



**United Nations
Environment
Programme**

Distr.
GENERAL

UNEP/OzL.Pro/ExCom/84/54
22 November 2019

ORIGINAL: ENGLISH



EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Eighty-fourth Meeting
Montreal, 16–20 December 2019

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, second tranche) UNDP

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Malaysia

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

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2018	248.34 (ODP tonnes)
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)							Year: 2018		
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-22				93.82	104.53				198.34
HCFC-123				1.29					1.29
HCFC-141b		48.58							48.58
HCFC-225						0.14			0.14

(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		2019	2020	2021	After 2021	Total
UNDP	ODS phase-out (ODP tonnes)	58.97	0	3.69	0	62.66
	Funding (US \$)	2,648,491	0	165,743	0	2,814,234

(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
Funds approved by ExCom (US \$)		Project costs 3,507,938	0	0	0	0	0	0	3,507,938
Total funds requested for approval at this meeting (US \$)		Project costs			2,475,225				2,475,225

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 second tranche of stage II of the HCFC phase-out management plan (HPMP), at the amount of US \$2,475,225, plus agency support costs of US \$173,266.¹ The submission includes a progress report on the implementation of the first tranche, the verification report on HCFC consumption for 2016 to 2018 and the tranche implementation plan for 2019 to 2021.

Report on HCFC consumption

2. The Government of Malaysia reported a consumption of 248.34 ODP tonnes of HCFC in 2018, which is 52 per cent below the HCFC baseline for compliance. The 2014-2018 HCFC consumption is shown in Table 1.

Table 1. HCFC consumption in Malaysia (2014-2018 Article 7 data)

HCFC	2014	2015	2016	2017	2018	Baseline
Metric tonnes (mt)						
HCFC-22	5,913.75	5,425.28	4,557.95	3,213.59	3,606.22	6,355.19
HCFC-123	72.93	65.48	60.13	36.68	64.58	56.65
HCFC-141b	1,239.97	1,079.04	605.68	528.79	441.60	1,477.61
HCFC-142b	4.47	0.00	0.00	0.00	0.00	12.10
HCFC-225	0.00	1.52	1.49	1.95	1.93	1.11
Total (mt)	7,231.12	6,571.32	5,225.24	3,781.01	4,115.83	7,934.74*
ODP tonnes						
HCFC-22	325.26	298.39	250.69	176.75	198.34	349.54
HCFC-123	1.46	1.31	1.20	0.73	1.29	1.13
HCFC-141b	136.40	118.69	66.62	58.17	48.58	162.54
HCFC-142b	0.29	0.00	0.00	0.00	0.00	0.79
HCFC-225	0.00	0.11	0.10	0.14	0.14	0.08
Total (ODP tonnes)	463.40	418.50	318.62	235.78	248.34	515.76*

*Contains 0.94 ODP tonnes of HCFC-141, consumption of which was 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) manufacturing and servicing sectors. Minor quantities of HCFC-123 and HCFC-225 are used as a solvent, refrigerant, propellant and blowing agent applications. Consumption of HCFC-141b continues to decline given the implementation of PU foam sector conversions under the HPMP; similarly, consumption of HCFC-22 continues to decline due to activities implemented in the manufacturing and servicing sectors, and the introduction of new non-HCFC-22 based equipment. The small increase in consumption between 2017 and 2018 was due to improvements in the local economy.

Country programme (CP) implementation report

4. The Government of Malaysia reported HCFC sector consumption data under the 2018 CP implementation report which is consistent with the data reported under Article 7 of the Montreal Protocol.

Verification report

5. 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 was accurately reported under Article 7 of the Montreal Protocol for 2016 to 2018. The verification concluded that Malaysia was in

¹ As per the letter of 13 September 2019 from the Ministry of Energy, Science, Technology, Environment and Climate Change of Malaysia to the Secretariat.

compliance with the targets specified in row 1.2 of the Agreement between the country and the Executive Committee.

