. UNIDO explained that HCFC-22 as refrigerant has not been addressed yet in Mexico as the only activity related to the refrigeration servicing sector in stage I was partial phase-out of HCFCs used as cleaning agent. Given the rapid growth of HCFC-22 consumption in the sector, it was considered of the utmost importance to start significant activities in this sector to ensure compliance with stage II phase-out targets, reducing the demand in future years. The proposal only addresses 66.23 ODP tonnes of the more than 300 ODP tonnes of HCFC-22 (i.e., 22 per cent of total consumption) used in the sector. The remaining consumption will be addressed in future stages.

42. Furthermore, the sector is being addressed because of its size and complexity in Mexico, with many as-yet unequipped technicians and many new alternatives expected to appear on the market in coming years; the need to ensure that low-GWP alternatives are chosen over high-GWP alternatives; the need to maintain the momentum of phase-out activities in the sector and introduce new techniques for recovery, management and good practices in the air-conditioning and commercial refrigeration sectors; and the consideration that the small XPS foam enterprises remaining in the manufacturing sector are not in position to adopt alternatives today.

Approach

43. The Secretariat noted that during the preparation of stage II, the Government of Mexico took into consideration the discussion paper on key considerations to minimize adverse climate impact in the refrigeration servicing sector resubmitted to the 72nd meeting[8]. Mexico has already implemented some of the activities mentioned in the discussion paper, such as the introduction of mandatory reporting by ODS importers and exporters to reduce illegal trade, and the introduction of record-keeping practices in large and medium-size end-users, including large supermarket chains. The training programme will include preventive maintenance, enhancing installation quality and improving the energy efficiency of equipment through better maintenance. The existing recovery, recycling and reclamation scheme will be improved and supported by legislation. Mexico also plans to include training on safe handling of flammable refrigerants, to gain an understanding of the related regulations and standards, to enhance training institutes to provide training on installation, maintenance and disposal of equipment using flammable substances, and to facilitate the entry of technology with a lower climate impact for new factory-charged air-conditioning systems.

44. The Secretariat considered the proposed approach to be adequate, as it focuses on reducing HCFC emissions, avoiding increase of energy use, and facilitating the entry of air-conditioning equipment with a lower climate impact.

45. However, it was also noted that there is an absence of specific activities to influence a shift of technology in the commercial refrigeration sector, where emissions could be high and installations are designed locally. In responding, UNIDO acknowledged that this is an important source of emissions of HCFC-22, but it may be early to start any other activities in addition to refrigerant containment and training on installation and maintenance. For instance, secondary loop systems with either HC or ammonia are not widespread due to energy efficiency issues, and trans-critical CO_2 may also have energy efficiency issues in local temperature conditions. Mexico will include cascade systems (sub-critical CO_2 and HC/ammonia) in the curricula of the training workshops and in awareness programme when the technology is more mature and cost-effective (currently at US $600/kg). Initial results for CO_2-based vending machines being developed show increased costs and slightly decreased energy efficiency.

46. In view of the length of stage II and changing market conditions, the Secretariat suggested closely monitoring the developments in the refrigeration and air-conditioning sector, and making use of the flexibility in the Agreement to modify or add activities within the budget according to the evolving needs of the sector. This suggestion was taken, and tranches have been distributed to allow this flexibility.

[8] UNEP/OzL.Pro/ExCom/72/42.

47. The Secretariat noted the increase in the consumption of HCFC-22 in the servicing sector in recent years. As many of the activities will require several years to have an effective impact in the reduction of consumption, the earlier they start, the earlier the country will be able to curb the growth of HCFC consumption.

Phase-out in aerosol sector

HCFC reductions

48. The Secretariat noted that the submission of stage II was required to ensure equivalent conditions for aerosol enterprises assisted in stage I and stage II, and to minimize imports that would allow emerging enterprises to start using HCFC-141b, which would have a negative effect on converted enterprises. As the sector will be addressed now, the Secretariat requested UNIDO to consider committing to an additional HCFC reduction in 2018. Upon further discussion, UNIDO reported that the Government of Mexico committee to add 5 per cent to the current reduction of 30 per cent of the baseline in 2018 (for a total of 35 per cent). If an earlier conversion would take place, the Government of Mexico would adjust the quotas to ensure the sustainability of the conversion.

