



**United Nations
Environment
Programme**

Distr.
GENERAL

UNEP/OzL.Pro/ExCom/77/39
27 October 2016

ORIGINAL: ENGLISH



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

PROJECT PROPOSAL: CUBA

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, third tranche) UNDP

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Cuba

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out plan (Stage I)	UNDP (lead)	65 th	35% by 2020

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2015	13.4 (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									
HCFC-124									
HCFC-141b									
HCFC-141b in Imported Pre-blended Polyol		0.2							0.2
HCFC-142b									
HCFC-22				0.6	12.6				13.1

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:		16.9	Starting point for sustained aggregate reductions:
			30.23
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:		19.26	Remaining:
			10.97

(V) BUSINESS PLAN		2016	2017	2018	2019	2020	Total
UNDP	ODS phase-out (ODP tonnes)	1.6	0.0	1.1	0.0	0.6	3.3
	Funding (US \$)	152,142	0	107,500	0	60,200	319,842

(VI) PROJECT DATA			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Montreal Protocol consumption limits			n/a	n/a	16.9	16.9	15.2	15.2	15.2	15.2	15.2	11.0	
Maximum allowable consumption (ODP tonnes)			n/a	n/a	16.9	16.9	15.2	15.2	15.2	15.2	15.2	11.0	
Agreed funding (US\$)	UNDP	Project costs	750,000	0	700,000	0	0	141,527	0	100,000	0	56,000	1,747,527
		Support costs	56,250	0	52,500	0	0	10,615	0	7,500	0	4,200	131,065
Funds approved by ExCom (US\$)		Project costs	750,000	0	700,000	0	0	0	0	0	0	0	1,450,000
		Support costs	56,250	0	52,500	0	0	0	0	0	0	0	108,750
Total funds requested for approval at this meeting (US\$)		Project costs	0	0	0	0	0	141,527	0	0	0	0	141,257
		Support costs	0	0	0	0	0	10,615	0	0	0	0	10,615

Secretariat's recommendation:	Individual consideration
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PROJECT DESCRIPTION

1. On behalf of the Government of Cuba, UNDP as the designated implementing agency has submitted to the 77th meeting a request for funding for the third tranche of stage I of the HCFC phase-out management plan (HPMP), at the amount of US \$141,527, plus agency support costs of US \$10,615¹. The submission includes a progress report on the implementation of the second tranche and the tranche implementation plan for 2017 to 2018.

Report on HCFC consumption

HCFC consumption

2. The Government of Cuba reported a consumption of 13.17 ODP tonnes of HCFC in 2015, which is 2.02 ODP tonnes lower than the Montreal Protocol target for that year. The 2011-2015 HCFC consumption is shown in Table 1.

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

HCFC	2011	2012	2013	2014	2015	Baseline
Metric tonnes						
HCFC-22	245.45	226.70	221.70	238.99	239.48	259.05
HCFC-124	0.63	0.00	0.00	0.00	0.00	0.60
HCFC-141b	6.57	22.10	0.00	0.00	0.00	23.61
HCFC-142b	0.38	0.00	0.00	0.00	0.00	0.36
Total (mt)	253.03	248.80	221.70	238.99	239.48	283.62
HCFC-141b in imported pre-blended polyols *	59.72	54.54	55.45	**5.97	**2.2	***121.33
ODP tonnes						
HCFC-22	13.50	12.47	12.19	13.15	13.17	14.25
HCFC-124	0.01	0.00	0.00	0.00	0.00	0.01
HCFC-141b	0.72	2.43	0.00	0.00	0.00	2.60
HCFC-142b	0.02	0.0	0.00	0.00	0.00	0.02
Total (ODP tonnes)	14.26	14.90	12.19	13.15	13.17	16.88
HCFC-141b in imported pre-blended polyols *	6.57	6.00	6.10	**0.66	**0.24	***13.35

*Source: Country programme implementation report.

**Import of HCFC-141b contained in pre-blended polyols was accounted as consumption by the Ozone Secretariat in 2014 and 2015. The NOU has requested the correction.

***Average consumption 2007-2009.

3. HCFC-22 consumption decreased in 2012 and 2013 due mostly to economic difficulties encountered by the importers. Consumption of HCFC-141b has been completely phased out as a result of activities implemented in the refrigeration servicing sector (HCFC-141b in bulk used for flushing refrigeration circuits) and the polyurethane (PU) foam sector (HCFC-141b contained in imported pre-blended polyols).

Country programme (CP) implementation report

4. The Government of Cuba reported HCFC sector consumption data under the 2015 CP implementation report that is consistent with the data reported under Article 7 of the Montreal Protocol.

¹ As per the letter of 3 October 2016 from the Ministerio del Comercio Exterio y la Inversion Extranjera of Cuba to UNDP.

