



**United Nations
Environment
Programme**

Distr.
GENERAL

UNEP/OzL.Pro/ExCom/94/43
8 May 2024

ORIGINAL: ENGLISH



EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Ninety-fourth Meeting
Montreal, 27-31 May 2024
Items 7(a) and 9(d) of the provisional agenda¹

PROJECT PROPOSALS: MALAYSIA

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

Phase-out

- HCFC phase-out management plan (stage II, final progress report) UNDP
- HCFC phase-out management plan (stage III, first tranche) UNDP

¹ UNEP/OzL.Pro/ExCom/94/1

Stage II of the HCFC phase-out management plan for Malaysia (final progress report) (UNDP)**Background**

1. On behalf of the Government of Malaysia, UNDP as the designated implementing agency has submitted the progress report on the implementation of the third and final tranche of stage II of the HCFC phase-out management plan (HPMP) for Malaysia,² in line with decision 88/40.³ The submission includes the verification report on HCFC consumption for 2021 to 2022.

Status of implementation of stage II of the HCFC phase-out management plan

2. Stage II of the HPMP for Malaysia was approved at the 77th meeting⁴ to phase out 146.24 ODP tonnes of HCFCs used in the refrigeration and air-conditioning (RAC) servicing sector, RAC manufacturing sector, the foam sector, and the solvent sector, and to meet the 42.9 per cent reduction from the baseline by 2022, at a total cost of US \$6,138,063, plus agency support costs. Stage II of the HPMP was completed in December 2023, as stipulated in the Agreement between the Government of Malaysia and the Executive Committee.

Report on HCFC consumption

3. The Government of Malaysia reported under country programme (CP) implementation report a consumption of 153.64 ODP tonnes of HCFC in 2023, which is 70 per cent below the HCFC baseline for compliance. The Article 7 data for 2023 has not been reported yet. The 2019-2023 HCFC consumption is shown in table 1.

Table 1. HCFC consumption in Malaysia (2019-2023 Article 7 data)

HCFC	2019	2020	2021	2022	2023*	Baseline
Metric tonnes (mt)						
HCFC-22	3,238.86	3,679.08	3,020.46	3,369.92	2,774.27	6,355.19
HCFC-123	21.79	9.82	27.06	36.69	27.06	56.72
HCFC-141b	323.49	235.13	135.22	9.00	4.71	1,477.61
HCFC-142b	0.00	0.00	0.00	0.00	0.00	12.10
HCFC-225	0.59	0.05	0.00	0.00	0.00	1.11
Total (mt)	3,584.72	3,924.08	3,182.75	3,415.61	2,806.04	7,934.74**
ODP tonnes						
HCFC-22	178.14	202.35	166.13	185.35	152.58	349.54
HCFC-123	0.44	0.20	0.54	0.73	0.54	1.13
HCFC-141b	35.58	25.86	14.87	0.99	0.52	162.54
HCFC-142b	0.00	0.00	0.00	0.00	0.00	0.79
HCFC-225	0.04	0.00	0.00	0.00	0.00	0.08
Total (ODP tonnes)	214.20	228.41	181.54	187.07	153.64	515.76**

* CP data.

** Total baseline also includes 13.38 mt (0.94 ODP tonnes) of HCFC-141, 0.03 mt (0.00 ODP tonnes) of HCFC-124, and 18.60 mt (0.74 ODP tonnes) of HCFC-21, consumption of which has been zero since 2012, 2010, and 2010, respectively.

4. The two main HCFCs consumed in the country are HCFC-22 and HCFC-141b. HCFC-22 is used in the RAC servicing sector and, until 2019, manufacturing sector; the Government prohibited the use of HCFCs in RAC manufacturing in 2020.⁵ Notwithstanding the phase-out of HCFCs in RAC manufacturing,

² As per the letter of 18 March 2024 from the Department of Environment of Malaysia to UNDP.

³ There was an error in the date of the approval proviso, which should have indicated a deadline submission of the final progress report by the first meeting of 2024.

⁴ Decision 77/46

⁵ 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.

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; in 2021 consumption fell likely due to COVID-19-related restrictions, and then increased again in 2022 with the easing of those restrictions. As further described in paragraphs 37 to 40 of the present document, consumption in 2023 decreased due to the enforcement of regulations on energy efficiency and conservation, including the requirement for public buildings to establish higher air-conditioning (AC) set points, which reduced the use of old and inefficient room air conditioners and chillers that, in turn, also reduced the servicing needs for such equipment, and the gradual improvement of servicing practices.

5. HCFC-141b was used in the polyurethane (PU) foam manufacturing sector until 1 January 2023 when, in line with decision 77/46(b)(ii), (iii), and decision 88/40(a), the Government banned the import and use of HCFC-141b pure and contained in pre-blended polyol for use in PU foam manufacturing; up to 1 ODP tonne of HCFC-141b may be used in solvent sector, in line with decision 77/46(b)(iv). HCFC-123 is used to service chillers. Minor quantities of HCFC-225 were used by an enterprise for a solvent application; that enterprise converted with its own resources in 2020.

Country programme implementation report

6. The Government of Malaysia reported HCFC sector consumption data under the 2022 CP implementation report that is consistent with the data reported under Article 7 of the Montreal Protocol.

Verification report

7. 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 reported under Article 7 of the Montreal Protocol for 2021 to 2022 was correct (as shown in table 1 above), except for small differences due to rounding in the verification report. UNDP confirmed that future verification reports will consider imports and exports to 3 decimal places so that the calculated consumption matches that reported under Article 7. The verification concluded that Malaysia has strict administrative controls and legislation in place to ensure effective implementation of the HCFC programmes and projects to meet the consumptions targets as per the country's Agreement with the Executive Committee. The verifier recommended that steps be taken to minimize the reporting gaps in the records by the customs department and the department of statistics. UNDP confirmed that the departments of environment, statistics, and customs were working in close coordination to minimize reporting gaps; that data reconciliation was undertaken within the first quarter of the year; and that the Government will continue to assess strategies to further minimize reporting gaps.

Progress report on the implementation of the third and final tranche of stage II of the HCFC phase-out management plan

Legal framework

8. The Government ratified the Kigali Amendment on 21 October 2020. A ban on the import of HCFC-141b pure and pre-blended in polyols (with the exception of 1.0 ODP tonne for solvents)⁶ is in place as of 1 January 2023.

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

Polyurethane foam manufacturing sector

9. 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, originally planned by 1 January 2022. Fifteen of the SMEs later decided to withdraw from the project and instead planned to convert to HFC in pre-blended polyols (primarily based on HFC-365mfc blowing agent), with the funding allocated to the conversion of an additional eligible enterprise.⁷

10. Of the remaining 52 enterprises, as of the 88th meeting, two SMEs and ten large-sized enterprises with consumption above 20 mt had completed their conversion, one postponed conversion due to a temporary closure as a result of the COVID-19 pandemic,⁸ and 40 enterprises were in varying stages of verification and contract preparation, with all conversions expected to be finalized by December 2022.

11. Since the 88th meeting, an additional 11 enterprises withdrew from the project due to financial difficulties and converted to HFCs contained in pre-blended polyols; the remaining 29 enterprises completed their conversion to low-GWP alternatives. As of January 2023, all active PU foam manufacturing enterprises had completed their conversions.

Refrigeration servicing sector

12. The following activities were carried out:

- (a) Training of 7,997 technicians and 75 trainers on good practices and the safe handling of flammable refrigerants, for a cumulative 17,826 technicians and 270 trainers trained under stage II; all 17,826 technicians have been certified and registered through the online certification programme;
- (b) Training of 293 customs and enforcement officers on monitoring and control of HCFCs, for a cumulative 531 technicians trained under stage II;
- (c) Procurement and delivery of the remaining equipment to the Authorized Training Centres (ATCs) and Centres of Excellence (COEs), including the three additional ATCs identified at the 88th meeting; and
- (d) A workshop on recovery and reclamation, and emerging technologies in the RAC sector, was organized for approximately 300 technicians, contractors, and manufacturers, and a seminar on low-GWP technologies in the food and beverage industry for approximately 300 participants from Government, industry, service contractors, manufacturers, and academia.

Project implementation and monitoring unit

13. The project implementation and monitoring unit (PMU) provided project management and monitoring support, facilitation of technical assistance delivery, preparation of reports required by the Government and the Executive Committee, and financial and budgetary control of the project. As of

⁷ Decision 87/14(c)(ii).

⁸ At the 88th meeting, UNDP confirmed that it would return to the Multilateral Fund the funds associated with the conversion of the enterprise should the enterprise not resume its manufacturing. UNDP confirmed at the present meeting that the enterprise had resumed operations and had completed its conversion.

March 2024, of the US \$500,000 approved under stage II, US \$452,826 had been disbursed and US \$47,174 committed.⁹

Level of fund disbursement

14. As of November 2023, of the total US \$6,138,063 approved, US \$5,651,435 had been disbursed, as shown in table 2. Of the balance of US \$486,628, US \$231,288 will be disbursed in 2024 and US \$255,340 will be returned to the Multilateral Fund at the 95th meeting.

