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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Seventy-seventh Meeting
Montreal, 28 November - 2 December 2016

PROJECT PROPOSALS: MEXICO

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

Phase-out

- HCFC phase-out management plan (stage I, annual progress report) UNIDO and UNDP
- HCFC phase-out management plan (stage II, second tranche) UNIDO/UNEP/Italy/Germany

PROJECT DESCRIPTION

1. On behalf of the Government of Mexico, UNIDO as the lead implementing agency, has submitted to the 77th meeting the annual progress report on the implementation of the work programme associated with the fifth and final tranche of the HCFC phase-out management plan (HPMP)¹ in line with decision 75/29(a)².

HCFC consumption and verification reports

2. The Government of Mexico reported HCFC consumption of 652.58 ODP tonnes in 2015, which is 37 per cent lower than the HPMP target of 1,033.9 ODP tonnes for the same year in the Agreement between the Government and the Executive Committee, and 43 per cent lower than the established baseline of 1,148.8 tonnes. The 2011-2015 HCFC consumption is shown in Table 1.

Table 1. HCFC consumption in Mexico (2011-2015 Article 7 data)

HCFC	2011	2012	2013	2014	2015	Baseline
Metric tonnes (mt)						
HCFC-22	6,704.53	7,425.30	4,695.21	4,933.17	4,468.17	8,505.1
hHCFC-123	63.29	37.00	20.90	29.00	48.57	73.1
HCFC-124	161.30	29.33	-62.17	21.10	25.76	8.0
HCFC-141b	6,196.20	5,882.20	4,691.44	4,003.4	3,590.69	6,123.9
HCFC-142b	437.70	725.53	89.00	166.00	158.78	89.2
Total HCFCs (mt)	13,563.02	14,099.36	9,434.37	9,152.67	8,291.97	14,799.3
ODP tonnes						
HCFC-22	368.75	408.39	258.24	271.32	245.75	467.8
HCFC-123	1.27	0.74	0.42	0.58	0.97	1.4
HCFC-124	3.55	0.64	-1.37	0.46	0.57	0.2
HCFC-141b	681.58	647.04	516.06	440.37	394.98	673.6
HCFC-142b	28.45	47.15	5.79	10.79	10.32	5.8
Total HCFCs (ODP tonnes)	1,083.40	1,103.98	779.14	723.53	652.58	1,148.8

3. The decrease in HCFC consumption between 2013 and 2015 was partially explained by the phase-out activities in the polyurethane (PU) foam and aerosol sectors, the introduction of alternatives to HCFC-141b used for flushing refrigerant circuits during service practices, and the introduction of non-HCFC-22 alternatives in the refrigeration and air-conditioning sector.

4. There is only one HCFC producer in Mexico (Quimobasicos) that produced 4,752 mt (261.36 ODP tonnes) of HCFC-22 in 2015. Mexico also exported HCFC-22, HCFC-141b (contained in pre-blended polyols), HCFC-123 and HCFC-124 in 2015. The HCFC import quota for 2016 was established at 789.95 ODP tonnes.

Verification report

5. The verification report for HCFC consumption confirmed that the Government is implementing a licensing and quota system for HCFC imports and exports and that the total consumption of HCFCs for 2015 was 652.58 ODP tonnes. The verification report for HCFC production confirmed that production of HCFC-22 was 261.36 ODP tonnes.

Country programme (CP) implementation report

6. The Government of Mexico reported HCFC sector consumption data under the 2015 CP

¹ The fifth and final tranche of stage I of the HPMP was approved at the 75th meeting at a total cost of US \$1,449,982, consisting of US \$226,317 plus agency support costs of US \$16,974 for UNIDO and US \$1,122,503, plus agency support costs of US \$84,188 for UNDP.

² Provision reflected in Annex XII of the document UNEP/OzL.Pro/ExCom/75/85.

implementation report that is consistent with the data reported under Article 7.

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

Activities in the PU foam manufacturing sector

7. Domestic refrigeration: Mabe has completed its conversion to hydrocarbon (HC), phasing out 55.9 ODP tonnes of HCFCs.

8. Systems houses: The technical conversion of all systems houses has been completed. Formulations for all applications have been developed and are commercially available. The majority of downstream users completed the conversions to low-GWP alternatives with the remaining to be completed by the end of 2016. A summary of progress achieved on the systems house project is presented in Table 2.

