

**United Nations
Environment
Programme**Distr.
GENERALUNEP/OzL.Pro/ExCom/95/47
14 November 2024

ORIGINAL: ENGLISH



EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Ninety-fifth Meeting
Montreal, 4-8 December 2024
Item 9(d) of the provisional agenda¹

PROJECT PROPOSALS: CHINA

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

Phase-out

HCFC phase-out management plan (stage II):

UNDP, UNEP, UNIDO, World Bank,
Austria, Germany, Italy, and Japan

- | | | |
|--|-------------------------|--------------------------|
| • Extruded polystyrene foam sector plan – seventh tranche | UNIDO and Germany | Individual consideration |
| • Polyurethane foam sector plan – fifth tranche | World Bank | Individual consideration |
| • Refrigeration and air-conditioning servicing sector plan and the national enabling programme – seventh tranche | UNEP, Germany and Japan | Individual consideration |

¹ UNEP/OzL.Pro/ExCom/95/1

Overarching strategy for stage II of the HCFC phase-out management plan for China

Note by the Secretariat

Background

- At its 76th and 77th meetings, the Executive Committee approved stage II of the HCFC phase-out management plan (HPMP) for China with associated sectors plans, and at the 79th meeting, the Agreement with the Government of China for the implementation of stage II of the HPMP was approved.
- The HCFC consumption limits and targeted phase-out amounts associated with the six sector plans for the period 2016-2026, as per the Agreement for stage II of the HPMP approved at the 79th meeting, are shown in table 1.

Table 1. HCFC consumption limits and targeted phase-out by sector for stage II of the HPMP for China as per the Agreement approved at the 79th meeting (ODP tonnes)

Maximum allowable consumption							
Sector	2016-2017	2018-2019	2020-2021	2022	2023-2024	2025	2026
National	16,978.9	15,048.1	**11,772.0	n/a	n/a	n/a	n/a
XPS foam*	2,286.0	2,032.0	1,397.0	1,397.0	762.0	165.0	0.0
PU foam*	4,449.6	3,774.5	2,965.7	2,965.7	1,078.4	330.0	0.0
ICR*	2,162.5	2,042.4	**1,609.9	n/a	n/a	n/a	n/a
RAC*	3,697.7	2,876.0	**2,259.7	n/a	n/a	n/a	n/a
Solvent	455.2	395.4	321.2	321.2	148.3	55.0	0.0
Servicing*	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Targeted phase-out							
Sector	2018	2020	2023	2025	2026	Total	Reduction from baseline (%)
XPS foam*	254.0	635.0	635.0	597.0	165.0	2,286	100 in 2026
PU foam*	675.1	808.8	1,887.3	748.4	330.0	4,449.6	100 in 2026
ICR*	120.1	432.5	n/a	n/a	n/a	552.6	33 in 2020
RAC*	821.7	616.3	n/a	n/a	n/a	1,438	45 in 2020
Solvent	59.8	74.2	172.9	93.3	55.0	455.2	100 in 2026
Servicing*	n/a	734.0	n/a	n/a	n/a	734.0	n/a
Total	1,930.7	3,300.8	2,695.2	1,438.7	550.0	9,915.4	

* XPS = extruded polystyrene; PU = polyurethane; ICR = industrial and commercial refrigeration and air-conditioning; RAC = room air-conditioning manufacturing and heat pump water heaters; servicing = refrigeration and air-conditioning servicing and the national enabling programme

** National maximum allowable consumption for 2020 only; for the 2021-2026 period, it was expected to be determined at the time of submission of stage III of the HPMP.

- All second tranche requests except that for the polyurethane (PU) foam sector plan were approved at the 80th and 81st meetings. At the 82nd and 83rd meetings, consideration of all subsequent tranche requests was deferred to the 84th meeting. Details on the consideration of these funding tranches and decisions taken by the Executive Committee are included in annex I to the present document.
- At the 84th meeting, upon consideration of all stage II funding tranche requests for sector plans submitted by the relevant bilateral and implementing agencies on behalf of the Government of China, the Executive Committee decided *inter alia* (decision 84/69(a)):

- To request the relevant bilateral and implementing agencies, on behalf of the Government of China, to submit, at the 85th meeting, the 2020 funding tranche requests for the PU foam, extruded polystyrene (XPS) foam, industrial and commercial refrigeration and air-conditioning (ICR) and solvent sector plans of stage II of the HPMP;

- (ii) To approve the revised Appendix 2-A, “The Targets and Funding,” of the Agreement between the Government of China and the Executive Committee for stage II of the HPMP approved at the 79th meeting, as contained in Annex XXII to the report of the 84th meeting (document UNEP/OzL.Pro/ExCom/84/75), to reflect the revised maximum allowable total consumption of HCFCs in row 1.2 and the revised total funding in rows 3.1, 3.2 and 3.3 and the sector funding and support costs;
- (iii) To request the Government of China, through the relevant bilateral and implementing agencies, to submit, no later than eight weeks prior to the 86th meeting, a revised plan of action that included related activities and information on the technology selected, and associated funding tranches to extend through 2026 stage II of the room air-conditioning manufacturing and heat pump water heaters (RAC), ICR, and refrigeration servicing sectors and enabling programme and, for the RAC and ICR sector plans, the maximum allowable sectoral consumption levels of HCFC as described in rows 1.3.1 and 1.3.4;
- (iv) Also to request the Government of China, through the relevant bilateral and implementing agencies, to submit, at the 86th meeting, figures for potential revisions to Appendix 2-A for:
 - a. Row 1.2 specifying the maximum allowable total consumption of HCFCs in 2021-2026 to reflect the information under sub-paragraph (a)(iii) above;
 - b. The XPS foam, PU foam and solvent sector funding tranches for 2021-2026 in rows 2.2.1 to 2.2.4, 2.3.1 to 2.3.2 and 2.6.1 to 2.6.2, respectively;
 - c. Tonnages associated with lines 4.1.1 to 4.6.3 to reflect the information in sub-paragraph (a)(iii) above;
- (v) Further to request the Government of China to update the information on necessary revisions to reflect the present decision for the approved XPS foam, PU foam and solvent sector plans;
- (vi) To approve US \$1,000,000, plus agency support costs of US \$120,000, for UNEP, for the refrigeration and air-conditioning servicing sector and enabling programme, consistent with the revised Appendix 2-A referred to in sub-paragraph (a)(ii) above; and
- (vii) To request UNDP as the lead implementing agency of the overall stage II of the HPMP, on behalf of the Government of China, to submit, at the 86th meeting, a draft revised Agreement between the Government of China and the Executive Committee reflecting only the relevant outcomes approved at the 84th meeting or those relevant to sub-paragraphs (a)(iii) and (a)(iv) above, and the revised plan of action for the RAC, ICR and refrigeration and air-conditioning servicing sectors and enabling programme also due for submission at the 86th meeting.

5. At the 85th meeting, the Executive Committee approved the third tranches of the XPS foam, ICR, and solvent sector plans, as well as the second tranche of the PU foam sector plan that had been submitted prior to adoption of decision 84/69 but had been deferred.

6. At the 86th meeting, the implementing agencies submitted the revised plans of action for all sectors under stage II, addressing all elements of decision 84/69, including HCFC phase-out targets from 2021 to 2026, related activities, information on selected technologies, associated funding tranches, and a draft revised Agreement. The Executive Committee noted the revised sector plans and approved the revised Agreement for stage II of the HPMP (decision 86/34).

7. The revised HCFC consumption limits and targeted phase-out amounts associated with the six sector plans of stage II for the period 2016-2026 are shown in table 2.

Table 2. Consumption limits and targeted phase-out by sector for stage II of the HPMP for China as per the Agreement approved at the 86th meeting (ODP tonnes)

Maximum allowable consumption							
Sector	2016-2017	2018-2019	2020-2021	2022	2023-2024	2025	2026
National	16,978.9	15,048.1	11,772.0	11,772.0	8,618.0	5,063.5	4,513.5
XPS foam	2,286.0	2,032.0	1,397.0	1,397.0	762.0	165.0	0.0
PU foam	4,449.6	3,774.5	2,965.7	2,965.7	1,078.4	330.0	0.0
ICR	2,162.5	2,042.4	1,609.9	1,609.9	1,369.6	780.9	780.9
RAC	3,697.7	2,876.0	2,259.7	2,259.7	1,614.1	1,232.6	1,232.6
Solvent	455.2	395.4	321.2	321.2	148.3	55.0	0.0
Servicing	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Targeted phase-out							
Sector	2018	2020	2023	2025	2026	Total	Reduction from baseline by 2026 (%)
XPS foam	254.0	635.0	635.0	597.0	165.0	2,286.0	100
PU foam	675.1	808.8	1,887.3	748.4	330.0	4,449.6	100
ICR	120.1	432.5	240.3	588.7	-	1,381.6	67.5
RAC	821.7	616.3	645.6	381.5	-	2,465.1	70
Solvent	59.8	74.2	172.9	93.3	55.0	455.2	100
Servicing	n/a	734.0	n/a	n/a	n/a	734.0	n/a
Total	1,930.7	3,300.8	3,581.1	2,408.9	550.0	11,771.5	n/a

8. At the 91st meeting, the Executive Committee approved² the requests for the fifth tranches of sector plans for XPS foam, solvent, and refrigeration and air-conditioning servicing and the national enabling programme,³ and at the 93rd meeting, the Executive Committee approved the requests for the sixth tranches of the XPS foam, solvent and refrigeration servicing sector plans, and for the fourth and fifth tranche, respectively, of the PU foam and ICR sector plans.⁴ At the 94th meeting, the Executive Committee approved the request for the fourth tranche of the RAC sector plan, on the understanding that UNIDO and the Government of Austria would not transfer any of the approved funds to the Foreign Environmental Cooperation Centre (FECO) of the Government of China until the Executive Committee had considered the report, to be submitted by UNDP, referred to in decision 94/11(b)(ii); that any unused incremental operating costs from stage II of the HPMP RAC sector plan would be returned to the Multilateral Fund taking into account sales of split R-290 air-conditioning (AC) units that had taken place before 31 December 2026; and that UNIDO would submit, to the 97th meeting, an update on consideration by the Government of China of the suggestions to facilitate the manufacturing of R-290 split AC units described in paragraph 32 of document UNEP/OzL.Pro/ExCom/94/29.⁵

Submission to the 95th meeting

9. Relevant bilateral and implementing agencies submitted requests for the seventh tranches of the XPS foam and refrigeration servicing sector plans and for the fifth tranche of the PU foam sector plan. The summary of funding approved so far and requested at the present meeting is shown in table 3.

² Decisions 91/50—91/52.

³ The full name of the refrigeration and air-conditioning servicing sector and the national enabling programme is abbreviated to “refrigeration servicing sector” in the present document.

⁴ Decisions 93/49—93/53.

⁵ Decision 94/34.

Table 3. Funding approved and requested for selected sectors under stage II of the HPMP (US \$)

Sector plan	Lead and cooperating agencies	Funding approved	Funding requested
XPS foam	UNIDO, Germany	36,405,298	1,000,000
PU foam	World Bank	18,112,039	1,000,000
ICR	UNDP	52,464,531	0
RAC	UNIDO, Austria, Italy	43,062,981	0
Solvent	UNDP	25,045,909	0
Servicing	UNEP, Germany, Japan	13,329,132	3,000,000
Total		188,419,890	5,000,000

Status of ratification of the Kigali Amendment

10. On 17 June 2021, the Permanent Mission of the People's Republic of China to the United Nations deposited its letter of acceptance of the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer (hereinafter referred to as the Kigali Amendment) with the Secretary General of the United Nations. The Amendment entered into force on 15 September 2021. Following its acceptance, the Government of China revised its regulations with the purpose of including HFCs in its jurisdictional scope and further enhancing liability for engaging in illegal activities involving controlled substances. On 29 September 2021, the Ministry of Ecology and the Environment (MEE), the National Development and Reform Commission and the Ministry of Industry and Information Technology jointly issued an updated Catalogue of Controlled Ozone-Depleting Substances (ODSs) in China, including HFCs in its scope. Since 1 November 2021, the import and export license management system has applied to substances listed in the revised Catalogue, including HFCs.

HCFC consumption

11. The Government of China reported HCFC consumption for 2022 under Article 7 of the Montreal Protocol as shown in table 4.

Table 4. HCFC consumption in China from 2019 to 2023 (Article 7 data)

Year	2019	2020	2021	2022	2023*	Starting point
Metric tonnes (mt)						
HCFC-22	*173,656	133,450	127,721	134,065	110,637	209,006
HCFC-123	958	868	946	952	788	507
HCFC-124	38	(23)	(32)	22	(17)	140
HCFC-133/133a	0	(17)	0	0	0	0
HCFC-141b	38,449	28,976	25,276	27,796	9,773	53,502
HCFC-142b	6,500	2,149	4,577	1,949	2,853	22,624
HCFC-225ca/cb	0.57	0	0	0	0	17
Total	219,600	165,404	158,488	164,784	124,033	285,796
ODP tonnes						
HCFC-22	9,551	7,340	7,025	7,374	6,085	11,495
HCFC-123	19	17	19	19	16	10
HCFC-124	0.83	(0.51)	(0.69)	0.48	(0.38)	3
HCFC-133/133a	0	(1.08)	0	0	0	0
HCFC-141b	4,229	3,187	2,780	3,058	1,075	5,885
HCFC-142b	422	140	297	127	185	1,471
HCFC-225ca/cb	0.017	0	0	0	0	1
Total	14,223	10,683	10,121	10,577	7,361	18,865

* Country programme data.

12. HCFC consumption in China continues to be dominated by three substances: HCFC-22, HCFC-141b and HCFC-142b, which collectively account for 99.8 per cent of the country's consumption

expressed in ODP tonnes. The overall HCFC consumption in ODP tonnes in 2023 remained below the previous years' consumption levels, reduction targets established by the Montreal Protocol and the maximum allowable consumption stated in the Agreement with the Executive Committee. Sectoral reductions in HCFC consumption are discussed in detail in the stand-alone progress reports on the implementation of the XPS foam, PU foam, and refrigeration servicing sector plans contained in the present document.

13. The Government has also reported the country programme (CP) data for 2023. Table 5 presents the country's HCFC consumption per sector, confirming compliance with the manufacturing sector consumption limits set out in rows 1.3.1, 1.3.2, 1.3.3, 1.3.4 and 1.3.5 of Appendix 2-A of the Agreement for stage II of the HPMP.