Table 2. Financial report of stage II of the HPMP for Malaysia

Funding tranche	Funds approved (US \$)	Funds disbursed (US \$)	Disbursement rate (%)	Fund balance (US \$)
First	3,507,938	3,507,938	100	0
Second	2,475,225	2,124,464*	86	350,761
Third	154,900	19,033	12	135,867
Total	6,138,063	5,651,435	92	486,628

* Includes US \$255,340 under the PU foam sector that will be returned to the Multilateral Fund at the 95th meeting.

Secretariat's comments

Legal framework

15. The Government of Malaysia has already issued HCFC import quotas for 2024 at 190.43 ODP tonnes, which is lower than the Montreal Protocol control targets. The Government may issue additional quotas of 22.24 ODP tonnes in 2024 if there is additional demand for HCFCs; the release of such additional quotas would result in consumption that is lower than the Montreal Protocol control targets and the targets specified in the Agreement between the country and the Executive Committee.

HCFC consumption

16. Notwithstanding the activities undertaken to strengthen the servicing sector, consumption of HCFC-22 in that sector increased substantially relative to 2017. The reasons for that increase, and measures to address it, are further discussed in paragraphs 37 to 40 of the present document.

Polyurethane foam manufacturing sector

17. Noting that a number of enterprises decided to change technology from HFOs to pre-blended hydrocarbons, and that other enterprises decided to withdraw from the project, the Secretariat sought to better understand the challenges faced by enterprises. UNDP noted that of the 68 eligible enterprises included in the project, 26 enterprises withdrew during implementation, with the overwhelming majority of those enterprises having a consumption of less than 5 mt of HCFC-141b, which were considered micro- and small-sized enterprises. Those micro- and small-sized enterprises faced financial challenges to implement the conversion: conversion to flammable blowing agents was not feasible given the high capital costs needed to safely use such blowing agents, and the limited availability and high price of HFO-based systems was difficult for the enterprises to accommodate notwithstanding the assistance provided by the Multilateral Fund.

18. While those 26 enterprises faced challenges, other similarly sized enterprises were able to convert to pre-blended cyclopentane systems, in line with relevant decisions by the Executive Committee allowing this requested change in technology. In general, those enterprises also had other business units, so the enterprises tended to have a higher level of technical capacity and the overall size of the enterprises allowed them to more easily co-finance the additional safety-related measures required for a conversion to

⁹ Committed expenses include pending payments to vendors and consultants and staff salaries.

pre-blended cyclopentane. In addition, UNDP emphasized that many foam manufacturing enterprises in Malaysia used high-pressure dispensers, and local and regional enterprises had developed low-cost retrofits for such dispensers to allow the use of pre-blended cyclopentane. This may not be the case in other Article 5 countries, where the use of low-pressure dispensers is more prevalent.

19. Only two enterprises converted to methylal, and none to methyl formate given the limited supply chain for that blowing agent and concerns about the royalties held for the pre-blended methyl formate systems. The main impediment to the uptake of HFOs, which are not flammable and are technically viable, was cost. Notwithstanding assurances received by UNDP from suppliers that availability of HFOs would not be a significant issue for Malaysia, the perceived market demand during implementation of the project was insufficient to elicit the establishment of a robust supply chain. An additional concern expressed by the PU foam industry in Malaysia related to potential emissions and controls of PFAS being discussed in various fora. The Secretariat notes that the availability of HFOs for use in the foam sector remains a challenge in some Article 5 countries, though the reasons for this are not clear as availability appears to vary across regions and even countries within the same region. For example, availability of HFOs appears not to have been a significant barrier to the uptake of the technology in another country in that region, while in Malaysia it was a significant impediment.

Secretariat's recommendation

20. The Executive Committee may wish to note the final progress report on the implementation of the work programme associated with stage II of the HCFC phase-out management plan for Malaysia.

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Malaysia

(I) PROJECT TITLE	AGENCY
HCFC phase-out plan (stage III)	UNDP (lead)

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2022	187.07 ODP tonnes
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)								Year: 2023	
Chemical	Aerosol	Foam	Fire-fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-22					152.58				
HCFC-123					0.54				
HCFC-141b						0.52			

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

(V) ENDORSED BUSINESS PLAN		2024	2025	2026	Total
UNDP	ODS phase-out (ODP tonnes)	63.28	0.00	78.90	142.18
	Funding (US \$)	5,523,340	0	7,364,810	12,888,150

(VI) PROJECT DATA		2024	2025-2026	2027	2028	2029	2030	Total
Montreal Protocol consumption limits (ODP tonnes)		335.24	167.62	167.62	167.62	167.62	0.00	n/a
Maximum allowable consumption (ODP tonnes)		294.63	167.62	167.62	120.00	120.00	0.00	n/a
Project costs requested in principle (US \$)	UNDP	5,542,907	0	8,605,558	0	1,835,000	0	15,983,465
	Project costs							
	Support costs	388,003	0	602,390	0	128,450	0	1,118,843
Total project costs recommended in principle (US \$)		5,542,907	0	8,605,558	0	1,835,000	0	15,983,465
Total support costs recommended in principle (US \$)		388,003	0	602,390	0	128,450	0	1,118,843
Total funds recommended in principle (US \$)		5,930,910	0	9,207,948	0	1,963,450	0	17,102,308

(VII) Request for approval of funding for the first tranche (2024)		
Implementing agency	Funds recommended (US \$)	Support costs (US \$)
UNDP	5,542,907	388,003
Total	5,542,907	388,003

Secretariat's recommendation:	Individual consideration (Secretariat presentation not required)
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PROJECT DESCRIPTION

Background

21. On behalf of the Government of Malaysia, UNDP as the designated implementing agency has submitted a request for stage III of the HCFC phase-out management plan (HPMP), at the amount of US \$18,033,592, plus agency support costs of US \$1,262,351, as originally submitted.¹⁰ The implementation of stage III of the HPMP will phase out the remaining consumption of HCFCs by 2030.

22. The first tranche of stage III of the HPMP being requested at this meeting amounts to US \$6,587,185, plus agency support costs of US \$461,103 for UNDP, as originally submitted.

23. An overview of the implementation of stage II, including the analysis of HCFC consumption, progress and financial reports on the implementation, is available in paragraphs 1 to 19 of the present document.

Report on HCFC consumption

24. As described in paragraph 3 of the present document, the Government reported HCFC consumption of 153.64 ODP tonnes in 2023, which is below the target specified in the country's Agreement with the Executive Committee for 2023, and 70 per cent below the HCFC baseline for compliance.

Stage III of the HCFC phase-out management plan

Remaining consumption eligible for funding

25. After deducting 258.09 ODP tonnes of HCFCs associated with stages I and II of the HPMP, the remaining consumption eligible for funding in stage III amounts to 257.67 ODP tonnes.

Sector distribution of HCFCs

26. There are between 30,000 and 40,000 technicians¹¹ and approximately 2,000 workshops consuming HCFCs in Malaysia. HCFC-22 is used to service refrigeration and air-conditioning (RAC) equipment, including residential air-conditioning (AC), commercial AC, chillers, and commercial refrigeration equipment. HCFC-123 is used to service chillers. In line with the 1 January 2020 ban, there is no HCFC-based manufacturing in the country.

Phase-out strategy

27. Stage III of the HPMP will focus on further strengthening the capacity of the servicing sector, with a focus on the servicing of room AC, light commercial AC, stand-alone commercial refrigeration equipment, and HCFC-123-based chillers, with an emphasis on recovery and reuse of HCFC, and encouraging improvement of servicing practices, to avoid a transition from HCFCs to high-GWP HFCs. In addition, stage III will further strengthen the regulatory and institutional systems by establishing new bans on uses of HCFCs, and expand custom officers, port authorities and national control and compliance officers' capacities to control and manage HCFC use and continue raising awareness to sustain the HCFC phase-out.

¹⁰ As per the letter of 7 February 2024 from the Department of Environment of Malaysia to the Secretariat.

¹¹ Of which between 1 and 3 per cent are women. At the 93rd meeting, the number of technicians in the country was erroneously estimated at approximately 20,000.

Proposed activities

28. Stage III proposes activities to strengthen policy; build capacity of customs and RAC technicians, including equipment procurement; provide technical assistance; and raise awareness on the HCFC phase-out, as summarized in table 3.