Technology

49. UNIDO was asked to further elaborate on the reasons for proposing formulations containing HFC-134a for electronic cleaning aerosols and HFC-245fa for industrial aerosols. UNIDO explained that the alternatives are selected based, among other factors, on their availability, safety, technical properties and price. Currently, HFC-134a-based formulations are the best available option for non-flammable aerosol applications. Selection of an HFO or other new propellants is not possible or viable due to their unavailability in the market, their very high price and, in some cases, a certain grade of flammability which is not allowed for several applications. In the case of HFC-245fa used for industrial cleaning by Quimobásicos, UNIDO indicated that the other option could be a type of HFO, but the performance and flammability, as well as the high price (US $90.00/kg), are not acceptable in this particular sector.

50. After consultation with Quimobásicos, it was indicated that HFO as a solvent is not expected to be available in the medium term. The market for HFO is looking first at other applications such as mobile air-conditioning, and there is no clear market or technological signal for solvents for the time being. The Secretariat considered that the specific application produced by Quimobasicos does not seem to be in competition with the multiple enterprises in the sector producing electronic cleaners and dusters. Therefore this enterprise could be converted later. Given this fact and that this enterprise is proposing to introduce an HFC-based formulation with a high-GWP, the Secretariat explored the possibility of postponing this specific conversion and using another alternative with a lower impact in climate. Upon discussions it was agreed that the project would still be part of stage II on the understanding that when the tranche in 2016 is submitted, UNIDO will report on the availability and affordability of lower GWP suitable alternate ves (such as HFOs). In the event that there is no better solution than HFC-245fa at that time, UNIDO would start conversion to HFC-245fa on the understanding that it will be an interim solution and once affordable low-GWP alternatives become available in the market, Mexico would commit to convert Quimobásicos from HFC without any further funding from the Multilateral Fund.

Eligibility of enterprises included in the aerosol project

51. The Secretariat noted that the Dimmex and Tecnosol enterprises had received funding[9] for the phase-out of CFC-11, CFC-12 and CFC-113 for the cleaning of electronics and some industrial uses. The alternatives introduced were HFC-134a and HFC-4310. UNIDO clarified that in the case of Dimmex, the

[9] Project MEX/ARS/41/INV/116 provided assistance for US $252,340, which was complemented by US $2,710,711 self-funded by the enterprises.

conversion from CFC to HFC was only for a particular formulation to be used as electronic cleaner, while the manufacturing of a duster with HCFC-22 had already been formulated before the implementation of the CFC phase-out project, and was therefore not funded.

52. In the case of Tecnosol, the previous project addressed the formulation of an aerosol for the electronic cleaner market where certain properties are needed, including non-flammability and compatibility with plastics, and only covered incremental operating costs. For other applications Tecnosol had been producing HCFC aerosols.

53. Since no funding was received for conversion of HCFC-containing aerosols produced at the time of approval of the CFC conversion project, the phase-out of HCFC consumption related to those aerosols at these two enterprises is eligible.

Remaining consumption of HCFC-141b

54. During the project review period, UNIDO also indicated that the 27 mt (2.97 ODP tonnes) of HCFC-141b used in medical applications that were initially not intended to be addressed during stage II, will also be phased out during stage II. As the enterprise consuming these 2.97 ODP tonnes is not eligible for funding, the phase-out will take place without assistance from the Multilateral Fund. Based on this, the Government of Mexico will be able to achieve total phase-out of HCFC-141b in 2022 and promulgate a ban on the import of HCFC-141b, to enter into force by 1 January 2022.

Production of HCFC-22

55. In justifying the inclusion of preparatory funding for production in stage II of the HPMP, UNIDO explained that the Government of Mexico considers it a matter of extreme importance to start implementing gradual phase-out of domestic HCFC-22 production given the large amount of this substance used in the refrigeration servicing sector. The only producer of HCFC-22 in Mexico, CYDSA, Quimobásicos, has two production lines, which in the past produced CFC-11 and CFC-12 as well as HCFC-22. A Multilateral Fund project funded the closure of only one line producing CFCs, since at that time the second line was already producing HCFC-22. The Government considers that the closure of the second line is eligible for assistance from the Multilateral Fund. The Secretariat is of the view that issues related to production should not be discussed in the context of the HPMP and accordingly requested UNIDO to remove the request for preparatory funding. UNIDO and the Government of Mexico agreed to remove the request.

