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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Eighty-second Meeting
Montreal, 3-7 December 2018

PROJECT PROPOSALS: BRAZIL

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

Phase-out

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

Stage I of the HPMP for Brazil (annual progress report)

1. On behalf of the Government of Brazil, UNDP as the lead implementing agency, has submitted to the 82nd meeting the annual progress report on the implementation of the work programme associated with the fifth tranche of stage I of the HCFC phase-out management plan (HPMP),^{1,2} in line with decision 75/53(b).³

2. At the 80th meeting, the Executive Committee approved the extension of the completion date of stage I of the HPMP to 31 December 2019, on the understanding that no further extension of project implementation would be requested (decision 80/12(b)).

Progress report on the implementation of the fifth tranche

Legal framework

3. The Government approved a regulation to strengthen environmental controls of potentially polluting activities related to ozone-depleting substances (ODS), updated the guidelines and coordinating actions related to the protection of the ozone layer, and updated the regulation that establishes import quotas between 2018 and 2021. Accordingly, the total HCFC import quota will be maintained at 16.6 per cent below the baseline for the years 2018 and 2019, reduced to 39.3 per cent below the baseline in 2020, and to 51.6 per cent below the baseline in 2021. These reductions include a 90 per cent decrease in the HCFC-141b quota in 2020 over the baseline of this substance, and a 27.1 per cent decrease in the HCFC-22 quota over the baseline for this substance. For other HCFCs imported into Brazil, the quotas for the same period should not exceed the levels established for 2013.

4. The Government also continues to support the Brazilian Association of Technical Standards (ABNT) in developing and discussing specific standards for the handling, installation and maintenance of equipment using flammable refrigerants (e.g., security in refrigeration systems; installation of residential split and compact air-conditioning systems; and reverse production of refrigerators).

Polyurethane (PU) foam manufacturing sector

Conversion of 12 stand-alone PU foam enterprises (79.71 ODP tonnes)

5. Ten enterprises (with HCFC-141b consumption of 64.76 ODP tonnes) in the continuous panel and integral skin/flexible moulded applications had completed their conversions prior to the current reporting period (three had opted for hydrocarbon (HC), three for methyl formate, three for methylal, and one for methylene chloride). The status of the two remaining enterprises is presented below:

- (a) Espumatec (11.98 ODP tonnes) decided to convert to water-based technology rather than methyl formate, as initially approved by the project. The project is currently under implementation and will be completed in February 2019; and

¹ The fifth and final tranche of stage I of the HPMP was approved at the 75th meeting at a total cost of US \$2,035,094, consisting of US \$1,470,700, plus agency support costs of US \$110,303 for UNDP, and US \$409,091, plus agency support cost of US \$45,000 for Germany.

² As per the letter of 5 September 2018 from the Ministry of Environment of Brazil to UNDP.

³ The Government of Brazil, UNDP and the Government of Germany were requested to submit progress reports on the implementation of the work programme associated with the fifth and final tranche on a yearly basis until the completion of the project, verification reports until approval of stage II of the HPMP, and the project completion report to the final meeting of the Executive Committee in 2018.

- (b) Panisol (3.0 ODP tonnes), which faces difficulties in converting to HC-based technology due to its location in an urban area, is being assisted by UNDP to identify a viable alternative technology.

Conversion of 11 systems houses with close to 380 downstream users (89.1 ODP tonnes)

6. Eight out of 11 systems houses have completed their conversions, and developed and introduced low-GWP formulations in 173 downstream users, phasing out 57.48 ODP tonnes of HCFC-141b. The systems house Ecopur, which had not shown interest in participating in the HPMP in previous years, has decided to participate in the plan and will start to convert to methyl formate in December 2018. Table 1 summarizes the status of the systems houses project component.

Table 1. Implementation status of systems houses and downstream users

Approved HPMP					HPMP implementation								
Systems house (SH)	Downstream users (DSU)				DSU identified							Status*	
	FMF/ISF**		PUR ***		Identified (all sectors)	DSU validated cumulative					SH	DSU	
	No.	ODP tonnes	No.	ODP tonnes		Found eligible	ODP tonnes	Project ongoing	Project completed	ODP tonnes phased out			Total DSU
Ariston	7	1.4	98	49.6	12	12	6.32	0	12	57.48	12	COM	COM
Ecoblaster	17	5.7			24	22	10.61	0	18		18	COM	COM
Shimtek	14	2.9			5	3	1.01	0	2		2	COM	COM
U-Tech	0	0			12	12	4.20	0	12		12	COM	COM
Amino	49	6.9			50	48	13.64	21	25		46	COM	ONG
Arinos****	85	10.8			36	35	5.8	7	23		30	COM	ONG
Polyurethane	0	0			17	17	3.84	5	12		17	COM	ONG
Purcom	101	11.8			108	102	16.49	31	69		100	COM	ONG
Ecopur (Rodza)	0	0			3	TBD*	TBD	0	0			ONG	N.S.
M.Cassab	0	0			15	TBD	TBD	0	0			ONG	N.S.
Polisystem	0	0			6	TBD	TBD	0	0			ONG	N.S.
Grand total	273	39.5	98	49.6	288	251	61.91	64	173	57.48	237	n/a	n/a

*COM: Completed as per approval; however, more downstream users can be added in the future; ONG: Ongoing; N.S.: Not started; TBD: To be determined.

**Flexible moulded foam and integral skin foam.

***Rigid PU foam applications (water heater, thermoware, packaging, and pipe-in-pipe).

****Non-eligible enterprise (non-Article 5 ownership) that converted to methylal and methyl formate with its own resources. Associated funds (US \$179,300, plus agency support cost of US \$13,448) were returned to the Fund by deducting them from the fifth tranche approved at the 75th meeting.

Temporary use of high-GWP technology

7. In the annual progress report submitted at the 80th meeting, UNDP explained that two systems houses (Shimtek and U-Tech) had requested the temporary use of HFC-based polyol systems with high global-warming potential (GWP), as HFOs were not yet available on a commercial scale in the country. Both systems houses had signed a commitment to stop the temporary use of HFC blends once HFOs were commercially available and the systems had been developed and optimized, at no additional cost to the Multilateral Fund.

8. Accordingly, the Executive Committee requested UNDP to continue assisting Shimtek and U-Tech in securing the supply of the alternative technologies selected, on the understanding that any incremental operational costs (IOCs) would not be paid until the alternative technology originally selected or another technology with a low GWP had been fully introduced. UNDP was also requested to report on the status of use of the interim technology selected by the systems houses at each meeting until the technology originally selected or another technology with a low GWP had been fully introduced (decision 80/12(e)), along with an update from the suppliers on progress made toward ensuring that the selected technologies, including associated components, were available on a commercial basis in the country (decision 81/9).