Table 5. HCFC consumption per sector in China in 2023 (CP data) (ODP tonnes)

Substance	XPS foam	PU foam	ICR*	RAC*	Solvent	Servicing
HCFC-22	605.0	0.0	1,320.0	1,375.0	0.0	2,785.0
HCFC-141b	0.0	954.0	0.0	0.0	121.0	0.0
HCFC-142b	97.5	0.0	4.2	0.0	0.0	83.7
HCFC-123	0.0	0.0	9.4	0.0	0.0	6.4
HCFC-124	0.0	0.0	0.0	0.0	0.0	-0.4
Total	702.5	954.0	1,333.6	1,375.0	121.0	2,874.7
Maximum allowable consumption	762.0	1,078.4	1,369.6	1,614.1	148.3	n/a

* Consumption breakdown between the ICR and RAC sectors is submitted by the implementing agencies.

14. The Government of China continues to monitor HCFC consumption in each sector. Every year, FECO collects data from multiple sources, including beneficiary enterprises, verification reports of the production sector, the licensing system, and the industrial associations. The data is cross verified with actual consumption by enterprises only for some sectors (such as RAC, with limited enterprises) and substances (HCFC-22). In sectors with many small and medium-sized enterprises (SMEs) (i.e., XPS foam, PU foam, ICR, and servicing), HCFCs are monitored through the national licensing and quota system for imports, exports, production, and consumption. Domestic production quotas regulate HCFC sales in the local market and subsequent consumption by SMEs. Quotas are also issued to enterprises in each sector with annual consumption of over 100 mt of HCFCs.

15. In cooperation with the local ecology and environment bureaus (EEBs), FECO continues to strengthen policies to support reductions in HCFC consumption, and the MEE oversees quota management while strengthening relevant control measures regarding HCFC production and consumption, including three bans on HCFC consumption issued in 2023 for three subsectors: pipelines, solar energy water heaters of the PU foam sector, and medical solvents. The MEE, jointly with the Ministry of Industry and Information Technology, has also issued a catalogue of recommended alternatives to ODSs to promote conversion and transformation in different sectors.

16. A revision of the Regulation on the Administration of ODS entered into force on 1 March 2024, including further enhancement of the quota and licensing registration system; further strengthening of the legal responsibility (for ODS as by-products during the production process should be disposed in an environmentally sound manner and not directly discharge them); and specified more severe penalties for illegal acts. In February 2024, MEE issued a Notice on the Promotion and Implementation of the Revised Regulation on the Administration of ODS requiring local EEBs to attach great importance and take comprehensive measures to fully implement the revised Regulation.

Verification of consumption of HCFCs in China

17. The World Bank commissioned an independent verification of the 2023 HCFC production and consumption figures in China, which confirmed that the consumption reported for 2023 was within the

limits established by the Agreement. At the time of finalization of the present document, the Secretariat had not yet completed its review of the verification report, including whether based on the verification report any revisions might be needed to the data submitted under Article 7 of the Montreal Protocol and the CP data report.

Verification of the manufacturing sector conversions

18. UNIDO and the World Bank submitted technical reports to verify one conversion completed in the XPS foam in 2023 and three conversions completed in the PU foam sector in 2024, in line with subparagraph 5(c) of the Agreement. An overview of verifications by sector is shown in table 6.

Table 6. Verified phase-out of HCFCs by sector achieved in 2023 through funded conversions

Sector	Number of lines and enterprises	Verified phase-out of HCFCs	
		mt	%
XPS foam	1 line 1 enterprise	306.97	100
PU foam	7 lines and 30 spray foam units in 3 enterprises	370.56	36

Progress overview of the implementation of stage II of the HCFC phase-out management plan

19. The main achievements in the implementation of stage II of the HPMP include:

- (a) Establishment and continuous enforcement of the licensing and quota system to control consumption in all manufacturing sectors, including the application of quota permits to enterprises consuming more than 100 mt of HCFCs per year, resulting in compliance with relevant consumption limits throughout the period of implementation;
- (b) *XPS foam sector*: The contract between FECO and UNIDO was signed in September 2017. Eleven enterprises have completed conversions to carbon dioxide (CO₂) with other low-global-warming-potential (GWP) co-blowing agents, phasing out 4,604 mt (259.48 ODP tonnes) of HCFCs. Three additional enterprises with a consumption of 1,129 mt (62.11 ODP tonnes) of HCFCs have completed trial production with new equipment installed, and the remaining seven enterprises are at different stages of implementation. All ongoing conversions are expected to be completed by the end of 2025;
- (c) *PU foam sector*: The contract between FECO and the World Bank was signed in January 2019. The first 11 participating enterprises completed conversions to water-blown, hydrofluoroolefin (HFO), or cyclopentane foam-blowing technology, collectively phasing out 1,189 mt (130.79 ODP tonnes) of HCFC-141b. An additional 11 enterprises with joint consumption of 1,041 mt (114.5 ODP tonnes) have completed conversion to water-based technology (six), HFO (three), and cyclopentane (two), and are in the process of final verification or receiving final disbursement. Ten of them will receive their final disbursement in the last quarter of 2024 and one in the first quarter of 2025. One additional enterprise has received equipment and is in the process of its installation;
- (d) *ICR sector*: UNDP and FECO signed an amendment for the fifth tranche in August 2024. Of all conversion projects with contracts signed under the first three tranches, 16 lines have received national acceptance, phasing out 2,248 mt (123.65 ODP tonnes) of HCFC-22. FECO and the Chinese Association of Refrigeration (CRAA) have carried out baseline HCFC consumption verification at eight manufacturing lines, and contracts for conversions at four additional lines are pending. Several technical assistance activities have been implemented, including the preparation of a working outline for research on charging reductions for the safe application of flammable refrigerants, and research on the

application of HFCs/HFOs and CO₂ as overlapping or secondary cooling technology for refrigeration;

- (e) *RAC manufacturing sector:* Eleven RAC manufacturing enterprises (12 lines) and four compressor manufacturers signed agreements to convert their manufacturing lines to R 290 to phase out 4,384.64 mt (241.15 ODP tonnes) of HCFC-22 under stage II. Of these, nine RAC manufactures (10 lines) and all four compressor manufacturers have completed their conversions; the remaining two RAC lines are expected to be completed in 2025. Five heat pump water heater (HPWH) manufacturing lines, with an aggregated consumption of 133.29 mt (7.33 ODP tonnes) of HCFC-22, had also been verified as eligible for participation; two have signed agreements, with conversions also expected to be completed in 2025, and the remaining three are preparing project proposals;
- (f) *Solvent sector:* FECO signed two batches of contracts with a total of 49 enterprises. Out of the first batch of 24 enterprises with 514 production lines and a combined consumption of 1,176.2 mt (129.4 ODP tonnes) of HCFC-141b, 22 have completed conversions and received national acceptance, and two have withdrawn due to closures and consumption phased out. The second batch of contracts, at a total value of US \$2,000,907, was signed in July 2022 with 25 eligible enterprises, covering 347 production lines with a verified consumption of 372.2 mt (40.9 ODP tonnes) of HCFC-141b. All 25 enterprises have completed their production conversion activities and received national acceptance. The third batch of investment project applications has been received. Baseline verification contract has been signed with the Lixin accounting firm, to be conducted in the last quarter of 2024. Contracts for consulting services on the technical conversion guideline for the electronic and metal subsectors have been signed with the China Electronic Components Association; and
- (g) *Refrigeration servicing sector:* The agreement between FECO and UNEP for the sixth tranche was signed in May 2024. Regarding six new codes and standards under development: bidding has been completed for two; terms of reference have been drafted for three, and a consultation meeting has been held for one. Promotion of the previously developed codes and standards has continued, including training held for 300 technicians. FECO/MEE organized two additional expert meetings and site visits for a study to develop the certification system for handling the recovered ODSs and additional site visits and surveys for the study on HCFC phase-out in the cold chain sector, focused on key equipment types, the status of alternatives, maintenance and disposal. Six key provinces/cities (Guangdong, Anhui, Sichuan, Henan, Chongqing, and Shanghai) were selected for the capacity-building projects under the enabling component and training for a total of 579 participants was held, including staff from local EEBs, law enforcement officers responsible for overseeing the enforcement of ODS regulations, and local officers from autonomous regions and municipalities responsible for ODS management. Training on good servicing practices focusing on alternative refrigerants was held for 44 trainers and technicians; 150 technicians received training through the manufacturers' commercial refrigeration after-sales programme; and 96 technicians were trained through the manufactures' after-sales programme for R-290 RAC servicing, for which training material was also developed. Training material for supermarkets was developed and tested in pilot sessions and a stakeholder consultation meeting was held in this sector. Promotional activities have continued, World Ozone Day was celebrated, and the Ozone2Climate Technologies roadshow and roundtable hosted in-person and virtual.

Disbursement of funds

20. As of October 2024, of the US \$188,419,890 approved for all tranches of sector plans under stage II of the HPMP in China, US \$148,043,439 (79 per cent) had been disbursed from implementing agencies to FECO, and FECO disbursed US \$128,762,523 (68 per cent) to beneficiaries,⁶ as shown in table 7.

Table 7. Disbursements by sector under stage II of the HPMP (as of October 2024)

Funding by sector / implementing agencies (IAs)		Tranche 1	Tranche 2	Tranche 3	Tranche 4	Tranche 5	Tranche 6	Total
XPS foam (UNIDO/Germany)								
Approved (US \$)		7,514,867	9,000,000	9,890,431	5,000,000	2,000,000	3,000,000	36,405,298
Disbursed from IAs to FECO	Amount (US \$)	7,514,867	9,000,000	9,890,431	4,071,414	1,800,000	900,000	33,176,712
	Ratio (%)	100	100	100	81	90	30	91
Disbursed by FECO	Amount (US \$)	7,400,495	9,000,000	9,890,431	2,831,081	660,676	896,224	30,678,907
	Ratio (%)	98	100	100	57	33	30	84
PU foam (World Bank)								
Approved (US \$)		7,045,027	2,067,012	4,000,000	5,000,000	n/a	n/a	18,112,039
Disbursed from IA to FECO	Amount (US \$)	7,045,027	2,067,012	4,000,000	2,500,000	n/a	n/a	15,612,039
	Ratio (%)	100	100	100	50	n/a	n/a	86
Disbursed by FECO	Amount (US \$)	7,045,027	1,981,577	3,225,699	1,085,291	n/a	n/a	13,337,594
	Ratio (%)	100	96	81	22	n/a	n/a	74
ICR (UNDP)								
Approved (US \$)		13,368,756	20,000,000	2,095,775	9,000,000	8,000,000	n/a	52,464,531
Disbursed from IA to FECO ^[1]	Amount (US \$)	13,298,756	19,775,000	1,696,851	7,180,000	1,983,217	n/a	43,933,824
	Ratio (%)	99	99	81	80	25	n/a	84
Disbursed by FECO	Amount (US \$)	13,177,878	17,936,749	965,518	3,114,954	0	n/a	35,195,099
	Ratio (%)	99	90	46	35	0	n/a	67
RAC (UNIDO/Austria/Italy)								
Approved (US \$)		15,562,981	16,000,000	4,500,000	7,000,000	n/a	n/a	43,062,981
Disbursed from IAs to FECO	Amount (US \$) ^[2]	13,113,980	7,900,000	2,025,035	0	n/a	n/a	23,039,015
	Ratio (%)	84	49	45	0	n/a	n/a	54
Disbursed by FECO	Amount (US \$)	8,220,302	6,694,402	^[3] 3,519,020	^[3] 632,116	n/a	n/a	19,065,840
	Ratio (%)	53	42	78	9	n/a	n/a	44
Solvent (UNDP)								
Approved (US \$)		2,821,937	3,777,190	12,946,782	2,500,000	1,000,000	2,000,000	25,045,909
Disbursed from IA to FECO	Amount (US \$)	2,796,937	3,741,089	12,944,409	2,463,976	492,000	0	22,438,411
	Ratio (%)	99	99	100	99	49	0	90
Disbursed by FECO	Amount (US \$)	2,796,937	^[4] 3,742,190	12,670,212	1,521,177	512,184	17,700	21,260,400
	Ratio (%)	99	99	98	61	51	1	85
Servicing (UNEP/Germany/Japan) ^[5]								
Approved (US \$)		3,679,132	2,650,000	1,000,000	2,000,000	2,000,000	2,000,000	13,329,132
Disbursed from IAs to FECO ^[6] *	Amount (US \$)	3,678,438	2,640,000	925,000	1,540,000	560,000	500,000	9,843,438
	Ratio (%)	100	100	93	77	28	25	74
Disbursed by FECO	Amount (US \$)	3,678,438	2,472,307	^[7] 933,763	1,043,489	^[7] 694,447	402,239	9,224,683
	Ratio (%)	100	93	93	52	35	20	69
TOTAL funding for all sectors								
Approved by the ExCom (US \$)		49,992,700	53,494,202	34,432,988	30,500,000	13,000,000	7,000,000	188,419,890
Disbursed from IAs to FECO	Amount (US \$)	47,448,005	45,123,101	31,481,726	17,755,390	4,835,217	1,400,000	148,043,439
	Ratio (%)	95	84	91	58	37	20	79
Amount (US \$)		42,319,077	41,827,225	31,204,643	10,228,108	1,867,307	1,316,163	128,762,523

⁶ The milestones for disbursing funding for the XPS foam, PU foam, ICR, RAC and solvent sector plans include signing the conversion contract (30 per cent payment); completion of design and procurement contract (20 per cent); completion of prototype manufacture, conversion of lines and performance test (30 per cent); and trial production, training, and equipment disposal upon project acceptance (20 per cent).

Funding by sector / implementing agencies (IAs)		Tranche 1	Tranche 2	Tranche 3	Tranche 4	Tranche 5	Tranche 6	Total
Disbursed by FECO	Ratio (%)	85	78	91	34	14	19	68

^[1] Interest accrued from the funds held by FECO of US \$103,708, US \$97,468, US \$99,480, and US \$159,433 for the period 2015-2021 was deducted from the approved funds before transfer.

^[2] Due to an error, the value reported to the 94th (and 93rd) meeting was US \$14,571,089.

^[3] Disbursement from FECO to beneficiaries is higher than from UNIDO to FECO given disbursements by FECO with its own resources.

^[4] Consisting of US \$3,741,089 plus US \$1,101 of interest accrued up to December 2016 and offset from the transfer for the second tranche, according to decision 80/17(b).

^[5] An additional US \$1,000,000 was approved at the 84th meeting.

^[6] Reference for disbursement in the refrigeration servicing sector.

^[7] The disbursement from FECO to beneficiaries for the third and fifth tranches includes disbursement from UNEP for direct implementation of US \$39,794 and US \$134,447, respectively.

21. At the time of submission of the tranche requests (12 weeks prior to the 95th meeting), the rate of fund disbursement from FECO to beneficiaries in the XPS foam, PU foam and servicing sectors was at or above 20 per cent.

Financial report of the project management unit

22. In line with decision 81/46(b), UNDP submitted the project management unit (PMU) expenditures for stages I and II of the HPMP as of December 2023, as presented in annex II to the present document.