Table 2. Status of systems house project

Systems house (SH)	Technologies developed	Project status as of September 2016	Downstream foam users (DSU) as of September 2016		Expected dates for completion
			Qty	Status	
Acsa/Pumex (merged, operates as Pumex)	Pre-blended cyclopentane Methyl formate (MF) HFO	Conversion completed Formulations developed and commercially available	37	Conversion completed IOC pending	SH: Completed DSU: Dec 2016
Aepsa	MF	Conversion completed Formulation developed and commercially available	5	Project completed	SH: Completed DSU: Completed
Bayer	HFC HFO (future)	SH non-eligible	1	Conversion ongoing	SH: Completed DSU: End 2016
Comsisa	MF	Conversion completed Formulation developed commercially available	19	Project completed	SH: Completed DSU: Completed
Dow	HFC HFO (future) Water blown	SH non-eligible	13	Conversion ongoing	SH: Completed DSU: Dec 2016
Eiffel	MF Water Methylal Methylal/HFC-365mfc HFO (self-funded) Cyclopentane (self-funded)	Conversion completed Formulations developed and commercially available (MF and Methylal)	93	Conversion completed IOC pending	SH: Completed DSU: Dec 2016
Huntsman	Water	SH non-eligible	n.a.	Voluntary phase-out	n.a.
Maxima	MF Water HFC/HFO	Conversion completed Formulations developed and commercially available	55	Conversion completed IOC pending	SH: Completed DSU: Dec 2016
Poliolos	Water MF HFO (self-funded)	Conversion completed Formulations developed and commercially available	4	Conversion ongoing	SH: Completed DSU: Dec 2016
Urethane of Mexico	MF	Conversion completed Formulation developed and commercially available	35	Project completed	SH: Completed DSU: Completed
Valcom	MF Methylal with HFC (HFO future)	Conversion completed Formulations developed and commercially available	12	Project completed	SH: Completed DSU: Completed
Zadro	Methylal	Conversion completed Formulation developed and commercially available	14	Project completed	SH: Completed DSU: Completed

9. Commercial refrigeration (Fersa, Frigopanel, Metalfrio): Conversion and destruction of ODS-related equipment at Metalfrio (9.2 ODP tonnes of HCFC-141b) was completed in December 2014. Although the certificate³ has not been fully completed, the enterprise is already manufacturing insulation foam based on HC systems. Equipment for Ojeda/Frigopanel (6.4 ODP tonnes of HCFC-141b) and Fersa (7.3 ODP tonnes of HCFC-141b) was delivered, and installation and commissioning are expected to be completed by the end of 2016.

Activities in the aerosol manufacturing sector

10. Silimex: The project was successfully completed in December 2014 with the complete phase-out of 11 ODP tonnes of HCFC-141b.

Activities in the refrigeration servicing sector

11. An overview of the progress in the refrigeration servicing sector and the remaining activities to be completed are presented in Table 3.

Table 3. Overview of the progress in the refrigeration servicing sector

Activity	A. Overall output as proposed	B. Achieved 1 st to 4 th tranches	C. Plan of action 5 th tranche	D. Achieved 5 th tranche	E. Final output stage I	Status
Customs officers training sessions	2	2	0	0	2	Completed, 82 officers trained, including some from other countries in the region
Purchase of refrigerant identifiers	20	12	0	0	12	Completed, 12 refrigerant identifiers purchased for the 12 customs points that have ODS import/export operations
Training manual	4,000	4,000	0	0	4,000	Completed, 4,000 manuals were printed and delivered to the 11 training centres
Train-the-trainers courses	3	2	0	0	2	Completed, 38 trainers from 11 training centres
Technicians trained	4,000	1,000	3,000	700	4,000	Ongoing, delay due to inadequate equipment and flushing agents supplied. The cleaning agent was replaced, new motors for the equipment were ordered and an additional 11 flushing machines were purchased. An additional 700 technicians were trained. Contracts were signed for an additional 10 courses in 7 training centres with an estimated 1,400 participants. Additional contracts are expected to be signed
Purchase of servicing kits	200	0	200	200	200	Ongoing, servicing kits were purchased and are being distributed to the best trained technicians (October 2016 and February 2017)
Purchase of flushing units	33	22	11	23	45	Completed, an additional 23 flushing units were purchased and delivered to the training centres
ODP tonnes of HCFC phased out as cleaning agent	23	0	23	0	23	Ongoing, the servicing kits are currently being distributed to technicians. HCFC-141b phase-out will be recorded in 2017
New standards for AC equipment and policy	3	0	3	1	3	Ongoing, new standard "NOM-026-Energy Efficiency for inverter AC" developed. Two energy-efficiency standards for AC equipment are being updated (NOM-021-

³ TUV (Technischer Überwachungsverein) certification on the safety of products for humans and the environment.