9. In line with decisions 80/12(e) and 81/19, UNDP has reported that both systems houses are currently developing polyols based on HFO-1233zd(E). At the time of signing the Agreement, one of the suppliers had indicated that larger volumes would be made available for South America from 2016 on, and although the availability of HFO-1233zd(E) in Brazil has indeed increased, procurement of larger quantities still presents a challenge. The Government of Brazil and UNDP continue to hold meetings with the suppliers to discuss the supply of HFOs and expect that with the conversion of larger enterprises to HFO-based technology in stage II, the volumes imported to Brazil will further increase. UNDP will continue reporting on any additional progress by Shimtek and U-Tech.

Refrigeration servicing sector

10. Activities in this sector under stage I have been focused on the implementation of the demonstration projects on better HCFC-22 containment in supermarkets. They included: updating the technical training materials for supermarkets; training on leakage control for the supermarkets' technical teams participating in the projects; intervention plans in three supermarkets and follow-up visits; preparation of two case studies; and continuous dissemination of project results. Awareness activities continue to be implemented (e.g., website updates, social media outreach and dissemination of information).

Project implementation and monitoring unit (PMU)

11. The PMU continued to support the National Ozone Unit (NOU) in implementing the HPMP activities.

Level of fund disbursement

12. As of September 2018, of the US \$19,417,866 approved for stage I,⁴ US \$15,446,586 (80 per cent) had been disbursed (US \$11,489,876 for UNDP and US \$3,956,710 for the Government of Germany). The balance of US \$3,971,280 will be disbursed in the period from 2019 to 2020 (Table 2).

Table 2. Financial report of stage I of the HPMP for Brazil

Implementing/ bilateral agency	Funds approved (US \$)	Funds disbursed		Balance (US \$)
		(US \$)	(%)	
UNDP	15,326,957	11,489,876	75	3,837,081
Government of Germany	4,090,909	3,956,710	97	134,199
Total	19,417,866	15,446,586	80	3,971,280

Implementation plan for 2019

13. Between January and December 2019, the Government and the implementing agencies will complete the conversion of the remaining two PU foam enterprises, three systems houses, and estimated 200 downstream foam users included in stage I. Activities in the refrigeration servicing sector will include: completion of the demonstration project in supermarkets; preparation and publication of case studies; and regional dissemination of the activities and results of stage I of the HPMP.

⁴ Excluding US \$179,300 (plus agency support cost of US \$13,448) returned to the Fund that was associated with a non-eligible enterprise.

Comments

PU foam sector

Issues identified in ongoing individual conversions

14. Introduction of HC in Panisol: Given that this enterprise cannot use a flammable blowing agent due to its urban location, UNDP is considering HFO or methyl formate as an alternative option. The conversion to any of these two options could be completed before December 2019. UNDP continues to provide technical assistance to Panisol with the aim of avoiding its conversion to HFC, which could potentially set a precedent for other enterprises.

15. Change of technology by Espumatec: The Executive Committee approved US \$291,894 for Espumatec to phase out 108.90 mt of HCFC-141b by converting its production to methyl formate, but the enterprise decided to convert to water-based technology instead, which requires approval by the Executive Committee. The incremental cost of converting to water-based technology was calculated above US \$400,000, taking into consideration a level of incremental capital costs (ICCs) comparable to those of converting to methyl formate due to minor modifications to the equipment being necessary, but larger IOCs, due to the required increase in density linked to introducing water (estimated at US \$3.50/kg). In line with decision 60/44(f)(vii), IOCs larger than US \$1.60/kg can be accepted by the Executive Committee for introduction of water-blown technology on a case-by-case basis in stage I of HPMPs. As the incremental cost of converting to water-based technology is larger than that of converting to methyl formate, the difference in cost will be covered by Espumatec.

Issues identified in the group projects

16. The Secretariat noted with appreciation the thorough work carried out by the Government of Brazil and UNDP to verify the eligibility of a large number of small and medium-sized PU foam enterprises included in stage I of the HPMP. With every annual report, UNDP submits a list of enterprises verified. The present progress report indicated that out of 277 enterprises verified, 12 enterprises appeared to be ineligible to receive funding from the Multilateral Fund. UNDP informed that their eligibility is still being verified and also confirmed that funding would only be provided to those enterprises if they are found eligible. The Secretariat estimates the potential savings that could be returned to the Fund from the 12 potentially ineligible enterprises at US \$283,500;⁵ however, no details on these enterprises or confirmation of their ineligibility are available yet.

17. UNDP reported that additional enterprises in the integral skin sector (addressed through stage I only) have been identified in the meantime and that some of them could be eligible. Accordingly, UNDP requested flexibility to use the funds from ineligible enterprises to address the additional eligible ones. Considering the characteristics of the PU foam sector in Brazil, which is composed of more than 1,500 enterprises (out of which approximately 1,120 are being assisted in both stage I and stage II), and noting that the Government and UNDP have a thorough system to validate the eligibility of the enterprises identified prior to offering any assistance, the Secretariat considers that potential savings from enterprises found ineligible could be used to fund eligible enterprises not identified at the time of approval of stage I.

18. Accordingly, UNDP was requested to include in the updated list of downstream foam enterprises assisted under stage I submitted every year, the list of enterprises that stopped using HCFC-141b without Multilateral Fund assistance, as well as the enterprises found ineligible, and their HCFC-141b consumption. This would help the Secretariat understand the level of funds that could potentially be reallocated before any reallocation occurs. In addition, in cases where UNDP identifies an enterprise not previously identified

⁵ The estimation is based on the level of funds approved for downstream users (US \$8,765,047) divided by the 371 downstream users included in stage I.

and not participating in stage II of the HPMP but potentially eligible for funding, this enterprise could be included in the annual progress report, after informing the Secretariat. UNDP will also provide information about total costs incurred and will return savings to the Fund at the end of the project.