Report on overarching principles for managing funds transferred from implementing agencies to FECO for stage II of the solvent, XPS foam, RAC manufacturing and heat-pump water heater, and the refrigeration and air-conditioning servicing sectors of the HPMP (decision 94/11(b))

23. At the 94th meeting, the Executive Committee considered and subsequently inter alia (decision 94/11(b)(ii)) noted the report and the overarching principles for managing funds transferred from implementing agencies to the FECO for stage II of the HPMP, and requested UNDP to apply to stage II of the ICR sector plan for China, on a trial basis, the overarching principles (as described in annex VI to the final report to the 94th meeting); and as the lead implementing agency for stage II of the HPMP for China, to coordinate with other implementing agencies and submit a report to the 95th meeting on how to implement the overarching principles in the solvent sector, the XPS foam sector, the RAC manufacturing and heat pump water heater sector, and the refrigeration and air-conditioning servicing sector plan and the national enabling programme.

24. On behalf of the Government of China and the relevant implementing agencies, UNDP submitted the updated overarching principles for managing funds transferred from implementing agencies to FECO for stage II of the following sector of the HPMP of China: solvent, XPS foam, RAC manufacturing and heat-pump water heater, and the refrigeration and air-conditioning servicing, as shown in annex III to the present document. The main features proposed are summarized below:

Proposed methodology for reporting fund disbursements and their balances

- (a) Tranche progress reports will include the disbursement from FECO to final beneficiaries in both renminbi (RMB) and United States dollars (US dollar), with conversion to US dollar using the UN conversion exchange rate;⁷
- (b) The annual financial audit report will report the actual balance per sector plan in RMB and US dollar, with conversion to US dollars using UN conversion exchange rate, and the

⁷ In line with the over-arching principles submitted to the 94th meeting, funds transferred from the implementing agencies to FECO are converted from U.S. dollars to RMB based on the exchange rate provided by the bank at the time the funds are received.

auditor will also estimate the differences in US dollar figures caused by exchange rate fluctuations for each year in the annual audit report;

- (c) UNDP, as lead implementing agency, will coordinate with the auditor to ensure that the audit report uses the same exchange rates methodology of the relevant sector plans, aiming to minimize discrepancies between both reports;

Improving the funds transfer schedule from implementing agencies to FECO/MEE

- (d) The implementing agencies and FECO will improve the current funds transfer schedule to prevent the accumulation of large balances in FECO's RMB account and thereby mitigate exchange rate risk. FECO will agree with each agency upon a limit for a maximum amount of each transfer based on each sector's implementation plan. For the ICR, RAC, XPS foam, solvent and servicing sector, the proposed limit is set at 5 to 25 per cent of the tranche for each payment, based on the work plan proposed by FECO. In addition, FECO and the implementing agencies will agree on a disbursement plan that considers conversions and activities to be undertaken in three to six months. This aims to optimize the payment schedule based on the best estimate of planned activities;
- (e) In principle, implementing agencies will withhold further transfers to FECO if there are sufficient funds in FECO's account for the committed payments in the upcoming months. Each payment from an implementing agency to FECO should not exceed an agreed percentage of the tranche (which will, in turn, be commensurate with the enterprises' conversion plans, the project document working plan and the tranche disbursement plan from FECO to the enterprises).

Last payment of the funding from implementing agencies to FECO

- (f) To facilitate the potential return of unspent balances, by the end of implementation, implementing agencies will withhold the last payment of the tranche upon receipt of a report from FECO on the amount of funds that will be disbursed in the agreed time frame and estimated balance of the entire project. The final payment from an implementing agency to FECO should cover the committed amounts and will be disbursed accordingly. Any final remaining balances should stay in the implementing agencies' account for return to the Multilateral Fund.

Secretariat's comments

25. The Secretariat notes with appreciation the efforts being made by the Government of China, UNDP and the lead agencies for each sector plan to mitigate the risk associated with exchange rate losses. The Secretariat notes that this risk decreases when the funding transferred from the implementing agency to FECO is promptly disbursed by FECO to beneficiaries. Historically, the risk of exchange rate losses has been larger in the ICR and RAC manufacturing sectors where IOCs have constituted a substantial portion of the agreed funding and could only be disbursed to final beneficiaries inter alia based on sales of equipment based on the agreed technology. In contrast, the XPS foam, PU foam and solvent sectors have so far experienced a smoother adoption of the selected technologies with IOCs payments occurring more promptly. However, it is not possible to conclude whether there were exchange rate losses on potential returns associated with stage I of the XPS foam and solvent sector plans. The Secretariat appreciates that the same principles will be applied to the XPS foam, solvent and servicing sectors, where the projects are managed by FECO using RMB.

26. The level of funds cumulated in FECO's accounts varies largely over time and from sector to sector. The balance at a specific point in time is subject to a number of variables, including whether due payments

are scheduled, a transfer has just been received from the implementing agency, the stage of implementation, and the size of the plan. As seen in table 7 of the present document, as of October 2024 the level of funds in FECO's accounts was US \$2.50 million in XPS foam, US \$2.27 in PU foam, US \$8.74 million in ICR to US \$3.97 million in RAC manufacturing, US \$1.2 million in solvent and US \$618,755 in servicing. However, this information has limited value out of context. Analysing this data over the period of implementation of the stage would assist identifying potential cases where balances are persistently high or increasing over time. By the time of submission of each tranche request, the Secretariat can analyse the balances in the implementing agencies and FECO's account by the time of submission and by 31 December of the previous year (from the audit report) and identify any potential issues.

Secretariat's recommendation

27. The Executive Committee may wish:

- (a) To note the report on how to implement the overarching principles for managing funds transferred from implementing agencies to the Foreign Economic Cooperation Office (FECO) for stage II of the HCFC phase-out management plan (HPMP) of China to the solvent sector, the extruded polystyrene foam sector, the room air-conditioning manufacturing and heat-pump water heater sector, and the refrigeration and air-conditioning servicing sector plan and the national enabling programme, as contained in annex III of the present document; and
- (b) To request UNDP, UNIDO and UNEP, as lead agencies of the relevant sector plans, to apply to stage II of the ICR, solvent sector, the extruded polystyrene foam sector, the room air-conditioning manufacturing and heat-pump water heater sector, and the refrigeration and air-conditioning servicing sector plan and the national enabling programme, on a trial basis, the overarching principles referred to in subparagraph (a) above.

Disbursement of funds and interest accrued under stage II⁸

28. In line with decision 69/24, information on interest accrued at the end of 2023 from funds previously transferred for the implementation of sector plans was provided through an audit report of disbursements made in all sectors,⁹ as shown in table 8. The report indicates that "the financial statement of project grant and disbursement of the HPMP (stage II) complies with the rules of the Montreal Protocol on ODS and the Chinese Institution Accounting Standard. The statement of project grant and expenditure has been fairly and justly presented in all material respects from 1 January to 31 December 2023 by FECO."

Table 8. Interest accrued under stage II of the HPMP in China as of 31 December 2023 (US \$)

Sector plan and implementing agencies	Interest accrued stage II (US \$)
XPS foam (UNIDO/Germany)	2,034
PU foam (World Bank)	-3
ICR (UNDP)	11,507
RAC (UNIDO/Austria/Italy)	8,780
Solvent (UNDP)	8,453
Servicing (UNEP/Germany/Japan)	3,750
Total for all sector plans	34,521

Tranche progress reports and funding requests

29. Detailed stand-alone progress reports on the implementation of the XPS foam, PU foam and refrigeration servicing sector plans and the associated tranche requests for funding are included in the

⁸ The financial audit report only includes stage II as stage I is already completed.

⁹ Submitted by UNDP on 9 October 2024.

present document, following the Note by the Secretariat. Each provides a report on the implementation of the ongoing tranche and level of fund disbursement, an implementation plan for the next tranche, comments by the Fund Secretariat, and a recommendation.

30. The Secretariat notes that the Government of China has been in compliance with the HCFC consumption targets established for each sector, that substantive progress and fund disbursement have been achieved in all sectors, and that all technical and cost issues have been resolved.

Secretariat's recommendation

31. The Executive Committee may wish, with regard to the interest accrued by the Government of China up to 31 December 2023 on funds previously transferred for the implementation of sector plans under stage II of the HCFC phase-out management plan (HPMP), as per decisions 69/24 and 77/49(b)(iii), to request the Treasurer:

- (a) To offset future transfers to UNIDO by US \$2,034, representing interest accrued from funds previously transferred for the implementation of the extruded polystyrene foam sector plan under stage II of the HPMP;
- (b) To offset future transfers to UNDP by US \$11,507, representing interest accrued from funds previously transferred for the implementation of the industrial and commercial refrigeration sector plan under stage II of the HPMP;
- (c) To offset future transfers to UNIDO by US \$8,780, representing interest accrued from funds previously transferred for the implementation of the room air-conditioning sector plan under stage II of the HPMP;
- (d) To offset future transfers to UNDP by US \$8,453, representing interest accrued from funds previously transferred for the implementation of the solvent sector plan under stage II of the HPMP; and
- (e) To offset future transfers to UNEP by US \$3,750, representing interest accrued from funds previously transferred for the implementation of the refrigeration and air-conditioning servicing sector plan and the national enabling programme under stage II of the HPMP.

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

China

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out plan (stage II) XPS foam sector	UNIDO (lead) and Germany	Approved: 77 th Revised: 86 th	100% phase-out by 2026

(II) LATEST ARTICLE 7 DATA (Annex C, Group I)	Year: 2023	TBD*
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* China submitted its 2023 Article 7 data on 15 October 2024. At the time of finalization of the present document, the Ozone Secretariat was still processing that data.

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)					Year: 2023
Chemical	Aerosol	Foam	Refrigeration		Solvent
			Manufacturing	Servicing	Total sector consumption
HCFC-22		605.00	2,695.00	2,785.04	6,085.04
HCFC-123			9.40	6.36	15.76
HCFC-124				-0.38	-0.38
HCFC-141b		954.03			121.00
HCFC-142b		97.50	4.23	83.69	185.41

(IV) CONSUMPTION DATA (ODP tonnes)			
2009-2010 baseline	19,269.00	Starting point for sustained aggregate reductions	18,865.44
CONSUMPTION ELIGIBLE FOR FUNDING			
Already approved	12,161.02	Remaining	6,704.42

(V) ENDORSED BUSINESS PLAN		2024	2025	2026	Total
UNIDO	ODS phase-out (ODP tonnes)	50.87	203.47	179.80	434.14
	Funding (US \$)	1,070,000	4,280,000	3,782,080	9,132,080

(VI) PROJECT DATA			2016	2017	2018 2019	2020*	2021	2022	2023	2024	2025	2026	Total
Montreal Protocol consumption limits (ODP tonnes)			17,342.1	17,342.1	17,342.1	12,524.9	12,524.9	12,524.9	12,524.9	12,524.9	6,262.4	6,262.4	n/a
Maximum allowable consumption (ODP tonnes)			2,286.0	2,286.0	2,032.0	1,397.0	1,397.0	1,397.0	762.0	762.0	165.0	0.0	n/a
Funding agreed in principle (US \$)**	UNIDO	Project costs	7,514,867	8,732,614	0	9,890,431	4,400,000	2,000,000	3,000,000	1,000,000	4,000,000	3,534,654	44,072,566
		Support costs	526,041	567,620	0	692,330	308,000	140,000	210,000	70,000	280,000	247,426	3,085,080
	Germany	Project costs	-	267,386	0	0	600,000	0	0	0	0	0	867,386
		Support costs	-	31,877	0	0	73,535	0	0	0	0	0	105,412
Funds approved by ExCom (US \$)		Project costs	7,514,867	9,000,000	0	9,890,431	5,000,000	2,000,000	3,000,000	0	0	0	36,405,298
		Support costs	526,041	599,497	0	692,330	381,535	140,000	210,000	0	0	0	2,549,403
Total funds recommended for approval at this meeting (US \$)		Project costs								1,000,000			1,000,000
		Support costs								70,000			70,000

* The third (2018) tranche was submitted to the 82nd, 83rd, and 84th meetings and deferred for consideration at the 85th meeting (decisions 82/71(b), 83/55 and 84/69(a)).

** Total adjusted value of stage II of the HPMP for the XPS foam sector plan and the funding level of tranches between 2020 and 2026 were approved at the 86th meeting (decision 86/34).

Secretariat's recommendation:	Individual consideration
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PROJECT DESCRIPTION

32. On behalf of the Government of China, UNIDO as the lead implementing agency has submitted a request for funding for the seventh tranche of the extruded polystyrene (XPS) foam sector plan of stage II of the HCFC phase-out management plan (HPMP), in the amount of US \$1,000,000, plus agency support costs of US \$70,000, for UNIDO only.¹ The submission includes a progress report on the implementation of the sixth tranche of the XPS foam sector plan, the tranche implementation plan for 2025, and a verification report in line with subparagraph 5(c) of the Agreement between the Government of China and the Executive Committee.

33. This submission is based on the revised plan of action for the XPS foam sector for the period 2021--2026 in the total amount of US \$18,534,654, plus agency support costs, approved by the Executive Committee at the 86th meeting. The value of the adjusted total funding approved in principle for stage II of the XPS foam sector plan is US \$44,939,952, plus agency support costs (decisions 86/34 and 86/38).

34. Stage II of the XPS foam sector plan comprises four groups of activities: policy and regulatory interventions, an investment component to assist enterprises with conversions, technical assistance to strengthen the technical capacity of the sector and to promote the adoption of alternatives with low global-warming potential (GWP), and project management. The original plan proposed to assist 124 enterprises in phasing out 1,265 ODP tonnes of HCFCs, while the remaining consumption of 1,021 ODP tonnes was to be phased out by non-assisted enterprises; the revised plan approved in 2020 sets out to directly assist 21 enterprises in phasing out 466.32 ODP tonnes of HCFCs, with the remaining consumption of 930.68 ODP tonnes (based on the 2020 target of 1,397 ODP tonnes) to be phased out by non-assisted enterprises.

Progress report on the implementation of the sixth tranche of stage II of the XPS foam sector plan

Investment activities

35. The contract between the Foreign Environmental Cooperation Centre (FECO) and UNIDO for the implementation of stage II of the XPS foam sector plan was signed in September 2017. Eleven enterprises have already completed their conversions to carbon dioxide (CO₂) with other low-GWP co-blowing agents,² phasing out 4,604 metric tonnes (mt) or 259.48 ODP tonnes of HCFCs. Three additional enterprises with a consumption of 1,129 mt (62.11 ODP tonnes) of HCFCs have completed trial production with the new equipment installed, and the remaining seven enterprises are at different stages of implementation, as summarized in table 1. All ongoing conversions are expected to be completed by the end of 2025.