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

Legal framework

5. The Government of Cuba implemented an enforceable national system of licensing and quotas for controlling HCFC imports, production and exports. A ban on imports of HCFC-141b in bulk was established from 1 January 2014 and on imports of HCFC-141b contained in pre-blended polyol from 1 January 2016. The customs advanced course for instructors and customs officers was updated to include the bans.

6. Since 2016, the ozone technical unit (OTOZ) was integrated into the Center for Information Management and Energy Development (Cuba Energia, within the Nuclear and Advanced Technologies Agency), part of the Ministry of Science Technology and Environment.

PU foam manufacturing sector

7. Activities in the PU foam manufacturing sector include the conversion of five enterprises manufacturing panels and commercial refrigeration equipment to hydrocarbon (HC) and water-blown technology to phase out 121.33 mt (13.35 ODP tonnes) of HCFC-141b contained in imported pre-blended polyols. Conversion to HC of the two largest enterprises (Refrigeracion Caribe and Lancomet) has been completed, achieving the phase-out of 112.58 mt (12.38 ODP tonnes) of HCFC-141b. The conversion to water-blown technology of the remaining three smaller enterprises (8.75 mt or 0.97 ODP tonnes) has not progressed as expected because the selected technology did not provide acceptable results on insulation performance. One enterprise (INPUD) decided to convert to cyclopentane, while the other two (FRIARC, and IDA) are still testing different options.

Refrigeration servicing sector

8. The following activities were implemented:

- (a) Thirty trainers and 1,300 technicians received training in good refrigeration practices. Sixteen refrigeration and air-conditioning (RAC) training facilities received equipment (e.g., air-conditioning units, recovery units, vacuum pumps, cylinders, electronic weighting scales, tools and welding kits), and training material. A manual on good practices in RAC was produced and distributed (3,000 copies);
- (b) OTOZ streamlined the collection facilities and added a collection truck (not funded by the HPMP) to the recovery, recycling and reclaiming centre. In addition, contaminated CFC-12 and HCFC-22 (one metric tonne) was destroyed at the cement plant included in the ODS disposal demonstration project;
- (c) One hundred and ten technicians received training in RAC equipment conversion and 400 HCFC-22-based RAC units were converted to alternative technologies, mostly R-404A and R-407C; and
- (d) Six specialized trainers and engineers from the technical advisory group received training through participation in four technical and scientific events, international fairs and congresses.

Project implementation and monitoring unit (PMU)

9. Project implementation is coordinated by OTOZ, where technical specialists support the implementation of each of the project components.

Level of fund disbursement

10. As of September 2016, of the US \$1,450,000 approved so far, US \$1,102,361 (76 per cent) had been disbursed. The balance of US \$347,639 will be disbursed in 2016 and 2017.

Implementation plan for the third tranche of the HPMP

11. The following activities will be implemented:

- (a) Procurement and distribution of additional equipment (e.g., vacuum pumps, cylinders, manifolds and welding sets) to further strength the 16 selected training facilities (US \$12,500);
- (b) Continuation of the RAC equipment conversion programme (US \$90,527);
- (c) Continue training technicians on the introduction of HCs (US \$38,000); and
- (d) Project monitoring and follow-up (US \$500).

SECRETARIAT'S COMMENTS AND RECOMMENDATION**COMMENTS**Progress report on the implementation of the second tranche of the HPMP*Legal framework*

12. The Government of Cuba has issued HCFC-22 import quotas for 2016 at 12.65 ODP tonnes. The 2017 quota will be established at the beginning of that year.

Manufacturing sector

13. The Secretariat noted the completion of the conversion of the two largest enterprises representing 92.7 per cent of the consumption of HCFC-141b, but also expressed concern regarding the delay in the conversion of the remaining three smaller foam enterprises (FRIARC, INPUD and IDA), especially as the ban on imports of HCFC-141b contained in pre-blended polyols entered into force on 31 December 2015. The following two issues were discussed:

- (a) None of the three enterprises is converting to water-blown technology as proposed in the HPMP as the tests did not produce the expected results. INPUD has already decided to convert to cyclopentane at an incremental cost of US \$230,000. As the level of funds approved for INPUD was US \$155,618, UNDP provided confirmation that the required co-financing will be provided by the enterprise and the Government of Cuba;
- (b) FRIARC and IDA are still considering several alternatives but have not made a decision. In line with the Agreement between the Government and the Executive Committee (paragraph 7(c)) and decision 74/20 (b), once the new technology is decided upon, UNDP will report on the incremental cost of the conversion and provide confirmation on whether the enterprises will provide the required co-financing in the case of a more expensive technology, or confirmation of the funds to be returned to the Fund, in the case of a less expensive technology;