Recommendation

19. The Executive Committee may wish:

- (a) To note:
 - (i) The 2018 progress report on the implementation of the HCFC phase-out management plan (HPMP) (stage I) for Brazil, submitted by UNDP;
 - (ii) That the enterprise Espumatec changed the selected technology from methyl formate to water, and that the additional incremental costs associated to the change of technology would be covered by Espumatec;
 - (iii) That 12 downstream polyurethane foam users were found to be potentially ineligible and that the funds associated to the enterprises confirmed to be ineligible would be returned to the Fund at the end of stage I, unless UNDP identifies additional eligible enterprises not addressed under stage I or stage II to which those funds could be reallocated in consultation with the Secretariat, and that any reallocation of funds will be reported to the Executive Committee in the next annual progress report;
- (b) To request UNDP:
 - (i) With the Governments of Brazil and Germany, to continue submitting on a yearly basis progress reports on the implementation of the work programme associated with stage I of the HPMP until the completion of the project, and the project completion report to the first meeting of the Executive Committee in 2020;
 - (ii) To include in the next progress report to be submitted to the last Executive Committee meeting in 2019:
 - a. The status of implementation of the conversion of the enterprise Panisol, on the understanding that the remaining funds from the conversion of the enterprise will be returned to the Multilateral Fund in the event that the enterprise should withdraw from the project; and
 - b. The complete list of downstream foam enterprises assisted by the Multilateral Fund under stage I, along with their HCFC-141b consumption phased out, sub-sector, baseline equipment and technology adopted; the list of enterprises that stopped using HCFC-141b without Multilateral Fund assistance; the list of enterprises found ineligible and their HCFC-141b consumption; and the list of additional eligible enterprises identified that were not addressed under stage I or stage II, if any; and
 - (iii) To continue assisting the Government of Brazil in securing the supply of low global-warming potential (GWP) alternative technologies to the systems houses Shimteck and U-Tech, on the understanding that any incremental operating costs would not be paid until the technology originally selected or another technology with a low-GWP has been fully introduced, and to provide to each meeting a report

on the status of their conversion until the technology originally selected or another technology with a low-GWP has been fully introduced, along with an update from the suppliers on the progress made towards ensuring that the selected technologies, including associated components, are available on a commercial basis in the country.

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Brazil

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase out plan (Stage II)	Germany, Italy, UNDP (lead), UNIDO,	75 th	45% by 2021

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2017	837.26 (ODP tonnes)

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)				Year: 2017
Chemical	Foam	Refrigeration		Total sector consumption
		Manufacturing	Servicing	
HCFC-22		84.19	477.07	552.77
HCFC-123		0.06	0.24	0.30
HCFC-124		0.21	0.74	0.95
HCFC-141b	284.56			284.56
HCFC-142b		0.01	0.06	-1.33

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	1,327.3	Starting point for sustained aggregate reductions:	1,327.3
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	684.36	Remaining:	642.94

(V) BUSINESS PLAN		2018	2019	2020	After 2020	Total
UNIDO	ODS phase-out (ODP tonnes)	44.13	0.0	36.73	38.71	119.57
	Funding (US \$)	3,659,442	0	3,045,630	3,210,000	9,915,072
Germany	ODS phase-out (ODP tonnes)	30.50	0.0	12.96	30.62	74.08
	Funding (US \$)	2,626,696	0	1,116,345	2,636,797	6,379,838
UNDP	ODS phase-out (ODP tonnes)	92.50	0.0	50.26	0.0	142.76
	Funding (US \$)	7,670,184	0	4,167,650	0	11,837,834

(VI) PROJECT DATA			2015	2016	2017	2018	2019	2020	2021	2022	2023	Total	
Montreal Protocol consumption limits (*)			1,194.60	1,194.60	1,194.60	1,194.60	1,194.60	862.74	862.74	862.74	862.74	n/a	
Maximum allowable consumption (ODP tonnes) (*)			1,194.60	1,194.60	1,194.60	1,194.60	1,194.60	862.74	730.02	730.02	730.02	n/a	
Agreed* funding (US \$)	UNDP	Project costs	3,078,900	0	2,627,704	7,168,396	0	3,895,000	0	0	0	16,770,000	
		Support costs	215,523	0	183,939	501,788	0	272,650	0	0	0	1,173,900	
	UNIDO	Project costs	1,950,275	0	0	2,647,057	0	3,619,305	2,000,000	1,000,000	0	11,216,697	
		Support costs	136,519	0	0	185,294	0	253,356	140,000	70,000	0	785,169	
	Germany	Project costs	1,299,386	0	686,978	2,363,637	0	1,004,545	1,500,000	0	872,727	7,727,273	
		Support costs	144,614	0	76,457	263,059	0	111,800	166,941	0	97,129	860,000	
	Italy	Project costs	250,000	0	0	0	0	0	0	0	0	0	250,000
		Support costs	32,500	0	0	0	0	0	0	0	0	0	32,500
	Funds approved by ExCom (US\$)	Project costs	6,578,561		3,314,682			8,518,910	3,500,000	1,000,000	872,727		35,963,970
		Support costs	529,156		260,396			637,806	306,941	70,000	97,129		2,851,569
Total funds requested for approval at this meeting (US\$)	Project costs				12,179,090								
	Support costs				950,141								

(*) Reflect the figures in the revised Agreement (Annex II).

Secretariat's recommendation:	Individual consideration
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PROJECT DESCRIPTION

20. On behalf of the Government of Brazil, UNDP as the lead implementing agency has submitted to the 82nd meeting a request for funding for the third tranche of stage II of the HCFC phase-out management plan (HPMP), at a total cost of US \$13,129,131, consisting of US \$7,168,396, plus agency support costs of US \$501,788 for UNDP; US \$2,647,057, plus agency support costs of US \$185,294 for UNIDO, and US \$2,363,637, plus agency support costs of US \$263,059 for the Government of Germany.⁶ The submission includes a progress report on the implementation of the second tranche, the verification report on HCFC consumption for 2017 and the tranche implementation plan for 2018 to 2020.

Report on HCFC consumption

21. The Government of Brazil reported a consumption of 837.26 ODP tonnes of HCFC in 2017, which is 36.9 per cent below the HCFC baseline for compliance and 29.9 per cent below the limit established in its Agreement with the Executive Committee. The 2013-2017 HCFC consumption is shown in Table 1.