56. The request of US $360,000 to continue yearly monitoring of domestic HCFC production was reduced to US $100,000.

Calculation of remaining eligible consumption

57. The Secretariat and UNIDO discussed the methodology for calculating the remaining eligible consumption after stage II. After stage I, the total remaining eligible consumption is 797.5 ODP tonnes composed of 368.0 ODP tonnes of HCFC-22, 428.1 ODP tonnes of HCFC-141b, 1.0 ODP tonne of HCFC-142b, 0.3 ODP tonnes of HCFC-123 and 0.1 ODP tonnes of HCFC-124. By achieving the total phase-out of HCFC-141b and reducing 105.5 ODP tonnes of HCFC-22, the remaining eligible consumption would be 263.9 ODP tonnes.

58. It was noted that the remaining eligible consumption after stage II was calculated at 335.8 ODP tonnes in the project proposal as submitted. In analysing the difference, it was noticed that for HCFC-141b after deducting from the remaining eligible consumption, the consumption of all eligible and non-eligible enterprises, as well as the exports of HCFC-141b contained in polyols, there were still 71.9 ODP tonnes remaining. As there were no more enterprises to address, this remaining tonnage of

HCFC-141b was reallocated to the remaining eligible consumption of HCFC-22. The Secretariat clarified that as the starting point is established by substance (as shown in Appendix 1-A of the Agreement between the Government of Mexico and the Executive Committee for stage I), the remaining consumption of HCFC-141b cannot be reallocated. Therefore, the remaining eligible consumption after stage II of the HPMP is 263.9 ODP tonnes.

59. In line with Executive Committee decision 68/42(b), 28.60 ODP tonnes of HCFC-141b exported in pre-blended polyols are discounted from the starting point for aggregate reductions in HCFC consumption. The remaining eligible consumption of HCFC-141b after stage II is zero.

Verification

60. UNIDO provided a verification of the consumption in 2013 by mid April 2014 indicating that the HCFC consumption level in 2013 is 779.2 ODP tonnes, which is below the freeze target of 1,148.8 ODP tonnes.

Revised overall cost of the HPMP stage II

61. Upon additional adjustments in the budget and tonnage addressed in the aerosol and servicing sectors, the agreed cost of the activities proposed in stage II of the HPMP amounts to US $10,513,243 (excluding agency support costs). Detailed activities and the cost breakdown are shown in Table 9.

Table 9. Detailed activities and costs agreed in stage II of the HPMP

Description of component	Agency	HCFC	Total HCFC		Cost (US $)	C.E.	Percentage of baseline
			Mt	ODP			
Conversion from HCFC-141b to HFO blowing agent at Whirlpool Mexico		HCFC-141b	1,000.0	110.00	-		9.6%
Conversions other non-eligible enterprises		HCFC-141b HCFC-22	1,599.8	162.10	-		14.1%
Subtotal non-funded activities			**2,599.8**	**272.10**	**-**		**23.7%**
Aerosol sector activities	UNIDO	HCFC-141b HCFC-22	768.2	63.37	2,708,103	3.53	5.5%
Servicing sector activities							
Cleaning agent phase-out in the refrigeration servicing sector	UNIDO	HCFC_141b HCFC-22	308.0	32.23	1,385,990	4.50	2.8%
Technicians training programme	UNIDO	HCFC-22	1,000.1	55.01	4,500,600	4.50	4.8%
Assistance for the introduction of HC alternatives	Germany	HCFC-22	145.0	7.98	650,000	4.48	0.7%
Strengthening of recovery, recycling and reclamation network	Italy	HCFC-22	62.5	3.44	281,200	4.50	0.3%
Subtotal servicing sector activities			1,515.6	98.66	6,817,790	4.50	8.6%
Policy and regulatory actions							
Updating and operating the quota and licensing system and legislation	UNIDO	HCFC-22	8.3	0.46	37,350	4.50	0.0%
Customs activities	UNEP	HCFC-22	17.8	0.98	80,000	4.49	0.1%
Public awareness	UNIDO	HCFC-22	17.8	0.98	80,000	4.49	0.1%
Subtotal policy and regulatory actions			43.9	2.42	197,350.00	4.50	0.2%
Preparatory funding production sector	UNIDO				-		0.0%
Monitoring of HCFC production	UNIDO				100,000		0.0%
HPMP monitoring and coordination	UNIDO				690,000		0.0%
Subtotal funded activities			**2,327.7**	**164.45**	**10,513,243**	**4.52**	**14.3%**
Total for stage II of the HPMP			**4,927.5**	**436.55**	**10,513,243**	**2.13**	**38.0%**

62. Activities included in stage II of the HPMP for Mexico will result in the phase-out of 164.45 ODP tonnes of HCFCs with an overall cost-effectiveness of US $4.52 per kg. In addition, 272.10 non-eligible ODP tonnes will be phased out, achieving a total reduction of 436.55 ODP tonnes at a cost of US $2.13 per kg.

