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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 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, fourth 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 <sup>th</sup>	35% by 2020

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2017	9.56 (ODP tonnes)
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(III) LATEST COUNTRY PROGRAM SECTORAL DATA (ODP tonnes)						Year: 2017
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Total sector consumption
				Manufacturing	Servicing	
HCFC-22					9.52	9.52
HCFC-123						
HCFC-124						
HCFC-141b						
HCFC-141b in imported pre-blended polyols						
HCFC-142b						

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	16.88	Starting point for sustained aggregate reductions:	30.23
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	19.26	Remaining:	10.97

(V) BUSINESS PLAN		2018	2019	2020	Total
UNDP	ODS phase-out (ODP tonnes)	1.10	0.0	0.62	<b>1.72</b>
	Funding (US \$)	107,500	0	60,200	<b>167,700</b>

(VI) PROJECT DATA			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Montreal Protocol consumption limits			n/a	n/a	16.88	16.88	15.19	15.19	15.19	15.19	15.19	10.97	n/a
Maximum allowable consumption (ODP tonnes)			n/a	n/a	16.88	16.88	15.19	15.19	15.19	15.19	15.19	10.97	n/a
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\$)	UNDP	Project costs	750,000	0	700,000	0	0	141,527	0	0	0	0	1,591,527
		Support costs	56,250	0	52,500	0	0	10,615	0	0	0	0	119,365
Total funds requested for approval at this meeting (US\$)	UNDP	Project costs								100,000			100,000
		Support costs								7,500			7,500

<b>Secretariat's recommendation:</b>	Blanket approval
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## PROJECT DESCRIPTION

1. On behalf of the Government of Cuba, UNDP as the designated implementing agency, has submitted a request for funding for the fourth tranche of stage I of the HCFC phase-out management plan (HPMP), at the amount of US \$100,000, plus agency support costs of US \$7,500.<sup>1</sup> The submission includes a progress report on the implementation of the third tranche and the tranche implementation plan for 2019 to 2020.

### Report on HCFC consumption

2. The Government of Cuba reported a consumption of 9.56 ODP tonnes of HCFC in 2017, which is 43 per cent below the HCFC baseline for compliance. The 2013-2017 HCFC consumption is shown in Table 1.

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

HCFC	2013	2014	2015	2016	2017	Baseline
<b>Metric tonnes</b>						
HCFC-22	221.67	238.99	239.49	229.18	173.82	259.05
<b>Total (mt)</b>	<b>221.67</b>	<b>238.99</b>	<b>239.49</b>	<b>229.18</b>	<b>173.82</b>	<b>259.05</b>
HCFC-141b in imported pre-blended polyols*	2.00	5.97	2.00	0.0	0.0	**121.33
<b>ODP tonnes</b>						
HCFC-22	12.19	13.14	13.17	12.60	9.56	16.88
<b>Total (ODP tonnes)</b>	<b>12.19</b>	<b>13.14</b>	<b>13.17</b>	<b>12.60</b>	<b>9.56</b>	<b>16.88</b>
HCFC-141b in imported pre-blended polyols*	0.22	0.66	0.22	0.0	0.0	**13.35

\*Country programme data.

\*\*Average consumption between 2007 and 2009.

3. The consumption of HCFC-22 is for the servicing of refrigeration and air-conditioning equipment and the manufacturing of refrigeration and air-conditioning systems. The decrease in HCFC-22 consumption by 24 per cent in 2017 (as compared to 2016) is due to the implementation of the HPMP (i.e., establishment of the licencing and quota system, activities implemented in the refrigeration servicing sector, and introduction of non-HCFC based equipment) and an economic slowdown in the country. Zero consumption of HCFC-141b contained in imported pre-blended polyols since 2016 is due to its ban since 1 January 2016.

### *Country programme (CP) implementation report*

4. The Government of Cuba 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.

<sup>1</sup> As per the letter of 12 July 2018 from the Ministry of Foreign Trade of Cuba to UNDP.

Progress report on the implementation of the third 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 polyols from 1 January 2016.

6. The advanced course for instructors and customs officers was updated to include the bans. Sixty-one customs officers have been trained. Information related to the Montreal Protocol and the protection of the Ozone layer was incorporated in the curriculum of the training programme for customs officers and refrigeration technicians.

*Manufacturing sector*

7. The main activity in the polyurethane (PU) foam manufacturing sector is 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 cyclopentane of the three largest enterprises (Refrigeracion Caribe, Lancomet and INPUD) has been completed. The remaining two small enterprises (Friarc and IDA) are temporarily using HFC-365mfc and HFC-227ea due to the poor performance of the originally selected technology (water-blown); these enterprises are considering HFO-based systems.