Table 1. HCFC consumption in Brazil (2013-2017 Article 7 data)

HCFC	2013	2014	2015	2016	2017	Baseline
Metric tonnes						
HCFC-22	14,256.44	14,320.78	12,757.62	11,101.86	10,050.47	14,401.0
HCFC-123	0.00	3.00	0.00	-2.87	14.89	14.9
HCFC-124	164.59	113.20	238.12	69.22	42.98	351.3
HCFC-141b	3,641.42	3,373.04	2,863.05	2,371.80	2,586.90	4,741.3
HCFC-142b	14.88	54.06	60.96	35.74	-20.50	86.3
Total (mt)	18,077.33	17,864.08	15,919.75	11,575.75	12,674.74	19,594.8
ODP tonnes						
HCFC-22	784.10	787.64	701.67	610.60	552.78	792.0
HCFC-123	0.00	0.06	0.00	-0.06	0.30	0.30
HCFC-124	3.62	2.49	5.24	1.52	0.95	7.70
HCFC-141b	400.56	371.03	314.94	260.9	284.56	521.70
HCFC-142b	0.97	3.51	3.96	2.32	-1.33	5.60
Total (ODP tonnes)	1,189.25	1,164.74	1,025.81	875.29	837.26	1,327.30

22. The overall decreasing trend in HCFC consumption between 2013 and 2017 is due to legislative measures including the operation of the licensing and quota system, implementation of phase-out activities in the polyurethane (PU) foam and refrigeration sectors approved under stages I and II of the HPMP, conversion of multinational enterprises in domestic refrigeration without assistance from the Multilateral Fund, public awareness of the need to keep reaching the compliance targets up to 2020, and the economic slowdown over the last few years.

Country programme (CP) implementation report

23. The Government of Brazil reported HCFC sector consumption data under the 2017 CP implementation report that is consistent with the data reported under Article 7 of the Montreal Protocol.

Verification report

24. The verification 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 2017 was 837.26 ODP tonnes. The verification concluded that Brazil is acting in an appropriate and consistent

⁶ As per the letter of 5 September 2018 from the Ministry of the Environment of Brazil to UNIDO.

manner to promote the reduction in HCFC consumption in the country, thus fulfilling the commitments made to the Executive Committee.

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

PU foam manufacturing sector

Conversion of 14 stand-alone PU foam enterprises (57.14 ODP tonnes)

25. One additional enterprise with a consumption of 4.97 ODP tonnes of HCFC-141b (Isar) completed its conversion to methyl formate and methylal, with a total phase-out of 10.29 ODP tonnes of HCFC-141b for three projects completed. One enterprise (Gelopar) has decided to change the alternative technology from cyclopentane to HFO-1233zd(E) reduced with water. Table 2 summarizes the status of progress of the 14 foam enterprises.

Table 2: Status of progress for individual projects in the PU foam manufacturing sector

Status of implementation	Enterprises	HCFC phase-out (ODP t)	Technology
Project completed	3 (Cold Air, IBF, Isar)	10.29	Methyl formate (MF) and methylal
Completed formulation development and started industrial conversions	5 (Artico, Bulltrade, F. Ibibora, Gelopar, Refrimate)	22.28	CO ₂ , HFO
Developing formulations and started industrial conversions	3 (Niju, Tecpur, Termjet/Thermotelas)	11.51	CO ₂ , HFO, MF
Validated eligibility and prepared work plan. Will start conversion in 2018	1 (Sao Rafael)	2.50	CO ₂ or HFO
Contacted. No activities have started yet	1 (Ananda Metais)	6.93	HC
Being converted with funds from stage I	1 Poliumetka	3.63	MF
Total	14	57.14	

Conversion of 14 systems houses with more than 700 downstream users (116.20 ODP tonnes)

26. One systems house (Purcom) has completed conversion to methyl formate and is in the process of validating the eligibility of its downstream users. An additional systems house (U-Tech) has completed the conversion of its manufacturing plant from HCFC-141b to methyl formate. U-Tech requested authorization for the temporary use of HFC-134a to replace HCFC-22, with the commitment to discontinue its use, with its own resources, as soon as gaseous HFO is available in the market and polyol systems containing it have been developed and optimized. The enterprise is testing HFO formulations with the supplier's support.⁷

27. The remaining systems houses are at different stages of implementation, as presented in Table 3.

Table 3. Status of progress for group projects in the PU foam manufacturing sector

Status of implementation of systems house	Systems house	Technology	Downstream users (DSU)	HCFC phase-out (ODP tonnes)	Status of implementation of DSU
Completed plant conversion and formulation development	Purcom	MF	90	15.03	Eligibility being validated
Completed formulation development, no plant conversion required	Flexivel	HFO	260	8.23	
	Amino	MF	46	12.37	

⁷ Refer to paragraphs 7 to 9 of the present document on temporary use of high-GWP alternatives by Shimtek and U-Tech.

Status of implementation of systems house	Systems house	Technology	Downstream users (DSU)	HCFC phase-out (ODP tonnes)	Status of implementation of DSU
Completed plant conversion, ongoing formulation development	Ariston	MF	32	3.27	
	Ecoblaster	MF	40	8.91	
	U-Tech	MF, HFO	22	0.95	
Ongoing plant conversion and formulation development	Polyurethane	CO ₂	16	4.06	Not started
Ongoing formulation development, plant conversion not started	M. Cassab	CO ₂	24	7.10	
	Comfibras	HFO	12	0.84	
Non-eligible systems houses developing formulations, self-funded	Univar	Methylal	84	24.63	Eligibility being validated
	Basf	HFO	8	3.02	Not started
	Dow	HFO	11	12.88	
Enterprise contacted, conversion not started yet	Polisystem	MF	47	13.09	Not started
	Shimtek	HFO	13	1.83	
Total	14		705	116.20	

Refrigeration and air-conditioning (AC) manufacturing sector (61.05 ODP tonnes)

28. Activities undertaken within the commercial refrigeration manufacturing sector included a technical assistance project in small and medium-sized enterprises (SMEs), group projects, and individual projects in the supermarket sector. The status of implementation is presented below.

Individual projects (8.67 ODP tonnes)

29. This project includes the conversion to R-290 of two enterprises (Eletrofrío and Plotter Rack), consuming more than 35 metric tonnes (mt) of HCFC-22, including demonstration of the new technology introduced in the supermarket sector.

30. Eletrofrío signed terms of commitment for project implementation, prepared terms of reference, signed a contract for equipment procurement, selected the supermarket (Condor Super Center Ltda.) for the demonstration, and is currently developing a R-290-based modular chiller prototype.

31. Plotter Racks is procuring refrigerant handling tools and safety elements and is developing a R-290-based modular chiller prototype with assistance from an international expert. The contract for the demonstration in a supermarket is being completed.