Activity	A. Overall output as proposed	B. Achieved 1 st to 4 th tranches	C. Plan of action 5 th tranche	D. Achieved 5 th tranche	E. Final output stage I	Status
						ENER/SCFI-2008 and NOM-O23-ENER-2010)

Level of fund disbursement

12. As of September 2016, of the US \$18,066,211 approved, US \$11,787,761 (65 per cent) had been disbursed (US \$8,830,619 for UNDP and US \$2,957,142 for UNIDO). The balance of US \$6,278,450 will be disbursed between 2016 and 2018 (Table 4).

Table 4. Financial report of stage I of the HPMP for Mexico as of September 2016 (US \$)

Component	Agency	Funds approved	Funds disbursed		Planned disbursement (Oct. 2016 – 2018)
			(US \$)	(%)	
PU foam (Mabe)	UNDP	2,428,987	2,404,387	99	24,600
PU foam (systems houses)		11,225,029	6,426,232	57	4,798,797
PU foam (Metalfrío, Fersa, Ojeda)	UNIDO	2,046,110	1,133,990	55	912,120
Aerosol (Silimex)		520,916	520,894	100	22
Refrigeration servicing sector		1,845,169	1,302,258	71	542,911
Total		18,066,211	11,787,761	65	6,278,450

Implementation plan for 2016-2017

13. The following activities will be implemented: Project completion report for the Mabe project, completion of the conversion of the remaining PU foam downstream users and payment of IOCs, issuance of the certificate to Metalfrío; completion of the conversion at Frigopanel/Ojeda and Fersa; delivery of tools to technicians and continuation of training programme in good practices; monitoring of the quota system, finalization of the standards update, and verification of HCFC production in 2016.

Additional activities proposed in the extruded polystyrene (XPS) foam sector

14. The Government of Mexico included in the progress report a request to convert two eligible enterprises in the extruded polystyrene (XPS) foam sector to phase out additional 215.21 mt⁴ of HCFC-22 and HCFC-142b at an estimated cost of US \$1,271,000, to be funded from savings from the PU foam sector plan. With the implementation of this project, Mexico will avoid the increase in the use of HCFC in the XPS foam sector and will allow the Government to completely phase out the use of HCFC-142b in the country. The two enterprises to be included in stage I are the following:

- (a) *Plásticos Espumados*: A locally owned enterprise that has been manufacturing XPS foam panels since 2004 for general construction where dimensional stability and thermal insulation are of the essence. The enterprise has one conic twin-screw extruder from 1987. The project intends to retrofit it to operate with HFO-1234ze, install a single head blowing agent pump to allow separate DME/HFO metering, safety elements for the use of DME, technical assistance, production trials and safety audit. Incremental operating costs are requested for one year; and
- (b) *Termofoam Valladolid*: A locally owned enterprise that has been manufacturing XPS foam panels since 2005 for general construction purposes for which dimensional stability and

⁴ As submitted, based on average consumption for 2010 to 2012. Proportion of HCFC-22 and HCFC-142b is not known yet, and current consumption based on last year or last three years (as per the guidelines) has not been determined yet.

thermal insulation are of the essence. The enterprise has two single-screw extruders purchased in 2005. The project intends to retrofit both extruders to operate with HFO-1234ze, install a DME tank, a single head blowing agent pump to allow separate DME/HFO metering, safety elements for the use of DME, technical assistance, production trials and safety audit. Incremental operating costs are requested for one year.

15. HFO-1234ze has been selected as the alternative technology over CO₂, HCs or HFCs because of its non-flammability, low-GWP, ideal boiling point, and performance; it is expected to retain or improve the thermal insulation performance. HFO-1234ze requires the use of DME to ensure proper blending; as DME is moderately flammable, safety items are required. The project proposes the flexibility to use a blend of HFC-134a and HFC-152a on a temporary basis due to high price and inadequate supply of HFO-1234ze.

16. The proposed costs for conversion of both enterprises are presented in Table 5. Once the conversion has been completed (no later than the end of 2018), the Government commits to ban imports of HCFC-142b and manufacturing of XPS foam using HCFCs.

Table 5. Proposed costs for conversion of XPS foam enterprises

Enterprise	HCFC consumption (mt) 2010-2012	Incremental capital cost (ICC) (US \$)	IOC (US \$)	Total cost (US \$)
Plasticos Espumados	90.01	540,000	70,000	610,000
Termofoam Valladolid	125.20	561,000	100,000	661,000
Total	215.21	1,101,000	170,000	1,271,000

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

Activities in the foam manufacturing sector

Systems houses

17. In line with paragraph 7(c) of the Agreement, UNDP submitted a list of downstream users for which eligibility has been validated in the field. The Secretariat noted that the number of downstream users listed in the report was lower than the number of users for which funds were approved. UNDP clarified that the original list of users was prepared in 2009-2010 and some have changed suppliers; remaining end-users are still to be identified and allocated to their current supplier. The final list of end-users will be higher than the number indicated in the current report. UNDP also assured the Secretariat that funding from the project would be only provided to the eligible enterprises and for eligible equipment. As there are still downstream users to be validated and to start their conversions, the Secretariat and UNDP agreed that an updated list will be included in the annual tranche implementation report to be submitted in 2017.