Table 1. Status of progress at XPS foam enterprises selected for conversions

Status of implementation	Number of enterprises	HCFC consumption in 2016*		Value of contracts (US \$)
		mt	ODP tonnes**	
Project completed (passed project acceptance)	11	4,603.77	259.48	25,627,068
Completed trials	3	1,129.28	62.11	4,478,962
Received equipment	3	1,171.68	65.93	4,472,430
Equipment procurement contracts signed	3	1,017.30	55.95	4,242,107
Conversion subcontract signed	1	410.26	22.84	1,570,520
Total	21	8,332.29	466.31	40,391,087

* 2016 is the year used as reference for HCFC consumption for stage II of the HPMP.

** ODP tonnes are calculated by the actual amount of HCFC-22 and HCFC-142b used by each enterprise.

¹ As per the letter of 14 September 2024 from the Ministry of Ecology and the Environment of China to UNIDO.

² Alcohol for XPS board thickness below 60 mm; alcohol and small amounts of HFC-152a (GWP of 124) for XPS board thickness above 60 mm.

Verification of converted manufacturing lines

36. In accordance with subparagraph 5(c)³ of the Agreement, UNIDO commissioned in 2024 the verification of the only manufacturing line in one XPS foam enterprise that had completed its conversion to CO₂ in 2023, phasing out 306.97 mt (16.88 ODP tonnes) of HCFCs, which represents 100 per cent of phase-out achieved by assisted enterprises in the sector in 2023. The verification report confirmed that the enterprise had permanently ceased their use of HCFCs in XPS foam manufacturing and started using CO₂ and ethanol in line with the relevant national product standards. The verification also confirmed that the allocation of funds was transparent and within the cost-effectiveness thresholds, and that the replaced baseline equipment was destroyed, in line with the Multilateral Fund requirements.

Technical assistance activities

37. Technical assistance activities implemented over 2023-2024 included technical support provided by the implementation support agency (ISA) to FECO and the 10 enterprises with ongoing projects in their day-to-day operations, conversion processes, on-site baseline verifications and promotion of alternative technologies. Additionally, the development of the “XPS foam for floor heating” standard continued, and a local equipment manufacturer was selected to conduct research on thermal bonding machines to facilitate HCFC phase-out by small and medium-sized enterprises (SMEs). The manufacturer has prepared the initial design of the thermal bonding technology prototype, which is expected to be completed by June 2025.

Level of fund disbursement

38. As of October 2024, of the US \$36,405,298 approved so far, US \$30,678,907 (84 per cent) had been disbursed by FECO to beneficiaries, as shown in table 2. The balance of US \$5,726,391 will be disbursed in 2024-2025.

Table 2. Status of disbursements for stage II of the XPS foam sector plan (US \$)

Description		Tranche						Total
		First	Second	Third	Fourth	Fifth	Sixth	
Funds approved	UNIDO	7,514,867	8,732,614	9,890,431	4,400,000	2,000,000	3,000,000	35,537,912
	Germany	0	267,386	0	600,000	0	0	867,386
	Total	7,514,867	9,000,000	9,890,431	5,000,000	2,000,000	3,000,000	36,405,298
Disb. from IAs to FECO	UNIDO	7,514,867	8,732,614	9,890,431	3,960,000	1,800,000	900,000	32,797,912
	Germany*	0	267,386	0	111,414	0	0	378,800
	Total	7,514,867	9,000,000	9,890,431	4,071,414	1,800,000	900,000	33,176,712
	Rate (%)	100	100	100	81	90	30	91
Disb. from FECO to beneficiaries	Total	7,400,495	9,000,000	9,890,431	2,831,081	660,676	896,224	30,678,907
	Rate (%)	98	100	100	57	33	30	84
Fund balance		114,372	0	0	2,168,919	1,339,324	2,103,776	5,726,391

* According to the implementation requirements, funding is directly disbursed from the Government of Germany to beneficiaries and goods/service providers.

Implementation plan for the seventh tranche of stage II of the extruded polystyrene foam sector plan

39. During the seventh tranche, FECO will continue enforcing quota permits for the XPS foam enterprises consuming more than 100 mt of HCFCs per year while supervising the ongoing conversions to CO₂-based technology at 10 beneficiary enterprises and providing them with technical and safety assistance. The ISA will support the enterprises through day-to-day operational management, supervision,

³ The country has to submit a verification report of a random sample of at least 5 per cent of the manufacturing lines which had completed their conversion in the year to be verified, on the understanding that the total aggregated HCFC consumption of the random sample of the manufacturing lines represents at least 10 per cent of the sector consumption phased out in that year.

training, guidance in the implementation of activities, facilitating safe conversions, and carrying out verifications.

40. Technical assistance activities to support the conversions include the finalization of the “XPS foam for floor heating” standard; the completion of the development of thermal bonding technology equipment to facilitate the adoption of CO₂-based technology by SMEs; additional training for XPS foam enterprises on the use of CO₂-based thermal bonding technology in XPS foam thicker than 60 mm; and the preparation of an environmental, economic and social impact assessment and technical research regarding the ban on the use of HCFCs in XPS foam sector, as well as further measures needed to ensure sustainable HCFC phaseout. Table 3 presents the budget for activities to be carried out under the seventh tranche.

Table 3. Budget for the seventh tranche of stage II of the XPS foam sector plan in China (UNIDO)

Item	Budget (US \$)
Conversion of XPS foam enterprises to CO ₂ -based technology	895,000
Technical assistance including ISA's support, supervision, and verification	50,000
Project monitoring, including:	
- Project and support staff	32,505
- Domestic and international travel (respectively US \$2,475 and US \$385)	2,860
- Domestic meetings	2,200
- Consulting services	1,980
- Operating costs: office operation, facilities and equipment, computer, phone, other	15,455
Project monitoring subtotal	55,000
Total	1,000,000

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

Report on HCFC consumption

41. The consumption of HCFCs in the XPS foam manufacturing sector in 2023 amounted to 12,500 mt (702.5 ODP tonnes), which is below the 762 ODP tonnes allowable consumption set out in the Agreement between the Government of China and the Executive Committee, as shown in table 4.

Table 4. Consumption of HCFCs in the XPS foam sector

Description		2019	2020	2021	2022	2023
Consumption*	mt	33,500	24,500	23,500	24,500	12,500
	ODP tonnes	1,898	1,363	1,318	1,357	702
Maximum allowable consumption**	mt	35,339	24,296	24,296	24,296	13,252
	ODP tonnes	2,032	1,397	1,397	1,397	762
Phase-out targets	mt	n/a	11,043	n/a	n/a	11,044
	ODP tonnes	n/a	635	n/a	n/a	635

* 2019-2023: As per the country programme implementation report.

** As per the Agreement approved at the 86th meeting for stage II from 2016 to 2023.

42. Reductions in consumption during the implementation of the sector plan have been achieved through conversions of XPS foam enterprises; strict implementation of production, domestic sales and consumption quotas required for manufacturing enterprises consuming over 100 mt of HCFCs; mandatory registration of enterprises; and the involvement of local ecology and environment bureaus (EEBs) in supervision and monitoring. Through the technical assistance component, the Government continues to strengthen the industry's technical capacity to adopt CO₂-based technology and ensure that further reductions are achieved and sustained.

43. In 2023, China reduced its HCFC consumption by 655 ODP tonnes (from 2022) to reach the target of 762 ODP tonnes. In addition to the enterprise conversion completed in 2023 (16.88 ODP tonnes), the application of policy measures and regulations continues to play a key role in supporting HCFC phase-out in XPS foam sector as per the agreed schedule. The quota management system ensures control of domestic HCFC production, import and export, and the technical assistance activities being implemented, such as the formulation and revision of some technical and testing standards, issuance of recommended catalogs and guides for alternative technology, and research on the impact of applying a ban on the use of HCFCs in the XPS foam sector, are intended to facilitate a sustained transition to low-GWP alternatives.

Status of progress

44. The Secretariat noted progress in the conversion of the remaining 10 enterprises assisted under the sector plan and in the research on thermal bonding technology with one local equipment manufacturer. Upon request on more details about the research on thermal bonding technology, UNIDO confirmed that by applying this technology in the manufacturing of XPS foam, the use of HFC-152a would no longer be required when producing panels thicker than 60 mm⁴ and SMEs would be able to handle the process without relying on equipment suppliers. UNIDO also explained that because of the wide range of thickness requirements for XPS boards in the market (from 20 to 150 mm), XPS foam enterprises often needed to adjust processes to meet thickness demands, incurring raw material loss. By adopting the thermal bonding technology, XPS foam enterprises can continuously produce boards of fixed thickness and combine two or three boards to meet order requirements, eliminating the need for frequent process adjustments. Once the thermal bonding technology becomes available, FECO will provide related training to XPS foam enterprises.

Project implementation and monitoring

45. As the lead implementing agency for the HPMP in China, UNDP provided a cumulative report on the project management unit (PMU) expenditures, in line with decision 81/46(b). The PMU expenditures related to stage II of the XPS foam sector plan are summarized in table 5.

Table 5. PMU cumulative expenditures for stage II of the XPS foam sector plan (2017-2023)

Item	Description	Cost (US \$)
Sector-specific costs	Project staff	1,443,718
	Domestic travel	127,411
	International travel	13,189
	Domestic meetings	84,462
	International meetings	0
	Consulting service	82,393
Subtotal for sector-specific costs		1,751,173
Operational costs	Shared costs (support staff, computers, internet, printing, office operation and maintenance)	1,542,658
Total disbursement		*3,293,831

* Including US \$1,725,621 funded by stage II of the HPMP and US \$ 1,568,210 co-financed by the Government of China.

Gender policy implementation

46. In line with the Multilateral Fund operational policy on gender mainstreaming (decisions 84/92 and 90/48(c)), the Government of China has continued to implement activities to promote women's participation in the plan, including the continuous encouragement of women attending training and technical assistance activities and the recruitment of women as experts in different areas. In addition to

⁴ CO₂-based technology requires co-blowing with alcohol for panels with thickness below 60 mm, or with alcohol and HFC-152a for panels with thickness above 60 mm.

activities included in previous reports, during the present tranche, the enterprise selected to conduct research on thermal bonding technology has put two women in charge of the project, and the Government of Germany has selected three experts to provide technical support, two of whom (67 per cent) are women.

Sustainability of the HCFC phase-out and assessment of risks

47. Noting the imminent HCFC reductions required in the sector, the Secretariat discussed with UNIDO the risk of failing to meet the maximum allowable consumption target of 165 ODP tonnes in 2025 and the total HCFC phase-out in XPS foam by 1 January 2026. The Secretariat and UNIDO have also discussed the risks of not fully adopting low-GWP technologies, particularly given the high number of SMEs in the sector. UNIDO explained that, under the current strategy so far, all HCFC consumption targets had been met and the transition to CO₂-based technology had proceeded smoothly. As previously reported, CO₂-based technology is now considered mature and results from the conversions have been widely disseminated.

48. To mitigate the risk of not meeting future targets, FECO and local EEBs will continue regular monitoring and supervision to prevent the illegal reintroduction of HCFCs in key provinces and cities, especially among enterprises that have already completed their conversions. Considering the sector's large number of SMEs, FECO and local EEBs will also systematically provide ongoing technical support and fire safety guidance to ensure the successful adoption of the selected low-GWP technologies.

Conclusion

49. The Government of China remains in compliance with the Montreal Protocol and its Agreement with the Executive Committee with regard to the XPS foam sector plan, including the consumption target agreed for 2023. While no additional plant conversions were completed in 2024, all enterprises currently assisted have achieved progress in the implementation of their projects. So far, 11 enterprises have converted to CO₂-based technology with an associated phase-out of 4,604 mt (259.48 ODP tonnes) of HCFCs. The submission included the verification report for the conversion of one enterprise completed in 2023. The report confirmed that the enterprise had permanently ceased using HCFCs in XPS foam manufacturing and started manufacturing using CO₂ and ethanol in line with the relevant national product standards. A total of 30 per cent of funds approved for the sixth tranche has been disbursed to beneficiary enterprises. Funds from the seventh tranche will be used to complete the ongoing conversions to low-GWP alternatives in 10 enterprises and to continue the implementation of policy-related and technical assistance activities, including *inter alia* training in support of sectoral transition provided by the ISA to the XPS foam enterprises, revision of a product standard, optimisation of CO₂-based technology through continued research on the use of thermal bonding in XPS foam production, and preparation of an environmental, economic and social impact assessment and technical research on the ban on the use of HCFCs in the XPS foam sector.

RECOMMENDATION

50. The Executive Committee may wish to consider:

- (a) Noting the progress report on the implementation of the sixth tranche of the extruded polystyrene (XPS) foam sector plan of stage II of the HCFC phase-out management plan (HPMP) for China; and
- (b) Approving the seventh tranche of the XPS foam sector plan of stage II of the HPMP for China, and the corresponding 2025 tranche implementation plan, in the amount of US \$1,000,000, plus agency support costs of US \$70,000, for UNIDO.

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

China

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out plan (stage II) PU foam sector	World Bank	Approved: 77 th Revised: 86 th	100% phase-out by 2026

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2023	TBD*
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* China submitted its 2023 Article 7 data on 15 October 2024. At the time of finalization of the present document, the Ozone Secretariat was still processing that data.

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)					Year: 2023
Chemical	Aerosol	Foam	Refrigeration		Solvent
			Manufacturing	Servicing	Total sector consumption
HCFC-22		605.00	2,695.00	2,785.04	6,085.04
HCFC-123			9.40	6.36	15.76
HCFC-124				-0.38	-0.38
HCFC-141b		954.03			1,075.03
HCFC-142b		97.50	4.23	83.69	185.41

(IV) CONSUMPTION DATA (ODP tonnes)			
2009--2010 baseline	19,269.00	Starting point for sustained aggregate reductions	18,865.44
CONSUMPTION ELIGIBLE FOR FUNDING			
Already approved	12,161.02	Remaining	6,704.42

(V) ENDORSED BUSINESS PLAN		2024	2025	2026	Total
World Bank	ODS phase-out (ODP tonnes)	157.16	785.81	660.08	1,603.06
	Funding (US \$)	1,070,000	5,350,000	4,494,000	10,914,000

(VI) PROJECT DATA			2016	2017	2018-2019	2020*	2021	2022	2023	2024	2025	2026	Total
Montreal Protocol consumption limits (ODP tonnes)			17,342.1	17,342.1	17,342.1	12,524.9	12,524.9	12,524.9	12,524.9	12,524.9	6,262.4	6,262.4	n/a
Maximum allowable consumption (ODP tonnes)			4,449.6	4,449.6	3,774.5	2,965.7	2,965.7	2,965.7	1,078.4	1,078.4	330.0	0.0	n/a
Agreed funding (US \$)**	World Bank	Project costs	7,045,027	0	0	2,067,012	4,000,000	0	5,000,000	1,000,000	5,000,000	4,200,000	28,312,039
		Support costs	493,152	0	0	144,691	280,000	0	350,000	70,000	350,000	294,000	1,981,843
Funds approved by ExCom (US \$)		Project costs	7,045,027	0	0	2,067,012	4,000,000	0	5,000,000	0	0	0	18,112,039
		Support costs	493,152	0	0	144,691	280,000	0	350,000	0	0	0	1,267,843
Total funds requested for approval at this meeting (US \$)		Project costs								1,000,000			1,000,000
		Support costs								70,000			70,000

* The second (2017) tranche was submitted to the 84th meeting and deferred for consideration at the 85th meeting (decision 84/69(a)).