63. With approval of stage II of the HPMP, the Government of Mexico commits to achieving accelerated reductions of 35 per cent the baseline for compliance in 2018, 50 per cent in 2020 and 67.5 per cent in 2022. The Government of Mexico also commits to achieving total phase-out of HCFC-141b and introducing a ban for imports of HCFC-141b by 1 January 2022.

Impact on the climate

64. The implementation of the conversion of nine aerosol enterprises would avoid the emission into the atmosphere of some 589.2 thousand tonnes of CO_2-equivalent per year, as shown in Table 10.

Table 10. Impact on the climate of the aerosol conversion projects

Enterprise	Annual warming impact before conversion (t-CO2E)		Annual warming impact after conversion by alternative technology (t-CO2E)					Climate impact of conversion t-CO_2E
	HCFC-22	HCFC-141b	Perchloroetylene	HFC-134a	HFC-152a	HC	HFC-245fa	
GWP	1,810	725		1,430	124	20	1,030	
Aerosoles Internacionales	64,798	9,248		13,028.73	3,761.29			-57,256
Alben International	18,589				1,273.48			-17,315
Dimmex	109,223				7,482.66			-101,740
Envatec	126,819	10,150		14,300.00	7,944.18			-114,725
Quimica Jerez	54,119	15,950		22,471.02	2,538.40			-45,060
Quimica Marcat	164,348	57,529		35,290.97	7,042.21	454		-179,089
Tecnosol	123,623	35,706		50,305.97	5,851.93			-103,171
Quimobasicos	33,938	149,785					212,798	29,076
TOTAL	**973,824**		**384,543**					**-589,281**

65. In addition, the implementation of the technical assistance programme to phase out the use of HCFC-141b and HCFC-22 as cleaning agents will phase out 278 mt of HCFC-141b and 30 mt of HCFC-22 emitted every year during servicing. This represents a reduction in emissions into the atmosphere of some 255,850 tonnes of CO_2-equivalent per year.

66. The remaining technical assistance and demonstration activities in the servicing sector, which include better containment of refrigerants and leakage control through training and equipment, a pilot introduction of HC-based equipment and the enforcement of HCFC import quotas, among others, will reduce the amount of HCFC-22 used for refrigeration servicing. Each kilogramme of HCFC-22 not emitted due to better refrigeration practices results in savings of approximately 1.8 CO_2-equivalent tonnes. Although a calculation of the impact on the climate was not included in the HPMP, the activities planned by Mexico, in particular its efforts to improve servicing practices; refrigerant recovery and reuse indicate that the implementation of the HPMP will reduce the emission of refrigerants into the atmosphere therefore resulting in benefits on climate. However, at this time, a more accurate quantitatively assessment on the impact on climate cannot be conducted. The impact might be established through an

assessment of implementation reports by, *inter alia*, comparing the levels of refrigerants used annually from the commencement of the implementation of the HPMP, the reported amounts of refrigerants being recovered and recycled, the number of technicians trained and the HCFC-22 based equipment being retrofitted.

Co-financing

67. In addition to the assistance received under stage II of the HPMP, 272.10 non-eligible ODP tonnes will be phased out with funds from enterprises and other sources.

2014-2020 draft business plan of the Multilateral Fund

68. Table 11 shows the level of funding and amounts of HCFCs to be phased out according to the 2014-2020 business plan of the Multilateral Fund. The level of funding requested for the implementation of stage II of the HPMP of US $11,306,842 (including support costs and excluding costs associated with stage I tranches) is lower than that in the business plan (US $15,196,509[10]), as it is associated with a reduced amount of HCFCs to be phased out during implementation of stage II of the HPMP.