XPS foam project and adjustment to the stage I Agreement

18. The Secretariat enquired about the reasons for and the level of the savings in the implementation of the PU foam sector plan that could cover the conversion of the two XPS foam enterprises. UNDP clarified that a final amount of savings has not been determined yet as the project is still ongoing, but the level of savings expected would be enough to convert the two XPS foam enterprises. On the reason for the savings, UNDP indicated that it was due to the conversions of several downstream foam enterprises via foreign-owned systems houses at a lower cost to the Fund.

19. In reviewing the proposal the Secretariat noted the following:
- (a) In accordance with Appendix 1-A of the Agreement, the starting point for aggregate reductions in consumption for HCFC-142b is only one ODP tonne (15.38 mt). Accordingly this would be the maximum amount of HCFC-142b reductions that could be funded by the Fund; and
 - (b) The proposal indicated that a HFC blend might be used on a temporary basis until a stable supply at a reasonable price HFOs is available on the local market. While a combination of these two HFCs would have a lower GWP than any combination of HCFC-22 and HCFC-142b, a better understanding would be required on the interim blend proposed, the period of time during which this blend would be used, and the expected availability of HFO-1234ze in the next years.
20. In response to these issues, UNDP indicated that the consumption of HCFC-142b in 2008 (the year used as reference for the starting point) was approximately 111 mt (7.21 ODP tonnes) and not one tonne as reported under Article 7 of the Montreal Protocol and in Appendix 1-A of the Agreement. The reason for the incorrect reporting was that in 2008 imports of HCFC-141b and HCFC-142b were recorded under the same customs code, and a larger consumption was allocated to HCFC-141b. This was corrected later by the Government of Mexico; however, the Ozone Secretariat was not notified on the correction of the data. UNDP indicated that the Government of Mexico will request the corresponding correction to the Ozone Secretariat. Accordingly, once this correction is accepted, Appendix 1-A of the Agreements for stage I and for stage II would also need to be adjusted in order to reflect the correct proportion of HCFC-141b and HCFC-142b.
21. The Secretariat noted that consumption of HCFC-142b has been historically reported since 2005, including during the baseline years. Furthermore, during the discussion for the approval of stage II at the 72nd meeting⁵, after having deducted from the starting point the consumption of all eligible and non-eligible enterprises using HCFC-141b, there were still 71.9 ODP tonnes in the remaining eligible consumption that were not associated to any PU foam, aerosol or solvent enterprise. While this tonnage was deducted from the remaining eligible consumption at no cost to the Fund, it is possible that a portion of it corresponds to HCFC-142b wrongly classified as HCFC-141b as reported by UNDP.
22. Additional consultations are taking place with the HFO-1234ze supplier to estimate a date when the substance will be available in Mexico, and with the enterprises on the blend of HFC-134a and HFC-152a that would be introduced on an interim basis although, the Secretariat indicated that a direct conversion to HFO-1234ze would be the preferable option.
23. In view of the need to request a correction of the consumption data reported under Article 7 of the Montreal Protocol and to clarify the information on the enterprises and the selected technology, the Secretariat suggested UNDP to continue finalizing this work and resubmit the complete proposal for consideration at the next Executive Committee meeting.

RECOMMENDATION

24. The Executive Committee may wish to consider:
- (a) Noting:
 - (i) The 2016 progress report on the implementation of stage I of the HCFC phase-out management plan (HPMP) for Mexico submitted by UNIDO;

⁵ UNEP/OzL.Pro/ExCom/72/33 paras 58 and 59.

- (ii) With appreciation that the polyurethane (PU) foam sector plan is being completed at a lower cost than originally approved, resulting in savings to be assessed once the sector plan has been completed;
 - (iii) That UNDP and the Government of Mexico could resubmit the proposal to reallocate savings from the PU foam sector to an investment project to phase-out the use of HCFC-142b in the extruded polystyrene (XPS) foam manufacturing sector once a request for correction of the consumption of HCFC-142b in 2008 is revised by the Ozone Secretariat noting that the funding from the conversion of US \$1,271,000 will be covered from the savings related to the PU foam sector plan; and
- (b) Requesting the Government of Mexico, UNIDO and UNDP to include in the next progress report of stage I of the HPMP to be submitted to the last Executive Committee meeting in 2017 the complete list of downstream foam enterprises assisted by the Multilateral Fund under stage I, including their HCFC-141b consumption phased out, subsector, baseline equipment and technology adopted.