** Total adjusted value of stage II of the HPMP for the PU foam sector plan and the funding level of tranches between 2020 and 2026 were approved at the 86th meeting (decision 86/34).

Secretariat's recommendation:	Individual consideration
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PROJECT DESCRIPTION

51. On behalf of the Government of China, the World Bank as the designated implementing agency has submitted a request for funding for the fifth tranche of the polyurethane (PU) rigid foam sector plan of stage II of the HCFC phase-out management plan (HPMP), at a total cost of US \$1,000,000, plus agency support costs of US \$70,000.¹ The submission includes a progress report on the implementation of the fourth tranche, the tranche implementation plan for 2025, and verification reports in line with sub-paragraph 5(c) of the Agreement between the Government of China and the Executive Committee.

52. This submission is based on the revised plan of action for the PU foam sector for the period 2021-2026 in the total amount of US \$19,200,000, plus agency support costs, approved by the Executive Committee at the 86th meeting. The value of the adjusted total funding approved in principle for stage II of the PU foam sector plan is US \$28,312,039, plus agency support costs (decisions 86/34 and 86/39).

53. Stage II of the PU foam sector plan comprises four groups of activities: policy and regulatory interventions, an investment component to assist enterprises with conversions, technical assistance to support the sector's conversion to alternatives with low global-warming potential (GWP), and project management. The investment component proposes to phase out 379.30 ODP tonnes through conversions of individual enterprises, and to channel technical assistance activities, including the development of foam-blowing formulations, through systems houses to downstream users, many of which are small and medium-sized enterprises (SMEs).

Progress report on the implementation of the fourth tranche of stage II of the polyurethane foam plan

Investment activities

54. The contract between the Foreign Environmental Cooperation Centre (FECO) and the World Bank for the implementation of stage II of the PU rigid foam sector plan was signed on 8 January 2019. Out of the 23 enterprises that have signed contracts with FECO for conversion to water-blown, hydrocarbon (HC) or hydrofluoroolefin (HFO) technology, 11 completed their conversions to water-based technology (five), HFO (two), and cyclopentane (four), and an additional 11 enterprises have completed conversions to water-based technology (six), HFO (three), and cyclopentane (two), and are in the process of the final verification or receiving final disbursement. Ten of them will receive their final disbursement in the last quarter of 2024 and one in the first quarter of 2025. There is only one conversion still ongoing, for which the enterprise has received equipment and is in the process of installing it. The status of progress of the conversions of the 23 assisted enterprises is presented in table 1.

Table 1. Conversion progress at PU foam enterprises assisted under the first four tranches of stage I

Status of implementation	Selected technology	No. of enterprises	HCFC consumption in 2016*		Value of contract (US \$)
			mt	ODP tonnes	
Project completed	Water-based	5	611.49	67.26	3,031,027
	HC	4	410.15	45.12	3,469,807
	HFO	2	167.53	18.43	1,695,072
Conversion completed and verified Final disbursement ongoing	Water-based	6	560.75	61.68	2,242,988
	HC	1	185.21	20.37	1,111,284
	HFO	2	133.35	14.67	533,404
Conversion completed Final verification ongoing	HC	1	105.08	11.56	630,480
	HFO	1	56.24	6.19	224,948
Equipment procured Installation ongoing	HC	1	27.02	2.97	162,102
Total		23	2,256.82	248.25	13,101,112

* 2016 is the reference year for HCFC consumption for stage II of the HPMP.

¹ As per the letter of 14 September 2024 from the Ministry of Ecology and Environment of China to the World Bank.

55. In addition, FECO, the World Bank and the implementation support agency (ISA) finalized the design of the implementation modality for the provision of technical assistance to foam downstream users through systems houses. Nine additional foam manufacturing enterprises and 17 systems houses submitted applications to participate in the sector plan, their project contracts are expected to be signed in the fourth quarter of 2024 upon completion of the verification of their baseline, and conversions are expected to be completed in a period of one to one and a half years.

Verification of converted manufacturing lines

56. In accordance with subparagraph 5(c)² of the Agreement, the World Bank submitted the following three verification reports for three PU foam enterprises (including one spray foam enterprise) converted to HC, HFO and water-based technology in 2024 with associated phase-out of 370.56 mt (40.76 ODP tonnes) of HCFCs. This represents more than 5 per cent of the lines that completed their conversion in 2024 and 36 per cent of the amount of HCFCs phased out in the same year.

57. The verification reports confirmed *inter alia* that the enterprises had permanently ceased using HCFCs in PU foam production and started manufacturing with selected alternative technologies, and that the replaced baseline equipment was destroyed. The level of funds provided was consistent with the signed contracts and the enterprises co-financed capital and operational costs.

Technical assistance activities

58. In 2024, the ISA continued to provide technical assistance to FECO on project implementation, financial appraisal and performance verifications at beneficiary enterprises, project acceptance workshops for completed conversions, and baseline verification of additional enterprises and systems houses entering the plan. FECO also organized a training workshop in 2024 to raise the foam enterprises' awareness on the ongoing domestic and global HCFC-141b phase-out, to exchange experience gained from the conversions to low-GWP alternatives, and to promote the plan of action for the PU foam sector plan.

59. FECO continues to assist the Ministry of Ecology and the Environment (MEE) in enforcing the established policies and regulations on the management of ozone-depleting substances (ODSs), and to enhance the ODS monitoring and management capacity of local ecology and environment bureaus (EEBs). The MEE plans to issue a ban on the use of HCFCs in the PU foam sector (except spray foam) on 1 January 2025, while the ban for the entire sector is planned for the end of 2025. FECO commissioned a research study on the impact of issuing these two bans, including collection of HCFC141b consumption data, information on availability, commercial viability and costs of alternative technologies and views from enterprises, industrial associations and relevant stakeholders. The study is undertaking an assessment, proposing recommendations to avoid or mitigate potential negative impacts, and proposing the draft legal texts for the bans. FECO will submit the final report to MEE in November 2024 and will provide support to MEE during its internal processing and issuance of the ban.

Monitoring by the local ecology and environment bureaus

60. In line with decision 84/39(c)(iii),³ the Government of China reported through the World Bank that the local EEBs continued to enforce provisions of the established policies and regulations on ODS

² The country has to submit a verification report of a random sample of at least 5 per cent of the manufacturing lines which had completed their conversion in the year to be verified, on the understanding that the total aggregated HCFC consumption of the random sample of the manufacturing lines represents at least 10 per cent of the sector consumption phased out in that year.

³ The Executive Committee requested the Government of China through the relevant implementing agency to report on the results of the monitoring efforts of local EEBs, including cases where CFC-11 had been detected, in future financial audit reports and, once all the remaining balances under the projects included in the financial audit had been

management, exercise their registration systems with HCFC consumers, and routinely monitor and manage enterprises dealing with ODSs in their regions. Since the submission of the last progress report, no illegal production or consumption of CFC-11 has been found.

Level of fund disbursement

61. As of October 2024, of the US \$18,112,039 approved, US \$15,612,039 had been disbursed by the World Bank to FECO, and US \$13,337,594 (74 per cent of the total funding approved) had been disbursed by FECO to beneficiary enterprises, as shown in table 2. The balance of US \$2,274,445 will be disbursed in 2025 and 2026.

Table 2. Status of disbursements for stage II of the PU foam sector plan (US \$)

Funding tranche	Funds approved	Disbursement from the World Bank to FECO		Disbursement from FECO to beneficiaries		Fund balance
		Amount	Rate (%)	Amount	Rate (%)	
First	7,045,027	7,045,027	100	7,045,027	100	0
Second	2,067,012	2,067,012	100	1,981,577	96	85,434
Third	4,000,000	4,000,000	100	3,225,699	81	774,300
Fourth	5,000,000	2,500,000	50	1,085,291	22	1,414,709
Total	18,112,039	15,612,039	86	13,337,594	74	2,274,445

Implementation plan for the fifth tranche of stage II of the polyurethane foam sector plan

62. During the fifth tranche, FECO will complete the ongoing conversion of one enterprise to HC and undertake conversions to water-based technology and HFOs at nine additional enterprises and 17 systems houses that entered in the plan. To ensure that the 2025 compliance target is met, FECO will also continue to enforce quota permits for PU foam enterprises that consume more than 100 mt of HCFCs per year.

63. Technical assistance activities will include ISA's support to FECO to implement the conversion projects for the new enterprises and systems houses in the plan; FECO's support to MEE in enforcing the established policies and regulations on ODS management and enhancing the local EEBs' ODS monitoring and management capacity; and completion of the study to evaluate the impact of issuing the two expected bans on the use of HCFCs in the sector. FECO will conduct additional workshops to share knowledge and lessons learned from the conversions to low-GWP alternatives and build awareness among the additional PU foam enterprises on alternative technologies in the sector through various media channels.

64. Table 3 presents the budget for activities included in the implementation plan of the fifth tranche.

Table 3. Budget for the fifth tranche of stage II of the PU foam sector plan in China (World Bank)

Activity	Budget (US \$)
Conversion of PU foam enterprises to water-based, HFO, and HC technology	945,000
Technical assistance (funds from previous tranches)	0
Project monitoring, including:	
- Project staff – programme management, support, financial procurement, legal support	21,767
- Domestic travel	1,890
- Domestic meetings	1,459
- Consulting services	1,615
- Operating costs – daily operating expenses, support staff, office facilities and equipment	28,269
Subtotal for project monitoring	55,000
Total	1,000,000

disbursed and those projects had been completed, to continue such reporting under the annual progress reports of stage II of the PU foam sector plan of the HPMP.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

Report on HCFC consumption

65. The consumption of HCFC-141b in the PU foam manufacturing sector in 2023 amounted to 954.03 ODP tonnes, remaining below the 1,078.4 ODP tonnes of allowable consumption set out in the Agreement between the Government of China and the Executive Committee, as shown in table 4.

Table 4. HCFC-141b consumption and phase-out targets for the PU foam sector

PU foam sector		2015	2016	2017	2018	2019	2020	2021	2022	2023
Consumption*	mt	34,202	34,821	36,439	34,177	34,290	26,176	22,776	25,296	8,673
	ODP tonnes	3,762.0	3,830.3	4,008.3	3,759.4	3,771.9	2,879.4	2,505.3	2,782.5	954.03
Maximum allowable consumption**	mt	40,451	40,451	40,451	34,314	34,314	26,961	26,961	26,961	9,084
	ODP tonnes	4,449.6	4,449.6	4,449.6	3,774.5	3,774.5	2,965.7	2,965.7	2,965.7	1,078.4
Phase-out targets	mt	8,569	n/a	n/a	6,137	n/a	7,353	n/a	n/a	17,877
	ODP tonnes	942.6	n/a	n/a	675.1	n/a	808.8	n/a	n/a	1,887.3

* As per the country programme implementation report.

** As per the Agreement for stage I of the HPMP up to 2015 approved at the 67th meeting, and as per the Agreement for stage II from 2016 to 2023 approved at the 86th meeting.

66. The significant reduction of HCFC-141b consumption in the PU foam sector is attributed to the completion of ongoing conversion projects and the enforcement of existing policies (i.e., bans on the use of HCFC-141b in five subsectors) in combination with the reduced supply and increased price of HCFC-141b resulting from the implementation of activities under the HCFC production phase-out management plan, including the closure of HCFC-141b production lines by two producers.

67. The issuance of the ban on the use of HCFCs in the PU foam sector (except spray foam) on 1 January 2025 is expected to contribute to ensuring further reductions in HCFC consumption to comply with the consumption target of 330 ODP tonnes in 2025. In addition, project conversions completed in 2024 and additional conversions to water-blown technology by nine individual enterprises and 17 systems houses expected to take place before the end of 2025, will also contribute to achieving the next reduction target and the total phase-out of HCFC-141b by 1 January 2026.

Status of progress

68. The Secretariat notes that following initial delays, the implementation modality for the systems house projects has been developed and 17 systems houses have submitted applications to participate in the sector plan. The World Bank estimates that each of these systems houses supplies HCFC-based formulations to around 20 downstream foam users. The estimated HCFC-141b consumption to be phased out through these systems houses is 5,175 mt (569.25 ODP tonnes) of HCFC-141b, although this number is still being verified. The Secretariat considers that this could represent a significant additional reduction in HCFC-141b consumption to assist the country in achieving total phase-out by 1 January 2026.

69. Upon request, the World Bank also confirmed that previous COVID-related restrictions that caused delays to FECO visits to complete verifications of either enterprise baseline or project completion, have now been removed and as of end September 2024, additional on-site verification of project completion and baseline verifications for new enterprises were completed.

Project implementation and monitoring

70. As the lead implementing agency for the HPMP for China, UNDP provided a cumulative report on the project management unit (PMU) expenditures, in line with decision 81/46(b). The PMU expenditures related to stage II of the PU foam sector are summarized in table 5.

Table 5. PMU cumulative expenditures for stage II of the PU foam sector plan (2017-2023)

Item	Description	Cost (US \$)
Sector-specific costs	Project staff	1,657,235
	Domestic travel	84,959
	International travel	6,800
	Domestic meetings	58,613
	International meetings	0
	Consulting services	56,690
Subtotal for sector-specific costs		1,864,297
Operational costs	Shared costs (support staff, computers, internet, printing, office operation and maintenance)	1,111,478
Total disbursement*		*2,975,775

* Including US \$852,658 funded by stage II of the HPMP and US \$2,123,117 co-financed by the Government of China.

Gender policy implementation

71. In line with the Fund's gender mainstreaming policy (decisions 84/92 and 90/48(c)), FECO continued to encourage women's participation in all activities implemented under the plan. Fifty per cent of participants in the baseline verification initiation meetings for the nine new enterprises and 17 systems houses were women. In addition, 40 per cent of sub-project focal points and 50 per cent of all consultants working on technical assistance activities are women. Under the fifth tranche, the gender ratio of training and workshops attendees will continue to be monitored and women will be encouraged to participate in activities organized under the plan.