Group projects (3.22 ODP tonnes)

32. This project includes the conversion of three enterprises with consumption between 10 and 35 mt of HCFC-22. Two enterprises manufacturing beer coolers and beverage dispensers (Aquagel Refrigeração and Choepiras Ribeirão Memo) were contacted and confirmed their interest in converting to low-GWP alternatives, although the project has been slow to start due to the economic circumstances. Their equipment charge is between one and seven kilograms (kg) and needs to maintain temperature at -2 degrees Celsius, which seems difficult for R-290, as originally envisaged. The project will start with the development of equipment operating with an alternative refrigerant that allows for safe transportation and meets the technical low-temperature specifications required.

33. The third enterprise, Freeart Seral Brasil Metalurgica Ltda. has not responded to the Government and UNIDO.

Technical assistance project for SMEs (3.85 ODP tonnes)

34. The Government and UNIDO contacted the 33 enterprises manufacturing commercial refrigeration equipment listed in the project; identified and contracted a national consultant and an assistant to support the enterprises in the conversion to low-GWP alternatives; visited ten enterprises; held two workshops on alternative refrigerants in commercial refrigeration attended by 108 participants from 20 enterprises; and developed content for technical and informative workshops directed at enterprises in need of training in handling flammable refrigerants.

35. Based on the information collected from the SMEs, and given the diversity of equipment produced, the lack of trained technicians to handle flammable refrigerants, the cost of components compatible with alternative technologies, and the need for technical information and technology development, it was decided to prioritize training on safe handling of alternative refrigerants. The provision of equipment and tools for the conversion of the 20 largest SMEs to low-GWP alternatives (R-290, R-600a, CO₂, HFOs or HFO-based blends) will start in 2019 at the enterprises with greater potential to assimilate the technology.

36. One of the 33 enterprises (Spacinox, producer of commercial refrigeration for supermarkets, consuming 0.23 mt in 2013 when stage II was prepared) could not be contacted, as it stopped production. UNIDO has requested to replace this enterprise with a newly identified eligible enterprise, JJ Instalacoes Comerciais, which consumed 0.74 mt of HCFC-22 in 2016 in manufacturing refrigerated display counters used by supermarkets, butcher shops, bakeries and convenience stores. The enterprise, established in May 2003, is 100 per cent Brazilian-owned.

Room AC manufacturing sector (45.31 ODP tonnes)

37. This project includes the conversion of three room AC manufacturers (Climazon, Elgin and Gree) to R-290. Activities planned to start in 2018 have been delayed to 2019 as the enterprises have expressed concerns related to uncertainty about the regulations on the use of flammable refrigerants and their acceptance in the market, fear of higher prices of the converted AC units, and scarcity or unavailability of components on the Brazilian market. The issue is being discussed in the Brazilian Association of Technical Standards (ABNT) technical group, in which UNIDO participates.

38. In this context, a viable plan of action is proposed to start in 2019 by providing information and technical assistance to facilitate the involvement of enterprises in the conversion process. It includes exchange of knowledge between the enterprises, international experts, and established enterprises in other countries that have carried out the conversion.

Modification of the Agreement between the Government and the Executive Committee

39. The Government of Brazil is requesting a modification in the annual tranche distribution in order to reflect the delay in the implementation of the room AC manufacturing project to 2019-2020. Thus, instead of requesting US \$1,722,982 in 2018 for the room AC project, UNIDO is only requesting US \$950,000, which will allow for initiating the technical assistance activities intended to ensure the participation of the three enterprises in the project. The difference (US \$772,982) will be added to the 2020 tranche, when equipment for the conversion of the room AC enterprises will be procured. The adjustment to the tranche distribution is presented in Table 4.

Table 4. Proposed adjustment to UNIDO's tranche distribution

Original tranches	2015	2018	2020	2021	2022	2023	Total
Commercial refrigeration	1,674,275	1,421,057	-	-	-	-	3,095,332
Room AC	-	1,722,982	2,630,383	2,000,000	1,000,000	-	7,353,365
PMU	276,000	276,000	216,000	-	-	-	768,000

Original tranches	2015	2018	2020	2021	2022	2023	Total
Total UNIDO	1,950,275	3,420,039	2,846,383	2,000,000	1,000,000	-	11,216,697
Adjusted tranches							
Commercial refrigeration	1,674,275	1,421,057	-	-	-	-	3,095,332
Room AC	-	950,000	3,403,365	2,000,000	1,000,000	-	7,353,365
PMU	276,000	276,000	216,000	-	-	-	768,000
Total UNIDO	1,950,275	2,647,057	3,619,365	2,000,000	1,000,000	-	11,216,697

Refrigeration servicing sector

40. Fourteen training institutions were contracted and provided with educational kits (i.e., basic servicing tools and equipment components for demonstration and practical training). Sixty-five trainers and 1,238 technicians were trained in best practices for split and window type air conditioners; 737 technicians were trained in best practices for commercial refrigeration; and three monitoring visits to regional partner training institutions were carried out. Best practices handbooks on low-GWP alternatives are currently being prepared and several dissemination and awareness activities were completed (i.e., videos, posters, stickers, stamps, rulers, and cards promoting awareness of best practices in refrigeration). Two workshops were held on the safe use and servicing of equipment based on flammable refrigerants. Support was also provided for the review, discussion and development of technical standards for the servicing sector.

Project implementation and monitoring unit (PMU)

41. There are two PMUs operating in Brazil, one for UNDP and one for UNIDO. Both continued to provide support to the NOU and beneficiaries in implementing stage II of the HPMP by: providing international and national technical assistance to the Government and the eligible enterprises; managing the implementation of investment projects; organizing missions, meetings and technical visits to enterprises; preparing reports and technical documentation; organizing meetings with the Ministry of the Environment (MAA) and the Brazilian Cooperation Agency (ABC); providing technical analyses of products; and monitoring the schedules agreed upon in contracts. Moreover, the UNDP PMU was engaged in drafting, executing and monitoring service contracts; preparing annual budget reviews conforming to the agency rules and regulations; ensuring financial control of the funds approved; and organizing awareness raising activities.

Level of fund disbursement

42. As of August 2018, of the US \$9,893,243 approved so far, US \$4,805,211 (49 per cent) had been disbursed (US \$2,923,568 for UNDP, US \$411,131 for UNIDO, US \$1,359,719 for the Government of Germany, and US \$110,793 for the Government of Italy), as shown in Table 5. The balance of US \$5,088,032 will be disbursed between 2018 and 2020.