*Refrigeration servicing sector*

8. The following activities were implemented:

- (a) Thirty-three trainers and 1,783 technicians received training in good refrigeration practices; a three-day workshop was held on *inter alia* the use of alternative technologies and their impact on energy efficiency, with the participation of approximately 120 stakeholders (including refrigeration technicians); additional equipment (e.g. recovery machine, vacuum pumps and tools) was provided to 16 selected training facilities;
- (b) Seventy-five technicians received training on refrigeration and air-conditioning equipment conversion and 45 HCFC-22-based refrigeration and air-conditioning units were converted to R-404A; and
- (c) Fifteen technicians from the technical advisory group participated in seven technical and scientific events, international fairs and congresses on alternative technologies.

*Project implementation and monitoring unit (PMU)*

9. Project implementation is coordinated by the Ozone Technical Office (OTOZ), where technical specialists support the implementation of each of the project components.

Level of fund disbursement

10. As of August 2018, of the US \$1,591,527 approved so far, US \$1,442,073 had been disbursed, as shown in Table 2. The balance of US \$149,454 will be disbursed in 2019 and 2020.

**Table 2. Financial report of stage I of the HPMP for Cuba (US \$)**

Tranche		UNDP	Disbursement rate (%)
First and second tranches	Approved	1,450,000	92.1
	Disbursed	1,335,289	
Third tranche	Approved	141,527	75.5
	Disbursed	106,784	
<b>Total</b>	Approved	1,591,527	90.6
	Disbursed	1,442,073	

Implementation plan for the fourth tranche of the HPMP

11. The following activities will be implemented between January 2019 and September 2020:
- Training of the additional 900 technicians on good refrigeration practices (US \$48,000);
  - Continuation of the refrigeration and air-conditioning equipment conversion programme (US \$35,000);
  - Technical assistance for the introduction of alternative refrigerants (including participation of technicians in two local and two international workshops on alternatives), publishing brochures, technical sheets and posters on alternatives to HCFCs, and training of 30 customs officers on ODS control and procedures to prevent illegal trade (US \$15,000); and
  - Project monitoring and follow-up (US \$2,000).

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

12. The Government of Cuba has issued HCFC import quotas for 2018 at 11.11 ODP tonnes, which is lower than the Montreal Protocol control targets.

*Temporary use of a high-GWP alternative in the polyurethane (PU) foam sector*

13. At the 77<sup>th</sup> meeting, the Government of Cuba submitted a request for approval of the third tranche of stage I of its HPMP,<sup>2</sup> indicating that, although two PU foam enterprises (namely Friarc and IDA) had received assistance to convert to water-blown technology, they were currently using, on a temporary basis, a blend of HFC-365mfc and HFC-227ea (a high-GWP technology), because the technology initially selected did not provide the required insulation performance. In approving the tranche, the Executive Committee *inter alia* requested UNDP to continue assisting the Government in securing the supply of low-GWP technology and to report on the status of the use of interim technology at each meeting, until a low-GWP technology had been fully introduced and the enterprises had been converted (decision 77/50(b)), along with a detailed analysis of the incremental capital and operational costs in the event of use of a technology other

<sup>2</sup> UNEP/OzL.Pro/ExCom/77/39.

than that selected when the project was approved and an update from the suppliers on the progress made towards ensuring that the selected technologies, including associated components, were available on a commercial basis in the country (decision 81/10(b)).

14. In line with decisions 77/50(b) and 81/10(b), UNDP has reported that HFO-based systems will be supplied by a regional systems house for trials at Friarc and IDA that are expected to be conducted in November 2018.

15. Noting the progress made, the Secretariat enquired whether there were any identified barriers to delivering HFOs to Cuba. UNDP indicated that the identified systems house is an established supplier of Cuba; the only possible barrier could be the cost of the new systems. Once the technology selection has been tested *in situ*, the associated incremental costs could be assessed. As indicated in the previous report, despite the fact that the final technology has yet to be introduced, the Government has already banned the use of HCFC-141b in line with its commitment.

#### *Refrigeration and air-conditioning manufacturing sector*

16. At the 65<sup>th</sup> meeting, in approving stage I of the HPMP, the Executive Committee noted that during its implementation, the Government of Cuba could submit an investment project to phase out 1.32 ODP tonnes of HCFC-22 used by the enterprise Frioclima, manufacturing refrigeration and air-conditioning equipment (decision 65/24(d)). Frioclima has started, with its own funds, the production of chillers with HFC-134a. Therefore, the Government will not submit the request.