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

Legal framework

6. Malaysia has an enforceable system of licensing and quotas for HCFC imports and exports in place, the system is capable of ensuring the country's compliance with the targets specified in the Agreement between the Government and the Executive Committee.

7. A ban on the establishment and expansion of new HCFC-based manufacturing capacities as of 1 January 2013 was issued. The Energy Commission of Malaysia, which is the permit issuing agency on the importation of air-conditioning equipment, has ceased issuing permits for the import of HCFC-based air-conditioners (2.5 HP and lower) since January 2016. An update to regulations to ensure proper refrigerant handling during servicing and proper disposal of HCFC-based equipment is under review by the Attorney General Chamber, and approval is anticipated in early 2020. In line with decision 77/46(b)(ii), the ban on export of HCFC-141b contained in pre-blended polyol was effective as of 1 January 2019.

8. Imports are randomly inspected by customs. Suspicious shipments found to contain a controlled substance other than for which the license was issued or different from its label (i.e., counterfeit refrigerant) are returned to the sender and the exporting country notified through informal Prior Informed Consent (iPIC). No cases of CFC-11 or CFC-12 were detected; in 2016, a shipment of purportedly HCFC-22 was found to contain HFC-134a. As HFC-134a was not a controlled substance in the country, the importer was penalized for mis-declaration and required to pay a duty tax.

9. Eighty-five customs and enforcement officers were trained on monitoring and controlling of HCFCs. Main topics included: information on the Montreal Protocol, customs legal framework and procedures on the import/export license and quota system, refrigerant labelling, linkages between customs and the national ozone unit (NOU), demonstration on use of refrigerant identifiers, and techniques to identify suspicious cargo and collect samples.

PU foam manufacturing sector

10. 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 will phase out their consumption without support from the Multilateral Fund, which will lead to complete phase-out of HCFC-141b in the PU foam sector by 1 January 2022. A stage approach was used, whereby enterprises with consumption of 20 mt or higher would convert to cyclopentane or pre-blended cyclopentane; smaller enterprises would convert under the second and third tranches to reduced hydrofluoro-olefins (HFOs), though some might convert to methylal.

11. Accordingly, memoranda of agreement (MOA) were signed with 12 enterprises, two of which have completed their conversion to cyclopentane (12.32 ODP tonnes of HCFC-141b); the conversion of a further eight enterprises is advancing (28.99 ODP tonnes of HCFC-141b), with expected completion date by 31 December 2019. Two smaller enterprises, with consumption of 2.54 ODP tonnes, are expected to complete their conversion in 2020.

12. Building on the technical assistance (TA) provided under stage I, a workshop with participation from over 50 foam enterprises was held on safety for cyclopentane technology and low-GWP alternatives. A second workshop with participation of 36 foam enterprises was held on low-GWP alternatives and to promote awareness of the 1 January 2022 ban.

RAC manufacturing sector

13. The following activities were carried out:

- (a) Procurement of equipment (e.g. portable refrigerant recovery machine, refrigerant cylinder, manifold gauges, electronic refrigerant scale, electronic leak detector for flammable refrigerants, double-stage vacuum pump, and related accessories) for two centres of excellence (COE) was initiated;
- (b) Procurement of tools and equipment (e.g. vacuum pump, refrigerant recovery machine, manifold gauge set, electronic leak detector, and related accessories) for training purposes for 41 Authorised Training Centres (ATCs) is in progress, with delivery expected early next year;
- (c) Three training sessions were organized for 56 trainers on flammable refrigerants; and an additional training for 85 trainers on good handling of refrigerants at an ATC was organized, and promotional activities related to the on-line certification system programme continued. Since 2017, a total of 6,890 technicians have been certified and registered through the implementation and use of the online system;
- (d) Workshop on “Recycle and Reclaim of Refrigerants and the Emerging Alternatives in the Market (RAC sector)” was conducted with the participation of approximately 300 service technicians, contractors, and manufacturers. The workshop focused on the exchange of information on low-GWP alternatives and a review of training manuals; and
- (e) A seminar on the food and beverage industry was held with approximately 300 participants from Government, industry, service contractors, manufacturers, and academia.