Table 5. Financial report of stage II of the HPMP for Brazil (US \$)

Agency	First tranche		Second tranche		Total approved	
	Approved	Disbursed	Approved	Disbursed	Approved	Disbursed
UNDP	3,078,900	2,273,398	2,627,704	650,170	5,706,604	2,923,568
UNIDO	1,950,275	411,131	0	0	1,950,275	411,131
Government of Germany	1,299,386	947,521	686,978	412,198	1,986,364	1,359,719
Government of Italy	250,000	110,793	0	0	250,000	110,793
Total	6,578,561	3,742,843	3,314,682	1,062,368	9,893,243	4,805,211
Disbursement rate (%)		57		32		49

Implementation plan for the third tranche of the HPMP

43. The proposed action plan for the implementation of the third tranche of stage II between 2018 and 2020 is presented below.

PU foam manufacturing (UNDP)

- (a) Complete the conversion of systems houses and start the conversion of downstream users (US \$6,557,221); complete the conversion of additional individual projects (at least four) (US \$221,175); and continue implementation and monitoring of activities through the PMU (US \$390,000);

Commercial refrigeration and room AC (UNIDO)

- (b) *Individual projects*: finalize equipment procurement; implement the demonstration project in the two selected supermarkets; prepare a technical report; and hold a workshop on the demonstration component of the project (US \$640,000);
- (c) *Group project*: provide technical assistance (visits, participation in events, dissemination of information); prepare terms of reference for product modification at two enterprises (US \$222,832);
- (d) *Technical assistance for SMEs*: hold workshops on natural refrigerants; implement the product modification project for commercial refrigeration equipment, refrigeration chambers and other commercial refrigeration equipment produced by the beneficiary enterprises; and procure equipment (to be concluded in 2020) (US \$558,225);
- (e) *Room AC project*: awareness, dissemination and information activities on the use of alternative refrigerants; technical assistance for product development and change; development of terms of reference to study the needs of assembly-line modifications, and development of equipment projects; exchange of information with enterprises using low-GWP and zero-ODP alternatives (US \$950,000);
- (f) *PMU*: operation of the management and monitoring unit; implementation, follow-up, recording and continuous monitoring of activities; preparation of reports; support in the review, discussion and development of technical standards for the refrigeration and AC sector (US \$276,000);

Refrigeration servicing sector (Germany)

- (g) Training of: 5 trainers in HCFC-22 containment; 501 technicians in best commercial refrigeration practices; 3,200 technicians in best practices for AC systems (window and split type); and monitoring visits (US \$1,643,006);
- (h) Training in low-GWP alternatives: preparation of best practices handbook (CO₂ and HC in commercial refrigeration systems); purchase of additional demonstration units and toolkits for commercial refrigeration, (number to be determined based on needs) (US \$355,000);
- (i) Awareness building: development of information materials, technical publications and videos; operation and maintenance of website; regional dissemination of activities and results of stage II of the HPMP (i.e., articles in journals and on the project website); participation in sectoral events and fairs; meeting with national stakeholders (US \$99,351); and

- (j) Management and monitoring of activities implemented; data processing; sampling; quality control; support in the review, discussion and design of technical standards for the servicing sector (US \$266,280).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

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

Change of technology in one individual PU foam enterprise

44. The report indicated that one enterprise that received assistance to convert to cyclopentane (Gelopar) has decided to convert to HFO-1233zd(E) reduced with water instead. ICCs approved included costs for the introduction of cyclopentane and retrofit of the foam dispensers which are no longer required, while the IOCs for the introduction of HFO-based technology are higher than for cyclopentane.

45. The cost to convert Gelopar as initially approved was US \$657,300 (including pre-mixer, safety items and modification of the foam dispensers) to phase out 64.80 mt of HCFC-141b with a cost-effectiveness of US \$10.14/kg. The revised cost of converting Gelopar to HFO-based technology is US \$450,500 (most of it IOCs, plus technical assistance, trials and testing, and minor modification of the equipment). Based on the recalculation of the incremental cost to convert Gelopar to HFO-based technology, savings amount to US \$206,800.

46. In discussing whether the savings should be returned to the Fund, UNDP stressed the need for flexibility in the case of Brazil, where funding was approved based on 705 enterprises identified, whereas the estimated amount of enterprises in the PU foam sector is above 1,500 (out of which approximately 1,120 are receiving assistance through stage I or stage II). The Secretariat recognizes that in the case of Brazil, given the number of enterprises operating in the sector, it is likely that additional eligible enterprises will be identified during the implementation of stage II, and in such a case, those savings could be used to provide funding to those eligible enterprises.

47. Accordingly, the Secretariat proposes that in the event that UNDP identifies eligible enterprises not included in the list of enterprises submitted with the stage II proposal, UNDP should report to the Secretariat on the enterprises identified, including confirmation of their eligibility, HCFC consumption, technology selected, calculation of incremental cost and the level of funds to be reallocated from the savings. Upon review by the Secretariat, those savings could be reallocated and reported in the next tranche implementation report, noting that the level of savings from Gelopar represent less than seven per cent of any of the tranches approved so far.

Reporting of incurred IOCs in line with decision 75/43

48. Decision 75/43(b)(iii) states that UNDP would report to the Executive Committee the IOCs incurred during the conversion to reduced HFO formulations in the foam sector when requesting the second tranche of stage II of the HPMP, on the understanding that if the IOCs were below US \$5.00 per kilogram, the Government of Brazil would return the associated funds to the Multilateral Fund. As at present all conversions to HFO are ongoing, this information is not available yet. The Secretariat would only be requesting this information when the conversions to HFO are completed and more information on the cost is available.

Status of progress of the commercial refrigeration individual project

49. The Secretariat noted the progress achieved in the design of R-290-based modular chillers by Eletrofrio and Plotter Racks. In providing additional details on the value of the project, UNIDO indicated that the demonstration of the chillers in two selected supermarkets is expected to generate performance data for R-290-based systems, including energy efficiency, safety, climate impact, and cost-benefit ratio of adopting the technology. It is expected that it will help develop demand for R-290-based refrigeration systems, as well as knowledge and capacity to handle flammable refrigerants. Both enterprises committed to stop using HCFC-22 for manufacturing equipment upon completion of the project.

Status of progress in the commercial refrigeration group project

50. UNIDO clarified that despite the challenges in providing a suitable low-GWP alternative to Chopeiras Ribeirão Memo and Aquagel enterprises, their conversion process is at an advanced stage and is expected to be completed by 2019. Conversely, given the lack of progress with the Freeart Seral enterprise, which has not responded to contact attempts by the Government and UNIDO, the Secretariat indicated that in the event that the enterprise phases out HCFC without Multilateral Fund assistance or decides not to participate in the plan, the US \$210,346 approved for this enterprise will need to be returned to the Fund. UNIDO indicated that it will persist with further attempts to contact the enterprise during 2019, and will report to the Executive Committee by the end of that year.