Table 3. Activities to be implemented in stage III of the HPMP for Malaysia

Project component	Planned activities	Cost (US \$)
<i>Legal framework</i>		
Policies and regulations	<ul style="list-style-type: none"> • Development and subsequent update of a compendium of policies and regulations related to all controlled substances under the Montreal Protocol 	60,000
	<ul style="list-style-type: none"> • Implementation of two bans to address remaining HCFC consumption: a ban on the use of new HCFC-123 chillers for sensitive sectors as of 31 December 2027, and a ban on HCFC-141b for all uses as of 31 December 2025; includes consultant fees and stakeholder meetings 	150,000
Customs capacity-building	<ul style="list-style-type: none"> • Training of 400 customs and port authority officers and 350 enforcement officers on the monitoring and import control of HCFCs and their alternatives • Development of a risk profile manual for ODS and other controlled substances and mapping of illicit trade risks • Development of an online training and resource module • Six coordination meetings between the national ozone unit (NOU), Department of Environment (DOE), customs, and the port authority • Eight bilateral meetings between the NOU and other stakeholders 	415,000
	<ul style="list-style-type: none"> • Provision of equipment to two laboratories to strengthen identification of refrigerants and blowing agents¹² • Training for five laboratory personnel on use of the new equipment and for 50 enforcement officers on ODS sampling 	203,300
<i>RAC servicing</i>		
Technician capacity-building	<ul style="list-style-type: none"> • Review and update of technician training manuals • Refresher training for 350 trainers • Training and certification for 10,000 technicians (including refresher training) in good servicing practices, including containment and recovery and recycling of refrigerants • Harmonization of national certification programme and policies between Authorized Training Centres (ATCs) and vocational schools • Update and maintenance of the online certification system • Training of 350 trainers for the harmonized certification programme • Certification of 500 technicians under the harmonized certification programme 	6,447,460
Equipment procurement	<ul style="list-style-type: none"> • Basic training and assessment equipment to 64 ATCs,¹³ 10 toolkits to each of the 23 ATCs established under stage II,¹⁴ and equipment to three Centres of Excellence (COEs)¹⁵ 	5,784,850

¹² Equipment for each laboratory includes three chromatographer columns, a coulometric Karl-Fischer titrator, 15 calibration standards for HCFC and HFC blends, a thermogravimetric analyzer, a portable gas chromatograph to analyze PU foam blowing agent, and five portable refrigerant identifiers for enforcement officers.

¹³ Equipment for each ATC includes a basic refrigeration cycle trainer unit, a basic split AC trainer unit, a basic condensing unit trainer unit, three closed cycle flushing machines, three non-HCFC/non-HFC flushing liquid, and three nitrogen flush kits.

¹⁴ Each kit includes a hydrocarbon gauge manifold set, hydrocarbon leak detectors, high precision weigh scale, a high precision charging machine, a refrigerant recovery and recycling unit, a vacuum pump, a digital vacuum gauge, a NTC thermometer, a refrigerant cylinder, and pressure/temperature tables for hydrocarbon refrigerants.

¹⁵ One COE will be provided 15 flushing kits, and two will be provided two training units each.

Project component	Planned activities	Cost (US \$)
	• Servicing tools provided to 2,000 technicians ¹⁶	2,375,120
<i>Technical assistance</i>		
Refrigerant recovery, recycling and reclamation (RRR)	<ul style="list-style-type: none"> • Development of a guideline and SOPs for four reclamation centres • Review and improvement of the reclamation business model to provide technical assistance to the four reclamation centres • Train 45 operational staff of the four reclamation centres on efficient reclamation practices 	55,750
Chillers	<ul style="list-style-type: none"> • Map installed capacity of HCFC-123-based chillers; assessment of options for non-HCFC-123-based chillers; assessment of needs in the servicing sector; development of procurement guidelines to replace HCFC-based chillers; conduct stakeholder consultations; and development of standard operating procedures (SOPs) for best practices in servicing HCFC-123-based chillers 	176,112
<i>Awareness-raising</i>		
Awareness-raising activities	<ul style="list-style-type: none"> • Five awareness-raising campaigns targeting owners of residential and small commercial equipment on the HCFC/HFC bans and phase-out, including safety and the energy-efficiency benefits of alternative technologies • Five awareness-raising campaigns targeting importers, distributors and import brokers of ODS-based products on the sector bans, including how to implement them, the phase-out targets, enforcement of the bans, and potential needs during the servicing tail • Five workshops for large end-users, equipment designers and installers, and servicing technicians on low-GWP alternative RAC technologies • Five awareness-raising campaigns targeting equipment owners and the servicing sector to promote the refrigerant RRR system 	685,000
<i>Project implementation and monitoring</i>		
Project implementation and monitoring unit (PMU)		1,681,000
Total		18,033,592

Project implementation and monitoring unit

29. The system established under stages I and II of the HPMP will continue into stage III, with the NOU and UNDP monitoring activities, reporting on progress, and working with stakeholders to phase out HCFCs. The cost of those activities for UNDP amounts to US \$1,681,000, and includes project staff (US \$920,000), consultants (US \$365,000), meetings and travel (US \$156,000), operational costs (US \$216,000) and consumption verification (US \$24,000).

Gender policy implementation

30. Preparation of the stage III project plan was developed in line with decisions 84/92(d), 90/48(c), and 92/40(b) of the Multilateral Fund, with gender responsive actions and gender indicators incorporated into HPMP project activities. While female representation has historically been low in manufacturing and servicing, participation of women has notably been increasing in other areas under the HPMP; stage III aims to ensure career opportunities for women, support women in pursuing relevant studies, and provide safe environments for women and men.

31. Gender mainstreaming was applied under stage II of the HPMP beginning in the third tranche, following decision 84/92(d), by encouraging participation of women in the events and activities of the

¹⁶ Each set of tools includes a gauge manifold set, a refrigeration tube, locking pliers, tube piercing pliers, a tube cutting tool, a tube bender tool, ratchet wrenches, a flaring and swaging tool set, refrigerant leak detectors, a valve core remover, and an NTC thermometer.

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. Stage III includes a gender action plan that builds upon the activities of the previous stage and incorporates its gender outcomes.

Total cost of stage III of the HCFC phase-out management plan

32. The total cost of stage III of the HPMP for Malaysia has been estimated at US \$18,033,592 (plus agency support costs), as originally submitted, for achieving a 67.5 per cent reduction from its HCFC baseline consumption by 2025, a 76.7 per cent reduction by 2028, and a 100 per cent reduction by 2030. The proposed activities and cost breakdown are summarized in table 4.

Table 4. Total cost of stage III of the HPMP for Malaysia as submitted

Activity	Cost (US \$)
Policies and regulations	210,000
Customs capacity-building	618,300
Technician capacity-building	6,447,460
Equipment procurement for 64 ATCs and 3 COEs	5,784,850
Equipment for RAC technicians	2,375,120
Technical assistance for RRR	55,750
Technical assistance for HCFC-123-based chillers	176,112
Awareness-raising	685,000
Project implementation and monitoring	1,681,000
Total	18,033,592

Implementation plan for the first tranche of stage III of the HCFC phase-out management plan

33. The first funding tranche of stage III of the HPMP in the total amount of US \$6,587,185 will be implemented between June 2024 and December 2027 and will include the activities summarized in table 5.

Table 5. Activities to be implemented in the first tranche of stage III of the HPMP for Malaysia

Project component	Planned activities	Cost (US \$)
<i>Legal framework</i>		
Policies and regulations	• Development of a compendium of policies and regulations related to all controlled substances under the Montreal Protocol	60,000
	• Preparation for the implementation of two bans to address remaining HCFC consumption	30,000
Customs capacity-building	• Training of 89 customs and port authority officers and 140 enforcement officers on the monitoring and import control of HCFCs and their alternatives • Development of a risk profile manual for ODS and other controlled substances and mapping of illicit trade risks • Development of an online training and resource module • Six coordination and bilateral meetings between the NOU and stakeholders	180,000
	• Provision of equipment to two laboratories to strengthen identification of refrigerants and blowing agents ¹⁷ • Training for five laboratory personnel on use of the new equipment	140,800

¹⁷ Specific equipment is listed in table 3.

<i>RAC servicing</i>		
Technician capacity-building	<ul style="list-style-type: none"> • Review and update of technician training manuals • Refresher training for 70 trainers • Training for 3,000 technicians (including refresher training) in good servicing practices • Harmonization of national certification programme and policies between ATCs and vocational schools • Training of 350 trainers for the harmonized certification programme 	2,247,460
Equipment procurement	<ul style="list-style-type: none"> • Basic training and assessment equipment to 32 ATCs, and begin provision of equipment to three COEs¹⁸ 	2,892,425
<i>Technical assistance</i>		
RRR	<ul style="list-style-type: none"> • Development of a guideline and SOPs for four reclamation centres 	15,000
Chillers	<ul style="list-style-type: none"> • Map installed capacity of HCFC-123-based chillers 	70,000
<i>Awareness-raising</i>		
Awareness-raising activities	<ul style="list-style-type: none"> • An awareness-raising campaign targeting owners of residential and small commercial equipment • An awareness-raising campaign targeting importers, distributors and import brokers • Two workshops for large end-users, equipment designers and installers, and servicing technicians on low-GWP alternative RAC technologies 	274,000
<i>Project implementation and monitoring</i>		
PMU	<ul style="list-style-type: none"> • Includes project staff (US \$345,000), consultants (US \$140,000), meetings and travel (US \$58,500), operational costs (US \$126,000), and verification (US \$8,000) 	677,500
Total		6,587,185

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

34. The Secretariat reviewed stage III of the HPMP in light of stages I and II, the policies and guidelines of the Multilateral Fund, including the criteria for funding HCFC phase-out in the consumption sector for stage II of HPMPs (decision 74/50), and the 2024-2026 business plan of the Multilateral Fund.

