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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Eighty-eighth Meeting
Montreal, 15-19 November 2021¹

PROJECT PROPOSAL: MALAYSIA

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

Phase-out

- HCFC phase-out management plan (stage II, third tranche) UNDP

¹ Online meetings and an intersessional approval process will be held in November and December 2021 due to coronavirus disease (COVID-19)

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

MALAYSIA

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out plan (stage II)	UNDP (lead)	77 th	42.9% by 2022

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2020	228.41 (ODP tonnes)
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)								Year: 2020	
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-22					202.36				202.36
HCFC-123					0.20				0.20
HCFC-141b		24.93				0.94			25.86
HCFC-225						0.00			0.00

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	515.8	Starting point for sustained aggregate reductions:	515.76
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	258.09	Remaining:	257.67

(V) BUSINESS PLAN		2021	2022	2023	Total
UNDP	ODS phase-out (ODP tonnes)	3.69	0.00	0.00	3.69
	Funding (US \$)	165,743	0	0	165,743

(VI) PROJECT DATA			2016	2017	2018	2019	2020	2021	2022	Total
Montreal Protocol consumption limits			464.18	464.18	464.18	464.18	335.24	335.24	335.24	n/a
Maximum allowable consumption (ODP tonnes)			438.40	438.40	438.40	400.00	335.24	309.46	294.63	n/a
Agreed funding (US \$)	UNDP	Project costs	3,507,938	0	0	2,475,225	0	154,900	0	6,138,063
		Support costs	245,556	0	0	173,266	0	10,843	0	429,665
Funds approved by ExCom (US \$)		Project costs	3,507,938	0	0	2,475,225	0	0	0	5,983,163
		Support costs	245,556	0	0	173,266	0	0	0	418,822
Total funds requested for approval at this meeting (US \$)		Project costs						154,900		154,900
		Support costs						10,843		10,843

Secretariat's recommendation:	For blanket approval
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PROJECT DESCRIPTION

1. On behalf of the Government of Malaysia, UNDP as the designated implementing agency has submitted a request for funding for the third and final tranche of stage II of the HCFC phase-out management plan (HPMP), at the amount of US \$154,900, plus agency support costs of US \$10,843.² The submission includes a progress report on the implementation of the second tranche, the verification report on HCFC consumption for 2019 to 2020 and the tranche implementation plan for 2021 to 2023.

Report on HCFC consumption

2. The Government of Malaysia reported a consumption of 228.41 ODP tonnes of HCFC in 2020, which is 56 per cent below the HCFC baseline for compliance. The 2016-2020 HCFC consumption is shown in Table 1.

Table 1. HCFC consumption in Malaysia (2016-2020 Article 7 data)

HCFC	2016	2017	2018	2019	2020	Baseline
Metric tonnes (mt)						
HCFC-22	4,557.95	3,213.59	3,606.22	3,238.86	3,679.08	6,355.19
HCFC-123	60.13	36.68	64.58	21.79	9.82	56.65
HCFC-141b	605.68	528.79	441.60	323.49	235.13	1,477.61
HCFC-142b	0.00	0.00	0.00	0.00	0.00	12.10
HCFC-225	1.49	1.95	1.93	0.59	0.05	1.11
Total (mt)	5,225.24	3,781.01	4,115.83	3,585.40	3,924.08	7,934.74*
ODP tonnes						
HCFC-22	250.69	176.75	198.34	178.14	202.35	349.54
HCFC-123	1.20	0.73	1.29	0.44	0.20	1.13
HCFC-141b	66.62	58.17	48.58	35.58	25.86	162.54
HCFC-142b	0.00	0.00	0.00	0.00	0.00	0.79
HCFC-225	0.10	0.14	0.14	0.04	0.00	0.08
Total (ODP tonnes)	318.62	235.78	248.34	214.2	228.41	515.76*

*Contains 0.94 ODP tonnes of HCFC-141, consumption of which has been zero since 2011.