Replacement of one eligible enterprise by another in the technical assistance project for SMEs in commercial refrigeration

51. The enterprise Spacinox phased out 0.23 mt of HCFC-22 without Multilateral Fund assistance. UNIDO proposed that the US \$66,000 allocated for this enterprise be reallocated to the newly identified eligible enterprise JJ Instalacoes Comerciais (0.74 mt). Upon review of the information provided, the Secretariat recommends the reallocation of US \$66,000 from Spacinox to JJ Instalacoes Comerciais, noting that the costs of conversion will be the same. Accordingly, the project will phase out an additional 0.74 mt (0.04 ODP tonnes) of HCFC-22.

Delay in the room AC sector and change in the tranche distribution

52. In reviewing stage II at the 75th meeting, the Secretariat had expressed concern with the fact that the three local manufacturers of AC equipment would be committing to convert to a low-GWP technology that had not yet been tested in the country, and that required standards and regulations, while non-eligible enterprises would be able to convert at their own convenience (e.g., after 2020 if they wished to do so) to any technology. UNDP, as lead agency, explained that even though the proposed alternative technologies had not been tested in the country, the headquarters (located in China) of two out of the three eligible enterprises already had the technology available, and that the third enterprise also imported a part of its components from a supplier in China who had the technology available.

53. In explaining the reasons that prevented the start of the conversions in 2018 as expected, UNIDO indicated that the economic crisis has had a significant impact on the Brazilian market during the past three years, leading the enterprises to revise their business strategies and the commitment to migrate immediately to low-GWP technologies. Consequently, in 2017 UNIDO focused on implementing the commercial refrigeration projects, where there is a stronger interest and market demand for systems based on low-GWP refrigerants.

54. In the AC sector there is no market pressure to replace HCFCs and there are regulation issues to solve in order to replace HCFCs with flammable refrigerants. UNIDO, in cooperation with the Government, has followed up on the regulation issues and is progressing rapidly so as to set the rules to allow the use of natural refrigerants in the AC sector.

55. While the Secretariat appreciated the reduction of the 2018 tranche to reflect the delay in the room AC project, it requested clarification for the US \$950,000 still being requested for this sector. UNIDO explained that these funds are aimed at covering activities leading to the substitution of HCFC-22 with flammable refrigerants, including support for the formulation of new regulations on flammable refrigerants in the AC sector; market awareness raising on flammable refrigerants in the AC sector; assessment and promotion of technical options; development of new market opportunities; exchanges with enterprises using low-GWP and zero-GWP refrigerants in other countries; technical assistance to prepare specifications and modification of products and factory layouts; and initiation of assembly lines modifications.

56. The plan is to come to an agreement with the AC manufacturing sector by the end of 2019 and, in early 2020, to move forward with the designing of new AC products based on flammable refrigerants, the designing and engineering of the new production lines, and the certification of new products. Upon the signature of an implementation agreement with the individual AC manufacturing enterprises, and in order to sustain the momentum, UNIDO has foreseen the procurement of some equipment and services to allow AC manufacturing enterprises to move ahead with conversion of their production lines. The next tranche will be requested at the last meeting in 2020, so as to allow for the procurement of the bulk of the equipment in 2021. Given the magnitude of the project and its impact on stage II, UNIDO will report on the progress achieved in 2019 at the 84th meeting.

Conversion of heat exchanger manufacturing lines

57. Decision 75/43 requested the Secretariat to undertake additional work on the level of incremental costs for the conversion of heat exchanger manufacturing lines in enterprises converting to R-290 technology, to report to the Executive Committee at the 76th meeting, and to adjust the cost of stage II of the HPMP for Brazil, as appropriate, upon receipt of the submission of the request for the second tranche. The Secretariat will undertake the cost adjustment based on the technical information contained in that study,⁸ detailed information on the baseline equipment at the enterprises, and the technology selected by each of them. Given the delay in starting the room AC project, this analysis can only be done at the second meeting in 2020, when the third tranche for UNIDO is requested and this information (baseline equipment and technology selected) is made available.

Refrigeration servicing sector

58. While no implementation issues were identified in the refrigeration servicing sector, the Government of Germany indicated that some of the main findings and conclusions from the demonstration project to reduce leakages in supermarkets were, *inter alia*, the reduction of the leakage rate of the systems from 62 per cent of their total charge size per year, to zero in the first six months, and a 25 per cent improvement in the average energy efficiency of the refrigeration systems through decreased leakage rate.

59. In addition to the provision of tools and equipment, local training institutes are being strengthened through continuous technical guidance, including all technical publications developed by the project, training materials, handbooks and presentations of the best practices training courses. Besides the expertise and equipment, the project increases the visibility of the training centres within the sector, thus facilitating access to a large network of contacts, which might result in new business opportunities for training in the future.

60. In relation to the technician certification scheme there is not one operating in the country yet. It is not easy to implement because of the number of government institutions and private associations that have to be involved. The NOU has started discussions with the refrigeration and AC association (ABRAVA) on how to proceed, but the process is still in its preliminary stages.

⁸ Available in UNEP/OzL.Pro/ExCom/77/69.

Revision to the HPMP Agreement

61. In view of the revised funding schedule proposed by UNIDO due to the delay in the room AC projects, Appendix 2-A of the Agreement between the Government of Brazil and the Executive Committee has been updated and paragraph 16 has been modified to indicate that the updated Agreement supersedes that reached at the 80th meeting, as contained in Annex I to the present document. The full updated Agreement will be appended to the final report of the 82nd meeting.

Conclusion

62. Brazil continues to be in compliance with the Montreal Protocol and the HCFC consumption targets stated in the Agreement with the Executive Committee. HCFC consumption in 2017 was 36.9 per cent below the HCFC consumption baseline and 29.9 per cent below the limit established in the Agreement. With the second tranche of stage II, one additional PU foam enterprise completed its conversion, for a total of three enterprises phasing out 10.29 ODP tonnes of HCFC-141b. Four additional systems houses completed their conversion and another one completed its formulation development to assist downstream users to convert to several low-GWP foam blowing alternatives. Other PU foam enterprises and systems houses are progressing in their conversions. A savings amount of US \$206,800 has been generated due to a change of technology by one PU foam enterprise. UNDP requested flexibility in using these funds to assist other eligible enterprises, in the event they are identified (stage I and II only included around 1,120 enterprises out of an estimated number of more than 1,500).