Overarching strategy

35. The Government of Malaysia proposes to meet the 100 per cent reduction of its HCFC baseline consumption by 2030, and to maintain a maximum annual consumption of HCFCs in the period of 2030 to 2040 at a level consistent with Article 5, paragraph 8 ter(e)(i) of the Montreal Protocol.¹⁹

36. In line with decision 86/51, to allow for consideration of the final tranche of its HPMP, the Government of Malaysia agreed to submit a detailed description of the regulatory and policy framework in place to implement measures to ensure that HCFC consumption is in compliance with paragraph 8 ter(e)(i) of Article 5 of the Montreal Protocol for the period 2030–2040, and, if Malaysia intends to have consumption during the period 2030–2040, in line with paragraph 8 ter(e)(i) of Article 5 of the Montreal

¹⁸ Specific equipment is listed in table 3.

¹⁹ HCFC consumption may exceed zero in any year so long as the sum of its calculated levels of consumption over the ten-year period from 1 January 2030 to 1 January 2040, divided by 10, does not exceed 2.5 per cent of the HCFC baseline.

Protocol, to submit proposed modifications to its Agreement with the Executive Committee covering the period beyond 2030.

HCFC consumption

37. Consumption of HCFC-22 in the servicing sector approximately doubled between 2017 and 2022 notwithstanding the phase-out of HCFC-22 in the RAC manufacturing sector, the 1 January 2020 ban on the import of HCFC-22-based RAC equipment, and the activities undertaken under stage II to strengthen the servicing sector, including the training and certification of 17,826 technicians, and the provision of tools to ATCs and COEs. However, consumption in 2023 decreased relative to 2022, which UNDP attributed to the enforcement of the Energy Efficiency and Conservation Bill 2023, which is believed to have encouraged owners of high-energy consuming equipment, particularly HCFC-22 chillers, to advance the replacement of the existing, energy inefficient equipment; the establishment of a mandate requiring public buildings to establish AC set points at 24 or 25°C, which reduced the use of old and inefficient room AC units and chillers that, in turn, also reduced the servicing needs for such equipment; the gradual improvement of servicing practices; and initiation of implementation of the National Energy Transition Roadmap that targeted to retrofit Government buildings to be more energy efficient.

38. UNDP also noted that much of the new non-HCFC-based equipment installed in the country was likely not to replace existing HCFC-22 equipment but to address new demand for cooling. Owners of existing HCFC-22-based equipment were believed to be postponing replacing their equipment due to the higher price of new equipment, including because of inflationary pressures both in the country and globally. The demand to service existing HCFC-22 equipment that continued to be operated past its optimal lifespan likely contributed to the increased servicing demand in the country. Regarding the servicing of HCFC-22-based chillers, which UNDP estimated accounted for a little less than one quarter of the HCFC-22 servicing demand notwithstanding that such equipment constituted a small percentage of HCFC-22-based RAC equipment in the country, UNDP clarified that HCFC-22-based chillers are positive displacement chillers that tend to be older and suffer from high leakage rates than negative displacement chillers (i.e., HCFC-123-based chillers), which are newer and typically have low leakage rates.

39. UNDP also emphasized that servicing sector stakeholders may not be fully equipped with, for example, recovery equipment to support higher recovery rates. As stage II included only limited activities to address this need, stage III included the provision of tools to servicing technicians to enhance leakage reduction and refrigerant recovery; workshops and awareness-raising activities to support the sector to procure recovery equipment, improve recovery rates, and increase the reuse of refrigerants after recovery and reclamation; and technical assistance to four reclamation centres. UNDP further highlighted that while the Government was undertaking best efforts to address the country's HCFC-22 servicing consumption, and that this consumption was expected to decrease, demand for HCFC-22 to service existing equipment was expected to continue to 2030; any servicing in the 2030–2040 period would be in line with paragraph 8 ter(e)(i) of Article 5 of the Montreal Protocol.

40. UNDP also noted that the Government was launching a programme for Sustainability Achieved Via Energy Efficiency (SAVE) 4.0, which offers a rebate to households that purchase higher energy-efficient electrical appliances. This programme, combined with a central database hub that was launched in 2023 to enable the Government to identify households and buildings with higher energy consumption for receiving subsidies, could hasten the retirement of HCFC-22-based RAC equipment that was past its optimal lifetime, and contribute to a reduction in HCFC-22 servicing demand.

Legal framework

41. Noting that the Government would ban by 31 December 2027 the import and manufacture of HCFC-123-based chillers for sensitive sectors, such as for the military and the healthcare sector, the Secretariat sought to better understand how the exception had been used, and how HCFC-based equipment

and products for sensitive sectors other than HCFC-123-based chillers would be addressed, noting that the servicing tail could only be used to service equipment existing on 1 January 2030, except for specific uses identified in the Montreal Protocol that differed from the uses considered sensitive by the Government. UNDP clarified that to date no requests for the exception had been made, and that the 31 December 2027 ban would cover all HCFC-based equipment and would not be restricted to HCFC-123-based chillers.

42. The Secretariat enquired with the Government had considered regulatory approaches that might target the servicing of HCFC-22-based chillers, noting inter alia the high leakage rates estimated by UNDP and that such equipment typically has a large refrigerant charge (i.e., 10's to 100's of kg of refrigerant) and is typically serviced by specialized technicians. For example, a regulation requiring leak checking for larger equipment (e.g., with a refrigerant charge greater than 10 kg), a regulation requiring recovery of HCFCs during servicing of larger equipment, or a regulation requiring record-keeping practices (e.g., a servicing logbook) for larger equipment could usefully target the servicing of such equipment. UNDP emphasized the challenges associated with enforcing such regulations, and that the implementation of such regulations could have the unintended consequence of encouraging the uptake of high-GWP HFC-based chillers given the limited availability at this time of low-GWP technologies for this application. Accordingly, it was agreed not to include activities to support the development of such regulations under the HPMP.

43. The Secretariat noted with appreciation the request for two portable gas chromatographs to analyze PU foam blowing agent and sought to better understand how those would be used to strengthen the country's import controls. UNDP explained that at present the country uses portable refrigerant identifiers in the initial identification of suspect cargos and refrigerants; however, legal prosecution cannot take place only based on the portable refrigerant identifier results as those instruments do not provide the level of accuracy required by the judiciary system. Therefore, the second step for suspect cargos and refrigerants is to send a sample to a central laboratory where the sample is tested with a gas chromatograph, which provides the accuracy needed for the judicial system. Given the bottleneck in the demand for the gas chromatograph in the central laboratory, the two portable gas chromatographs would be used in decentralized laboratories to increase the national laboratory capacities. UNDP further confirmed that if a cargo is found to contain banned ODS, the legal measures will take place, on case-by-case as per legislation, which include seizing of cargo, proper disposal or return to origin, and legal prosecution of the violator.

Coordination of activities under HCFC phase-out and HFC phase-down plans

44. Noting that stage III of the HPMP and stage I of the country's Kigali HFC implementation plan (KIP) will be implemented simultaneously between 2024 and 2030, and include activities to strengthen the capacity in the country to service commercial refrigeration equipment, and of customs to control imports of controlled substances, the Secretariat sought to better understand how activities across the two projects would complement and not duplicate each other.

45. UNDP emphasized that many of the interventions under the KIP focus on sectors or subsectors that do not use HCFCs (i.e., firefighting, domestic refrigeration and MAC) or whose consumption is dominated by HFCs (i.e., commercial refrigeration). Technician training under the HPMP focuses on enabling technicians to gain expertise on refrigerant containment practices, best practices in servicing and installation, and procedures for recovery and reuse of refrigerants, which will allow technicians to apply to the certification scheme and contribute to Malaysia's efforts to contain refrigerants emissions. Training of commercial refrigeration technicians under the KIP would allow a higher level of specialized training, including by adding specific knowledge on the handling, installation and servicing of flammable refrigerants in the commercial refrigeration sector, particularly for standalone commercial refrigeration applications that are expected to convert to R-290, including at two enterprises that would be converted in the KIP. Accordingly, while both the HPMP and the KIP included activities to improve the capacity of technicians to service commercial refrigeration equipment, the former would focus more on condensing units, while the focus of the latter was primarily standalone commercial refrigeration equipment.

46. While refrigerant identifiers will be procured under both the HPMP and the KIP, under the former 10 identifiers will be provided to customs to update existing identifiers that cannot identify the gamut of new refrigerants in the market, while under the latter 16 identifiers will be provided to state enforcement officers, thereby ensuring that the provision of this equipment is complementary. Under the KIP, the training manual for customs officers will be updated, and three workshops to train 75 customs officers on the monitoring and import control of HFCs and their alternatives, and update customs training curricula to include HFC-related information (e.g., updated Harmonized System (HS) codes and quota system) organized. Under the HPMP, additional customs officers will be trained, based on the updated training manual; UNDP confirmed that the PMUs²⁰ under the respective projects will ensure the coordination of the training workshops. The Secretariat further notes with appreciation that customs capacity-building undertaken under the HPMP will also strengthen the capacity of the country to control imports of HFCs, including the provision of equipment to laboratories, and the development of a risk profile for imports of controlled substances and mapping of potential illicit trade risks. The schedule of phase-down commitments and funding tranches under stage I of the KIP and the proposed schedule of phase-out commitments and funding tranches under stage III of the HPMP are presented in annex I. Annex II presents the activities to be implemented simultaneously under the HPMP and the KIP.