3. The two main HCFCs consumed in the country are HCFC-141b, used in the polyurethane (PU) foam manufacturing sector, and HCFC-22, used in the refrigeration and air-conditioning (RAC) servicing sector and, until 2019, manufacturing sector; the Government prohibited the use of HCFCs in RAC manufacturing in 2020.³ Notwithstanding the phase-out of HCFCs in RAC manufacturing, HCFC-22 consumption increased in 2020 since the Government restricted imports of HCFCs during periods of COVID-19-related lockdown to allow for the imports of other essential items; due to the uncertainties during the pandemic, some importers decided to fully use their allocated quotas during the few months they were allowed to do so. In 2020, HCFC-141b continues to decline given the implementation of PU foam sector conversions under the HPMP. HCFC-123 was used to service chillers in 2020; prior to then, it was also used to manufacture chillers. Minor quantities of HCFC-225 are used in solvent applications.

Country programme (CP) implementation report

4. The Government of Malaysia reported HCFC sector consumption data under the 2020 CP implementation report that differed from the data reported under Article 7 of the Montreal Protocol. The

² As per the letter of 6 September 2021 from the Department of Environment of Malaysia to the Secretariat.

³ An exemption to this prohibition may be granted by the Director General of the Department of Environment for those uses where no viable alternatives are available.

latter inadvertently did not take into account the destruction of 0.16 mt of HCFC-22; UNDP confirmed that the Government would correct the 2020 CP data.⁴

Verification report

5. The verification report concluded that Malaysia is in compliance with the Agreement between the Government and the Executive Committee and that consumption was below the limits of the Montreal Protocol, and confirmed that the Government is implementing a licensing and quota system for HCFC imports and exports and that the total consumption of HCFCs reported under Article 7 of the Montreal Protocol for 2019 to 2020 was correct (as shown in Table 1 above). However, the Secretariat noted that the country had reported consumption of 295 kilogrammes each of HCFC-225ca and HCFC-225cb in the 2019 CP data report, while that consumption had been reported as HCFC-225 under Article 7; and that the harmonized system (HS) code used for those substances was the same, notwithstanding the different ODP of the substances. UNDP confirmed that during the licensing and import approval permit application, importers are required to declare the substance imported, whether HCFC-225, HCFC-225ca or HCFC-225cb; that the 2019 CP data was correct and that in other years HCFC-225 had indeed been imported; and that the Government would submit the correction to the 2019 data reported under Article 7 to the Ozone Secretariat.

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

Legal framework

6. A ban on the establishment and expansion of new HCFC-based manufacturing capacities has been in place since January 2013, and a ban on export of HCFC-141b contained in pre-blended polyols as of January 2019; and permits are no longer issued for the import of HCFC-based air-conditioning (AC) units (2.5 HP and lower), as of January 2016. An update to regulations to ensure proper refrigerant handling during servicing and proper disposal of HCFC-based equipment was finalized in March 2020.

7. A ban on the import, manufacture, and assembly of HCFC-based RAC equipment has been in place since 1 January 2020, and licences stopped being issued for the import of HCFC-141, HCFC-142b, and HCFC-21.⁵ In addition, the updated regulations specified HCFC inventory record-keeping requirements and disposal of refrigerants at prescribed premises as approved by the Department of Environment (DOE). A ban on the import of HCFC-141b pure and pre-blended in polyols was planned for 1 January 2022 (with the exception of 1.0 mt for solvents);⁶ however, activities related to the ban have been delayed due to the COVID-19 pandemic and the Government requested an extension of the ban to 1 January 2023.

PU foam manufacturing sector

8. Stage II included funding for the conversion of 67 PU foam enterprises, of which 57 are small- and medium-sized enterprises (SMEs), to low-global-warming-potential (GWP) alternatives; an additional ten non-eligible enterprises had planned to phase out their consumption without support from the Multilateral Fund, leading to complete phase-out of HCFC-141b in the PU foam sector by 1 January 2022. A staged approach was planned, whereby large-sized enterprises with consumption of 20 metric tonnes (mt) or higher would convert to cyclopentane pure or pre-blended in polyol systems, and smaller sized enterprises would convert under the second and third tranches to reduced hydrofluoroolefin formulations (HFOs), or potentially methylal.

⁴ The 2019 CP report similarly did not take into account the destruction of 0.675 mt of HCFC-22; the Government would correct the 2019 CP report as well.