63. In the commercial refrigeration sector, two individual enterprises have progressed in developing R-290-based modular chillers for demonstration in supermarkets, and technical assistance is being provided to SMEs to adopt low-GWP alternatives in the coming years. The funding from one SME that phased out without assistance will be allocated to another eligible SME identified, with an additional phase-out of 0.74 mt. Due to a delay in initiating the room AC project, the tranche distribution for UNIDO is being reduced at this meeting by US \$722,982. The Agreement is being adjusted accordingly. UNIDO will report at the 84th meeting on the progress in this project, as well as on one commercial refrigeration project.

RECOMMENDATION

64. The Executive Committee may wish to:

(a) Note:

- (i) The progress report on the implementation of the second tranche of stage II of the HCFC phase-out management plan (HPMP) in Brazil;
- (ii) That the enterprise Gelopar changed the selected technology from cyclopentane to HFO-1233zd(E) reduced with water, that the savings of US \$206,800 associated to the change of technology would be returned to the Fund at the end of stage II, unless UNDP identifies additional eligible enterprises not addressed under stage I or stage II to which those funds could be reallocated in consultation with the Secretariat; and that any reallocation of funds will be reported to the Executive Committee in the next tranche implementation report;
- (iii) That US \$66,000 associated to the enterprise Spacinox that stopped using HCFC-22 without Multilateral Fund assistance, will be reallocated to the new eligible enterprise JJ Instalacoes Comerciais; and
- (iv) That the Fund Secretariat had updated Appendix 2-A of the Agreement between the Government of Brazil and the Executive Committee to reflect the revision of

the tranche distribution for UNIDO, and that paragraph 16 had been modified to indicate that the updated Agreement supersedes that reached at the 80th meeting, as contained in Annex I to the present document;

- (b) Request UNIDO to report at the 84th meeting the status of implementation of the projects in the room air-conditioning manufacturing sector and the enterprise Freeart Seral in the commercial refrigeration manufacturing sector; and
- (c) Approve the third tranche of stage II of the HPMP for Brazil, and the corresponding 2018-2020 tranche implementation plan, in the amount of US \$13,129,131, consisting of US \$7,168,396, plus agency support costs of US \$501,788 for UNDP; US \$2,647,057, plus agency support costs of US \$185,294 for UNIDO, and US \$2,363,637, plus agency support costs of US \$263,059 for the Government of Germany.

Annex I

**TEXT TO BE INCLUDED IN THE UPDATED AGREEMENT BETWEEN THE GOVERNMENT OF THE FEDERATIVE REPUBLIC OF BRAZIL
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**

16. This updated Agreement supersedes the Agreement reached between the Government of Brazil and the Executive Committee at the 80th meeting of the Executive Committee.

APPENDIX 2-A: THE TARGETS, AND FUNDING

Row	Particulars	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	1,194.60	1,194.60	1,194.60	1,194.60	1,194.60	862.74	862.74	862.74	862.74	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	1,194.60	1,194.60	1,194.60	1,194.60	1,194.60	862.74	730.02	730.02	730.02	n/a
2.1	Lead IA (UNDP) agreed funding (US \$)	3,078,900	0	2,627,704	7,168,396	0	3,895,000	0	0	0	16,770,000
2.2	Support costs for Lead IA (US \$)	215,523	0	183,939	501,788	0	272,650	0	0	0	1,173,900
2.3	Cooperating IA (UNIDO) agreed funding (US \$)	1,950,275	0	0	2,647,057	0	3,619,365	2,000,000	1,000,000	0	11,216,697
2.4	Support costs for Cooperating IA (US \$)	136,519	0	0	185,294	0	253,356	140,000	70,000	0	785,169
2.5	Cooperating IA (Germany) agreed funding (US \$)	1,299,386	0	686,978	2,363,637	0	1,004,545	1,500,000	0	872,727	7,727,273
2.6	Support costs for Cooperating IA (US \$)	144,614	0	76,457	263,059	0	111,800	166,941	0	97,129	860,000
2.7	Cooperating IA (Italy) agreed funding (US \$)	250,000	0	0	0	0	0	0	0	0	250,000
2.8	Support costs for Cooperating IA (US \$)	32,500	0	0	0	0	0	0	0	0	32,500
3.1	Total agreed funding (US \$)	6,578,561	0	3,314,682	12,179,090		8,518,910	3,500,000	1,000,000	872,727	35,963,970
3.2	Total support costs (US \$)	529,156	0	260,396	950,141		637,806	306,941	70,000	97,129	2,851,569
3.3	Total agreed costs (US \$)	7,107,717	0	3,575,078	13,129,131		9,156,716	3,806,941	1,070,000	969,856	38,815,539
4.1.1	Total phase-out of HCFC-22 agreed to be achieved under this Agreement (ODP tonnes)										163.16
4.1.2	Phase-out of HCFC-22 to be achieved in previously approved projects (ODP tonnes)										51.50
4.1.3	Remaining eligible consumption for HCFC-22 (ODP tonnes)										577.34
4.2.1	Total phase-out of HCFC-141b agreed to be achieved under this Agreement (ODP tonnes)										300.90
4.2.2	Phase-out of HCFC-141b to be achieved in previously approved projects (ODP tonnes)										168.80
4.2.3	Remaining eligible consumption for HCFC-141b (ODP tonnes)										52.00
4.3.1	Total phase-out of HCFC-142b agreed to be achieved under this Agreement (ODP tonnes)										0.00
4.3.2	Phase-out of HCFC-142b to be achieved in previously approved projects (ODP tonnes)										0.00
4.3.3	Remaining eligible consumption for HCFC-142b (ODP tonnes)										5.60
4.4.1	Total phase-out of HCFC-123 agreed to be achieved under this Agreement (ODP tonnes)										0.00
4.4.2	Phase-out of HCFC-123 to be achieved in previously approved projects (ODP tonnes)										0.00
4.4.3	Remaining eligible consumption for HCFC-123 (ODP tonnes)										0.30
4.5.1	Total phase-out of HCFC-124 agreed to be achieved under this Agreement (ODP tonnes)										0.00
4.5.2	Phase-out of HCFC-124 to be achieved in previously approved projects (ODP tonnes)										0.00
4.5.3	Remaining eligible consumption for HCFC-124 (ODP tonnes)										7.70