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS
Mexico

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out plan (Stage II)	Germany, Italy, Spain, UNEP, UNIDO (lead)	73 rd	67.5% in 2022

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2015	652.58 (ODP tonnes)
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)								Year: 2015	
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-123					1.0				1.0
HCFC-124					0.6				0.6
HCFC-141b	58.0	157.3		179.7					395.0
HCFC-142b		10.3							10.3
HCFC-22	13.2			6.6	225.9				245.7

(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:	950.9	Remaining:	263.9

(V) BUSINESS PLAN		2016	2017	2018	2019	2020	After 2020	Total
UNIDO	ODS phase-out (ODP tonnes)	107.0	0.0	154.5	0.0	77.6	2.17	341.17
	Funding (US \$)	2,378,075	0	3,434,399	0	1,725,215	482,000	8,019,689
Germany	ODS phase-out (ODP tonnes)	15.6	0.0		0.0	0.0	0.0	15.6
	Funding (US \$)	365,750	0	0	0	0	0	365,750
Italy	ODS phase-out (ODP tonnes)	0.0	0	0.0	0.0	0	0.0	0.0
	Funding (US \$)	0.0	0	0.0	0.0	0.0	0.0	0.0
Spain	ODS phase-out (ODP tonnes)	0.0	0	0.0	0.0	0.0	0.0	0.0
	Funding (US \$)	0.0	0	0.0	0.0	0.0	0.0	0.0
UNEP	ODS phase-out (ODP tonnes)	1.9	0	0	0	1.9	0.0	3.9
	Funding (US \$)	45,200	0	0.0	0.0	45,200	0.0	90,400

(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	2,404,412	0	1,165,509	2,139,719	1,612,350	450,600	7,772,590
		Support costs	168,309	0	81,586	149,780	112,865	31,542	544,082
	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	458,191	0	0	0	0	0	458,191
		Support costs	59,565	0	0	0	0	0	59,565
	Spain	Project costs	0		1,056,991	1,070,000	0	0	2,126,991
		Support costs	0		121,238	122,731	0	0	243,969
	UNEP	Project costs	0	0	40,000	0	40,000	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	2,587,500	3,209,719	1,652,350	450,600	11,087,772	
Total support costs requested in principle (US \$)		268,624	0	248,774	272,511	118,065	31,542	939,516	
Total funds requested in principle (US \$)		3,456,227	0	2,836,274	3,482,230	1,770,415	482,142	12,027,288	

(VII) Request for funding for the second tranche (2016)		
Agency	Funds requested (US \$)	Support costs (US \$)
UNIDO	1,165,509	81,586
Germany	325,000	40,750
UNEP	40,000	5,200
Spain	1,056,991	121,238

Secretariat's recommendation:	For individual consideration
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PROJECT DESCRIPTION

25. On behalf of the Government of Mexico, UNIDO as the lead implementing agency has submitted to the 77th meeting a request for funding for the second tranche of stage II of the HCFC phase-out management plan (HPMP)⁶, at a total cost of US \$2,836,274 consisting of US \$1,165,509, plus agency support costs of US \$81,586 for UNIDO, US \$40,000, plus agency support costs of US \$5,200 for UNEP, US \$325,000, plus agency support costs of US \$40,750 for the Government of Germany, US \$1,056,991, plus agency support costs of US \$121,238 for the Government of Spain.

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

Legal framework

26. Regulations have been updated to include all blends containing HCFC in the quota and licensing system.

Activities in the aerosol manufacturing sector

27. Of the eight enterprises included in stage II, five have completed conversion (Aerosoles Internacionales, Alben, Dimmex, Quimica Jerez and Tecnosol) with the phase-out of 204.61 mt of HCFC-22 and 83.75 mt of HCFC-141b. Conversion at Envatec and Quimica Marcat is ongoing and Quimobasicos is to be addressed in the next tranche(s). The status of conversion is presented in Table 1.