Technical and cost-related issues

47. Funding for the servicing sector as originally submitted was based on the agreed cost-effectiveness for the servicing sector and on the country's 2022 HCFC consumption. In line with the decision in paragraph 32(b) of document UNEP/OzL.Pro/ExCom/ExCom/16/20, and based on the country's average 2021-2023 consumption of HCFC-22 (3,054.88 mt) and of HCFC-123 (30.27 mt), and including 3.80 mt of HCFC-141b used for flushing refrigerant circuits, the country was eligible for up to US \$14,826,965 for activities in the servicing sector, resulting in a reduction of US \$1,525,627 relative to the originally submitted proposal. To accommodate this level of eligible funding, the following adjustments were made:

- (a) Policies and regulations: rationalizing the costs related to the development and update of a compendium of policies and regulations, and for the implementation of bans, resulting in agreed costs of US \$170,000;
- (b) Equipment procurement for 64 ATCs: each ATC will be provided a basic refrigeration cycle trainer unit, a basic split A/C trainer unit, three closed cycle flushing machines, three non-HCFC/non-HFC flushing liquid, and three nitrogen flush kits; a basic condensing unit trainer unit would not be provided; and one center of excellence will be provided with 15 flushing kits, resulting in agreed costs of US \$4,166,294;
- (c) Adjusting the freight, demurrage and distribution costs for the equipment for RAC technicians, resulting in agreed costs of US \$2,298,909;
- (d) Technical assistance for RRR: adding an international coordinator technical advisor, a national expert on AC applications, and a national expert on refrigeration applications to provide technical assistance, resulting in agreed costs of US \$355,750;
- (e) Technical assistance for HCFC-123-based chillers: reducing the number of stakeholder consultations from seven to four, and rationalizing the cost to map the installed capacity of HCFC-123-based chillers and develop SOPs for best practices in servicing that equipment, resulting in agreed costs of US \$145,252; and
- (f) Awareness-raising: rationalizing the costs for the awareness-raising campaigns targeting

²⁰ Adjustments to the PMU under the HPMP to avoid duplication and ensure complementarity with the PMU under the KIP are described in paragraph 49 below.

owners of residential and small commercial equipment on the HCFC/HFC bans and phase-out, and for the workshops for large end-users, equipment designers and installers, and servicing technicians on low-GWP alternative RAC technologies, resulting in agreed costs of US \$625,000.

48. The second tranche of stage III includes the development of a national strategy for HCFC-123 chillers that may include HCFC-123 recycling/banks to cope with future demands, if needed. Noting that the working life of chillers can reach 15 years or more, and that 17 new HCFC-123 chillers had been procured before the 1 January 2020 ban but given delays due to the COVID-19 pandemic only delivered and installed in 2021 and 2022, it was agreed that UNDP would include an update on the progress in developing the national strategy as part of its progress report on the implementation of the second tranche.

PMU

49. In line with the reduction in funding for the servicing sector and corresponding adjustments to the activities undertaken, and given the simultaneous implementation of the HPMP and the KIP that will allow cost-efficiencies due to the joint operation of the respective PMUs, the costs for the PMU were adjusted as follows: project staff (US \$810,000), consultants (US \$65,000), meetings and travel (US \$148,500), and operational costs (US \$145,000). In addition, given that the reduction of 77 per cent of HCFC consumption will be met in 2028, in advance of the Montreal Protocol targets, and in order to minimize the administrative and reporting burden on the country, the Secretariat proposed that the last tranche of the HPMP be submitted in 2029, rather than in 2030 as originally submitted. This will allow the joint submission of verification reports under the KIP and the HPMP, resulting in agreed verification costs under the PMU of US \$8,000 (vice US \$24,000, as originally submitted). Accordingly, the agreed costs for the PMU are US \$1,156,500.

Total project cost

50. The total cost for stage III of the HPMP amounts to US \$15,983,465 to phase out 170.40 ODP tonnes (3,088.95 mt) of HCFCs, the country's average 2021-2023 HCFC consumption; an additional 87.27 ODP tonnes (1,622.51 mt) of HCFCs will be deducted from the country's remaining HCFC consumption eligible for funding, resulting in an overall cost-effectiveness of the project of US \$3.39/kg, as shown in table 6.

Table 6. Agreed cost of stage III of the HPMP for Malaysia

Activity	As submitted (US \$)	Agreed (US \$)	Phase-out (mt)	CE (US \$/kg)
Policies and regulations	210,000	170,000	3,088.95	4.80
Customs capacity-building	618,300	618,300		
Technician capacity-building	6,447,460	6,447,460		
Equipment procurement for 64 ATCs and 1 COE	5,784,850	4,166,294		
Equipment for RAC technicians	2,375,120	2,298,909		
Technical assistance for RRR	55,750	355,750		
Technical assistance for HCFC-123-based chillers	176,112	145,252		
Awareness-raising	685,000	625,000		
Project implementation and monitoring	1,681,000	1,156,500	0.00	n/a
Subtotal	18,033,592	15,983,465	3,088.95	5.17
Additional reduction from remaining consumption eligible for funding		n/a	1,622.51	n/a
Total		15,983,465	4,711.46	3.39

51. Funding under the first tranche was reduced to reflect the agreed changes in the eligible costs, including adjusting the costs for development of policies and regulations to US \$74,000; provision of basic training and assessment equipment to 32 ATCs, and beginning provision of equipment to one centre of excellence, resulting in adjusted costs of US \$2,083,147; as part of the technical assistance for RRR, adding three technical advisors, resulting in adjusted costs of US \$115,000; rationalizing the cost to map the

installed capacity of HCFC-123-based chillers, resulting in agreed costs of US \$65,000; and rationalizing the costs for the awareness-raising activities to US \$250,000 and for the PMU to US \$387,500, including project staff (US \$272,500), consultants (US \$15,000), meetings and travel (US \$51,000), operational costs (US \$45,000), and verification (US \$4,000), resulting in a total cost of US \$5,542,907 as summarized in table 7.

Table 7. Agreed costs for activities under the first tranche of stage III of the HPMP for Malaysia

Project component	Cost (US \$)
Policies and regulations	74,000
Customs capacity-building*	320,800
Technician capacity-building*	2,247,460
Equipment procurement for 32 ATCs and 1 COEs	2,083,147
Technical assistance for RRR	115,000
Technical assistance for HCFC-123-based chillers	65,000
Awareness-raising	250,000
Project implementation and monitoring	387,500
Total	5,542,907

* No change from the original submission.

Impact on the climate

52. The activities proposed in the servicing sector, which include better containment of refrigerants through training and provision of equipment, will reduce the amount of HCFC-22 and HCFC-123 used for RAC servicing. Each kilogram of HCFC-22 and HCFC-123 not emitted due to better refrigeration practices results in the savings of approximately 1.81 CO₂-equivalent tonnes and 0.08 CO₂-equivalent tonnes, respectively. A calculation of the impact on the climate was provided in the HPMP. The activities planned by Malaysia, including its efforts to promote low-GWP alternatives, as well as refrigerant RRR, indicate that the implementation of the HPMP will reduce the emission of refrigerants into the atmosphere, resulting in climate benefits.

Sustainability of the HCFC phase-out and assessment of risks

53. Notwithstanding the continued demand for HCFC-22 to service existing equipment in the country, the Secretariat considers the risks to the sustainability of the HCFC phase-out to be low given the Malaysia's well-functioning regulatory framework and licensing and quota system; well-functioning system to train, certify and register RAC technicians, which will be further strengthened under stage III; the 17,826 technicians already certified and registered in the country that will be complemented by training and certification of an additional 10,000 technicians under the project; and the activities to strengthen the country's RRR system and raise awareness of the HCFC phase-out. In addition, the energy efficiency measures implemented by the country are expected to both reduce demand for the use of older, inefficient RAC equipment, and hence reduce the associated servicing demand, and to accelerate the retirement of such equipment. The joint implementation of the country's KIP will help minimize the risk that old, inefficient HCFC-22-based equipment is replaced by high-GWP-based equipment. The Secretariat further notes with appreciation that there will be benefits to both the HCFC phase-out and HFC phase-down with the implementation of the awareness-raising activities and with the activities to strengthen servicing practices of RAC technicians servicing room AC, light commercial and standalone commercial refrigeration units given that such equipment is both HCFC-22 and HFC-based.

54. Malaysia had allowed two narrow exceptions to previously implemented bans: the 1 January 2023 ban on HCFC-141b except the import of the substance for use in the solvent sector, in line with decision 77/46, and on the import of HCFC-based equipment for sensitive sectors, noting that to date the

latter exception has never been used. Both exceptions will be closed under stage III, the former by 31 December 2025 and the latter by 31 December 2027.

2024-2026 draft business plan of the Multilateral Fund

55. UNDP is requesting US \$15,983,465, plus agency support costs, for the implementation of stage III of the HPMP for Malaysia. The total requested value of US \$5,930,910, including agency support costs for the period of 2024–2026, is US \$6,957,240 below the amount in the business plan.

Draft Agreement

56. A draft Agreement between the Government of Malaysia and the Executive Committee for stage III of the HPMP is contained in annex III to the present document.