Project implementation and monitoring unit (PMU)

14. The PMU was established with two project staff under the NOU, which is situated within the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC). As of 25 September 2019, of the US \$285,750 approved for PMU, US \$89,306 was disbursed for the following activities:

- (a) Project kick-off, including sector consultation meetings, recruitment of local and international experts, and day-to-day management of the project;
- (b) Support in the establishment of MOAs with enterprises, including liaison with enterprises, review of legal parameters and supporting documents;
- (c) Coordinate release of instalments to beneficiary enterprises, obtained supporting documentation, quality control of milestones achievement;
- (d) Support in procurement processes, including drafting terms of reference, supporting tender process, participating in evaluation of proposals, monitoring issuance of purchase orders and equipment delivery, and release of payments to suppliers; and
- (e) Overall facilitation of project implementation, including organizing meetings, travel arrangements, liaison with critical stakeholders, and preparation of managerial reports.

Level of fund disbursement

15. As of September 2019, of the US \$3,507,938 approved so far, US \$1,952,151 (56 per cent) had been disbursed. The balance of US \$1,555,787 will be disbursed in 2019 and 2020.

Implementation plan for the second tranche of the HPMP

16. The following activities will be implemented between 2019 and 2021:

- (a) PU foam manufacturing: monitoring and completing ongoing conversions in foam enterprises; initiating implementation in remaining enterprises; organizing meetings and capacity-building programmes for enterprises (US \$1,703,922);
- (b) RAC servicing sector: continued training of approximately 220 customs and enforcement officers, continued equipment support to the remaining 10 ATCs and additional training equipment and tools for flammable refrigerants for COEs and ATCs; continued training of approximately 2,500 technicians and 200 master trainers on good practices, technical support on low-GWP alternatives, and organizing two workshops for RAC manufacturing alternative technologies (US \$627,053); and
- (c) PMU: project management and monitoring of tranche targets and indicators, review of progress against milestones specified in MOAs, and recommendation related to release of installments; identification and recruitment of experts and consultants, as needed, and facilitation of technical assistance delivery; support NOU and UNDP to prepare reports required by the Government or the Executive Committee; and financial and budgetary control of the project (US \$144,250).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

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

Legal framework

17. The Government of Malaysia has already issued HCFC import quotas for 2019 at 325.98 ODP tonnes, which is lower than the Montreal Protocol control targets, and the maximum allowable consumption under the Agreement with the Executive Committee.

18. While extensive consultations on the bans on the import of RAC equipment operated with HCFCs and on the manufacturing and the new installation of RAC equipment operating with HCFCs, which were expected to be implemented by 1 January 2020, have taken place, the Government is considering a delay in their implementation. Further to an assessment, the Government is concerned that implementation of the bans would lead to increased imports of high-GWP-based equipment, which runs counter to the Government's intentions under the HPMP to promote to the extent possible the use of low-GWP alternatives when phasing-out HCFCs. The Government of Malaysia has looked into alternative solutions, including partial bans or a grace period for imports; however, those options are not feasible at the moment. The Government confirmed that it would continue its consultations in order to assess when and how to best implement the bans.

19. While low-GWP-based RAC equipment is available for many applications, its market penetration is still limited and costs of such equipment are typically higher than for high-GWP-based equipment. Accordingly, the Secretariat notes that a delay in implementation of the ban is unlikely to affect the country's compliance with its HCFC phase-out targets, and recommends that UNDP include an update on the status of the bans when submitting the request for the third tranche of the HPMP.