Table 1. Status of conversion of aerosol manufacturing enterprises

Enterprise	Substance	HCFC consumption (mt)		Alternative (to be) adopted	Status of the conversion/remarks	Next steps
		HCFC-22	HCFC-141b			
Aerosoles Internacionales	HCFC-22 HCFC-141b	35.80	12.75	Perchloroethylene/ HFC-134a/ HFC-152a	Conversion completed	IOC paid
Alben	HCFC-22	10.27	0.00	HFC-152a	Conversion completed	Final IOC payment
Dimmex	HCFC-22	60.34	0.00	HFC-152a	Conversion completed	IOC paid
Envatec	HCFC-22 HCFC-141b	70.10	14.00	Perchloroethylene/ HFC-134a/ HFC-152a	Conversion is ongoing. The enterprise is not purchasing HCFCs since early 2016	Conversion verification upon completion
Quimica Jerez	HCFC-22 HCFC-141b	29.90	22.00	Perchloroethylene/ HFC-134a/ HFC-152a	Conversion completed. Enterprise is not purchasing HCFCs since early 2016	Authorize the IOC payment
Quimica Marcat	HCFC-22 HCFC-141b	90.80	79.35	Perchloroethylene/ HFC-134a/ HFC-152a Hydrocarbons	The conversion is to be completed by the end of 2016, however, the enterprise is not purchasing HCFCs since third quarter 2016	Finalize the conversion
Tecnosol	HCFC-22 HCFC-141b	68.30	49.00	HFC-134a/ HFC-152a HFC-365mfc/ HFC-227ea	Conversion completed. Aerosol formulation based on HFC-365mfc/HFC 227ea is being introduced due to corrosion issues with the end users	Final IOC payment

⁶ As per the letter of 29 September 2016 from the Ministry of Environment and Natural Resources of Mexico to UNIDO.

Refrigeration servicing sector

28. The following activities were implemented: 32 flushing machines and 200 flushing kits were purchased (in addition to those purchased in stage I); a study tour to Italy was held to showcase best practices in reclamation and to support the set-up of the reclamation operation in Mexico; draft technical specifications for reclamation equipment were prepared; and the demonstration project on safe installation, use and maintenance of hydrocarbon (HC)-based equipment commenced with the development of training material, technical specifications and tender for the training tools and air-conditioning (AC) units, a draft certification scheme and a review of HC technical standards and regulations.

Level of fund disbursement

29. As of October 2016, of the total US \$3,187,603 so far approved, US \$1,358,933 (42.6 per cent) had been disbursed. The remaining US \$1,828,670 will be disbursed in 2016 and 2017 (Table 2).

Table 2. Financial report of stage II of the HPMP for Mexico (US \$)

Implementing/bilateral agency	First tranche	
	Approved	Disbursed
UNIDO	2,404,412	1,253,658
Government of Germany	325,000	77,217
Government of Italy	458,191	28,058
TOTAL	3,187,603	1,358,933
Disbursement rate (%)		42.6

Implementation plan for the second tranche of the HPMP and changes to the agreement

30. Quimobasicos is proposing to commence the conversion of its aerosol manufacturing line during the second tranche (2016) instead of in the third tranche (2018). In order to avoid any changes to the funding tranches of stage I, the Government is requesting to defer some of the activities proposed in the refrigeration sector to 2018. As both activities are implemented by UNIDO, this reprioritization has no impact in the value of the tranches. The proposed change will result in the earlier phase out of 1.03 ODP tonnes of HCFC-22 and 22.72 ODP tonnes of HCFC-141b, avoiding their release into the atmosphere given the emissive nature of the aerosol sector. UNIDO confirmed that the technology selected (HFO-1233zd) is available to Quimobasicos to implement the project.

31. The Government of Mexico is also requesting to include the Government of Spain as a cooperating bilateral agency for the second (2016) and third tranches (2018) of stage II for the following project components: conversion of Quimobasicos in the aerosol manufacturing sector (US \$700,000), phase-out of HCFC-22 in the servicing sector (US \$1,350,000), and HCFC-22 and HCFC-141b as a flushing agent in the refrigeration servicing sector (US \$76,991). The total level of funds approved for stage II would not be modified as funds currently approved in principle to UNIDO would be reallocated to the Government of Spain to implement these activities. The proposed changes to the distribution of funds for the second and third tranches are presented in Table 3 below:

Table 3. Proposed changes to the distribution of funds for the second (2016) and third tranche (2018)

Activity	Agency	Second tranche (2016)		Third tranche (2018)	
		Original	Updated	Original	Updated
Phase-out in the aerosol sector	UNIDO	919,247	851,229	631,982	0
	Spain	0	700,000	0	0
Flushing	UNIDO	76,991	0	635,990	635,990
	Spain	0	76,991	00	0
Servicing sector	UNIDO	953,762	41,780	1,619,247	1,181,229
	Spain	0	280,000	0	1,070,000
HC demonstration and training	Germany	325,000	325,000	0	0
Customs training	UNEP	40,000	40,000	0	0
Public awareness	UNIDO	30,000	30,000	30,000	30,000
Production sector monitoring	UNIDO	0	0	50,000	50,000
Quota and licensing	UNIDO	12,500	12,500	12,500	12,500
Coordination	UNIDO	230,000	230,000	230,000	230,000
Total		2,587,500	2,587,500	3,209,719	3,209,719
Total funding per agency					
UNIDO		2,222,500	1,165,509	3,209,719	2,139,719
Spain		-	1,056,991	-	1,070,000
Germany		325,000	325,000	-	-
UNEP		40,000	40,000	-	-
Total		2,587,500	2,587,500	3,209,719	3,209,719