⁵ Decisions 77/46(b)(v) and 77/46(b)(vi)

⁶ Decisions 77/46(b)(ii), 77/46(b)(iii), and 77/46(b)(iv)

9. Requests for change in technology were since approved for one large-sized enterprise and 41 SMEs from HFOs to cyclopentane (pure or pre-blended in polyol systems) or methylal on the understanding that the conversions would not be delayed and any additional costs would be covered by the enterprises (decisions 84/77(a)(ii), 85/11(b), 86/27(b), and 87/14(c)(i)), and that UNDP would provide an update on the status of the PU foam manufacturing conversions to the 88th meeting as part of the request for the third tranche of stage II of the HPMP (decision 87/14(b)(iv)). An additional two SMEs had confirmed that they would remain in the project and convert to the agreed technology (i.e., reduced HFOs).

10. The 14 remaining SMEs, plus one that had previously been approved for a change in technology, decided to withdraw from the project and instead planned to convert to HFC in pre-blended polyols (primarily based on HFC-365mfc blowing agent); the US \$169,281 associated with the conversion of these 15 enterprises was allocated to the conversion of Thermofoam Marketing Sdn Bhd to pre-blended cyclopentane, an enterprise that had previously been considered ineligible but that UNDP had subsequently determined to be eligible (decision 87/14(c)(ii)).

11. At the 84th meeting, UNDP reported that two large-sized enterprises with consumption above 20 mt had completed their conversion and a further eight had initiated their conversion to cyclopentane pure or pre-blended in polyol systems; since that time, those enterprises have completed their conversion. Since then, of the 43 SMEs remaining in the project: two have completed their conversion to pre-blended cyclopentane (2.54 ODP tonnes of consumption); 21 have initiated the conversion process and are in varying state of implementation (five have installed equipment; nine had received equipment but installation was pending and expected by July 2022; equipment for one enterprise was pending delivery and installation, expected by July 2022; procurement for three enterprises was initiated and was expected to be completed and the equipment delivered by January 2021; and procurement, equipment delivery, and installation for the remaining three enterprises was expected by September and December 2022); eight have verified baseline equipment and consumption and are pending the confirmation of memoranda of agreement (MOAs), with the conversion of four expected by September 2022 and the remaining four by December 2022; the baseline equipment and consumption of 11 enterprises was verified and were preparing their MOAs, with conversion expected to be finalized by December 2022; and one has postponed conversion due to a temporary closure as a result of the COVID-19 pandemic.⁷

RAC servicing sector

12. The following activities were carried out:

- (a) In-person training of 153 customs and enforcement officers on monitoring and control of HCFCs, including hands-on training on cargo verification and refrigerant identification;
- (b) Revision of the RAC training manuals; in-person training of 2,429 technicians on good servicing practices and the safe handling of flammable refrigerants including hands-on training on good practices and safety application of alternative refrigerants, which is needed for the certification tests; and promotional activities and implementation of the online certification system programme. Since 2017, a total of 10,713 technicians have been certified and registered through the implementation and use of the online system;
- (c) One virtual refresher course on flammable refrigerants for 54 certified master trainers, and a capacity-building training for one national ozone unit (NOU) officer on the safe use and handling of natural refrigerants;

⁷ UNDP confirmed that it would return to the Multilateral Fund the funds associated with the conversion of the enterprise should it not re-open prior to the implementation of the ban on the use of HCFC-141b pure and contained in pre-blended polyols.

- (d) Procurement of tools and equipment (e.g. vacuum pump, refrigerant recovery machine, manifold gauge set, electronic leak detector, and related accessories) and distribution to 41 Authorised Training Centres (ATCs);⁸ and procurement of training equipment and tools for flammable refrigerants (e.g., R-290 split AC demonstration unit, manifold gauge set for R-290, recovery machines for flammable refrigerants, digital micron vacuum gauge, flammable gas detectors, digital temperature controllers, and maintenance and installation kits, including filter drier, evaporator regulator, pressure switch, influx flow meter, solenoid valves, brazing rods, shut-off valves, heat protective spray, flaring tools, copper joints) and distribution to 48 ATCs and two centres of excellence (with delivery expected by December 2021);
- (e) A workshop for 120 enforcement officers to develop standard operating procedures for the enforcement of the updated 2020 refrigerant management regulations, which include the ban on the import, manufacture, and assembly of HCFC-based RAC equipment, HCFC inventory record-keeping requirements, and disposal of refrigerants at premises approved by the DOE; and
- (f) Two workshops for RAC manufacturing alternative technologies, one focused on the food and beverage industry, and the other on room AC.