Table 11. 2014-2020 business plan of the Multilateral Fund

Agency	2014	2015	2016	2017	2018	2019	2020	Total
Funding (US $)								
Germany	33,900	400,000	0	0	0	0	0	433,900
Italy	300,000	0	0	0	0	0	0	300,000
UNEP	0	0	40,000	0	40,000	0	0	80,000
UNIDO	8,888,839	0	3,742,861	0	875,455	0	875,455	14,382,609
Total	**9,222,739**	**400,000**	**3,782,861**	**0**	**915,455**	**0**	**875,455**	**15,196,509**
Phase-out (ODP tonnes)								
Germany	0	1.60	1.60	1.60	0	0	0	4.80
Italy	25.60	0	0	0	0	0	0	25.60
UNEP	0	0	0	0	0	0	0	0
UNIDO	160.23		73.87	0	10.00	0	10.00	254.10
Total	**185.83**	**1.60**	**75.47**	**1.60**	**10.00**	**0**	**10.00**	**284.50**

Draft agreement

69. In finalizing the draft Agreement between the Government of Mexico and the Executive Committee, the Secretariat noted several issues that will require further analysis, including the existence of two different targets in 2018 (i.e., 804.2 ODP tonnes for stage I and 746.72 ODP tonnes for stage II; tranches overlapping with potential implications in the financial monitoring and closure of stage I, two different penalty clauses for years where two stages are ongoing, among others (i.e., US $87.00/kg for stage I and US $128.00/kg for stage II. As these issues could also arise in several stages II of HPMPs, they are further developed in the document on "Overview of issues identified in project review"[11]. The Secretariat recommends consideration of the HPMP at the present meeting, and finalization of the draft Agreement to the 73rd meeting once these issues are further discussed.

[10] Includes an enterprise that will convert without assistance from the Multilateral Fund (Business plan references: decision 71/22 and document UNEP/Ozl.Pro/ExCom/71/11).

[11] UNEP/OzL.Pro/ExCom/72/12.

RECOMMENDATION

70. The Executive Committee may wish to consider:

(a) Approving, in principle, stage II of the HCFC phase-out management plan (HPMP) for Mexico for the period 2014 to 2022 to reduce HCFC consumption by 67.5 per cent of the baseline, at the amount of US $11,306,842 consisting of US $9,502,043, plus agency support costs of US $665,143 for UNIDO; US $80,000, plus agency support costs of US $10,400 for UNEP; US $650,000, plus agency support costs of US $81,500 for the Government of Germany; and US $281,200, plus agency support costs of US $36,556 for the Government of Italy;

(b) Deducting additional 436.55 ODP tonnes of HCFCs from the starting point for sustained aggregate reduction in HCFC consumption, including 28.6 ODP tonnes of HCFC-141b contained in exported pre-blended polyols;

(c) Noting the commitment of the Government of Mexico to issue a ban on import of HCFC-141b by 1 January 2022;

(d) Noting that the Government of Mexico has committed to reduce HCFC consumption by 35 per cent of the baseline in 2018, 50 per cent in 2020 and 67.5 per cent in 2022;

(e) Noting that approval of stage II of the HPMP did not preclude Mexico from submitting earlier than 2020, a proposal to achieve a reduction in HCFCs beyond that addressed in stage II of the HPMP;

(f) Requesting UNIDO not to implement the conversion of Quimobásicos to HFC-245fa in the aerosol and solvent sector prior to the approval of the tranche programmed for 2016, and to actively pursue establishing low-global warming potential (GWP) alternatives for that sub-sector prior to that date; and in the event that there is no better solution than HFC-245fa by 2016, allowing UNIDO to start the conversion of Quimobásicos to HFC-245fa on the understanding that it will be an interim solution and once affordable low-GWP alternatives become available, the Government of Mexico commits to converting Quimobásicos from HFC-245fa without any further funding from the Multilateral Fund;

(g) Requesting UNIDO, the Government of Mexico and the Secretariat to finalize the draft Agreement between the Government of Mexico and the Executive Committee for the reduction in consumption of HCFCs, for submission at the 73rd meeting; and

(h) Approving the first tranche of stage II of the HPMP for Mexico, and the corresponding tranche implementation plans, at the amount of US $3,445,607, consisting of US $2,581,403, plus agency support costs of US $180,698 for UNIDO; US $281,200, plus agency support costs of US $36,556 for the Government of Italy and US $325,000, plus agency support costs of US $40,750 for the Government of Germany.