32. The following activities will be undertaken in the second tranche:

- (a) Continuation of the phase-out activities in the aerosol manufacturing sector including the conversion of Quimobasicos (UNIDO/Spain) (US \$1,551,229);
- (b) Continuation of phasing out HCFC-141b used as a flushing agent in refrigeration servicing activities, including extension of training coverage to four more training centres; procurement of 10 to 20 flushing kits for the centres; training of 16 trainers and 480 technicians (UNIDO/Spain) (US \$76,991);
- (c) Procurement of equipment for two reclamation centres (including refrigerant cylinders filling systems, gas chromatographs, and recovery tanks), and training for the reclamation programme (Italy) (with the funding approved for the first tranche);
- (d) Continuation of the HC demonstration project with delivery of 1,000 AC units based on HC-290 and 10 AC demonstration training units; demonstration of safe installation, use and maintenance of 20 HC-290-based split AC systems; two trainer workshops on safe use of HCs; completion and publication of HC guidelines; development of HC regulations and standards, including labelling standards for equipment; and distribution of awareness material (Germany) (US \$325,000);
- (e) Two train the trainers courses in good practices; procurement of equipment and tools for proper handling recovery and reuse of refrigerants for training institutions; study tour to an international training centre; and development of manual on AC servicing (UNIDO/Spain) (US \$321,780);
- (f) Training of 24 customs officers focusing on the identification of HCFC-141b in pre-blended polyols and HFCs (UNEP) (US \$40,000); and
- (g) Annual coordination meetings with relevant stakeholders (as part of project coordination); regular updates to the ODS Information and Monitoring System (SISSAO), and public awareness activities (UNIDO) (US \$272,500).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

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

Conversion of non-eligible enterprises

33. The Secretariat requested UNIDO to provide an update on the status of the conversion of Whirlpool a domestic manufacturing enterprise and other non-eligible enterprises consuming 272.10 ODP tonnes of HCFC-141b/HCFC-22 during stage II. UNIDO clarified that Whirlpool has converted some production lines and reduced the consumption of HCFC-141b by 66 ODP tonnes with a complete phase-out expected by the end of 2020. Metecno is still using 22 ODP tonnes of HCFC-141b and is expected to be converted by 2020. Other non-eligible enterprises have already converted to alternative technologies⁷.

Aerosol manufacturing sector

34. Upon request, UNIDO provided information on the challenges encountered by the aerosol enterprises in adopting the selected technologies. Difficulties include poor solvent performance, corrosion or flammability of some of the alternatives. Due to poor performance of perchlorethylene as a solvent, some other technologies are being analysed, included HFOs. In the case of the production of silly strings (used in children parties) in Envatec and Quimica Jerez, HFC-134a is used at a higher cost than HFC-152a due to flammability and safety concerns. Both alternatives are part of the original project approved; and at the time of approval UNIDO had already anticipated that HFC-134a would be introduced only for applications where currently no other financially feasible non-flammable alternative existed.

35. In the case of Tecnosol, its main client is requesting a solution that provides dryer cleaning and faster evaporation process than the blend perchlorethylene/HFC-134a introduced. The only suitable solution is a blend of 93 per cent of HFC-365mfc and 7 per cent of HFC-227ea, which is more expensive alternative and was not envisaged in the approved project. While this blend has an overall GWP lower than the combination of HCFC-22 and HCFC-141b consumed by Tecnosol, it has a larger GWP than the perchlorethylene/HFC-134a blend originally proposed.

36. UNIDO indicated in all these cases that the proposed solutions were on interim basis. Lab tests are planned for 2017 to formulate a suitable and lower GWP alternative. It is also expected that the cost of HFO-1233zd would decrease during 2017, which would make that alternative more affordable to the enterprises. The results of the lab tests conducted and the availability of HFO-1233zd as an alternative to these enterprises will be presented in the next progress report on implementation of the second tranche.

37. UNIDO also reported that the sustainability of the phase-out of HCFC-141b and HCFC-22 will be ensured by the complete conversion of the aerosol sector and the fact that none of the enterprises will receive HCFC quotas by the time the project is completed.