Sustainability of the HCFC phase-out and assessment of risks

72. In providing updated information on the main risks for the sustained adoption of low-GWP technologies in the PU foam sector in China, the World Bank considered it unlikely that HFC-245fa become a popular alternative to HCFC-141b, as it was already controlled by the Chinese HFC production quota system and limited to less than 14,100 mt in 2024. Although there is still significant difference between the prices of HCFC-141b and HFOs, the price of HFC-245fa is about 70 to 80 per cent of the price of the less expensive HFOs used by the PU foam sector.

73. Factors that could to some extent slow down the sustained adoption of low-GWP alternatives in the PU foam sector include the stockpiling of HCFCs by enterprises in view of the reduction in supply, and the manufacturers' prioritization of price over quality. However, the reduction in the supply of HCFC-141b and associated price increases are expected to have a positive impact on the sustained adoption of alternative technologies.

Conclusion

74. The Government of China remains in compliance with the Montreal Protocol and its Agreement with the Executive Committee with regard to the PU foam sector plan. During the reporting period, an additional 11 enterprises consuming 1,040 mt (114.47 ODP tonnes) completed conversions to low-GWP technologies and started the process of the final verification or receiving final disbursement. FECO is completing baseline verifications for nine additional foam manufacturing enterprises and 17 systems houses, with conversions expected to be completed in 12 to 18 months. Technical assistance activities

implemented to support conversions to low-GWP alternatives include an ongoing study of the impact of issuing the ban on the use of HCFCs in the PU foam sector (except spray foam) on 1 January 2025 and the ban for the entire PU foam sector by the end of 2025. The level of disbursement of funds approved under the fourth tranche is 22 per cent, and 74 per cent for all funds approved under the stage. Funding for the fifth tranche is required to implement the conversion to low-GWP alternatives of the additional nine individual enterprises and 17 systems houses (and an estimated 340 SMEs supplied by them), and to comply with the next HCFC reduction targets for the sector.

RECOMMENDATION

75. The Executive Committee may wish to consider:

- (a) Noting the progress report on the implementation of the fourth tranche of the polyurethane (PU) foam sector plan of stage II of the HCFC phase-out management plan (HPMP) for China; and
- (b) Approving the fifth tranche of the PU foam sector plan of stage II of the HPMP for China, and the corresponding 2025 tranche implementation plan, in the amount of US \$1,000,000, plus agency support costs of US \$70,000, for the World Bank.

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

China

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out plan (stage II) refrigeration servicing and enabling programme	UNEP (lead), Germany and Japan	Approved: 76 th Revised: 86 th	n/a

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2023	TBD*
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* China submitted its 2023 Article 7 data on 15 October 2024. At the time of finalization of the present document, the Ozone Secretariat was still processing that data.

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)					Year: 2023
Chemical	Aerosol	Foam	Refrigeration		Solvent
			Manufacturing	Servicing	Total sector consumption
HCFC-22		605.00	2,695.00	2,785.04	6,085.04
HCFC-123			9.40	6.36	15.76
HCFC-124				-0.38	-0.38
HCFC-141b		954.03			1,075.03
HCFC-142b		97.50	4.23	83.69	185.41

(IV) CONSUMPTION DATA (ODP tonnes)			
2009–2010 baseline:	19,269.00	Starting point for sustained aggregate reductions:	18,865.44
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	12,161.02	Remaining:	6,704.42

(V) ENDORSED BUSINESS PLAN		2024	2025	2026	Total
UNEP	ODS phase-out (ODP tonnes)	77.66	31.06	65.16	173.88
	Funding (US \$)	3,329,200	1,331,680	2,793,316	7,454,196
Germany	ODS phase-out (ODP tonnes)	0.0	0.0	0.0	0.0
	Funding (US \$)	0	0	500,000	500,000
Japan	ODS phase-out (ODP tonnes)	0.0	0.0	0.0	0.0
	Funding (US \$)	0	0	0	0

(VI) PROJECT DATA			2016	2017	2018	2019*	2020	2021	2022	2023	2024	2025	2026	Total
Montreal Protocol consumption limits (ODP tonnes)			17,342.1	17,342.1	17,342.1	17,342.1	12,524.9	12,524.9	12,524.9	12,524.9	12,524.9	6,262.4	6,262.4	n/a
Maximum allowable consumption (ODP tonnes)**			16,978.9	16,978.9	15,048.1	15,048.1	11,772.0	11,772.0	11,772.0	8,618.0	8,618.0	5,063.5	5,063.5	n/a
Funding agreed in principle (US \$)	UNEP	Project costs	3,299,132	2,570,000	0	1,000,000	0	1,160,000	1,780,000	2,000,000	3,000,000	1,200,000	2,517,105	18,526,237
		Support costs	364,651	284,061	0	120,000	0	127,291	195,325	219,467	329,200	131,680	276,211	2,047,886
	Germany	Project costs	300,000	0	0	0	0	600,000	220,000	0	0	0	0	1,120,000
		Support costs	36,000	0	0	0	0	71,122	26,078	0	0	0	0	133,200
	Japan	Project costs	80,000	80,000	0	0	0	240,000	0	0	0	0	0	400,000
		Support costs	10,400	10,400	0	0	0	31,200	0	0	0	0	0	52,000
Funds approved by ExCom (US \$)		Project costs	3,679,132	0	2,650,000	1,000,000	0	2,000,000	2,000,000	2,000,000	0	0	0	13,329,132
		Support costs	411,051	0	294,461	120,000	0	229,613	221,403	219,467	0	0	0	1,495,995
Total funds recommended for approval at this meeting (US \$)		Project costs									3,000,000			3,000,000
		Support costs									329,200			329,200

* The third (2018) tranche was submitted at the 82nd meeting at a value of US \$3,850,000, plus agency support costs of US \$431,831, and deferred for consideration at the 84th meeting (decisions 82/71(b) and 83/55).

** The total maximum allowable consumption of Annex C, Group I substances for the 2021 to 2026 period, the total adjusted value of stage II of the HPMP for the sector, and the funding level of tranches between 2020 and 2026 were approved at the 86th meeting (decision 86/34).

PROJECT DESCRIPTION

76. On behalf of the Government of China, UNEP, as the lead implementing agency has submitted a request for funding for the seventh tranche of the refrigeration and air-conditioning servicing sector and the national enabling programme¹ of stage II of the HCFC phase-out management plan (HPMP), in the amount of US \$3,000,000, plus agency support costs of US \$329,200, for UNEP only.² The submission includes a progress report on the implementation of the sixth tranche of the refrigeration servicing sector and the tranche implementation plan for 2024-2025.

77. This submission is based on the revised plan of action for the refrigeration servicing sector for the period 2021-2026 in the total amount of US \$12,717,105, plus agency support costs, as approved by the Executive Committee at the 86th meeting. The value of the adjusted total funding approved in principle for stage II of the refrigeration servicing sector is US \$20,046,237, plus agency support costs (decisions 86/34 and 86/37).

78. Stage II of the refrigeration servicing sector plan comprises a component related to phase-out activities in the servicing sector and an enabling component to build capacity at the national and local levels, strengthen the communication and coordination mechanisms of relevant departments associated with the HPMP implementation, ensure continuous implementation of policies and regulations on controlled substances, and improve the monitoring and reporting of imports and exports of controlled substances in order to reduce the risks of illegal trade in ozone-depleting substances (ODSs).

79. Policy studies, revision of standards and codes, technician training and certification, and awareness and outreach activities included in the refrigeration servicing sector plan also support the phase-out in the room air-conditioning and heat pump water heaters (RAC) and the industrial and commercial refrigeration and air-conditioning (ICR) manufacturing sectors.

Progress report on implementation of the sixth tranche of stage II of the refrigeration servicing sector plan

80. As of September 2024, the following activities were implemented:

- (a) The project cooperation agreement (PCA) for the sixth tranche in the amount of US \$1,820,000 covering the funding tranche of UNEP, was signed in April 2024 between UNEP and the Foreign Environmental Cooperation Centre (FECO); the first installment under this PCA was transferred from UNEP to FECO in May 2024;
- (b) FECO and the Ministry of Ecology and the Environment (MEE) completed the bidding process for an expert to develop two technical specifications for the servicing and maintenance of cold storage systems and water chillers. Terms of reference (TOR) have been drafted for the codes on technical specifications for multi-split air conditioners, refrigeration and air-conditioning (AC) equipment for industrial and commercial applications, and equipment with flammable refrigerants. The TOR are being revised based on three site surveys in the cold storage market and a consultation meeting with relevant stakeholders and experts in 2024. The codes³ developed under previous tranches were promoted in technical publications, online, and in technical workshops for 300 technicians. A consultation meeting was held on the development of codes and standards for the

¹ The full name of the refrigeration and air-conditioning servicing sector and the national enabling programme is abbreviated to “refrigeration servicing sector” throughout the present document.

² As per the letter of 14 September 2024 from the Ministry of Ecology and the Environment of China to UNEP.

³ Specific codes for the servicing and maintenance of AC units (heat pumps) with focus on refrigerant emissions; specific code for the refrigeration equipment operational requirements for refrigeration management; and technical codes for the requirements for training tools/equipment and space for conducting hands-on session of training on good practices for refrigeration servicing technicians.

transportation, installation, and servicing of room air conditioners using flammable refrigerants under the component led by the Government of Germany (GIZ) and the final version draft will be submitted to the relevant authority before the end of 2024;

- (c) Local ecology and environment bureaus (EEBs) are being trained on the filing management system for ODS recycling and disposal,⁴ and enterprises have begun reporting their annual data through this system; a contract to update the system was signed in October 2024. Regarding the study to develop the certification system for handling the recovered ODSs, FECO/MEE organized two additional expert meetings and site visits, highlighting the challenges and barriers among the different subsectors. Additional site visits and surveys for the study on HCFC phase-out in the cold chain sector were conducted in August 2024, focusing on key equipment types, the status of alternatives, maintenance, and disposal;
- (d) The annual joint meeting between government ministries and a coordination meeting⁵ on the implementation of the HPMP were held. Contracts were signed with two more EEBs in six key cities/provinces (Anhui, Chongqing, Guangdong, Henan, Sichuan, and Shanghai) selected to date for the capacity-building projects during 2023 to 2026 under the enabling component. Daily technical support on ODS enforcement and training was provided for 217 staff from local EEBs; two batches of training were delivered for 192 law enforcement officers responsible for overseeing ODS enforcement; a training session on ODS management was held for 170 local officers from autonomous regions and municipalities; and one overseas study tour was held on the Montreal Protocol implementation and ODS management in other countries;
- (e) Online and in-person training sessions on ODS import and export, domestic policies, regulations, and the licensing system requirements were attended by 283 customs officers; 90 front-line and 81 customs officers from anti-smuggling bureaus were trained in combatting illegal ODS trade. An analysis was carried out on smuggling methods and countermeasures were recommended. TOR for the study on the applicability of the law to penalize illegal trade were completed. Two draft research reports were prepared and reviewed by experts and are expected to be finalized before the end of 2024.⁶ The project to build capacity in four customs and four anti-smuggling bureaus through studying ODS import and export supervision policies and measures, training customs officials, and strengthening cooperation was completed and final reports were prepared;
- (f) The two “pilot cities” (Tianjin and Hangzhou in Zhejiang Province) completed the planned activities, including strengthening of the filing and data management system and training for over 40 enterprises on the system, passing a local law to permit the inspection and enforcement of filing obligations, integrating refrigerant recovery requirements into the performance rating system for large industrial enterprises, compiling a key list of refrigeration servicing end users, organizing consultation meetings and market surveys, and promoting good practices through two training sessions for 80 technicians, outreach activities and the publication of over 4,000 brochures. A final report is under preparation;
- (g) A training session on good servicing practices focusing on alternative refrigerants was organized for a total of 44 participants, including trainers and technicians. Training material was developed under the manufacturers’ commercial refrigeration after-sales programme, and four batches of training were provided for a total of 150 technicians.

⁴ Which had launched in May 2023.

⁵ With roughly 50 participants from international implementing agencies, bilateral organizations, research institutions and industrial associations.

⁶ One on the synergy between the management of substances controlled under the Montreal Protocol and China’s trade policy and another on a comparative study of the import and export management policies in other countries.

UNEP entered into a new contract with the Chinese Association of Refrigeration (CRAA) which organized a refrigeration servicing competition incorporating the requirements of good service practices, encouraging the recycling and reuse of refrigerants and raising awareness among after-sales technicians. As for the training through the manufacturers' after-sales programme for R-290 RAC servicing, two pilot training sessions were held by two manufacturers for a total of 96 technicians; online training material was developed and is being reviewed and finalized; and a contract was signed to train a further 400 technicians;

- (h) Under the component to raise awareness among supermarkets, training material was developed and tested in pilot sessions and is being adjusted based on feedback. The China Chain Store and Franchise Association (CCFA), GIZ and FECO/MEE are developing guidance on refrigerant management for supermarkets; and the main supermarket stakeholders were invited to a consultation meeting to introduce current refrigerant management practices;
- (i) Promotional activities were carried out *via* social media, news articles, industry news publications, and the OzonAction in China website. The annual Ozone2Climate industry roundtable had over 240 in-person and more than 2,000 virtual participants, and the Ozone2Climate roadshow attracted thousands of participants. The World Ozone Day event was celebrated with over 200 people; and
- (j) Of the US \$170,000 approved for project management and monitoring activities, US \$42,501 was disbursed for staff (US \$33,443), travel (US \$4,101), and meetings and consultations (US \$4,957).

Level of fund disbursement

81. As of 31 August 2024, of the US \$13,329,132 approved so far, US \$9,225,377 (69 per cent) had been disbursed by FECO to beneficiaries, as shown in table 1. Out of the balance of US \$4,103,755, US \$3,313,755 has been committed, and US \$790,000 will be disbursed in conjunction with the seventh tranche.

Table 1. Status of disbursement for stage II of the refrigeration servicing sector plan (US \$)

Description		Tranche 1	Tranche 2	Tranche 3	Tranche 4	Tranche 5	Tranche 6	Total
Funds approved	UNEP	3,299,132	2,570,000	1,000,000	1,160,000	1,780,000	2,000,000	11,809,132
	Japan	80,000	80,000	0	240,000	0	0	400,000
	Germany	300,000	0	0	600,000	220,000	0	1,120,000
	Total	3,679,132	2,650,000	1,000,000	2,000,000	2,000,000	2,000,000	13,329,132
Disb. from IAs to FECO	UNEP	3,298,438	*2,640,000	925,000	*1,350,000	500,000	500,000	9,154,000
	Japan	80,000		0		0	0	
	Germany	300,000	0	0	190,000	60,000	0	
	Total	3,678,438	2,640,000	925,000	1,540,000	560,000	500,000	
	Ratio (%)	100	100	93	77	28	25	74
Disb. from FECO to beneficiaries	Total	3,678,438	2,472,307	**933,763	1,043,489	**694,447	402,239	9,224,683
	Ratio (%)	100	93	93	52	35	20	69
Fund balance		694	177,693	66,237	956,511	1,305,553	1,597,761	4,104,449

* Comprising both UNEP and Japan funding components.