17. The Secretariat enquired about the reasons why the enterprise Frioclima could not continue using HCFC-22 until a low-GWP alternative was available and converted to HFC-134a, given that the country's consumption of HCFC-22 is already 43 per cent lower than the baseline, and that the HCFC-22 consumption at the enterprise is low. UNDP indicated that due to the awareness-raising activities conducted by the OTOZ regarding the phase-out of HCFC-22, Frioclima's clients no longer wanted equipment with HCFCs.

18. Given that Frioclima converted to HFC-134a with its own funds, associated funding to phase out 1.32 ODP tonnes of HCFC-22 can no longer be requested from the Multilateral Fund. In addition, the US \$50,000 approved at the 58<sup>th</sup> meeting for the preparation of this project are no longer required and should be returned to the Fund (as discussed in the document "Progress report of UNDP as at 31 December 2017").<sup>3</sup>

#### *Refrigeration servicing sector*

19. With regard to the use and availability of HCFC alternatives (including flammable alternatives) UNDP affirmed that the market is price-driven and that R-404A is commonly used. Climate-friendly alternatives present in Cuba are cyclopentane in foam and NH<sub>3</sub> in refrigeration. Minor imports of R-600a-based refrigerators have occurred in the last years. HFC-32 or HFO-based refrigerants are not available in the country yet. UNDP also clarified that there is one plant producing HC (located in the Hermanos Díaz refinery in Santiago de Cuba) which is not operational yet, and that there are no imports of R-290 or R-600a.

20. The Secretariat noted that, under the refrigeration and air-conditioning equipment conversion programme, 45 additional units were retrofitted to R-404A and that the fourth tranche foresees the continuation of the conversion programme. Given the adoption of the Kigali Amendment, the Secretariat expressed concern that a high-GWP alternative to HCFC-22 is being used. Following extensive discussion on the necessity of the conversion and possible alternatives, and given the current level of HCFC-22 consumption, UNDP confirmed that the Government of Cuba committed not to convert any other

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<sup>3</sup> UNEP/OzL.Pro/ExCom/82/16.

HCFC-22-based refrigeration and air-conditioning equipment to R-404A or to any other high-GWP alternatives or flammable refrigerants in the remaining tranches (fourth and fifth) of stage I of the HPMP. Instead, with this funding (US \$35,000), allocated under the fourth tranche, it will promote low-GWP alternatives in the commercial refrigeration sector (e.g., workshops on low-GWP alternatives, acquisition of a limited number of new HC-based commercial refrigeration units, visits to cold rooms using HC refrigerants in the region), noting that the Government will have flexibility to choose amongst the above-mentioned activities.

### Conclusion

21. The Government of Cuba is in compliance with the Montreal Protocol and its Agreement with the Executive Committee. Sixty-one customs officers and 1,783 refrigeration technicians were trained. One more foam enterprise converted to cyclopentane. The overall disbursement rate is 90.6 per cent. The operational import licensing and quota system, the ban on imports of HCFC-141b pure and contained in pre-blended polyols, and the activities being implemented in the servicing sector will enable the country to maintain compliance. UNDP will continue reporting on the status of the interim use of the high-GWP technology at two PU foam enterprises until a low-GWP technology is fully introduced.

### **RECOMMENDATION**

22. The Fund Secretariat recommends that the Executive Committee:

- (a) Takes note of:
  - (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) The conversion of the enterprise Frioclima with its own funds to HFC-134a and that the associated funding to phase out 1.32 ODP tonnes of HCFC-22 can no longer be requested;
  - (iii) The return of US \$50,000, plus agency support costs, approved at the 58<sup>th</sup> meeting for the preparation of the investment project mentioned in sub-paragraph (a)(ii);
  - (iv) The report provided by UNDP and, with appreciation, the efforts made to facilitate the supply of technology with low-global warming potential (GWP) to the enterprises Friarc and IDA, funded under stage I of the HPMP for Cuba; and
- (b) Requests UNDP to continue assisting the Government of Cuba in securing the supply of low-GWP alternative technology and to provide, to the 83<sup>rd</sup> meeting, a report on the status of the conversion of the two enterprises mentioned in sub-paragraph (a)(iv), including, in the event of use of a technology other than that selected when the project was approved, a detailed analysis of the incremental capital and operating costs, along with an update from the suppliers on the progress made towards ensuring that the selected technologies, including associated components, were available on a commercial basis in the country.

23. The Fund Secretariat further recommends blanket approval of the fourth tranche of stage I of the HPMP for Cuba, and the corresponding 2019-2020 tranche implementation plan, at the funding level shown in the table below.

	<b>Project title</b>	<b>Project funding (US \$)</b>	<b>Support cost (US \$)</b>	<b>Implementing agency</b>
(a)	HCFC phase-out management plan (stage I, fourth tranche)	100,000	7,500	UNDP

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