RECOMMENDATION

57. The Executive Committee may wish to consider:

- (a) Approving, in principle, stage III of the HCFC phase-out management plan (HPMP) for Malaysia for the period from 2024 to 2030 for the complete phase-out of HCFC consumption, in the amount of US \$15,983,465, plus agency support costs of US \$1,118,843, for UNDP, on the understanding that no more funding from the Multilateral Fund will be provided for the phase-out of HCFCs;
- (b) Noting the commitment of the Government of Malaysia to completely phase out HCFCs by 1 January 2030, and that HCFCs will not be imported after that date, except for those allowed for a servicing tail between 2030 and 2040, where required, consistent with the provisions of the Montreal Protocol;
- (c) Further noting the commitment of the Government of Malaysia to ban the import of HCFC-141b for all uses by 31 December 2025, and to ban the import of HCFC-based equipment for sensitive sectors by 31 December 2027;
- (d) Deducting 257.67 ODP tonnes of HCFCs from the remaining HCFC consumption eligible for funding;
- (e) Approving the draft Agreement between the Government of Malaysia and the Executive Committee for the reduction in consumption of HCFCs, in accordance with stage III of the HPMP, contained in annex III to the present document;
- (f) That, to allow for consideration of the final tranche of its HPMP, the Government of Malaysia should submit:
 - (i) A detailed description of the regulatory and policy framework in place to implement measures to ensure that HCFC consumption was in compliance with paragraph 8 ter(e)(i) of Article 5 of the Montreal Protocol for the period 2030-2040;
 - (ii) If Malaysia were intending to have consumption during the period 2030–2040, in line with paragraph 8 ter(e)(i) of Article 5 of the Montreal Protocol, proposed modifications to its Agreement with the Executive Committee covering the period beyond 2030; and

- (g) Approving the first tranche of stage III of the HPMP for Malaysia, and the corresponding tranche implementation plan, in the amount of US \$5,542,907, plus agency support costs of US \$388,003 for UNDP.

Annex I

**SCHEDULE OF HFC PHASE-DOWN AND HCFC PHASE-OUT COMMITMENTS AND FUNDING TRANCHES
UNDER THE KIGALI HFC IMPLEMENTATION PLAN AND THE HCFC PHASE-OUT MANAGEMENT PLAN FOR MALAYSIA**

Kigali HFC implementation plan from 2024 to 2029 (stage I)

Row	Particulars	2024	2025	2026	2027	2028	2029	Total
1.1	Montreal Protocol reduction schedule of Annex F substances (CO ₂ -eq tonnes)	26,703,716	26,703,716	26,703,716	26,703,716	26,703,716	24,033,345	n/a
1.2	Maximum allowable total consumption of Annex F substances (CO ₂ -eq tonnes)	26,703,716	26,703,716	26,703,716	26,703,716	26,703,716	24,033,345	n/a
2.1	Lead IA (World Bank) agreed funding (US \$)	0	3,246,290	0	2,336,655	0	649,258	6,232,203
2.2	Support costs for Lead IA (US \$)	0	227,240	0	163,566	0	45,448	436,254
3.1	Total agreed funding (US \$)	0	3,246,290	0	2,336,655	0	649,258	6,232,203
3.2	Total support costs (US \$)	0	227,240	0	163,566	0	45,448	436,254
3.3	Total agreed costs (US \$)	0	3,473,530	0	2,500,221	0	694,706	6,668,457

HCFC phase-out management plan from 2024 to 2030 (stage III)

Row	Particulars	2024	2025	2026	2027	2028	2029	2030	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	335.24	167.62	167.62	167.62	167.62	167.62	0	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	294.63	167.62	167.62	167.62	120.00	120.00	0	n/a
2.1	Lead IA (UNDP) agreed funding (US \$)	5,542,907	0	0	8,605,558	0	1,835,000	0	15,983,465
2.2	Support costs for Lead IA (US \$)	388,003	0	0	602,390	0	128,450	0	1,118,843
3.1	Total agreed funding (US \$)	5,542,907	0	0	8,605,558	0	1,835,000	0	15,983,465
3.2	Total support costs (US \$)	388,003	0	0	602,390	0	128,450	0	1,118,843
3.3	Total agreed costs (US \$)	5,930,910	0	0	9,207,948	0	1,963,450	0	17,102,308

Annex II

**SIMULTANEOUS IMPLEMENTATION OF THE HCFC PHASE-OUT MANAGEMENT PLAN
AND THE KIGALI HFC IMPLEMENTATION PLAN IN MALAYSIA**

Category of activity	Activity	HCFC phase-out management plan (HPMP) Stage III		Kigali HFC implementation plan (KIP) Stage I	
		Details	Cost (US \$)	Details	Cost (US \$)
Investment activities	Commercial refrigeration			• Zun Utara and Berjaya	373,850
	MAC pilot project			• Proton	1,087,950
Regulatory framework	Impact assessments	<ul style="list-style-type: none"> • Consultations and issuance of HCFC bans • Compendium of HCFC/HFC regulations 	170,000	• Studies for and issuance of HFC bans	200,000
	Green procurement			• Feasibility studies and plan development	235,000
	Customs and capacity-building	<ul style="list-style-type: none"> • Online platform for customs officers • Training of 400 customs and 350 enforcement officers • Risk profile manual of controlled substances • Coordination and bilateral meetings • Equipment and training to laboratories/enforcement officers to strengthen identification capacities (includes five refrigerant identifiers) 	618,300	<ul style="list-style-type: none"> • Update training manual for customs • Training of customs officers • Sixteen refrigerant identifiers • SOPs for customs 	180,400
Capacity-building	MAC servicing, public transport			• Refrigerant management plan, training of train service contractors, and a study	100,000
	MAC servicing, other			• Develop training modules, revise standards and curriculum, train 100 trainers, and train and certify 2,540 technicians	1,037,000
				• Equipment to 20 ATCs and tools to 2,540 technicians	2,326,000
	Transport refrigeration			• Support to assembly sector	28,080
	RAC technician training	<ul style="list-style-type: none"> • Revision of technician training manuals • Training of 10,000 technicians • Harmonization of national certification programme and policies, update of online certification system, and certification of 500 technicians 	6,447,460	<ul style="list-style-type: none"> • Develop training modules and revise curriculum • Train and certify 2,200 commercial and domestic refrigeration servicing technicians and 60 trainers 	974,600

Category of activity	Activity	HCFC phase-out management plan (HPMP) Stage III		Kigali HFC implementation plan (KIP) Stage I	
		Details	Cost (US \$)	Details	Cost (US \$)
				<ul style="list-style-type: none"> • Procurement of basic training and assessment equipment for 64 ATCs, toolkits to 23 ATCs, and equipment to three centres of excellence • Provision of servicing tools to 2,000 technicians 	6,465,203
	Recovery and recycling	<ul style="list-style-type: none"> • Strengthen four reclamation centres by providing technical assistance and training • Technical assistance 	355,750	<ul style="list-style-type: none"> • Improve RRR capacities of technicians, service shops and cooling equipment owners, including for recovery practices, by strengthening regulations and conducting an assessment 	65,000
Technical assistance*	Technical assistance for chillers	<ul style="list-style-type: none"> • Assessment and strategy development for HCFC-123-based chillers 	145,252		
Outreach	Awareness-raising	<ul style="list-style-type: none"> • Campaign on bans for Importers and distributors • Campaign on alternative refrigerants for end-users • Campaign on application of alternative technologies for distributors, service shops, and technicians • RRR campaign for cooling sector 	625,000	<ul style="list-style-type: none"> • Workshops and study tours for industrial and other sectors to address challenges and support those not otherwise covered under the HPMP 	380,000
PMU	Project coordination		1,156,500		765,835
Total			15,983,465		9,275,115

* At its 93rd meeting, the Executive Committee also approved the preparation of a pilot project on energy efficiency in the standalone commercial refrigeration sector under decision 91/65 for US \$30,000, plus agency support costs, for the World Bank (decision 93/36).

Annex III

DRAFT AGREEMENT BETWEEN THE GOVERNMENT OF MALAYSIA AND THE EXECUTIVE COMMITTEE OF THE MULTILATERAL FUND FOR THE REDUCTION IN CONSUMPTION OF HYDROCHLOROFLUOROCARBONS IN ACCORDANCE WITH STAGE III OF THE HCFC PHASE-OUT MANAGEMENT PLAN

Purpose

1. This Agreement represents the understanding of the Government of Malaysia (the “Country”) and the Executive Committee with respect to the reduction of controlled use of the ozone-depleting substances (ODS) set out in Appendix 1-A (“The Substances”) to a sustained level of zero ODP tonnes by 1 January 2030 in compliance with Montreal Protocol schedule.
2. The Country agrees to meet the annual consumption limits of the Substances as set out in row 1.2 of Appendix 2-A (“The Targets, and Funding”) in this Agreement as well as in the Montreal Protocol reduction schedule for all Substances mentioned in Appendix 1-A. The Country accepts that, by its acceptance of this Agreement and performance by the Executive Committee of its funding obligations described in paragraph 3, it is precluded from applying for or receiving further funding from the Multilateral Fund in respect to any consumption of the Substances that exceeds the level defined in row 1.2 of Appendix 2-A as the final reduction step under this Agreement for all of the Substances specified in Appendix 1-A, and in respect to any consumption of each of the Substances that exceeds the level defined in rows 4.1.3, 4.2.3, 4.3.3, 4.4.3, 4.5.3, 4.6.3, and 4.7.3 (remaining consumption eligible for funding).
3. Subject to compliance by the Country with its obligations set out in this Agreement, the Executive Committee agrees, in principle, to provide the funding set out in row 3.1 of Appendix 2-A to the Country. The Executive Committee will, in principle, provide this funding at the Executive Committee meetings specified in Appendix 3-A (“Funding Approval Schedule”).
4. The Country agrees to implement this Agreement in accordance with stage III of the HCFC phase-out management plan approved (“the Plan”). In accordance with subparagraph 5(b) of this Agreement, the Country will accept independent verification of the achievement of the annual consumption limits of the Substances as set out in row 1.2 of Appendix 2-A of this Agreement. The aforementioned verification will be commissioned by the relevant bilateral or implementing agency.