** The disbursement from FECO to beneficiaries for tranches 3 and 5 includes the disbursement from UNEP for direct implementation of US \$39,794 and US \$134,447, respectively.

Implementation plan for the seventh tranche of stage II of the refrigeration servicing sector plan

82. The following activities will be implemented in 2024-2025:

- (a) Regular communication with all ministries and authorities involved in the monitoring of ODSs; collaborative review of policies related to the management of servicing workshops and refrigeration and air-conditioning technicians; continued work on the development of the five codes and standards from the previous tranche;⁷ additional survey and final report on the barriers and market mechanisms for HCFC recovery; final report on the policy study in the cold chain sector and continuation of the study on revised ODS regulations and the national phase-out plan; continued support for filing management and promotion of refrigerant recycling and reuse (UNEP) (US \$400,000 and funds from previous tranches); completion of the revision of two standards for the transportation, installation and servicing of room air conditioners using flammable refrigerants (Government of Germany) (funds from previous tranches);
- (b) Annual coordination meeting on HPMPs; continued preparation of guidelines on alternative technologies and policies to promote low-carbon and environmentally friendly technologies (UNEP) (US \$50,000); training on ODS enforcement at the provincial and municipal levels for at least 300 staff from local EEBs and/or law enforcement officers; continued technical and policy assistance on daily management activities related to ODS phase-out and support for training workshops held by local EEBs for the environmental protection personnel (UNEP) (US \$150,000 and funds from previous tranche); continued activities to support the six selected EEBs and selection of two new EEBs for capacity building on policy development, implementation of the filing management system, monitoring, enforcement, public awareness and training (UNEP) (US \$400,000);
- (c) Three training workshops for customs officers and anti-smuggling departments to train at least 150 officers and three training sessions for 200 participants from relevant enterprises on the Montreal Protocol control requirements and continued work to finalize the training manual (UNEP) (US \$100,000 and funds from previous tranche); continued operation and maintenance of the ODS import/export paperless management approval system (UNEP) (US \$70,000); continuation of the study on laws to penalize illegal trade including case studies and guidance for the investigation and processing of illegal trade in ODSs (UNEP) (US \$90,000 and funds from previous tranche); continuation of outreach and law enforcement inspections by customs and anti-smuggling bureaus; support for at least 10 national ozone unit (NOU) officers to participate in international workshops or regional network meetings; and an overseas training workshop to strengthen the cooperation on the management of controlled substances with relevant countries (UNEP) (funds from the previous tranche);
- (d) Selection of six pilot cities for a third batch of capacity-building activities including strengthening of the filing and data management system; promoting good practices through training and outreach; and demonstration of refrigerant management, recycling, and reuse (UNEP) (US \$900,000);
- (e) Training of 800 technicians through the vocational system on good servicing practices for alternative refrigerants through three workshops (including one specifically for women);

⁷ On technical specifications for the servicing and maintenance of cold storage systems, water chillers, multi-split air conditioners, refrigeration and air-conditioning equipment for industrial and commercial applications, and for equipment with flammable refrigerants.

and one international training in Japan on good servicing practices in regional countries (UNEP) (US \$325,000 and funds from the previous tranche);

- (f) Continuation of the manufacturers' commercial refrigeration after-sales programme at selected enterprises by the CRAA through training of a total of 1,000 technicians on the use of alternative technologies in commercial refrigeration (Government of Germany) (funds from previous tranches); and continued training through manufacturer-owned servicing workshops of 400 technicians from small- and medium-sized enterprises on skills required for the installation and servicing of RAC equipment based on R-290, HFC-32 and other low-global-warming-potential (GWP) alternatives in the ICR sector (UNEP) (funds from the previous tranche);
- (g) Training of 200 technicians in the supermarket subsector on good practices and alternative technologies and one study tour abroad on alternative technologies in supermarkets (Government of Germany) (funds from previous tranches);
- (h) Awareness-raising activities including celebration of the World Ozone Day; design, production, and dissemination of outreach materials; maintenance and updates of the OzonAction in China website (UNEP) (US \$160,000); and organization of the Ozone2Climate roadshow and roundtable events and an online exhibition for Ozone2Climate technology (UNEP) (US \$100,000); and
- (i) Project management and monitoring for UNEP (US \$255,000), comprising the cost of staff (US \$193,326), travel (US \$26,816), and meetings and consultations (US \$34,858).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

HCFC consumption

83. In 2023, consumption of HCFCs in the servicing sector was 52,225 metric tonnes (mt) or 2874.70 ODP tonnes, as shown in table 2.⁸

Table 2. HCFC consumption in the refrigeration servicing sector (2018-2023 country programme data)

HCFC	2019	2020	2021	2022	2023	Average*
mt						
HCFC-22	58,005.55	53,450.32	51,720.55	53,065.05	50,637.00	64,466.58
HCFC-123	404.58	358.18	406.30	411.69	318.03	113.75
HCFC-124	37.71	(23.20)	(31.65)	21.73	-17.49	139.56
HCFC-142b	909.55	584.36	2,011.60	884.31	1,287.51	5,338.58
Total (mt)	59,357.39	54,369.66	54,106.80	54,382.78	52,225.05	70,058.47
ODP tonnes						
HCFC-22	3,190.31	2,939.77	2,844.63	2,918.58	2,785.04	3,545.68
HCFC-123	8.09	7.16	8.13	8.23	6.36	2.30
HCFC-124	0.75	(0.51)	(0.70)	0.48	-0.38	3.05
HCFC-142b	59.12	37.98	130.75	57.48	83.69	347.03
Total (ODP tonnes)	3,258.27	2,984.40	2,982.81	2,984.77	2,874.70	3,898.06

* Average consumption in 2009 and 2010.

⁸ No maximum allowable consumption of HCFCs has been specified for the refrigeration servicing sector in the Agreement between the Government of China and the Executive Committee.

84. The Government of China continues to enforce a strict licensing and quota management system for HCFC production and consumption and is committed to meeting the phase-out target for the refrigeration servicing sector of stage II of the HPMP while supporting the concomitant phase-out in the RAC and ICR manufacturing sectors. The HCFC consumption in the servicing sector is about 26 per cent less, in ODP tonnes, than the average consumption in 2009 and 2010. Since 2022, there has been a large reduction in HCFC-123 and HCFC-124 and the consumption of HCFC-22 decreased by 5 per cent; however, the consumption of HCFC-142b in the servicing sector increased by 46 per cent.

85. HCFC-142b has historically been used as a refrigerant in bridge crane air conditioners at high ambient temperature and reductions in this application have lagged compared to the reduction of HCFC-142b in the manufacturing sectors. Although activities in the ICR and servicing sectors of the HPMP were implemented, and in recent years alternatives using HFCs and low-GWP refrigerants have been introduced, the consumption of HCFCs is subject to annual fluctuations due to the large accumulation of HCFCs in the existing equipment, which accounts for a proportion of the HCFC consumption in the servicing sector. The Government of China has been carrying out strict quota management in HCFC production and consumption to ensure that the country meets its compliance target. Additionally, manufacturers are actively researching alternative refrigerants for new bridge crane air-conditioning units.

Status of progress

86. On the implementation of standards and codes, UNEP confirmed that the purpose of the work undertaken during the implementation of the sixth tranche was to integrate requirements related to reducing ODS leakage, increasing ODS recycling and reuse, and establishing technical specifications for handling flammable and toxic refrigerants in specific refrigeration equipment. UNEP also explained that FECO/MEE developed the TOR for the five codes. The open bidding process of two of the codes is completed. The other three are still in the revision and review process to ensure consistency with the revised ODS regulation and national strategy of ODS management. Given the large quantities of HCFCs in installed equipment which would also require servicing and maintenance, maximizing recovery and reuse of HCFCs will reduce dependence on new HCFCs in servicing applications.

87. Regarding the certification system, UNEP explained that China had implemented a certification system for technicians in a general context which includes two types of certification processes managed by different authorities. The first is a voluntary skills assessment certification managed by the Ministry of Human Resources and Social Security. Most technicians trained in vocational schools are required to obtain this certification before graduation. The second is a skills assessment certification, which experienced servicing technicians can apply for after undergoing training and passing the exam. The latter is managed by the Ministry of Emergency Management and is mandatory for servicing high-pressure and toxic chemical equipment, such as large ammonia refrigeration systems, but it primarily focuses on hazardous chemical management in specific contexts. Through these certification systems, the trained technicians are expected to more effectively install and maintain equipment using flammable refrigerants.

88. On completion of the revision of the two standards for the transportation, installation, and servicing of room air conditioners using flammable refrigerants, these are in process in partnership with the China Household Electrical Appliances Association (CHEAA). CHEAA will complete the final version and submit it to the relevant authority before the end of 2024. This will further fast-track the adoption of air conditioners using low-GWP refrigerants.

89. Further, UNEP also explained that during the sixth tranche implementation, the focus areas for the studies had covered cold storage; commercial refrigeration; systems for recording and reporting information on refrigerant recovery and reuse, including possible mechanisms for strengthening the same; and methods for maximizing the recovery and reuse of refrigerants. One overseas study tour on unwanted ODS recycling and disposal and on-site visits to enterprises working on ODS recycling and regeneration were organized in December 2023 with refrigeration experts from GIZ.

90. On the level of disbursement, UNEP explained that the time needed for the preparation and signing of PCAs for each tranche left only a few months for the disbursement of funds in the same year. Furthermore, subcontracts signed under each tranche usually have a two- or three-year implementation period, and FECO/MEE issue the interim disbursement or final payment to local partners only after accepting their work.

Project implementation and monitoring

91. In line with decision 81/46(b), UNEP as the lead implementing agency for the refrigeration servicing sector of stage II of the HPMP provided a cumulative report on the project management unit (PMU) expenditures, as summarized in table 3.

Table 3. PMU cumulative expenditures in the refrigeration servicing sector plan of stage II of the HPMP

Item	Description	Cost (US \$)
Sector-specific costs	Project staff	528,715
	Domestic travel	58,707
	International travel	5,523
	Domestic meeting	39,461
	International meetings	0
	Consulting service	37,676
Subtotal for sector-specific costs		670,082
Operations costs	Shared costs (support staff, computers, Internet, printing, office operations and maintenance)	747,025
Total disbursements (2017-2023)		1,417,107

92. UNEP confirmed that there was no overlap in the awareness and outreach activities being implemented under the refrigeration servicing sector plan with that under other projects in China.

Gender policy implementation

93. In line with the Multilateral Fund operational policy on gender mainstreaming (decisions 84/92, 90/48(c) and 92/40(b)), during the implementation of the sixth tranche, sex-disaggregated data was collected, a training session was organized specifically for female technicians, and the participation of women has been considered throughout the implementation of all project components. During the implementation of the seventh tranche, women will be sought out and encouraged as instructors/trainers and female technicians will be encouraged to participate in the workshops. FECO/MEE will continue to collect sex-disaggregated data for the implemented activities, including the number of women participating in meetings, trainings, workshops, capacity-building, and outreach activities. Outreach and training material will be developed to highlight gender issues and promote gender equity, when applicable.

Sustainability of the HCFC phase-out and assessment of risks

94. In China, one of the primary goals of training activities in the servicing sector is to improve and enhance the infrastructure for the safe use of the new generation of refrigerants, including flammable and toxic refrigerants which are entering the market. Over the past few years, with ongoing efforts based on the enforcement of ODS regulations and a series of technical assistance activities, including the revision of standards, training, pilot projects, and outreach in the servicing sector, local partners have developed a clear understanding of the trend towards lower-GWP alternatives. The industry recognizes the timeline for the HCFC phase-out and is progressing toward it by preparing for the adoption of lower-GWP refrigerants from multiple angles. China continues to address the emerging challenges in adopting these new alternatives in multiple sectors and implementing activities through the project that will strongly support the adoption of flammable and other lower-GWP alternatives. Further, the servicing sector presents complexities in law enforcement due to diverse equipment, regional disparities, and overlapping management functions among

authorities. China also faces challenges in increasing the rate of refrigerant recovery and reuse, particularly with very limited funding support in the servicing market and in the adoption of alternative technologies which are higher in cost for the servicing sector. To mitigate these risks, with the assistance of UNEP, FECO/MEE is undertaking further steps related to capacity-building and training in the servicing sector for an easier adoption of alternatives, promoting regulations and providing support to maximize the recovery of HCFCs in existing equipment, and implementing other measures to promote the adoption of low-GWP alternatives to HCFCs.

Conclusion

95. The Government of China remains in compliance with the Montreal Protocol and its Agreement with the Executive Committee with regard to the refrigeration servicing sector. Progress has been made in the activities for the sector and its enabling component and the overall disbursement rate is at 69 per cent (and 20 per cent for the sixth tranche). Consumption of 2,874.70 ODP tonnes of HCFCs in the refrigeration servicing sector in 2023 confirms that the Government has maintained its commitment to reduce HCFC consumption for the refrigeration servicing sector by 734 ODP tonnes in 2023 (i.e., from the 2015 consumption of 3,734 ODP tonnes, to the 2020 target consumption for the refrigeration servicing sector of 3,000 ODP tonnes). The reduction that has been achieved so far will be sustained through the enforcement of the quota management system for HCFC production and consumption, the training programmes and technical assistance activities in the refrigeration servicing sector under implementation.

RECOMMENDATION

96. The Executive Committee may wish to consider:

- (a) Noting the progress report on the implementation of the sixth tranche of the refrigeration and air-conditioning servicing sector plan and the national enabling programme of stage II of the HCFC phase-out management plan (HPMP) for China; and
- (b) Approving the seventh tranche of the refrigeration and air-conditioning servicing sector plan and the national enabling programme of stage II of the HPMP for China, and the corresponding 2024-2025 tranche implementation plan, in the amount of US \$3,000,000, plus agency support costs of US \$329,200 for UNEP.

Annex I

BACKGROUND OF STAGE II OF THE HCFC PHASE-OUT MANAGEMENT PLAN FOR CHINA (76th to 83rd MEETINGS)

76th meeting

1. At its 76th meeting, the Executive Committee approved in principle:
 - (a) The solvent sector plan for the period 2016 to 2026, for the complete phase-out of all HCFCs in that sector, in the amount of US \$44.8 million, plus agency support costs; and
 - (b) The refrigeration servicing sector and enabling programme component for the period 2016 to 2020, to reduce HCFC consumption by 734.0 ODP tonnes in that sector, in the amount of US \$20.29 million, plus agency support costs.