Project implementation and monitoring unit (PMU)

13. The NOU monitors activities, reports progress, and works with stakeholders to phase out HCFCs. As of August 2021, of the US \$430,000 approved so far, US \$255,701 has been disbursed, comprising of US \$149,114 for staff and consultants, US \$30,178 for travel, US \$62,485 for workshops and meetings, and US \$13,924 for monitoring.

Level of fund disbursement

14. As of August 2021, of the US \$5,983,163 approved so far, US \$3,381,633 had been disbursed as shown in Table 2. The balance of US \$2,601,530 will be disbursed by December 2023.

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

Sector	First tranche		Second tranche		Total approved	
	Approved	Disbursed	Approved	Disbursed	Approved	Disbursed
PU foam manufacturing	2,272,640	2,150,390	1,703,923	414,800	3,976,563	2,565,190
RAC servicing	949,548	485,867	627,052	74,875	1,576,600	560,742
PMU	285,750	167,251	144,250	88,450	430,000	255,701
Total	3,507,938	2,803,508	2,475,225	578,125	5,983,163	3,381,633
Disbursement rate (%)	80		23		57	

Implementation plan for the third and final tranche of the HPMP

15. The following activities will be implemented between January 2022 and December 2023:
- (a) PU foam manufacturing: completion of ongoing conversions in foam enterprises, including establishment of MOAs with 12 enterprises that have not yet initiated the conversion process; and implementation of the ban on the import of HCFC-141b pure and pre-blended in polyols (US \$747,230 from previous tranche);
 - (b) RAC servicing sector: training of approximately 240 customs and enforcement officers; complete the delivery of the procured equipment to ATCs and centres of excellence and

⁸ At the 84th meeting, UNDP reported that procurement was in progress, with delivery expected in early 2020.

procurement of equipment (e.g. R-290 split AC demonstration unit, manifold gauge set for R-290, recovery machines for flammable refrigerants, digital micron vacuum gauge, flammable gas detectors, digital temperature controllers, and maintenance and installation kits) for three additional ATCs; training and certification of approximately 2,000 technicians on good servicing practices, including the safe handling of flammable refrigerants; four workshops for approximately 400 participants to raise awareness of low-GWP alternatives for RAC manufacturing and good servicing practices; and continued implementation and maintenance of the online certification system (US \$84,900 plus US \$609,653 from previous tranche); and

- (c) PMU: project management and monitoring support; facilitation of technical assistance delivery; preparation of reports required by the Government or the Executive Committee; and financial and budgetary control of the project, comprising US \$40,621 for staff and consultants, US \$33,904 for travel, US \$14,643 for workshops and meetings, and US \$36,632 for monitoring (US \$70,000 plus US \$174,298 from previous tranche).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

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

Legal framework

16. The Government of Malaysia has already issued HCFC import quotas for 2021 at 206.38 ODP tonnes, which is lower than the Montreal Protocol control targets.

PU foam manufacturing sector

17. The COVID-19 pandemic delayed the implementation of the PU foam sector plan, including temporary closure of PU foam manufacturers. Those factors resulted in limited delivery of support in what had been planned to be the last year of the conversion, prior to the establishment of the HCFC-141b ban. Accordingly, the Secretariat supports the request to defer the ban on the import and use of HCFC-141b contained in pre-blended polyols to 1 January 2023, and to phase out all uses of HCFC-141b, except in the solvent sector, by 1 January 2023.

RAC servicing sector

18. As most of the consumption in the AC manufacturing sector was at non-Article-5-owned enterprises, and therefore not eligible for funding under the Multilateral Fund, stage II of the HPMP only included technical assistance to AC manufacturers to encourage a transition to low-GWP alternatives. While the country's 2020 CP report indicated that the only controlled substance used in AC manufacturing was HFC-32, in line with the 2020 ban on the manufacturing of HCFC-based equipment, UNDP clarified that manufacturing of both HFC-32- and R-410A-based AC units was likely taking place and that the survey to be conducted under the country's Kigali HFC implementation plan preparation would assess such consumption.