Conditions for funding release

5. The Executive Committee will only provide the Funding in accordance with the Funding Approval Schedule when the Country satisfies the following conditions at least eight weeks in advance of the applicable Executive Committee meeting set out in the Funding Approval Schedule:
 - (a) That the Country has met the Targets set out in row 1.2 of Appendix 2-A for all relevant years. Relevant years are all years since the year in which this Agreement was approved. Years for which there are no due country programme implementation reports at the date of the Executive Committee meeting at which the funding request is being presented are exempted;
 - (b) That the meeting of these Targets has been independently verified for all relevant years, unless the Executive Committee decided that such verification would not be required;
 - (c) That the Country had submitted a Tranche Implementation Report in the form of Appendix 4-A (“Format of Tranche Implementation Reports and Plans”) covering each

previous calendar year; that it had achieved a significant level of implementation of activities initiated with previously approved tranches; and that the rate of disbursement of funding available from the previously approved tranche was more than 20 per cent; and

- (d) That the Country has submitted a Tranche Implementation Plan in the form of Appendix 4-A covering each calendar year until and including the year for which the funding schedule foresees the submission of the next tranche or, in case of the final tranche, until completion of all activities foreseen.

Monitoring

6. The Country will ensure that it conducts accurate monitoring of its activities under this Agreement. The institutions set out in Appendix 5-A (“Monitoring Institutions and Roles”) will monitor and report on implementation of the activities in the previous Tranche Implementation Plans in accordance with their roles and responsibilities set out in the same Appendix.

Flexibility in the reallocation of funds

7. The Executive Committee agrees that the Country may have the flexibility to reallocate part or all of the approved funds, according to the evolving circumstances to achieve the smoothest reduction of consumption and phase-out of the Substances specified in Appendix 1-A:

- (a) Reallocations categorized as major changes must be documented in advance either in a Tranche Implementation Plan as foreseen in subparagraph 5(d) above, or as a revision to an existing Tranche Implementation Plan to be submitted eight weeks prior to any meeting of the Executive Committee, for its approval. Major changes would relate to:
 - (i) Issues potentially concerning the rules and policies of the Multilateral Fund;
 - (ii) Changes which would modify any clause of this Agreement;
 - (iii) Changes in the annual levels of funding allocated to individual bilateral or implementing agencies for the different tranches;
 - (iv) Provision of funding for activities not included in the current endorsed Tranche Implementation Plan, or removal of an activity in the Tranche Implementation Plan, with a cost greater than 30 per cent of the total cost of the last approved tranche;
 - (v) Changes in alternative technologies, on the understanding that any submission for such a request would identify the associated incremental costs, the potential impact to the climate, and any differences in ODP tonnes to be phased out if applicable, as well as confirm that the Country agrees that potential savings related to the change of technology would decrease the overall funding level under this Agreement accordingly;
- (b) Reallocations not categorized as major changes may be incorporated in the approved Tranche Implementation Plan, under implementation at the time, and reported to the Executive Committee in the subsequent Tranche Implementation Report;
- (c) The Country agrees, in cases where HFC technologies have been chosen as an alternative to HCFCs, and taking into account national circumstances related to health and safety: to monitor the availability of substitutes and alternatives that further minimize impacts on the

climate; to consider, in the review of regulations standards and incentives adequate provisions that encourage introduction of such alternatives; and to consider the potential for adoption of cost-effective alternatives that minimize the climate impact in the implementation of the Plan, as appropriate, and inform the Executive Committee on the progress accordingly in tranche implementation reports; and

- (d) Any remaining funds held by the bilateral or implementing agencies or the Country under the Plan will be returned to the Multilateral Fund upon completion of the last tranche foreseen under this Agreement.

Considerations for the refrigeration servicing sector

8. Specific attention will be paid to the execution of the activities in the refrigeration servicing sector included in the Plan, in particular:

- (a) The Country would use the flexibility available under this Agreement to address specific needs that might arise during project implementation; and
- (b) The Country and relevant bilateral and/or implementing agencies would take into consideration relevant decisions on the refrigeration servicing sector during the implementation of the Plan.

Bilateral and implementing agencies

9. The Country agrees to assume overall responsibility for the management and implementation of this Agreement and of all activities undertaken by it or on its behalf to fulfil the obligations under this Agreement. UNDP has agreed to be the lead implementing agency (the “Lead IA”) in respect of the Country’s activities under this Agreement. The Country agrees to evaluations, which might be carried out under the monitoring and evaluation work programmes of the Multilateral Fund or under the evaluation programme of the Lead IA taking part in this Agreement.

10. The Lead IA will be responsible for ensuring coordinated planning, implementation and reporting of all activities under this Agreement, including but not limited to independent verification as per subparagraph 5(b). The role of the Lead IA is contained in Appendix 6-A. The Executive Committee agrees, in principle, to provide the Lead IA with the fees set out in row 2.2 of Appendix 2-A.

Non-compliance with the Agreement

11. Should the Country, for any reason, not meet the Targets for the elimination of the Substances set out in row 1.2 of Appendix 2-A or otherwise does not comply with this Agreement, then the Country agrees that it will not be entitled to the Funding in accordance with the Funding Approval Schedule. At the discretion of the Executive Committee, funding will be reinstated according to a revised Funding Approval Schedule determined by the Executive Committee after the Country has demonstrated that it has satisfied all of its obligations that were due to be met prior to receipt of the next tranche of funding under the Funding Approval Schedule. The Country acknowledges that the Executive Committee may reduce the amount of the Funding by the amount set out in Appendix 7-A (“Reductions in Funding for Failure to Comply”) in respect of each ODP kg of reductions in consumption not achieved in any one year. The Executive Committee will discuss each specific case in which the Country did not comply with this Agreement, and take related decisions. Once decisions are taken, the specific case of non-compliance with this Agreement will not be an impediment for the provision of funding for future tranches as per paragraph 5 above.

12. The Funding of this Agreement will not be modified on the basis of any future Executive Committee decisions that may affect the funding of any other consumption sector projects or any other related activities in the Country.

13. The Country will comply with any reasonable request of the Executive Committee and the Lead IA to facilitate implementation of this Agreement. In particular, it will provide the Lead IA with access to the information necessary to verify compliance with this Agreement.

Date of completion

14. The completion of the Plan and the associated Agreement will take place at the end of the year following the last year for which a maximum allowable total consumption level has been specified in Appendix 2-A. Should at that time there still be activities that are outstanding, and which were foreseen in the last Tranche Implementation Plan and its subsequent revisions as per subparagraph 5(d) and paragraph 7, the completion of the Plan will be delayed until the end of the year following the implementation of the remaining activities. The reporting requirements as per subparagraphs 1(a), 1(b), 1(d), and 1(e) of Appendix 4-A will continue until the time of the completion of the Plan unless otherwise specified by the Executive Committee.

Validity

15. All of the conditions set out in this Agreement are undertaken solely within the context of the Montreal Protocol and as specified in this Agreement. All terms used in this Agreement have the meaning ascribed to them in the Montreal Protocol unless otherwise defined herein.

16. This Agreement may be modified or terminated only by mutual written agreement between the Government of the Country and the Executive Committee of the Multilateral Fund.