Refrigeration servicing sector

38. Upon a query on the current availability of alternatives to HCFC in the market, UNIDO explained that the capacity-building programme, incentives for the replacement of old equipment and the availability of consistent data regarding the energy performance of HC-based AC units are expected to help increase the market penetration of small HC split air-conditioners over the next three years. Currently, over 150,000 air-conditioners have been already replaced in Mexico under the cash-for-coolers

⁷ The amount of HCFC phased out is not available.

programme, funded by the World Bank. Additional information on the alternatives will also be available in the final report on the ODS alternatives survey to be completed early 2017.

Inclusion of the Government of Spain and change in the Agreement

39. The Secretariat reviewed the request from the Government of Mexico to include the Government of Spain as a cooperating bilateral agency for stage II of the HPMP. Accordingly, relevant paragraphs and Appendix 2-A of the Agreement between the Government of Mexico and the Executive Committee have been updated as presented in Annex I. The full revised Agreement will be appended to the final report of the 77th meeting. In transferring these activities from UNIDO to the Government of Spain, the agency support costs for stage II of the HPMP increase by US \$95,080.

Conclusion

40. The Secretariat noted that a sufficient level of implementation of the first tranche of the HPMP has been achieved, in particular with the completion of the conversion of five aerosol enterprises phasing out 20.46 ODP tonnes of HCFC-22 and HCFC-141b. While the project had been originally approved with a combination of HFCs as part of the alternatives for the smaller enterprises, the enterprises and UNIDO are exploring the possibility to introduce HFOs in the future. The import licensing and quota system is operational and will enable the country to achieve compliance with its Agreement with the Executive Committee. The verification report confirms that the country is in compliance with both the Montreal Protocol and the Agreement with the Executive Committee. The Agreement between the Government of Mexico and the Executive Committee has been updated to reflect the transfer of US \$2,126,991 from UNIDO to the Government of Spain. The funding request is submitted for individual consideration due to the change requested in the Agreement.

RECOMMENDATION

41. The Executive Committee may wish to consider:

- (a) Noting:
 - (i) The progress report on the implementation of the second tranche of stage II of the HCFC phase-out management plan (HPMP) for Mexico;
 - (ii) The inclusion of the Government of Spain as a cooperating bilateral agency for the second (2016) and third tranches (2018) for activities in the aerosol and refrigeration servicing sectors;
 - (iii) That the Fund Secretariat had updated paragraphs 9 and 10 and Appendix 2-A of the Agreement between the Government of Mexico and the Executive Committee, based on the transfer of funding from UNIDO to the Government of Spain (US \$1,056,991 for the second tranche and US \$1,070,000 for the third tranche) for the implementation of activities mentioned in sub-paragraph (a)(ii) above, and that a new paragraph 16 had been added to indicate that the updated Agreement supersedes that reached at the 73rd meeting, as contained in Annex I to the present document; and
- (b) Approving the second tranche of stage II of the HPMP for Mexico, and the corresponding 2017-2018 tranche implementation plan, at the amount of US \$2,836,274 consisting of US \$1,165,509, plus agency support costs of US \$81,586 for UNIDO, US \$40,000, plus agency support costs of US \$5,200 for UNEP, US \$325,000, plus agency support costs of

US \$40,750 for the Government of Germany, US \$1,056,991, plus agency support costs of US \$121,238 for the Government of Spain.

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 IN ACCORDANCE WITH STAGE II OF THE HCFC PHASE-OUT MANAGEMENT PLAN

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

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, **the Government of Spain** 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, 2.8 **and 2.10** of Appendix 2-A.

16. This updated Agreement supersedes the Agreement reached between the Government of Mexico and the Executive Committee at the 73rd meeting of the Executive Committee.

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 \$)	2,404,412	-	1,165,509	2,139,719	1,612,350	450,600	9,899,581
2.2	Support costs for Lead IA (US \$)	168,309	-	81,586	149,780	112,865	31,542	692,971
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 \$)	458,191	-	-	-	-	-	458,191
2.6	Support costs for Cooperating IA (US \$)	59,565	-	-	-	-	-	59,565
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
2.9	Cooperating IA (Spain) agreed funding (US \$)			1,056,991	1,070,000			2,126,991
2.10	Support costs for Cooperating IA (US \$)			121,238	122,731			243,969
3.1	Total agreed funding (US \$)	3,187,603	-	2,587,500	3,209,719	1,652,350	450,600	11,087,772
3.2	Total support costs (US \$)	268,624	-	248,774	272,511	118,065	31,542	939,516
3.3	Total agreed costs (US \$)	3,456,227	-	2,836,274	3,482,230	1,770,415	482,142	12,027,288
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