Completion of stage II

19. UNDP has confirmed that stage II for Malaysia will be completed on 31 December 2023 as established in paragraph 14 of the Agreement. Stage III of the HPMP was expected to be submitted by the first meeting of 2023.

Gender policy implementation⁹

20. The first and second tranche of stage II of the HPMP were approved prior to decision 84/92(d); therefore, UNDP had not collected gender disaggregated data on the activities implemented under those tranches; such data will be collected under the third tranche. Gender mainstreaming is being applied through stage II of the HPMP by encouraging participation of women in the events and activities of the HPMP, promoting gender mainstreaming in training and awareness campaigns to develop staff competency and awareness, and discussing gender issues during the workshops by sharing experiences and lessons learned on gender mainstreaming.

Sustainability of the HCFC phase-out

21. The Environmental Quality Act has been amended to include provisions related to the control and phase-out of ODS, including bans on the import and use of CFCs; bans on the import, assembly, and manufacture of HCFC-based RAC equipment; and on the export of HCFC-141b contained in pre-blended polyol; forthcoming bans on the import of HCFC-141b contained in pre-blended polyols, and on the use of HCFC-141b in bulk and contained in imported pre-blended polyols, will ensure the sustainability of the HCFC phase-out in the PU foam manufacturing sector. The country has an enforceable system of licensing and quotas in place that is capable of ensuring the country's compliance. Random inspections of imports by customs help enforce that licensing and quota system. The NOU, as the Secretariat for the National Steering Committee for the Protection of Ozone Layer, supports the coordination of policies, strategic planning, and field activities to sustain the phase-out of ODS. Malaysia has regulations that provide a legal framework to ensure the actions implemented under Montreal Protocol framework are sustained over time. Training and capacity-building of customs officers, as well as of RAC technicians and training centres, further contribute to the sustainability of the phase-out.

Conclusion

22. The country's 2019 and 2020 consumption are below that specified in the Montreal Protocol and the country's Agreement with the Executive Committee, and the country's import licensing and quota system is operational and will enable continued HCFC consumption reductions in advance of the Montreal Protocol's phase-out schedule. While there has been progress in the conversions in the PU foam sector, the COVID-19 pandemic delayed the completion of those conversions and the Government requested to delay the implementation of the ban on the use of HCFC-141b pure and pre-blended in the manufacture of PU foam to 1 January 2023. The Secretariat supports the request by the Government in light of the exceptional circumstances of the COVID-19 pandemic. The level of disbursement of the second tranche is 23 per cent, and 57 per cent of the funds approved to date. The activities so far implemented, and those planned under the third tranche, will further build the capacity of customs and enforcement officers and strengthen the servicing sector, thereby helping ensure that the country continues to meet its compliance obligations under the Protocol.

RECOMMENDATION

23. The Fund Secretariat recommends that the Executive Committee:

- (a) Takes note of the progress report on the implementation of the second tranche of stage II of the HCFC phase-out management plan (HPMP) for Malaysia;

⁹ Decision 84/92(d) requested bilateral and implementing agencies to apply the operational policy on gender mainstreaming throughout the project cycle.

- (b) Takes notes that the Government will issue a ban on import of HCFC-141b contained in pre-blended polyols, and on the use of HCFC-141b in bulk and contained in imported pre-blended polyols, by 1 January 2023; and
- (c) Requests the Government of Malaysia and UNDP to submit progress reports on a yearly basis on the implementation of the work programme associated with the final tranche until the completion of the project, verification reports until approval of stage III, and the project completion report to the second meeting of the Executive Committee in 2024.

24. The Fund Secretariat further recommends blanket approval of the third and final tranche of stage II of the HPMP for Malaysia, and the corresponding 2021-2023 tranche implementation plan, at the funding level shown in the table below:

	Project title	Project funding (US \$)	Support cost (US \$)	Implementing agency
(a)	HCFC phase-out management plan (stage II, third tranche)	154,900	10,843	UNDP