PU foam manufacturing sector

20. Asia Roofing completed its conversion to cyclopentane; however, the approved technology was HFOs. This change of technology was due to the limited commercial availability of HFOs and the enterprise's desire to promptly phase out its use of HCFC-141b. Notwithstanding paragraph 7(a)(v) of the Agreement, UNDP confirmed that the lack of a request for a change of technology to the Executive Committee was an inadvertent omission. Accordingly, the Secretariat reviewed the eligible incremental costs for the conversion to cyclopentane and confirmed that those costs were above the approved funding of US \$390,000. UNDP confirmed that the additional costs associated with the change in technology were borne by the enterprise.

21. Given the immediate commercial availability of pre-blended cyclopentane systems from four systems houses in the country, and concerns about the stable supply of HFO blowing agents in the near-term, seven enterprises (Allied Foam, Astino, Century, Gai Hin, Hewgant, Insulated Box, and Roto Speed) were considering to similarly change technology from HFOs to pre-blended cyclopentane; however, those enterprises had not yet made a decision given ongoing tests of different blowing agent systems. On the request of the country, and in order to avoid a delay in the implementation of the stage II, the Secretariat considered it meaningful to undertake a detailed assessment of the eligible incremental costs to convert those enterprises to pre-blended cyclopentane, which confirmed that there would be no savings associated with such a change in technology, so that flexibility could be provided to allow the enterprises to select to convert to either HFOs or pre-blended cyclopentane. UNDP confirmed that the enterprises would co-finance any additional costs associated with the change in technology, the Secretariat recommends that flexibility be provided to the enterprises in selecting the technology, noting that UNDP would report to the Executive Committee on the technologies chosen by each enterprise when submitting the request for the third tranche of the HPMP.

Sustainability of the HCFC phase-out

22. The Environmental Quality Act has been amended to include provisions related to the control and phase-out of ODS, including prohibitions on the use of CFCs; bans on the establishment and expansion of new HCFC-based manufacturing capacity and on the export of HCFC-141b contained in pre-blended polyol; forthcoming bans on the import of HCFC-based RAC equipment, on the manufacturing and installation of such equipment, and on the import and use of HCFC-141b contained in pre-blended polyols. The country has an enforceable system of licensing and quotas in place that is capable of ensuring the country's compliance. Random inspections by customs helps 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 assure 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

23. The verified 2016 through 2018 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. The conversions in the PU foam sector are progressing, and any changes in

the technology selected will continue to ensure the introduction of low-GWP alternatives at no additional cost to the Fund; the requested flexibility to allow a change in technology for the identified foam enterprises is a meaningful mechanism to ensure continued and sustained implementation. The level of disbursement is 56 per cent. The activities so far implemented and those planned under the second 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

24. The Fund Secretariat recommends that the Executive Committee:

- (a) Takes note of the progress report on the implementation of the first tranche of stage II of the HCFC phase-out management plan (HPMP) for Malaysia; and
- (b) Takes note that Asia Roofing had changed its technology to cyclopentane, a low-global warming potential technology, at no additional cost to the Multilateral Fund.

25. The Fund Secretariat further recommends blanket approval of the second tranche of stage II of the HPMP for Malaysia, and the corresponding 2019-2021 tranche implementation plan, at the funding level shown in the table below on the understanding that:

- (a) If during implementation, Allied Foam, Astino, Century, Gai Hin, Hewgant, Insulated Box, and Roto Speed decided to change technology from hydrofluoro-olefins to pre-blended cyclopentane, they would have the flexibility to do so, on the understanding that the conversions would not be delayed and any additional costs would be covered by the enterprises; and
- (b) UNDP would report on the implementation of the technologies chosen at the enterprises in sub-paragraph (a), and on the status of the bans on the import of refrigeration and air-conditioning (RAC) equipment operated with HCFCs and on the manufacturing and the new installation of RAC equipment operating with HCFCs, when submitting the request for the third tranche of the HPMP:

	Project title	Project funding (US \$)	Support cost (US \$)	Implementing agency
(a)	HCFC phase-out management plan (stage I, second tranche)	2,475,225	173,266	UNDP