- (c) After the ban in December 2015, the three enterprises ran out of stocks of HCFC-141b and started using a blend of HFC-365mfc and HFC-227ea as blowing agent. Given that the global-warming potential (GWP) of the HFC blend is larger than that of HCFC-141b, the Secretariat discussed with UNDP the possibility that the Government of Cuba allows on an exceptional basis and for a limited time the import of HCFC-141b contained in pre-blended polyols to supply these three enterprises, noting that these imports would not have an impact on the compliance situation of the country. UNDP indicated that the national regulation is already in place with multiple institutions involved in its enforcement, and would not be possible for the NOU and the CITMA to revert this ban; and
- (d) The Government of Cuba reiterated its commitment to accelerate the adoption of low-GWP alternatives, citing that INPUD and IDA will be converted to low-GWP alternatives during the first half of 2017. OTOZ and UNDP will assist FRIARC to find a low-GWP alternative in the short term. As done in similar cases, UNDP will report to the Executive Committee on the status of use of the interim technology at each meeting up until the original technology selected or another technology with a low-GWP has been introduced, in line with decision 74/20(a)(ii).

14. The Executive Committee allowed the Government of Cuba to submit during implementation of stage I of the HPMP a project for the conversion of the enterprise Frioclima, manufacturing RAC equipment, to an alternative technology to be decided. The project has not yet been submitted due to the lack of an adequate technology in the market. UNDP indicated that the HCFC control measures (i.e., import quotas) have had a significant impact on Frioclima, and suggested that the Executive Committee evaluate the possibility of Frioclima using temporarily HFCs as an alternative to HCFC-22. However, in the view of the Secretariat, Frioclima could continue using HCFC-22 until a suitable technology is available, given the small amount consumed (around 0.6 ODP tonnes during the last two years) and its low impact on the HCFC-22 consumption (13.18 ODP tonnes), which has already been largely below the Montreal Protocol control measures (16.9 ODP tonnes in 2013-2014 and 15.2 ODP tonnes in 2015-2019). Noting this, UNDP indicated that it would continue working with the Government to identify a suitable technology and submit the investment project in the future, in line with the approved HPMP.

Refrigeration servicing sector

15. In discussing the status of penetration of alternative refrigerants in the local market, UNDP indicated that: R-410A is the main refrigerant used in new air-conditioning equipment; HFC-134a in domestic refrigerators and R-404A and R-407C in commercial refrigeration systems. HC-based equipment is not commonly used given restrictions on transportation which limit its availability. Ammonia use has increased in the industrial sector and some medium-sized refrigeration systems are also using ammonia, while HFOs, HFC-32 or other HFC blends are not yet available. HPMP activities in Cuba provide training on all alternatives to HCFC.

16. The Secretariat noted that the conversion of 400 RAC units mostly to R-404A and R-407C is a continuation of the programme established since the first tranche of stage I of HPMP². As previously reported, in the few cases where equipment has been retrofitted to HC, the same safety protocols established in the past for the conversion of domestic refrigerators to HC have been used. UNDP also indicated that the Government of Cuba is fully aware on the responsibility for retrofits of RAC equipment to flammable or toxic alternatives in line with decisions 72/17 and 73/34.

Conclusion

² Paragraph 10 of UNEP/OzL.Pro/ExCom/73/36

17. Cuba is in compliance with the Montreal Protocol control measures, and its operational import licensing and quota system, the ban on imports of pure HCFC-141b, and the activities being implemented in the servicing sector will enable the country to maintain compliance. One thousand and three hundred technicians have received training in good practices and 400 RAC units have been converted to alternative technologies available in the country. The ban on imports of HCFC-141b contained in pre-blended polyols will ensure sustainable conversion of the foam enterprises. Given that three small foam enterprises could not complete their conversions before the ban and are consequently using a blend of HFC-365mfc and HFC-227ea as a foam blowing agent on a temporary basis, UNDP will report to the Executive Committee on the status of the use of the interim technology until a low-GWP technology is fully introduced.

RECOMMENDATION

18. The Executive Committee may wish to consider:

- (a) Noting:
 - (i) The progress report on the implementation of the third tranche of stage I of the HCFC phase-out management plan (HPMP) for Cuba;
 - (ii) That three enterprises in the polyurethane (PU) foam sector for which conversion had been approved based on a low-global-warming potential (GWP) alternative were using a blend of HFC-365mfc and HFC-227ea temporarily due to low performance of the selected technology;
 - (iii) That the enterprise INPUD has decided to convert to cyclopentane instead of water-blown technology and will provide the required co-financing;
- (b) Requesting UNDP:
 - (i) To continue assisting the Government of Cuba, during the implementation of its HPMP, in securing the supply of low-GWP alternative technologies for the two foam enterprises (FRIARC and IDA) included in stage I of the HPMP; that have not found a low-GWP alternative technology;
 - (ii) To report to the Executive Committee on the status of use of the interim technology selected by the two enterprises at each meeting until a low-GWP technology had been introduced and the foam enterprises had been fully converted;
- (c) Approving the third tranche of stage I of the HPMP for Cuba, and the corresponding 2017-2018 tranche implementation plan, at the amount of US \$141,527, plus agency support costs of US \$10,615 for UNDP.