77th meeting

2. At its 77th meeting, the Executive Committee approved in principle stage II of the HCFC phase-out management plan (HPMP) for China for the period 2016 to 2026 in the amount of US \$500,100,000, plus agency support costs, to reduce HCFC consumption by 37.6 per cent of the baseline by 2020. Stage II included the following sector plans:

- (a) The industrial and commercial refrigeration and air-conditioning (ICR) sector plan to reduce HCFC consumption in the sector by 33 per cent by 2020;
- (b) The room air-conditioning manufacturing and heat pump water heaters (RAC) sector plan to reduce HCFC consumption in the sector by 45 per cent by 2020;
- (c) The polyurethane (PU) rigid foam sector and the extruded polystyrene (XPS) foam sector plans to achieve the total phase-out of HCFCs in these sectors by 2026; and
- (d) The refrigeration and air-conditioning servicing sector and the national enabling programme and the solvent sector plans, approved at the 76th meeting, were components of stage II of the HPMP.

79th meeting

3. At its 79th meeting, the Executive Committee approved the Agreement between the Government of China and the Executive Committee for the implementation of stage II of the HPMP, and set the agency support costs for UNDP, UNIDO, and the World Bank at 6.5 per cent, on the understanding that the agency support costs could be reconsidered at the 81st meeting, and maintained the level of agency support costs for the bilateral agencies and UNEP in place under the current administrative cost regime.

80th and 81st meetings

4. At the 80th and 81st meetings, the Executive Committee approved the second tranches for all except the PU foam sector plans.

82nd meeting

5. At the 82nd meeting, on behalf of the Government of China, UNDP, UNEP, UNIDO, the World Bank, and the Governments of Germany and Japan submitted requests amounting to US \$29,199,492 for the second tranche of the PU foam sector plan (US \$10,600,000), and the third tranches of the XPS foam

(US \$8,000,000), ICR (US \$12,000,000), solvent (US \$5,549,492), and refrigeration servicing (US \$3,850,000) sector plans of stage II of the HPMP.¹ The submission included an independent verification of HCFC production and consumption in 2017 (submitted by the World Bank); annual implementation reports covering the activities undertaken so far, and annual implementation plans for the activities to be implemented in 2018-2019.

6. After reviewing the documents associated with the third tranche requests for the XPS foam, ICR, solvent and refrigeration servicing sector plans, the Secretariat concluded that all of them had merits to warrant their submission for consideration at the 82nd meeting. However, this was not the case for the second tranche of the PU foam sector plan, as no disbursements from the first tranche had taken place at the time of submission.

7. In discussing the tranche requests, several Committee members expressed serious concern at approving additional funding at that meeting given the unexplained emissions of trichlorofluoromethane (CFC-11) that were reported in East Asia. Pursuant to decision XXX/3 regarding these unexpected emissions, more information had been requested on their cause, and it was suggested that the funding request be deferred until a subsequent meeting when more information was available. At the time, the Foreign Environmental Cooperation Centre (FECO) still held over US \$100 million that had not yet been disbursed to beneficiary enterprises; thus, it was considered that deferring the funding requests should have no significant effect. It was important to demonstrate to the international community that the Multilateral Fund took the issue of the illegal emission of CFC-11 seriously, but any decision to defer the funding should be without prejudice to any further actions to be taken by the Government of China.

8. Other members said that care needed to be taken, and that any decision to defer the funding requested should not put into jeopardy the 2020 reduction target for China. It was asked whether all funds had already been transferred to FECO or whether some of them remained with the implementing agencies, and what the effect on them might be if the present request for funding was deferred. The ongoing investigations into the cause of the emissions of CFC-11 meant that the Executive Committee needed to be cautious when reaching conclusions. It could take several years for all the relevant information to be assembled, and it was important to have clarity on what information was required and a timeline for assembling it.

9. Subsequent to deliberations on the issue in the contact group, the Committee decided (decision 82/71):

- (a) To request the Government of China, through the relevant implementing agency, to submit at the 83rd meeting:
 - (i) A review of the current monitoring, reporting, verification and enforcement systems in line with its Agreements with the Executive Committee on the country's HPMP and HCFC production phase-out management plan, including information on the organizational structure and capacity at the national and local levels that demonstrated how the long-term sustainability of the phase-out of HCFCs in the consumption and production sectors was being ensured and on the efforts to address any illegal trade in those substances; and
 - (ii) A progress report regarding actions taken with a view to strengthening of legislation on ozone-depleting substances (ODSs) and implementation thereof in China; and

¹ The request for the third tranche of the RAC sector plan (US \$18,000,000) was not submitted because the level of disbursement of funds approved for the second tranche had not reached 20 per cent.

- (b) To consider the requests for funding for the subsequent tranches of stage II at the 83rd meeting.

83rd meeting

10. In response to decision 82/71, UNDP submitted, on behalf of the Government of China, the report on the current monitoring, reporting, verification and enforcement systems and the progress report regarding actions taken with a view to strengthening of legislation on ODSs.² In addition, UNDP, UNEP, UNIDO, the World Bank and the Governments of Germany and Japan re-submitted requests for third tranches of the XPS foam, ICR, solvent and refrigeration servicing sector plans and for second tranche of the PU foam sector plan associated with stage II of the HPMP for China.

11. After reviewing the re-submission of the sector plans and associated documents, the Secretariat concluded that all of them merited consideration at the 83rd meeting, except the request for the second tranche of the PU foam sector plan, which did not meet the disbursement requirements; accordingly, this tranche request was not submitted.

12. In discussing the tranche requests, one Executive Committee member said that in light of the matter of the substantial increase in CFC-11 emissions from China, her delegation had concerns about the sustainability of reductions in ODS achieved using funding from the Fund, and was unable, at the present time, to support project funding for China; she further noted that there may need to be restitution for the environmental harm caused by the unexpected emissions. Another representative supported that stance, stating that until the matter had been clarified, his country was unable to approve new tranches for the HPMP, as that would undermine the credibility of the Montreal Protocol.

13. Following the discussion, the Executive Committee deferred, to the 84th meeting, consideration of the revision of the Agreement for stage II of the HPMP for China and the requests for the third tranches of the XPS foam, ICR, refrigeration servicing, and solvent sector plans under stage II of the HPMP (decision 83/55).

² UNEP/OzL.Pro/ExCom/83/11/Add.1

Annex II

FINANCIAL REPORT OF THE PROJECT MANAGEMENT UNIT ASSOCIATED WITH THE SECTOR PLANS OF STAGE I AND STAGE II OF THE HCFC PHASE-OUT MANAGEMENT PLAN AND HCFC PRODUCTION PHASE-OUT MANAGEMENT PLAN FOR CHINA

Stage I: cumulative project management unit (PMU) expenditure as of 31 December 2023 (US \$)

Item	Sectors *						
	Production	RAC	PU foam	XPS foam	ICR	Solvent	Servicing
Sector costs							
Project staff	1,768,942	1,963,171	1,590,980	1,199,717	1,785,395	235,859	260,452
Domestic travel	199,305	195,238	209,875	161,437	213,301	13,589	25,789
International travel	24,000	20,000	18,653	16,000	20,000	4,000	4,309
Domestic meeting **	176,004	153,384	170,391	130,008	172,133	12,000	20,382
International meetings	0	0	0	0	0	0	0
Consulting service ***	159,479	152,607	167,581	128,880	167,416	10,874	20,579
Subtotal sector costs	2,327,730	2,484,400	2,157,480	1,636,042	2,358,245	276,322	331,511
Share costs							
Supporting staff ****							
Computer, Internet, phone, printing, etc.							
Office operation and maintenance, utilities							
Total	4,889,411	4,953,494	4,749,869	3,622,688	4,996,308	450,982	646,156

Note: As stage I of the HPMP is now completed, the present report shows the same level of expenditure than the report submitted at the 93rd meeting. This report will not be included in future tranche requests from stage II of the HPMP.

Total cumulative expenditure of the PMU in the implementation of stage I of the HPMP/HPPMP in 2011-2022 was US \$24,308,908, comprising US \$19,354,647 from the HPPMP and HPMP sector plans and US \$4,954,234 from other individual projects or the Foreign Environmental Cooperation Centre's own budget. Expenditures for institutional strengthening and co-financing by the Government of China (about US \$4.01 million in 2011-2022) are not included.

* PU = polyurethane; XPS = extruded polystyrene; RAC = room air-conditioning manufacturing and heat pump water heaters; ICR = industrial and commercial refrigeration and air-conditioning.

** Costs for venue, equipment rental and others.

*** Consulting institutions and experts hired for project evaluation, financial and technical verifications, technical review, bidding evaluations, technical support, etc.; contractual staff hired to help with high workload or special events, such as meetings, exhibitions and workshops, as well as translation-related costs.

**** Costs associated with the apportioned supporting staff in the financial division, contract management, general affairs, and other relevant divisions.

Stage II: Cumulative PMU expenditure as of 31 December 2023 (US \$)

Item	Sectors *						
	Production	RAC	PU foam	XPS foam	ICR	Solvent	Servicing
Sector costs	12,126,029						
Project staff	2,417,086	1,861,288	1,657,235	1,443,718	1,939,776	554,347	528,715
Domestic travel	141,538	77,543	84,959	127,411	151,281	63,106	58,707
International travel	28,507	11,754	6,800	13,189	16,953	6,376	5,523
Domestic meeting **	94,420	56,176	58,613	84,462	101,404	42,066	39,461
International meetings	0	0	0	0	0	0	0
Consulting service ***	89,946	49,657	56,690	82,393	97,498	39,755	37,676
Subtotal sector costs	2,771,497	2,056,418	1,864,297	1,751,173	2,306,912	705,650	670,082
Share costs	9,077,770						
Supporting staff *****	5,801,093						
Computer, Internet, phone, printing, etc.	936,362						
Office operation and maintenance, utilities	2,340,315						
Total	4,632,739	3,193,353	2,975,775	3,293,831	4,194,031	1,496,963	1,417,107

Note: Total cumulative expenditure of the PMU in the implementation of stage II of the HPMP in 2017-2023 was US \$21,203,800, comprising US \$10,339,548 from the HPMP sector plans and US \$10,864,252 temporarily covered by the Foreign Environmental Cooperation Centre's budget, to be reimbursed by the implementing agencies from PMU costs for future tranches. Expenditures for institutional strengthening and co-financing by the Government of China are not included.

* PU = polyurethane; XPS = extruded polystyrene; RAC = room air-conditioning manufacturing and heat pump water heaters; ICR = industrial and commercial refrigeration and air-conditioning.

** Costs for venue, equipment rental and others.

*** Consulting institutions and experts hired for project evaluation, financial and technical verifications, technical review, bidding evaluations, technical support, etc.; contractual staff hired to help with high workload or special events, such as meetings, exhibitions and workshops, as well as translation-related costs.

***** Costs associated with the apportioned supporting staff in the financial division, contract management, general affairs, and other relevant divisions.

Annex III

OVERARCHING PRINCIPLES FOR THE IMPLEMENTATION MODALITY OF HPMP'S SECTOR PLANS IN CHINA

(Submitted by UNDP as lead implementing agency)

General principles

1. The implementation (execution) procedures established for technical cooperation projects are governed by the relevant implementing agencies' rules and procedures. According to these rules, each implementing agency maintains oversight responsibilities for project execution performance ensuring the proper allocation of funds (following Multilateral Fund policies), and supporting the Country to achieve compliance of the Agreement with the Executive Committee.
2. In addition to Agency's Rules and Procedures, Foreign Environmental Cooperation Centre (FECO)/ Ministry of Ecology and the Environment (MEE) may also need to follow specific administrative, financial, and operational procedures set by national regulations governing technical cooperation projects, as mandated by the Ministry of Finance of China, along with other relevant policies, rules and regulations within the country.

Funds management

3. With the exception of the World Bank, all other sector plans funded by the Multilateral Fund for China are managed by FECO/MEE using a national account in renminbi (RMB), therefore RMB is used as the bookkeeping currency.
4. The funding schedule under the sector plans, in principle approved and listed in the Agreement with the Executive Committee, are in US dollar amounts.
5. However, for project execution purpose, approved Tranches have their funds transferred from the relevant Implementing Agencies (IAs) to FECO/MEE are converted into RMB, and transferred to FECO's RMB bank account based on the actual conversion exchange rate provided by the bank.

Baseline reporting of funds disbursements and their balances

6. The previous reporting practice had only disclosed balances in United States dollar (US dollar) amounts reported in Tranche Progress Reports.

Proposed methodology for Reporting funds disbursements and their balances

7. FECO will provide disbursement figures (expenditures) in both actual RMB and US dollar.
8. Conversion to USD Dollar will be calculated by UN conversion exchange rate (provided regularly by the United Nations (UN)) in future progress reports and tranche requests.
9. The actual balance in RMB will be disclosed in the annual audit report, as well as the balance in US dollars calculated by UN exchange rate.
10. In addition, the auditor will also estimate the differences in US dollar figures caused by exchange rate fluctuations for each year in the annual audit report.

11. UNDP, as Lead IA, will coordinate with the auditor to ensure the same methodology is used in the audit report, aiming to minimize discrepancies between the audit report and the progress report, which is applicable to all Sector Plans.

Improving the funds transfer schedule from implementing agencies to FECO/MEE

12. Implementing Agencies will collaborate with FECO to improve the current funds transfer schedule, aiming to prevent the accumulation of large balances in FECO's RMB account and thereby mitigate exchange rate risk.

13. Each respective IA and FECO will agree upon a limit for a maximum amount of each transfer based on the implementation plan of the specific sector.

- (a) For the industrial and commercial refrigeration and air-conditioning (ICR), room air-conditioning manufacturing and heat pump water heaters (RAC), extruded polystyrene (XPS) foam, solvent and servicing sectors, the proposed limit is set at 5 to 25 per cent of the tranche for each payment, based on the Proposed Working Plan by FECO.

14. In addition to the milestones set in the current implementation agreement established between implementing agencies and FECO, an estimated disbursement plan will also be agreed upon for a specific number of months based on the enterprise conversions and disbursement plans. This aims to optimize the payment schedule based on the best estimates against the conversion milestones of the enterprises. For the ICR, RAC, XPS foam, solvent and servicing sectors, the proposed period is set at 3 to 6 months.

15. In principle, implementing agencies will withhold payments if there are sufficient funds in FECO's account for the committed payments in the upcoming number of months. Each payment from an implementing agency to FECO should not exceed an agreed percentage of the tranche (which will, in turn, be commensurate with the Company's Conversion Plan, The Project Document Working Plan and the Tranche Disbursements Plan from FECO to the enterprises).

Last payment of the funding from implementing agencies to FECO

16. To facilitate the potential return of potential unspent balances, by the end of the implementation, implementing agencies will withhold the last payment of the Tranche until there is a clear report from FECO on the amount of funds that will be disbursed in the agreed time frame and estimated balance of the entire project.

17. The final payment from an implementing agency to FECO should cover the committed amounts and will be disbursed accordingly. Any final remaining balances should stay in the implementing agencies' account for return to the Multilateral Fund.