APPENDICES

APPENDIX 1-A: THE SUBSTANCES

Substance	Annex	Group	Starting point for aggregate reductions in consumption (ODP tonnes)
HCFC-123	C	I	1.13
HCFC-141	C	I	0.94
HCFC-141b	C	I	162.54
HCFC-142b	C	I	0.79
HCFC-21	C	I	0.74
HCFC-22	C	I	349.54
HCFC-225	C	I	0.08
Total			515.76

APPENDIX 2-A: THE TARGETS, AND FUNDING

Row	Particulars	2024	2025	2026	2027	2028	2029	2030	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	335.24	167.62	167.62	167.62	167.62	167.62	0	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	294.63	167.62	167.62	167.62	120	120	0	n/a
2.1	Lead IA (UNDP) agreed funding (US \$)	5,542,907	0	0	8,605,558	0	1,835,000	0	15,983,465
2.2	Support costs for Lead IA (US \$)	388,003	0	0	602,390	0	128,450	0	1,118,843

Row	Particulars	2024	2025	2026	2027	2028	2029	2030	Total
3.1	Total agreed funding (US \$)	5,542,907	0	0	8,605,558	0	1,835,000	0	15,983,465
3.2	Total support costs (US \$)	388,003	0	0	602,390	0	128,450	0	1,118,843
3.3	Total agreed costs (US \$)	5,930,910	0	0	9,207,948	0	1,963,450	0	17,102,308
4.1.1	Total phase-out of HCFC-123 agreed to be achieved under this Agreement (ODP tonnes)								1.13
4.1.2	Phase-out of HCFC-123 to be achieved in previously approved projects (ODP tonnes)								0
4.1.3	Remaining eligible consumption for HCFC-123 (ODP tonnes)								0
4.2.1	Total phase-out of HCFC-141 agreed to be achieved under this Agreement (ODP tonnes)								0
4.2.2	Phase-out of HCFC-141 to be achieved in previously approved projects (ODP tonnes)								0.94
4.2.3	Remaining eligible consumption for HCFC-141 (ODP tonnes)								0
4.3.1	Total phase-out of HCFC-141b agreed to be achieved under this Agreement (ODP tonnes)								1.00
4.3.2	Phase-out of HCFC-141b to be achieved in previously approved projects (ODP tonnes)								161.54
4.3.3	Remaining eligible consumption for HCFC-141b (ODP tonnes)								0
4.4.1	Total phase-out of HCFC-142b agreed to be achieved under this Agreement (ODP tonnes)								0
4.4.2	Phase-out of HCFC-142b to be achieved in previously approved projects (ODP tonnes)								0.79
4.4.3	Remaining eligible consumption for HCFC-142b (ODP tonnes)								0
4.5.1	Total phase-out of HCFC-21 agreed to be achieved under this Agreement (ODP tonnes)								0
4.5.2	Phase-out of HCFC-21 to be achieved in previously approved projects (ODP tonnes)								0.74
4.5.3	Remaining eligible consumption for HCFC-21 (ODP tonnes)								0
4.6.1	Total phase-out of HCFC-22 agreed to be achieved under this Agreement (ODP tonnes)								255.46
4.6.2	Phase-out of HCFC-22 to be achieved in previously approved projects (ODP tonnes)								94.08
4.6.3	Remaining eligible consumption for HCFC-22 (ODP tonnes)								0
4.7.1	Total phase-out of HCFC-225 agreed to be achieved under this Agreement (ODP tonnes)								0.08
4.7.2	Phase-out of HCFC-225 to be achieved in previously approved projects (ODP tonnes)								0
4.7.3	Remaining eligible consumption for HCFC-225 (ODP tonnes)								0

*Date of completion of stage II as per stage II Agreement: 31 December 2023

APPENDIX 3-A: FUNDING APPROVAL SCHEDULE

1. Funding for the future tranches will be considered for approval at the first meeting of the year specified in Appendix 2-A.

APPENDIX 4-A: FORMAT OF TRANCHE IMPLEMENTATION REPORTS AND PLANS

1. The submission of the Tranche Implementation Report and Plans for each tranche request will consist of five parts:

- (a) A narrative report, with data provided by tranche, describing the progress achieved since the previous report, reflecting the situation of the Country in regard to phase out of the Substances, how the different activities contribute to it, and how they relate to each other. The report should include the amount of ODS phased out as a direct result from the implementation of activities, by substance, and the alternative technology used and the related phase-in of alternatives, to allow the Secretariat to provide to the Executive Committee information about the resulting change in climate relevant emissions. The report should further highlight successes, experiences, and challenges related to the different activities included in the Plan, reflecting any changes in the circumstances in the Country, and providing other relevant information. The report should also include information on and justification for any changes vis-à-vis the previously submitted Tranche Implementation Plan(s), such as delays, uses of the flexibility for reallocation of funds during implementation of a tranche, as provided for in paragraph 7 of this Agreement, or other changes;
- (b) An independent verification report of the Plan results and the consumption of the Substances, as per subparagraph 5(b) of the Agreement. If not decided otherwise by the Executive Committee, such a verification has to be provided together with each tranche request and will have to provide verification of the consumption for all relevant years as

specified in subparagraph 5(a) of the Agreement for which a verification report has not yet been acknowledged by the Committee;

- (c) A written description of the activities to be undertaken during the period covered by the requested tranche, highlighting implementation milestones, the time of completion and the interdependence of the activities, and taking into account experiences made and progress achieved in the implementation of earlier tranches; the data in the plan will be provided by calendar year. The description should also include a reference to the overall Plan and progress achieved, as well as any possible changes to the overall Plan that are foreseen. The description should also specify and explain in detail such changes to the overall plan. This description of future activities can be submitted as a part of the same document as the narrative report under subparagraph (b) above;
 - (d) A set of quantitative information for all Tranche Implementation Reports and Plans, submitted through an online database; and
 - (e) An Executive Summary of about five paragraphs, summarizing the information of the above subparagraphs 1(a) to 1(d).
2. In the event that in a particular year two stages of the Plan are being implemented in parallel, the following considerations should be taken in preparing the Tranche Implementation Reports and Plans:
- (a) The Tranche Implementation Reports and Plans referred to as part of this Agreement, will exclusively refer to activities and funds covered by this Agreement; and
 - (b) If the stages under implementation have different HCFC consumption targets under Appendix 2-A of each Agreement in a particular year, the lower HCFC consumption target will be used as reference for compliance with these Agreements and will be the basis for the independent verification.

APPENDIX 5-A: MONITORING INSTITUTIONS AND ROLES

1. The monitoring process will be managed by the Department of Environment (“DOE”) through the national ozone unit with the assistance of the Lead IA.
2. Consumption will be monitored and determined based on official import and export data for the substances recorded by relevant Government departments.
3. The DOE shall compile and report the following data and information on an annual basis on or before the relevant due dates:
- (a) Annual reports on consumption of the substances to be submitted to the Ozone Secretariat; and
 - (b) Annual reports on progress of implementation of the Plan to be submitted to the Executive Committee of the Multilateral Fund.
4. Consumption will be monitored annually throughout the implementation of the Plan and accordingly reflected in the progress report on the implementation of the Plan.
5. The DOE shall endorse the final report and the Lead IA shall submit the same to the relevant meeting of the Executive Committee along with the annual implementation plan and reports.

APPENDIX 6-A: ROLE OF THE LEAD IMPLEMENTING AGENCY

1. The Lead IA will be responsible for a range of activities, including at least the following:
 - (a) Ensuring performance and financial verification in accordance with this Agreement and with its specific internal procedures and requirements as set out in the Country's Plan;
 - (b) Assisting the Country in preparation of the Tranche Implementation Reports and Plans as per Appendix 4-A;
 - (c) Providing independent verification to the Executive Committee that the Targets have been met and associated tranche activities have been completed as indicated in the Tranche Implementation Plan consistent with Appendix 4-A;
 - (d) Ensuring that the experiences and progress is reflected in updates of the overall plan and in future Tranche Implementation Plans consistent with subparagraphs 1(c) and 1(d) of Appendix 4-A;
 - (e) Fulfilling the reporting requirements for the Tranche Implementation Reports and Plans and the overall plan as specified in Appendix 4-A for submission to the Executive Committee;
 - (f) In the event that the last funding tranche is requested one or more years prior to the last year for which a consumption target had been established, annual tranche implementation reports and, where applicable, verification reports on the current stage of the Plan should be submitted until all activities foreseen had been completed and HCFC consumption targets had been met;
 - (g) Ensuring that appropriate independent technical experts carry out the technical reviews;
 - (h) Carrying out required supervision missions;
 - (i) Ensuring the presence of an operating mechanism to allow effective, transparent implementation of the Tranche Implementation Plan and accurate data reporting;
 - (j) In case of reductions in funding for failure to comply in accordance with paragraph 11 of the Agreement, to determine, in consultation with the Country, the allocation of the reductions to the different budget items and to the funding of the Lead IA;
 - (k) Ensuring that disbursements made to the Country are based on the use of the indicators;
 - (l) Providing assistance with policy, management and technical support when required; and
 - (m) Timely releasing funds to the Country/participating enterprises for completing the activities related to the project.

2. After consultation with the Country and taking into account any views expressed, the Lead IA will select and mandate an independent entity to carry out the verification of the Plan's results and the consumption of the Substances mentioned in Appendix 1-A, as per subparagraph 5(b) of the Agreement and subparagraph 1(b) of Appendix 4-A.

APPENDIX 7-A: REDUCTIONS IN FUNDING FOR FAILURE TO COMPLY

1. In accordance with paragraph 11 of the Agreement, the amount of funding provided may be reduced by US \$140.41 per ODP kg of consumption beyond the level defined in row 1.2 of Appendix 2-A for each year in which the target specified in row 1.2 of Appendix 2-A has not been met, on the understanding that the maximum funding reduction would not exceed the funding level of the tranche being requested. Additional measures might be considered in cases where non-compliance extends for two consecutive years.

2. In the event that the penalty needs to be applied for a year in which there are two Agreements in force (two stages of the Plan being implemented in parallel) with different penalty levels, the application of the penalty will be determined on a case-by-case basis taking into consideration the specific sectors that lead to the non-compliance. If it is not possible to determine a sector, or both stages are addressing the same sector, the penalty level to be applied would be the largest.